

Health Affairs

At the Intersection of Health, Health Care and Policy

Cite this article as:

Robert Soeters, Peter Bob Peerenboom, Pacifique Mushagalusa and Célestin
Kimanuka
Performance-Based Financing Experiment Improved Health Care In The
Democratic Republic Of Congo
Health Affairs 30, no.8 (2011):1518-1527
doi: 10.1377/hlthaff.2009.0019

The online version of this article, along with updated information and services, is
available at:

<http://content.healthaffairs.org/content/30/8/1518>

**For Reprints, Links &
Permissions :**

http://content.healthaffairs.org/1340_reprints.php

Email Alertings : <http://content.healthaffairs.org/subscriptions/etoc.dtl>

To Subscribe : <https://fulfillment.healthaffairs.org>

Health Affairs is published monthly by Project HOPE at 7500 Old Georgetown Road, Suite 600, Bethesda, MD 20814-6133. Copyright © by Project HOPE - The People-to-People Health Foundation. As provided by United States copyright law (Title 17, U.S. Code), no part of may be reproduced, displayed, or transmitted in any form or by any means, electronic or mechanical, including photocopying or by information storage or retrieval systems, without prior written permission from the Publisher. All rights reserved.

Not for commercial use or unauthorized distribution

By Robert Soeters, Peter Bob Peerenboom, Pacifique Mushagalusa, and Célestin Kimanuka

DOI: 10.1377/hlthaff.2009.0019
HEALTH AFFAIRS 30,
NO. 8 (2011): 1518–1527
©2011 Project HOPE—
The People-to-People Health
Foundation, Inc.

Performance-Based Financing Experiment Improved Health Care In The Democratic Republic Of Congo

Robert Soeters

(Robert.Soeters@hotmail.com) is the director of SINA Health, in The Hague, Netherlands.

Peter Bob Peerenboom is a consultant with Tangrem Management Consultants, in The Hague.

Pacifique Mushagalusa is the general director of the Agence d'Achat des Performances du Sud Kivu, in Bukavu, Democratic Republic of Congo.

Célestin Kimanuka is an independent consultant and statistician in Goma, Democratic Republic of Congo.

ABSTRACT In some low-income countries such as Cambodia and Rwanda, experimental performance-based payment systems have led to rapid improvements in access to health care and the quality of that care. Under this type of payment scheme, funders—including foreign governments and international aid programs—subsidize local health care providers for achieving certain benchmarks. The benchmarks can include such measures as child immunizations or childbirth in a health facility. In this article we report the results of a performance-based payment experiment conducted in the Democratic Republic of Congo, which is one of the poorest countries in the world and has an extremely high level of child and maternal mortality. We found that providing performance-based subsidies resulted in lower direct payments to health facilities for patients, who received comparable or better services and quality of care than those provided at a control group of facilities that were not financed in this way. The disparity occurred despite the fact that the districts receiving performance-based subsidies received external foreign assistance of approximately \$2 per capita per year, compared to the \$9–\$12 in external assistance received by the control districts. The experiment also revealed that performance-based financing mechanisms can be effective even in a troubled nation such as the Democratic Republic of Congo.

Since the late 1990s, several encouraging experiments with performance-based financing have been conducted in Asia and more recently in Africa. These programs are based on contracts between district or provincial purchasing authorities and health care providers. The purchasing authorities develop contracts with the providers to make available a set of curative and preventive health activities to the population and are crucial in monitoring and auditing results at the health facility level, to prevent fraud, and at the consumer level, to empower communities. This empowerment is done by the purchasing authorities, which contract

community groups to conduct patient satisfaction surveys. Information is then used during contract renewal negotiations with the health facilities to improve health services.

In contrast to traditional financing, in performance-based financing these agencies pay subsidies for health service achievements, such as a child fully immunized or childbirth conducted in a health facility. In pioneering settings such as Cambodia and Rwanda, performance-based financing programs have improved health services more rapidly than other reform approaches in the same countries.¹

However, critics feared that this approach would be too complex for developing countries

and particularly for “failed states,” a term used to describe states characterized by serious and protracted social, political, and economic instability. These critics postulated that successful contracting would require functional basic administrative systems that would be too costly and therefore were unlikely to be sustainable.²⁻⁴ Others believed that the incentives specified by performance-based contracting would still not promote quality, even if they would stimulate providers to meet care targets and improve financial access to health care as a result.⁵ Our study investigated whether successful performance-based financing could meet critical standards and could also be achieved in the challenging environment of the Democratic Republic of Congo (hereafter referred to as Congo).

Congo is one of the poorest countries in the world and has an extremely high level of child and maternal mortality. Infectious diseases are the major cause of morbidity and mortality. In some areas of the country, the public health system has collapsed, and health care delivery is largely left to informal private providers. The public health budget serves mainly to finance irregular and very low salary payments to government health workers.⁶

In 2008 Congo was ranked sixth on the list of failed states because of its inability to provide public services, erosion of legitimate authority, corruption, criminality, and involuntary movement of populations.^{7,8} Despite these constraints, since 2000 the Ministry of Health has included performance-based contracting in its health policy. Some pilot contracting projects were started with financial support from the European Union, the World Bank, and the German Technical Cooperation. However, none of these financing experiments had a scientific design, which made evaluation of their success difficult.

In 2005 the Health Authority of South Kivu Province teamed up with the local nongovernmental organization Bureau des Oeuvres Médicales and the international development agency Cordaid to start a performance-based financing program with an experimental scientific design. Katana and Idjwi districts in Congo—with a combined population of 300,000—were selected to participate in the program.

Two neighboring districts, Kalehe and Kabare—with a combined population of 232,000 and similar characteristics to Katana and Idjwi—were targeted as the control areas. These two control districts would receive no performance-based payments but would receive essential drugs and equipment and fixed staff performance bonuses. The International Rescue Committee, another nongovernmental organi-

zation, operated in the two control districts before, during, and after the study period with financing from the UK Department for International Development. The local agency Bureau Central de Coordination operated from early 2007 in the control district of Kalehe with funding from the World Bank.⁹

Project Design

Contracting in performance-based financing involves payment for predetermined health services. The more contractual services a health care provider performs, the more subsidies the provider receives. This relationship is linear. For example, for one birth assisted by a skilled health worker, a health facility would receive \$7, for two deliveries \$14, and so on. The basic assumption is that financial incentives motivate health facilities and their staff to improve performance.

However, research in Cambodia and Rwanda demonstrated that successful performance-based financing required more comprehensive reforms than just a contract between purchaser and provider.¹⁰⁻¹² Therefore, performance-based financing programs needed agreements with providers and with regulators in order to ensure quality, and with local nongovernmental organizations for the purpose of measuring patient satisfaction and conducting audits at the household level.

The project in Congo invited autonomous health facility managers in the two districts participating in the experimental payment program to develop business plans, use financial tools to analyze revenues, and improve their decision-making process when spending resources. Operational expenses were areas of emphasis for health facility managers, including recruiting and motivating staff, using revenues for social marketing, rehabilitating infrastructure, developing subcontracts with private providers, and purchasing drugs.

Another feature of the experimental payment program was that facility managers were free to negotiate with their communities regarding user fees paid by patients instead of having those fees imposed by higher authorities such as government or international development agencies. Additionally, purchasing authorities—the agencies that hold and disburse subsidy payments upon verifying performance outputs—were expected to coach health facility managers. For example, coaching would be provided to reduce user fees if patients’ access was compromised because of financial barriers.

Where subsidies could not be paid because, for example, government or aid agency funds were exhausted, managers of participating health fa-

cilities could renegotiate with their communities to increase user fees. This allowed them to maintain high-quality health services and prevent labor unrest among staff as a result of reduced revenues. Giving purchasing authorities autonomy at the district level was an important step; it separated these agencies' purchasing responsibility from the regulatory and quality assurance responsibilities of the district health authorities.

Annual external assistance in the participating districts was around \$2 per capita. Of that amount, about \$1 was for the health centers, and forty cents was for hospital care. The remaining sixty cents was dedicated to the verification and coaching tasks of the purchasing authority and technical assistance costs.

The control districts followed a more traditional practice of receiving essential drugs and equipment directly from the international nongovernmental organizations and paying fixed monthly individual staff bonuses. Facility managers in the control districts typically did not participate in decisions related to spending for health care goods and services or infrastructure rehabilitation. Local health authorities and international aid agencies usually made these decisions.

Nominal user fees in the control districts were imposed on health facilities by international nongovernmental organizations working in the area, and private-sector collaboration was not encouraged. Nevertheless, the per capita international assistance budget was significantly higher in control districts—\$9–\$12 per year—than in districts participating in the experimental payment program.¹³

Study Data And Methods

A pre-intervention, stratified household cluster survey was conducted in November 2005 among 240 households in the two districts participating in the performance-based financing experiment and 200 households in the two control districts.

In 2008 a post-intervention assessment was conducted to measure the same quantitative health service outputs described in Exhibit 1, plus six indicators of patients' perceptions of quality described in Exhibit 2.

In addition, the post-intervention assessment included professional evaluations—conducted by a survey team recruited from local health authorities—of the degree to which health centers achieved fifty-three qualitative indicators, comparing twelve health centers in the performance-based finance districts with ten health centers in the control districts (Exhibit 3).

Logistic regression models were used to see whether changes in these indicators during the period 2005–08 differed between the participating and control districts.¹⁴ Most indicators were selected before the payment experiment began, although some were selected during the analysis. To prevent potential selection bias, external researchers reviewed and approved the analytical methodology.

The relatively small sample (440) in the 2005 household survey resulted in some of the findings' being statistically weak and further compromised by the cluster survey design. In 2008 semistructured interviews were conducted among the twenty-two health center managers to ascertain their views about performance-based financing versus traditional financing practices. The consistency of findings was exam-

EXHIBIT 1

Changes In Indicators Between 2005 And 2008 In The Participating And Control Districts, South Kivu Province, Congo

Output and patient knowledge indicators	Change between 2005 and 2008 (%)		Difference between participating and control districts (percentage points)
	Participating districts	Control districts	
Respondent heard about HIV/AIDS	8	-2	10**
Childbirth in health facility	8	29	21**
Episodes using modern health facility or pharmacy	15	5	10*
Household has at least one bed net	69	56	13
Vaccination composite score (for children under 1 year) 100% for 4 indicators	31	12	19
Antenatal care composite score 100% for 4 indicators	36	26	10
Household has heard about family planning	20	14	6
Household has latrine in reasonable condition	24	11	13
Woman in household uses modern family planning method	12	8	4

SOURCE Authors' analysis of results from household survey, quality survey, and interviews with health facility managers, 2005 and 2008. *p < 0.10 **p < 0.05

EXHIBIT 2
Patient-Perceived Quality Indicators For Participating And Control Districts, South Kivu Province, 2005 And 2008

Patient-perceived quality	Change between 2005 and 2008 (%)		Difference between participating and control districts (percentage points)
	Participating districts	Control districts	
Patient-perceived availability of drugs	12	-25	37****
Patient-perceived quality	13	-2	15**
Respect for patients by health facility staff	4	-8	12*
Patient perception that patient was cured	13	2	11
Patient-perceived waiting time was acceptable	-3	4	7
Composite score: 5 patient-perceived quality indicators are 100%	8	-17	25**

SOURCE Authors' analysis of results from the household survey, quality survey, interviews with and health facility managers, 2005 and 2008. **NOTE** The highest possible composite score on the five patient-perceived quality indicators was 100 percent. * $p < 0.10$ ** $p < 0.05$ **** $p < 0.001$

ined by comparing the results of the household cluster survey, the professional evaluations, and the interviews with health center managers.

The baseline household survey occurred in November 2005, and the post-intervention assessment was conducted in February 2008. Seasonal differences may therefore have affected the results. Another potential source of bias was the 85 percent increase in per capita annual cash income in the overall study area, from \$65 in 2005 to \$122 in 2008. A war had ended just before the study, followed by years of relative stability that permitted the free movement of goods and people.

In early 2006 the performance-based financing program established an autonomous funding organization in the two participating districts with five permanent qualified Congolese

staff members. External consultants, who conducted the study and developed the instruments and procedures for implementation, supported the staff. Health facilities were invited to submit business plans once every three months containing strategies for delivering health packages under the performance-based finance program.

Participating health centers received subsidies for sixteen indicators such as outpatient department consultancies, number of bed days, fully immunizing a child before twelve months of age, construction of a household pit latrine, and use by a woman of oral or injectable contraceptives. Hospitals received subsidies for twenty-two general indicators and eight HIV/AIDS indicators.

The purchasing authority signed principal contracts with thirty-nine health centers and four hospitals, and the health center managers

EXHIBIT 3
Professionally Determined Quality Indicators For Participating And Control Districts, South Kivu Province, 2005 And 2008

Quality and availability of qualified staff, and satisfaction concerning supervision	Participating districts			Control districts			Difference between participating and control districts (percentage points)
	2005	2008	Change between 2005 and 2008 (percentage points)	2005	2008	Change between 2005 and 2008 (percentage points)	
Overall professional quality score of health centers ^a	— ^b	65%	— ^b	— ^b	39%	— ^b	26****
Qualified staff in health center (standard = 1:2,000 population) ^c	42%	65	23	46%	54	8	15**
Regular supervision by district health team: Yes ^d	— ^b	100	— ^b	— ^b	60	— ^b	— ^b
Satisfied with supervision district health team: Yes ^d	— ^b	92	— ^b	— ^b	40	— ^b	— ^b

SOURCE Authors' analysis of results from the quality survey and interviews with health facility managers, 2005 and 2008. ^a $n = 884$ for participating districts; $n = 612$ for control districts. ^bNo data available. ^c $n = 30$ and 46 for participating districts in 2005 and 2008, respectively; $n = 30$ and 35 for control districts in 2005 and 2008, respectively. ^d $n = 12$ for participating districts; $n = 10$ for control districts. ** $p < 0.05$ **** $p < 0.001$

developed twenty-two subcontracts with private clinics in their catchment areas. This latter option aimed to improve access in remote areas. Unskilled private practitioners were unable to acquire subcontracts, forcing several of them to cease practicing, while qualified health workers were recruited by the private clinics.

The financing agency also signed contracts with thirty-nine local community groups, one in each health center catchment area. Their primary role was to verify, through patient surveys, to what extent health center activities actually took place. This component was initiated to prevent managers from inflating health facility statistics. These surveys also collected patients' views on the quality of the services provided by the health facilities and were used by the fund holder during the contract renewal negotiations.

Monthly subsidies to participating facilities varied between \$200 and \$4,000. In addition to the basic subsidies, remote health facilities benefited from an isolation bonus of up to 15 percent. District health authorities conducted reviews of the quality indicators once every three months in all health facilities participating in the performance-based financing experiment. The review instrument was a questionnaire that covered 154 indicators. Based on the outcome of these quality reviews, health facilities received a bonus: up to 15 percent of the subsidies for health services provided if the score was 100 percent, and proportionally less for lower scores.

Study Results

OUTPUT AND PATIENT KNOWLEDGE INDICATORS

As shown in Exhibit 1, the study reviewed seven output and two patient knowledge indicators. Only two indicators produced significant results ($p < 0.05$, or probability of sampling error smaller than 5 percent): In the performance-based financing districts it was whether a patient had "heard about HIV/AIDS," and in the control districts it was whether childbirth occurred in a health or childbirth facility, rather than (for example) at home. For childbirth in a facility, improved results in the control districts were attributed to lower user fees and investments made by nongovernment organizations to improve delivery of care.

For three indicators—"the proportion of people with a disease episode who used a modern health facility," "households having at least one bed net," and the "vaccination composite score for children under age one"—improvements were seen in the districts participating in performance-based financing, but the results fell just short of significance (the probability of sampling error was smaller than 7 percent, 12 percent, and

19 percent, respectively). There was a significant increase in both the participating and control districts for the indicator "woman in household using modern family planning"—from 1 percent in 2005 to 13 percent and 9 percent in 2008, respectively. But the difference in favor of the participating districts compared to the control districts was statistically weak. Eight out of nine indicators pointed in favor of the participating districts, which suggests that the health facilities there significantly outperformed the controls. The probability of sampling error is only 2 percent.

PATIENTS' PERCEPTIONS OF QUALITY AND PROFESSIONALS' ASSESSMENTS OF QUALITY As shown in Exhibit 2, five out of six indicators related to patients' perception of quality showed improvements in the districts participating in the performance-based financing program.

The composite indicator "five patient-perceived quality indicators are 100 percent" shows a significant difference in favor of the participating districts ($p < 0.03$). The findings were similarly positive for the indicators "patient-perceived quality" ($p < 0.036$) and "patient-perceived availability of drugs" ($p < 0.001$). The latter indicator showed a very significant difference.

In 2005 the health facilities in districts participating in performance-based financing scored 63 percent for "patients perceived availability of drugs"; the control facilities scored 77 percent. By 2008 the participating districts improved their score for this item to 77 percent, while the control districts' score fell to 45 percent. These findings suggest that the household respondents were more satisfied with the health facilities that followed the performance-based finance approach of demand-driven drug purchasing than they were with the health facilities that followed the central supply-driven monopolist approach in the control district.

For the indicator "respect for patients by staff," the results were reasonably strongly ($p < 0.09$) in favor of facilities in participating districts. That suggests that staff there received patients in a more kindly manner than in the control health facilities. Although the control facilities performed better with regard to the waiting time, a measure of patient satisfaction, the difference was statistically weak ($p < 0.44$).

The 2008 quality score was 65 percent in the twelve health centers participating in the performance-based financing program versus 39 percent in the ten control health centers (Exhibit 3). Based on the government standard of one qualified staff member per 2,000 population, the qualified staff in the participating health centers increased by twenty-three percentage points

from 2005 to 2008. In the control health centers this increase was only eight percentage points.

Managers of health facilities participating in the performance-based financing program recruited new staff and collaborated with private dispensaries through subcontracts. They thereby increased the number of qualified staff in their catchment area. These health center managers were also more satisfied with the health authority supervision visits than their colleagues in the control districts (Exhibit 3).

HEALTH FACILITY REVENUES AND USER FEES PAID BY PATIENTS Exhibit 4 shows that in the health centers receiving performance-based financing, the annual per capita revenues from patient user fees increased by 25 percent between 2005 and 2008. In Exhibit 5, household survey data show an increase of 45 percent in the overall per capita out-of-pocket health spending for the same period. These household survey data also show that the health spending did not affect the poorest 25 percent of the households in the participating districts. This group, in fact, reduced its health spending by 14 percent, while the relatively wealthy proportion of the sample increased its health spending.

In contrast, in the control health centers, the annual per capita user fee revenues fell by 43 percent between 2005 and 2008, because the user fee payments were fixed at a very low level by health authorities (Exhibit 4). Consequently, in 2008 health centers receiving performance-based financing collected sixty-four cents per capita from user fees, while the control health centers collected only twelve cents.

These findings seem consistent with patients' view that the quality of care was better in the participating health facilities than in the control facilities, resulting in frequent use and therefore more health facility revenues. Annual cash assistance from external donors to the participating health centers increased from none in 2005 to thirty-six cents per capita in 2008, and in the control health centers from seventeen cents to thirty-one cents per capita. In 2008 overall per

capita health center revenues in the participating centers were \$1.04 compared to \$0.45 in the control health centers, implying monthly revenues of \$867 and \$375, respectively, for an average health center serving 10,000 people.

In 2005 the proportion of household income spent on health was 10.2 percent in the participating districts (Exhibit 5). Six households experienced catastrophic health spending.¹⁵ Patients did not seek care for 19 percent of the disease episodes observed during the 2005 study, mainly because they lacked the money.

In 2008 the proportion of household income spent on health fell to 6.7 percent in the participating districts; no instances of catastrophic health spending were reported; and the proportion of respondents not seeking needed care declined to 4 percent. In 2008 households in the control districts spent 5.4 percent of their income on health. This low out-of-pocket contribution and corresponding low health facility revenues may have contributed to the poor quality of services and low staff motivation.

Discussion

In Congo, our analysis suggests that health facilities in districts participating in the performance-based financing program outperformed their counterparts in control districts that relied on traditional forms of health care financing. Financial access for patients in the participating districts improved despite the fact that health facilities there collected more revenue from user fees than the control health facilities did.

Although the external assistance of approximately \$2 per capita per year was less than the \$9–\$12 in the control districts, the results were comparable or better in the participating health districts. The performance-based financing program therefore achieved important efficiency gains with better results at a relatively low level of external financing, which also covered the operational costs for the purchasing authority, around sixty cents per capita per year. Econo-

EXHIBIT 4

Revenues In The Participating And Control Health Centers, South Kivu Province, 2005 And 2008

Health center revenues in 12 intervention and 10 control health centers (per capita)	Participating districts (\$)			Control districts (\$)		
	2005	2008	Change between 2005 and 2008	2005	2008	Change between 2005 and 2008
Annual revenues from user fees	0.51	0.64	0.13	0.21	0.12	-0.09
Annual revenues from external assistance (cash)	0.00	0.36	0.36	0.17	0.31	0.14
Total annual revenues	0.51	1.04	0.53	0.38	0.45	0.07

SOURCE Authors' analysis of results from the household survey, quality survey, and interviews with health facility managers, 2005 and 2008.

EXHIBIT 5

Per Capita Health Spending And Financial Access In Participating And Control Districts, South Kivu Province, 2005 And 2008

Health expenditure and financial access indicators	Participating districts			Control districts			Difference between participating and control districts
	2005	2008	Change between 2005 and 2008	2005	2008	Change between 2005 and 2008	
Annual per capita health expenditure, all households ^a	\$6.36	\$9.25	45%	\$6.89	\$5.65	-18%	73% ^b
Annual per capita health expenditure, poorest 25% of sample ^c	\$3.60	\$3.11	-14%	\$2.12	\$3.55	67%	81% ^b
Proportion of health expenditure compared to household income	10%	7%	-4%	10%	5%	-5%	2% ^b
Disease episode not treated in health facility due to shortage of money	19%	4%	-15%	17%	12%	-5%	10% [*]

SOURCE Authors' analysis of results from household survey, quality survey, and interviews with health facility managers, 2005 and 2008. ^a*n* = 240 for participating districts, 2005 and 2008; *n* = 200 for control districts, 2005 and 2008. ^bTest not applicable. ^c*n* = 67 and 47 for participating, districts 2005 and 2008, respectively; *n* = 43 and 63 for control districts, 2005 and 2008, respectively. ^{*}*p* < 0.10

mies of scale are enhanced when a purchasing authority covers a target population of 200,000 or more, because below this figure the fixed costs for setting up the purchasing authorities become too high compared to the payments or subsidies paid to the health facilities.

The Rwanda experience also suggests that once a government notices the advantages of performance-based financing, it is more likely to invest in the health system, resulting in improved sustainability of interventions.¹⁶ This is less likely when governments consider health interventions wasteful.

With respect to Congo, in contrast to the concerns mentioned in the literature, quality substantially improved in the participating districts. Several factors may have contributed to the quality improvements, including renegotiating contracts with health facilities before renewal in case a facility did not meet agreed service targets, as well as the professional quality evaluations and patient surveys.

The study further suggests that the program achieved important efficiency gains. External investments were considerably less in the participating districts than in the control districts, while the results were equal or better. All of this challenges critics' assumption that for performance-based financing to succeed, government administrative systems and capacity must first be in place.

Health facility managers who participated in performance-based financing were free to negotiate user fees with their communities. However, managers did not set unreasonably high tariffs—particularly for the poorest group—because this would have reduced patients' uptake of services and revenues from performance subsidies. Fi-

ancial access was monitored in participating districts through patient surveys by local non-governmental organizations, and this may have helped keep the agreed-upon user fee levels low. Moreover, communities will pay user fees when those fees are seen to improve quality of care, as reported elsewhere.¹⁷

This study suggests that out-of-pocket health spending in Congo should be balanced at around 7–10 percent of household income. A lower proportion would reduce health facility revenues to a level that may compromise quality of service, staff motivation, and financial stability. A higher proportion would create unacceptable access barriers. Similar findings have been reported from Burundi and may also be valid in other developing countries.¹⁸

How are subsidies per performance indicator, such as a delivery by skilled staff, established? Contrary to health insurance, where cost is an important criterion for reimbursement, there is no such relation in performance-based financing. The subsidy rates are influenced by the level of achievement of the health service output targets and by the availability of funds. When there are signs of moral hazard (unjustified high use of services because the user fees are too low) and overproviding (because health facilities may without justification provide too many services), the subsidies may be reduced by the financing authority, which then also provides a disincentive for the cost escalation often seen in health insurance.

In contrast, subsidies may be increased when targets are not achieved, to provide greater incentive to reach them. The subsidy level of an indicator also depends on the public's interest in it. For example, a high unmet need for family

Transparency was enhanced and corruption reduced under a performance-based financing program.

planning may be countered by higher subsidies for family planning activities.

We also analyzed the logistics systems for delivering essential drugs. We compared cash support for autonomous health facilities purchasing from competitive distributors in the performance-based financing districts with supply-driven central distribution in the control districts. Advocates of central distribution may argue that giving government and aid agencies a monopoly assures better quality. However, the availability of essential drugs in the health facilities using performance-based financing was significantly better despite the larger investments for drug distribution by aid agencies in the control districts.

Stock disruptions in the control health facilities were so common that they became a serious public health concern, as patients were forced to buy drugs from informal drug suppliers. Local health authorities and international nongovernmental organizations in the control districts became competitors to the thriving private Congolese pharmaceutical sector. Besides, where private distributors considered the public drug distribution monopoly to be unfair competition, they may have been tempted to start buying counterfeit drugs.

Moreover, excluding the private sector obstructs entrepreneurs from creating employment to stimulate the local economy and to become a source of tax revenues once their activities are formalized. Nevertheless, the Congolese experience stresses the importance of reinforcing the role of quality control for essential drugs by the health authorities, which must include the private pharmaceutical sector.

Africa still lacks sufficient capacity to carry out performance-based financing programs. There is a distinct need for more training institutions and experienced professionals to scale up this kind of program. Nevertheless, capacity is growing through regular exchanges between Rwanda,

Burundi, Congo, and recently Cameroon, Zambia, Tanzania, and the Central African Republic. Training courses and literature are now more readily available, and performance-based financing websites have appeared where professionals exchange information.

It is important to involve autonomous non-state organizations in the activities of purchasing authorities, because nongovernmental organizations and private concerns do not have the intrinsic staff motivation problems associated with low and irregular government salaries common in failed states. The role of international nongovernmental organizations is more important when there are concerns about political stability and transparency. Nevertheless, nongovernmental organizations should also be strictly monitored by government and international funding agencies, and their contracts should be renewed only when they produce measurable and positive achievements.

Contrary to the assumption by critics that performance-based financing may not be feasible in a so-called failed state, our study suggests that expansion of performance-based financing for health care to more districts and provinces seems justified. Transparency was enhanced and corruption reduced under a performance-based financing program.

Before the study started, local health authorities in participating districts did not fulfill their regulatory and quality assurance function, but instead informally taxed public, religious, and private health facilities a proportion of their revenues. This informal system arose to compensate for irregular and low government salaries. However, it created a tense relationship between authorities and providers, who understate their activities and revenues to avoid taxes.

We observed that these taxes varied enormously, between 5 percent and 40 percent of the health facility turnover, in several provinces and districts. The negotiated incentives of around \$2,000 per month per district health team in the intervention program stopped them from collecting informal health facility taxes and encouraged them to concentrate on their regulatory and supervisory roles.

Performance-based financing still faces problems, particularly improving financial access for hospital care and the choice of hospital performance indicators for which to give subsidies. Our findings suggest that annual subsidies of around forty cents per person for hospital care in the intervention districts were too low and should be increased. The use of modern family planning is still low relative to the unmet need in the densely populated eastern Congo, requiring more efforts on the part of governmental author-

ities in Congo to focus on the problem and provide better-quality services and more funding.

Despite evidence of progress, a vital question remains: How should these performance-based financing programs support the poorest of the poor, even within poor countries? Geographic differences in poverty or access can be compensated for by higher subsidies. This would mean letting socioeconomic criteria determine the per capita subsidy for different activities in each health facility's catchment area.

Furthermore, effective targeting mechanisms for vulnerable people seem to call for autonomous management of additional health facility subsidies or "equity" funds, rather than rigid approaches such as centrally imposing nominal or no user fees. Well-designed pilot studies in Congo and other developing countries should further test how to expand performance-based financing in different contexts, possibly including sectors other than health. ■

The authors extend their heartfelt gratitude to the representatives of the provincial health authorities as well as Maria Masson and Anatole Mangala for initiating and supporting the performance-based financing program in South Kivu, Congo. This program would

not have materialized without the unwavering support from 2003 onward of Beatrice Looijenga, Niek Thijssen, Arjanne Rietsema, Piet Vroeg, and Remco van der Veen from Cordaid in the Netherlands. The authors gratefully acknowledge the comments of Phil

Musgrove and Jurien Toonen, as well as the anonymous *Health Affairs* reviewers. They highly appreciate the work of Daan Uitenbroek from GGD Amsterdam, who assisted with the statistical analysis of the findings, and Wilma Meeus for editing the article.

NOTES

- Loevinsohn B, Harding A. Buying results? Contracting for health service delivery in developing countries. *Lancet*. 2005;366(9486):676–81.
- Palmer N. The use of private sector contracts for primary health care: theory, evidence, and lessons for low-income and middle-income countries. *Bull World Health Organ*. 2000;78(6):821–29.
- Mills A. To contract or not to contract? Issues for low and middle income countries. *Health Policy Plan*. 1998;13(1):32–40.
- Bennett S, Mills A. Government capacity to contract: health sector experience and lessons. *Public Adm Dev*. 1998;18(4):307–26.
- Meessen B, Kashala JP, Musango L. Output-based payment to boost staff productivity in public health centers: contracting in Kabutare district, Rwanda. *Bull World Health Organ*. 2007;85(2):108–15.
- World Bank. Congo, Democratic Republic of—Health Sector Rehabilitation Support Project [Internet]. Washington (DC): World Bank; 2005 Jun 23 [cited 2011 Jun 28]. Available for download from: http://www-wds.worldbank.org/external/default/main?pagePK=64193027&piPK=64187937&theSitePK=523679&menuPK=64187510&searchMenuPK=64187283&siteName=WDS&entityID=000090341_20050810100414
- Fund for Peace. Failed states index: most vulnerable countries 2009 [Internet]. Boston (MA): infoplease; [cited 2011 Jul 6]. Available from: <http://www.infoplease.com/world/statistics/failed-states-vulnerable-countries-2009.html>
- Coghlan B, Brennan R, Ngov P, Dofara D, Otto B, Clements M, et al. Mortality in the Democratic Republic of Congo: a nationwide survey. *Lancet*. 2006;367:44–51.
- UK Government, Department for International Development. Maternal health strategy reducing maternal deaths: evidence and action [Internet]. London: DFID; 2008 Jun [cited 2008 Dec 29]. Available from: <http://www.dfid.gov.uk/Pubs/files/maternal-health-strategy-report3.pdf>
- Perrot J, Elovania R. Consultation on strategic contracting in health systems [Internet]. Geneva: World Health Organization; 2008 Jan 9–11 [cited 2008 Dec 24]. Available from: http://www.who.int/contracting/events/Synthesis_EN_WEB.pdf
- Soeters R, Griffiths F. Improving government health services through contract management: a case from Cambodia. *Health Policy Plan*. 2003;18(1):74–83.
- Soeters R, Peerenboom P, Habineza C. Performance based financing and changing the district health system: experience from Rwanda. *Bull World Health Organ*. 2006;84(11):884–889.
- The 2007 International Rescue Committee budget for Kalehe and Kabare was estimated at \$9 per capita. The 2007 World Bank-financed project for Kalehe district was estimated at \$3 per capita.
- The surveys measured the main health service indicators following a randomized, stratified, multistage, cluster household survey design. SPSS Complex Samples (version 16.0) was used for the analysis. In the module "Complex Samples Logistic Regression," a statistical test was done for each dependent variable to study if the rate of change between 2005 and 2008 was statistically significantly different between the experimental group and the control group. A finding was significant when the chance of sampling error was smaller than 5 percent, but we considered a sampling error of around 10 percent still to be strong evidence. Under strict supervision, the data entry and cleaning processes were conducted with experienced interviewers and supervisors to prevent systematic bias.
- Catastrophic health expenditure is defined as a household spending more than 30 percent of household assets on a disease episode. During the household interviews, a strict protocol was followed to identify such cases.
- Logie D, Rowson M, Ndagije F. Innovations in Rwanda's health system: looking to the future. *Lancet*. 2008;372(9634):256–61.
- Litvack J, Bodart C. User fees plus quality equals improved access to health care: results of a field experiment in Cameroon. *Soc Sci Med*. 1993;37(3):369–83.
- Health spending below 8 percent of household income was not associated with financial access problems, but with poor-quality health services, social unrest among health personnel, lack of flexibility for health facility managers to solve problems with revenues from cost sharing, and dependence on unreliable government and aid agency assistance. Cordaid. Rapport l'Etude 2006–2008 dans les Provinces des Bubanza et Cankuzo, Burundi [Internet]. The Hague (Netherlands): Cordaid; 2011 Apr [cited 2011 Jul 4]. Available for download from: <http://www.cordaid-pbf.com>

ABOUT THE AUTHORS: ROBERT SOETERS, PETER BOB PEERENBOOM, PACIFIQUE MUSHAGALUSA & CELESTIN KIMANUKA



Robert Soeters is the director of SINA Health.

In *Health Affairs* this month, Robert Soeters and colleagues report on a performance-based payment experiment conducted in the Democratic Republic of Congo, a troubled nation facing widespread health challenges, including ongoing recovery of its health system after a long regional war and high mortality from preventable diseases. They found that paying performance-based subsidies to health care providers resulted in comparable or better services and quality of care, supplied at a lower cost, than in control areas that did not use that payment method.

Soeters, an independent public health and health financing specialist, is the director of SINA Health, a consultancy firm that organizes courses, conducts studies, and provides technical support mainly for performance-based health financing programs worldwide. His work in the Democratic Republic of Congo was one of more than 150 health care-related missions he has undertaken since the mid-1990s for such organizations as the World Bank, the European Union, and the World Health Organization. Around half of his assignments have been with nongovernmental organizations such as the Dutch-

based Cordaid. Prior to that, he worked in health financing in more than thirty countries, mostly in Africa, Asia, and Eastern Europe.

Soeters has a medical degree from the University of Amsterdam, a master of public health degree from the Royal Tropical Institute in Amsterdam, and a doctorate in public health and health economics from the University of Amsterdam.



Peter Bob Peerenboom is a consultant with Tangrem Management Consultants.

Peter Bob Peerenboom, a registered social medicine specialist and certified management consultant, works for the Dutch consultancy firm Tangrem, which specializes in health care financing and insurance systems. His fields of work are the Netherlands and Africa. Peerenboom has a medical degree from the Free University of Amsterdam and a doctorate in public health from the University of Amsterdam.



Pacifique Mushagalusa is the general director of the Agence d'Achat des Performances du Sud Kivu.

Pacifique Mushagalusa, a health economist, is the general director of the Agence d'Achat des Performances du Sud Kivu, a purchasing authority that provides health care to more than 800,000 people in the Congolese province of South Kivu. He has been involved in the performance-based financing project described in the *Health Affairs* article since 2005. He now organizes training courses in performance-based health financing and regularly speaks on the subject to various national ministries and conferences, some of them in neighboring countries. He earned a master of public health and health economy degree at the Public Health School of Kinshasa University.



Célestin Kimanuka is an independent consultant and statistician.

Célestin Kimanuka is an independent consultant and statistician with a specialization in public health. He has a license degree in statistics with a specialization in public health from the Institut Supérieur de Statistique of Lubumbashi, in the Democratic Republic of Congo.