An Evaluation of the Drug Revolving Fund in the PATHS-2 States of Nigeria

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The Partnership for Transforming Health Systems in Nigeria – 2 Project (PATHS-2)

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1. INTRODUCTION

1.1 BACKGROUND TO DRUG REVOLVING FUNDS

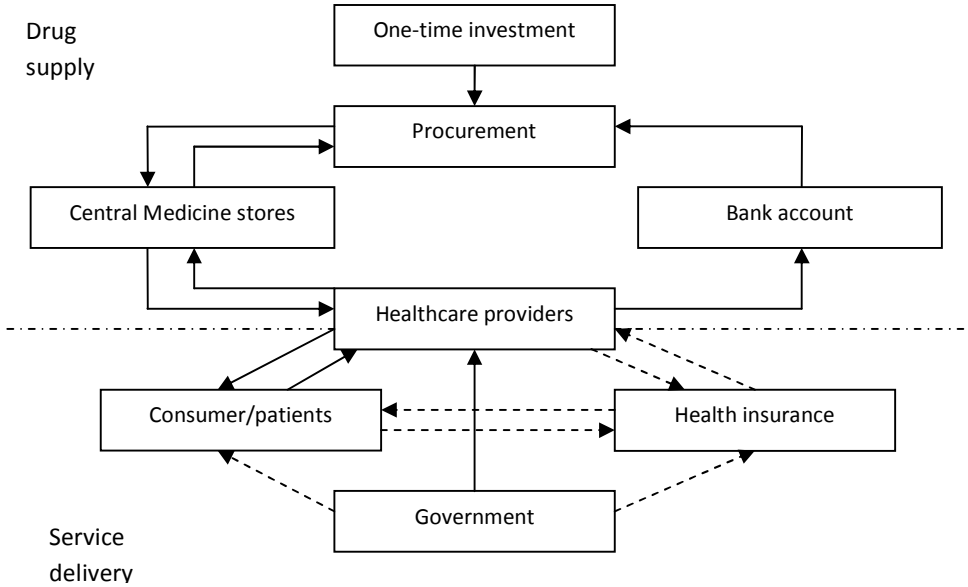
The Bamako Initiative of 1987 called for a steady supply of essential drugs at affordable prices attended by improved prescribing practices. Given the need for available, affordable, and high-quality essential drugs, many countries, including Nigeria, implemented a Drug Revolving Fund (DRF) as a sustainable financing method for ensuring such supply at the local level.

The DRF method had the following principles:

1. Institute an *essential drugs* list, when none was already present.
2. Procure a seed stock of drugs on the essential list, and provide to facilities at the chosen level. Funding could be through internal or external sources.
3. Recover the costs equivalent to the price of the seed stock plus operating expenses of the supply chain through the sales of drugs at the facility level. These revenues would then allow procurement of the next order of drugs, which when sold allows the procurement of the next consignment (revolves).

Two operational systems have been involved in the DRF method. The first one is drug supply, which include initial capitalization, drug purchase, storing, and distribution. The second one is health service delivery, which include drug prescription from healthcare provider side and drug purchase from consumer side. The relationship between these two operational systems is depicted in Figure 1. It is clear that the sustainability of DRF not only rely on a sound system that provide high quality and low cost of drugs, but also rely on a sound system that drugs can be prescribed and utilized and the cost of drug can be recovered through the system.

Figure 1. The DRF system



There were many anticipated corollary benefits, such as (1) it is a one-time investment, self-sustainable in ideal situation (may need recapitalization periodically); (2) It provides a supply assurance which will enhance service delivery and utilization; (3) The money generated by DRF can be potentially used partially as the income to staffs, which will provide a financial incentive to the sustainable the human resources in resource scarce areas; (4) It provide a mechanism for the quality assurance by controlling the source of purchase; (5) it provide a mechanism for the cost control by bulk purchase; (6) It can be used to target on the priority services (minimum services package).

The DRF methodology has so far been implemented in countries across Africa, Asia, and Latin America. Experience has been mixed; with successes in south-east Asian countries such as Vietnam and the Lao PDR, and beneficial results in African countries such as Benin, Guinea, and Sudan (Umenai & Narula, 1999). However, DRF also face several critical challenges, such as (1) In many developing countries, the original capital investment for the seed stock (capitalization) was provided by a foreign donor. For example, one of the world's largest DRFs in Khartoum, Sudan, was initiated in the late 1980s with the support of Save the Children Fund UK (Witter, 2007; Ali, 2009). In Nigeria, the UK Department for International Development (DfID) supported DRF capitalization in certain states through the Health Commodities Project. In South-East Asia, DRFs were started in certain regions of Lao PDR and Vietnam in the 1990s with the assistance of multilateral donor institutions and technical agencies such as UNICEF. The capacity of expansion is limited due to donor's constrain and the sustainability are affected by the fluctuation of foreign exchange or inflation (Witter, 2007). (2) There is a great challenge of navigating a tension between being fiscally responsible (ensure cost recovery, financial sustainability) and considering equity (ensuring access to essential drugs for all). In order to ensuring the accessibility, the price may set up too low to cover the cost of drug purchase and dispense, therefore reduce the

revolving fund for future drug purchase. (3) The drug revolving fund can be decapitalized due to poor management such as delays in cash flow, losses due to the theft and deterioration, and lack of M&E system (Witter, 2007, Murakami, Phommasack, Oula, & Senchanh, 2001).

1.2 THE DRUG REVOLVING FUND PROGRAM IN NIGERIA

Nigeria was an early adopter of the Bamako principles, and the DRF in the country has been supported by technical and financial resources of various donors and agencies. The Nigerian program focused on sustaining availability of the essential drug list at primary healthcare (PHC) facilities, where staff supervision and controls are weak. As a result, there is a threat of irrational drug use, both from prescriber and consumer sources. A study focused on Enugu state in south-east Nigeria compared 21 PHC centers with DRFs against 12 PHC centers without such funds, and found the following results (Uzochukwu, Onwujekwe, & Akpala, 2002):

1. Facilities with DRFs had better availability of essential drugs both in quantity (point of time) and consistency (average stock)
2. DRF facilities had higher rates of drug prescription for similar diseases. Though this could suggest potential irrationality in drug use, the non-DRF facilities could also under-prescribe due to stock-outs, poor knowledge of prescription practices, etc.
3. High numbers of drugs per prescription (poly-pharmacy) in DRF facilities.

There are several researches on the interaction of healthcare providers in Nigeria with the DRF (Uzochukwu, Onwujekwe, & Akpala, 2002). While initially the healthcare providers approached the DRF positively because they had essential drugs to work with, however, over time as they became focused on revenue generation and cost-recovery, they were de-motivated in the absence of additional incentives. There was an overemphasis on curative services (drug-using) vs. health promotion and preventive services, and drugs were prescribed irrationally as already discussed. In a study (Shown & Ogbonna, 2008) of prescribing doctors in a DRF facility (Jos University Teaching Hospital in Plateau state), while a high proportion knew of, and could state the purpose of the DRF (83.3%), less than a majority knew how essential drugs were selected (42.2%) or how they were procured (43.1%). Even fewer knew whether exemptions for DRF drug costs were applied in their facility (37.3%).

1.3 DRUG REVOLVING FUNDS IN THE PATHS PROJECTS

The historical importance of the DRF within the interlocking elements of the Partnership for Transforming Health Systems (PATHS, 2002-2008) project has varied by state. Over 2004-2005, PATHS generally adopted a framework which involved the promotion of the DRF for primary and secondary healthcare in the project states in Nigeria. In terms of implementation of DRF, PATHS states are currently at various stages. For example, in Enugu state, the DRF was introduced in 2005 during the strengthening of the district health system. The emphasis was placed on low-cost quality drugs and preventing stock-outs. Deferral and exemptions – often introduced to cater to poor populations – were

not implemented in this pilot program. The DRFs as in Enugu are managed by committees set up with district office, local health authority, and community representation (PATHS, 2008). In states such as Kaduna, the DRF program is still in its infancy. Table 1 below provides some details of the scale-up of DRF under the PATHS project.

Table 1. Phases of the DRF program in PATHS states, by date of first capitalization

State	Phase 1		Phase 2 (till present)	
	Date first facility capitalized in phase	Total facilities capitalized*	Date first facility capitalized in phase	Total facilities capitalized*
Enugu	March 2006	38	October 2008	121
Jigawa	September 2005	144	January 2008	218
Kaduna	N/A	N/A	May 2008	58
Kano	August 2007	18	January 2008	165

** Government and non-government facilities*

DRF has also been proposed as one of the major components in PATHS-2 project. It is expected that the DRF in PATHS states where the mechanism is established will be improved and will be rolled-out in others facilities where the DRF is planned.

1.4 Objectives and Study Questions

This study will come at an opportune time as the follow-up to PATHS: PATHS-2, begins its implementation phase, and absorbs the former HCP. Given this timing, the objectives of this study are to ensure/secure essential drug supply and utilization, especially to the poor, through the DRF mechanisms in PATHS-2 states; help PATHS-2 explore the options of integrating DRF within the overall health system strengthening process; support the development of a PATHS-2 DRF implementation plan; and provide evidence for FMOH and SMOHs for evidence-based changes to the DRF policies. The following specific policy areas will be addressed in the study.

1. Is the DRF sustainable in the current system?

As discussed, sustainability of the DRF at the facility level depends on whether the DRF can remain capitalized. A facility is considered decapitalized when the sum of the actual cash value of drug stocks at the facility as well as cash in hand in the bank account or in the facility safe, considered the total operating capital, is below the value of the initial and subsequent capitalizations. Using primary data, we investigate the following issues in order to address the sustainability question:

a. Average rates of capitalization/decapitalization over 2006-2009
b. Variation in capitalization given important facility characteristics
c. Factors that affect the rate of capitalization, such as free services

In the analysis in Section 2, we make conclusions about the sustainability of the DRF at the systemic level in the PATHS-2 states, after reviewing the average capitalization rate by state, the variation in capitalization across the facilities, and the potential factors that associated to the decapitalization.

2. How are patients affected by the DRF?

The characteristics of patients who access services at DRF facilities and the actual costs borne by them are examined in this analysis. We also explored equity aspects of the DRF program such as whether there is a differential relative cost of access for low or high income demographic groups. The DRF program also has a methodology to cater to low income clientele that cannot afford to pay full or any prices for drugs. It uses an allocation of the overall markup charged on the retail price to fund a 'Deferral and Exemptions' (D&E) account. The D&E account finances the provision of free drugs (exemptions) or for deferred payment. However, there is very little to known whether patients are aware of the D&E mechanism and access it in significant numbers. Using primary data, we investigated the following issues to address the accessibility and equity quesions:

a. Do patients, especially those of lower income, have adequate access to DRF drugs?
b. Are patients able to get the drugs they need at DRF facilities?
c. Does D&E function as it is designed? Who benefits from D&E program?

3. What is the reaction of healthcare workers to DRF in the facilities?

The healthcare workers in a DRF facility are essential to the success of the DRF mechanism. The DRF process requires extensive inputs of labor in maintaining records, managing bank accounts, and following guidelines related to the mechanism. As such it imposes an additional burden of labor on healthcare providers who already prescribe, stock, order new, and return expired DRF-related drugs. Given this additional burden, it is important to explore how healthcare workers in DRF facilities currently feel about the mechanism in terms of their workload, and what they see as its advantages and disadvantages as a process for ensuring a sustainable, pro-poor delivery system for essential drugs. A health workforce that feels the DRF mechanism is required as well as effective in practice may be willing to tolerate the incremental burden the process imposes. We will also enquire about the job satisfaction and salary expectations of the healthcare providers at these DRF facilities.

a. What are the characteristics of healthcare workers at DRF facilities in terms of their job satisfaction, salaries, and other sources of income?
b. Do healthcare workers at DRF facilities feel that the system works towards its stated ends?
c. What burden, in terms of additional patient load or administrative work, does the DRF mechanism impose on the healthcare workers?

1.5 Data Collection and Methods

Four surveys have been implemented in this study, We conducted facility-based surveys in a sample of primary and secondary health facilities. We also interviewed individual healthcare providers involved in the DRF program at these facilities, and conducted the patients exit interviews with patients accessing DRF services at the facilities. In addition, we conducted qualitative interviews in each of the four states with members of the state DRF committee, including prescribing healthcare providers from facilities implementing DRF, and officials who are in charge of DRF project in the State Ministry of Health (SMOH).

Facility Surveys

Across the four PATHS-2 states, a total of 757 government facilities has the DRF programe, 162 belonged to Enugu state, 360 to Jigawa, 55 to Kaduna, and 180 to Kano.

Our sampling approach was a combination of purposive and random sampling in order to achieve the right mix of states and facility types. Our targeted sample size is 30 primary health facility and 15 secondary health facility at each PATHS-2 states. In order to have a long enough period to observe variation in DRF-related variables, we required that the government health facilities in our sample frame have had operated the DRF for at least a year. With this criterion, our sampling frame was reduced to 326 from 757 facilities (43%). This reflects the fact that the majority of the facilities have been initiated into DRF by the HCP recently, especially in Kano and Kaduna. The final sample frame of 326 was split as follows: 84 facilities in Enugu (52% of all government DRF facilities), 173 in Jigawa (48%), 36 in Kaduna (65.5%), and 33 in Kano (18.3%).

From the final sampling frame of 326 government DRF facilities with at least a year of operating DRF, Enugu had only 11 secondary health facilities, Jigawa had 12, Kaduna had 5, and Kano had 16. It was decided to sample these secondary facilities with certainty, i.e., all were included in the survey sample. In addition, from the list of primary DRF health facilities in each state from the final sampling frame, 30 each were *randomly sampled* from the Enugu list (N=85) and the Jigawa list (N=163). The entirety of 31 primary DRF facilities in Kaduna, and the entirety of 20 primary DRF facilities in Kano were included with certainty. The final sample of *144* facilities is described in Table 2.

Table 2. Sample of health facilities implementing DRF

State		Enugu	Jigawa	Kaduna	Kano	Total
type						
	Govt. Primary	25	30	28	20	103
	Govt. Secondary	9	11	8	13	41
Location						
	Urban	5	11	13	9	38
	Rural	29	30	23	24	106
Total		34	41	36	33	144

Patient Exit Interviews

We randomly selected patients exiting the DRF pharmacy in the sampled facilities from above, and interviewed from four to five patients at each facility, with the variation driven by availability of patients in a fixed period of time. Patients were not discovered at three facilities within the fixed period of time during the visit of data collectors, which left us with data from 141 facilities on 700 patients in total. Distribution of patients by state and location are displayed in Table 3.

Table 3. Patients interviewed, by location and facility type

State		Enugu	Jigawa	Kaduna	Kano	Total
type						
	Govt. Primary	117	146	153	100	516
	Govt. Secondary	45	48	23	68	184
Location						
	Urban	27	58	60	43	188
	Rural	135	136	116	125	512
Total		162	194	176	168	700

Prescribing Healthcare provider Interviews

We interviewed one to four healthcare providers in a facility. In a facility there were no prescribing personnel present during the visit of our data collectors. From the remaining 143 facilities, we have 292 interviews(Table 4).

Table 4. Prescribing healthcare providers interviewed, by state, facility type, and position

State		Enugu	Jigawa	Kaduna	Kano	Total
type						
	Govt. Primary	56	57	57	39	209
	Govt. Secondary	21	22	11	29	83
Position						
	CHW*	47	48	43	32	170
	Doctor	16	9	4	19	48
	Nurse	8	12	10	13	43
	Pharmacist	0	2	5	1	8
	Midwife/Other	6	8	6	3	23
Total		77	79	68	68	292

* Community health worker

Qualitative Interviews with State DRF Committees

In each of the four PATHS-2 states, we conducted qualitative interviews with a individuals from the state DRF committee, which includes prescribing healthcare providers from facilities implementing DRF and officials in the State Ministry of Health (SMOH). There were 11 respondents from Enugu, 12 from Jigawa, 11 from Kaduna, and 12 from Kano. Each interviewee was presented with several distinct questions.

Methods

Facility data are based on the facility DRF management records. The health provider interview, patient exit interview, and DRF committee member interview are face-to-face interviews. Data were entered at the PATHS-2 offices in Abuja, Nigeria with the assistance of data entry tools provided by the National Statistical Commission. Validation of the data was performed in Abuja. Bivariate analysis method are used for the data analysis for this reports. Data analysis was performed in Bethesda, Maryland (USA) with Microsoft Excel and Stata 10 (STATACorp) software.

2. RESULTS

This section presents the results of data analysis. The results are grouped based on the policy issues related to the overall assessments to the DRF from major stakeholders, DRF sustainability, and the potential impacts of DRF project on the patients and providers.

2.1 THE OVERALL ASSESSMENTS TO THE DRF PROJECT

The overall assessments to the DRF project from the major stakeholders, including DRF Committees members, patients, and healthcare providers, are very positive. The interviews with state DRF committees yielded responses on 14 specific questions related to the functioning of the DRF in the PATHS-2 states. Below, we present the compiled results across the four states, with the most frequent responses on each question listed first (Table 5, 6 7).

Table 5 present the results on the potential benefit and problems to the health facility from DRF. In terms of the benefits of the DRF to the health facility, the highest frequencies were associated with the responses: increased drug availability, improvement in the quality of drugs, and the increased affordability of the drugs. A significant number of respondents felt that the number of patients utilizing health services at the facility would increase if it implemented DRF, which would boost the relevance and significance of the facility's work. While there was more variability in the responses on potential problems to facility, a high proportion of the respondents felt that there would be no problems. A significant number of the respondents felt the DRF system meant increased workload for the health facility staff, and hence would need more staff to be assigned to the facility.

Table 5. Compiled responses on potential benefits and problems to a facility from the DRF*

Benefit to the health facility	Total (N=46)	**Problems to the health facility**	Total (N=46)
Increase general drug availability	21, (46%)	*No problems*	13, (28%)
Genuine drugs (synonymous with quality)	20, (44%)	*Increased staff workload, need more staff*	11, (24%)
Make drugs more affordable	19, (41%)	Drugs not available	6, (13%)
Improve utilization of public health services	14, (30%)	Competition with free drug systems	5, (11%)
Improve staff motivation & incentives	6, (13%)	Additional requirements at the facility	5, (11%)
Improve facility finances (revenues)	5, (11%)	Poor implementation of guidelines	4, (9%)
Increase 'sustainability'	5, (11%)	Delays in supply	4, (9%)
Improve quality of care	4, (9%)	People unwilling to pay	4, (9%)
Reduce out of stock syndrome	4, (9%)	Reduce utilization if poorly managed	3, (7%)
Improve general management of the facility	3, (7%)	Out of stock or irregular stocking	3, (7%)
Improve engagement with the community	3, (7%)	Increased cost of some drugs	3, (7%)
Reduce waste	1, (2%)	Other problems[1]	8, (17%)

* Percentages are not cumulative, i.e., individual interviewees evinced more than one opinion.

[1] Drug expiry/pilferage; bankruptcy; variable prices; emergency care etc. services not catered to; drug quality is variable; recapitalization needed

Table 6 present the results on the potential benefit and problems to the local residents from DRF. The responses on the potential benefits to local residents show consistency, with two responses associated with very high frequencies. One of the two responses is the benefit of genuine drugs being made available through the DRF, leading to a reduction in the consumption of counterfeit medicine. According to a recent report from the United Nations Office on Drugs and Crime, the consumption of counterfeit drugs, especially anti-infectives and anti-malarials, is rising in West Africa, driven by proliferating smuggling networks and the tendency of individuals to purchase from small shops and vendors that are inadequately monitored (United Nations Office on Drugs and Crime, 2009). In some very small sample analyses of anti-malarial drugs reported in the same study, 6% of branded oral chloraquine and 11% of branded oral amoxycyllin had no active ingredient at all upon chemical analysis. The true extent of the problem may be larger. These facts point to the importance the DRF system has for local residents in Nigeria: presenting them with access to genuine and affordable essential drugs, which are available in their local health facilities. In terms of problems that the DRF might cause to local residents, these were mostly in the realm of poor implementation of the system, which could lead to interruptions in drug availability in the local area. Given the dependence on the DRF for quality drugs, such interruptions could be very problematic.

Table 6. Compiled responses on potential benefits and problems to local residents from the DRF*

Benefit to local residents	Total (N=46)	**Problems for local residents**	Total (N=46)
Genuine drugs, reduce consumption of fakes	31, (67%)	*No problems*	22, (48%)
Affordable drugs	29, (63%)	Drug shortages / lack of availability	5, (11%)
Availability of drugs, easy access	19, (41%)	Local chemists/sellers lose market	4, (9%)
Increased utilization drives improved health	10, (22%)	Free MCH drugs discourage payments	4, (9%)
More community participation ownership	7, (15%)	Low ability to pay / need for D&E	3, (7%)
Improved facility services and status	5, (11%)	Other problems[2]	13, (28%)
Increased confidence in health personnel	4, (9%)		
Reduced out of stock problem	4, (9%)		
D&E program improves access for poor	2, (4%)		
Other benefits[1]	4, (9%)		

* Percentages are not cumulative, i.e., individual interviewees evinced more than one opinion.

[1] Reduced waiting time; use of DRF surplus to carry out community projects; control over prescriptions; purchase from a facility; sustainable

[2] Security/political problems; patronage and optional payment; time-consuming community participation; drugs close to expiry sold; out of stock; accountability; poor management and long waiting hours; low sustainability

Table 7 present the results on the overall assessment of DRF's performance. A majority of Committee members (54.3%) across the states felt that the performance of the DRF in their state had been good/satisfactory or very good. The lowest proportions were in Enugu and Kaduna states. In Enugu, 36% of the respondents felt the performance could have been better/weak/poor, whereas the same proportion was about 54% in Kaduna.

Table 7. Overall assessment on the performance of the DRF in state

Performance of DRF in state	Enugu (N=11)	Jigawa (N=12)	Kaduna (N=11)	Kano (N=12)	Total (N=46)
Very good	3 (27%)	5 (42%)	4 (36%)	3 (25%)	15, (32.6%)
Good/satisfactory	2 (18%)	3 (25%)	1 (9%)	4 (33%)	10, (21.7%)
Well above average/fair	2 (18%)	2 (17%)	(0%)	2 (17%)	6, (13%)
Could be better/moderate	4 (36%)	2 (17%)	3 (27%)	3 (25%)	12, (26.1%)
Weak/poor	(0%)	(0%)	3 (27%)	(0%)	3, (6.5%)
Total	11 (100%)	12 (100%)	11 (100%)	12 (100%)	46 (100%)

The overall assessments to the DRF project from healthcare providers and patients are listed in Table 8 and 9. The results of these assessments are consistent with the results from DRF Committee members. Majority (81% and over) interviewed healthcare providers responded that DRF project makes drug supply more sustainable, therefore, more available to the consumers. They also responded that DRF project increased patient load. Among interviewed patients, over 93% obtained prescription, and over 60% obtained all prescribed drugs in the visited health facility. Over 59-83% responded that the drug price in DRF facility is lower than the price in other public facility, chemist/drug store, and private facility. Their satisfaction rate (rated excellent/very good/good) in terms of drug purchase/prescription from this visit is over 93%.

Table 8. Potential benefits to the facility by DRF project, by cadre

Cadre	Number of respondents	% 'Yes': DRF makes drug supply more sustainable	% 'Yes': DRF increases patient load
CHW	170	96%	98.8%
Doctors	48	81.3%	78%
Nurses	43	98%	95.4%
Pharmacists	8	87.5%	100%
Midwife/other	23	88%	88%

Table 9. Potential benefits to the patients by DRF project, by patients

Questions	Number of	%

	respondents with "yes" response	
Obtained prescription for drugs	655	93.5%
Obtained all prescription drugs in facility	421	60.1%
Drug price lower than Chemist/drug store	563	80.4%
Drug price lower than other public facilities	410	58.6%
Drug price lower than private facility	580	82.8%
Overall assessment on drug purchase/prescription from this visit		
Excellent/very good	468	66.8%
Good	190	27.1%
Fair/Poor	43	6.1%

Conclusions

The major stakeholders that we have interviewed for DRF project were quite positive about the benefits of the DRF system for facilities and local residents. The benefits to both levels mainly derived from the perceived increase in the quality of drugs, the drugs availability at the local level, and their affordability. Problems to the facilities would stem from a possible increase in the workload, which would require more staffing in order to ameliorate. It was expected that these attributes of the DRF drugs would lead to enhanced utilization of health services at the facilities, leading to both improved health outcomes as well as increased sales at the facility. Overall, the respondents felt that the DRF system was working quite well.

2.2 Is DRF Sustainable?

In addition to the potential benefits of DRF for the health facility and local residents, the State DRF Committee members that we have interviewed were asked if the DRF system was sustainable, and if so why. The results show (Table 1) that the highest frequency (74% of 46 respondents) went with the response: yes, it is sustainable, but only with good management and motivation of staff in facilities. The ability to manage the free MCH services, as well as correctly set the drug prices (inclusive of mark-up), were also identified as contributors to sustainability.

When asked whether decapitalization was occurring in the DRF system, and if so, for what reason; the highest frequency (33% of 46 respondents) applied to the response that decapitalization was not occurring in the DRF, followed by the response that only a 'little' decapitalization was occurring (20%). Among those who said that decapitalization was occurring the most common reasons identified were: drug expiry in the facility or the return of expired drugs to the Central Medical Stores; inability of facilities to recover the costs of the free MCH drugs program; and insufficient monitoring and

supervision of the DRF staff in the health facilities. In some cases, respondents identified more than one reason.

On being asked the reverse question of whether an increase in capitalization was occurring in facilities, 67% felt that this was occurring, versus 26% who felt that there was no increase. This result is only roughly consistent with the response on decapitalization (where only 53% felt there was little or no decapitalization). The listed reasons of increasing in capitalization in DRF system include the pricing and mark-up structure in the DRF facilities, the technical and financial support of HCP, PATHS, and other donors, and the rapid sales and high turnover were the contributing factors.

Table 10. Compiled responses on sustainability of the DRF in state

Performance of DRF in state	Enugu (N=11)	Jigawa (N=12)	Kaduna (N=11)	Kano (N=12)	Total (N=46)
Sustainable	7	10	7	10	34(73.9%)
No/a little decapitalization	5	5	5	9	24(52.2%)
Increase in capitalization	7	9	6	9	31(67.4%)
Total	11 (100%)	12 (100%)	11 (100%)	12 (100%)	46 (100%)

2.2.1 IS DECAPITALIZATION OCCURRING?

The responses from our interviews with state DRF committees indicated that the decapitalization did not exist, or was a limited problem. We calculated the capitalization rate for the facility at the current date (March 2009) based on the formula below to exam if the decapitalization exist in real practice:

$$\text{Capitalization rate till date (\%)} = \frac{100 \times \text{(Current DRF Value - Total Net Capitalization)}}{\text{Total Net Capitalization}}$$

In the formula above, *total net capitalization* included the initial (seed) capitalization plus subsequent recapitalizations, minus the value of drugs returned. Since the facilities had been in operation for different lengths of time, their current capitalization rate till date could vary simply due to length of operation. We calculated a normative basis for assessing capitalization by 'annualizing' that rate. The formula we used was:

$$\text{Annualized capitalization rate or ACR (\%)} = \frac{\text{Capitalization rate till date}}{\text{Months of operation}} \times 12$$

The annualized capitalization rate (%) or **ACR** bears the same sign as the capitalization till date (%). If the capitalization till date (rate) is negative, this indicates that the current DRF value is less than the total amount of capitalization put into the facility over time. A negative annualized capitalization rate indicates that on average, the facility will lose a certain percentage of its capital in the form of the value of its drug stocks and bank savings. For example, an annualized capitalization rate of -25% is an ongoing decapitalization that in the absence of any recapitalizations will deplete the entire DRF capital of the facility in four years. A decapitalized DRF facility will not be able to prescribe drugs or fund continuing drug purchases from the CMS without a recapitalization. The need for recapitalization in itself defeats the purpose of a 'revolving' DRF that should be sustainable without multiple capital infusions.

From our sample of 144 facilities, we had to drop 12 facilities for which we were unable to calculate the ACR due to missing data elements. Tthe average ACR was calculated to be -16.5% (95% confidence interval: -21.8, -11.2) – which indicates that the average DRF facility is in danger of losing nearly 17% of its capital on an annual basis (Table 11). This indicates that on average, decapitalization *is occurring*, and it is a significant rather than an isolated issue in PATHS-2 states.

2.2.2 Is decapitalization occurring homogenously across the PATHS-2 states?

There is significant variation across the PATHS-2 states in the average ACR. Kano and Enugu states have a higher ACR, with Kano and Enugu showing an increase in capitalization on an average annual basis: Kano at 0.4% (-8.8%, 9.8%), Enugu at 1.04% (-5.4%, 7.5%). Given the confidence intervals, the difference between the two states is not statistically significant, as confirmed by the p-value of a non-zero difference being equal to one (Table 11). Jigawa and Kaduna states have significant decapitalization according to the average ACR. Jigawa state DRF facilities had an average ACR of -20.72% (-27.5%, -14%), while Kaduna DRF facilities had -41.7% (-53.3%,-30.1%). The differences between these two states among themselves and with the other two states were statistically significant.

Table 11. Variation in the mean ACR (%) across PATHS-2 states and facilities

ACR variation	All states	Enugu	Jigawa	Kaduna	Kano
By state: mean	**-16.5%**	**1.04%**	**-20.7%**	**-41.7%**	**0.4%**
difference: Enugu (p-value)	-	-	-21.8% (0.004)	-42.8% (0.000)	-0.6% (1.00)
Jigawa (p-value)	-	-21.8% (0.004)	-	-21% (0.004)	21.2% (0.006)
Kaduna (p-value)	-	-42.8% (0.000)	-21% (0.004)	-	42.2% (0.000)
Kano (p-value)	-	-0.6% (1.00)	21.2% (0.006)	42.2% (0.000)	-
By location: urban	**-16.1%**	**5.8%**	**-23.8%**	**-29.9%**	**9.2%**
rural	**-16.6%**	**0.34%**	**-19.3%**	**-48.4%**	**-2.2%**
urban-rural difference (p-value)	0.5% (0.53)				
By facility type: PHC	**-19.3%**	**-1.5%**	**-17.5%**	**-50.6%**	**4.2%**
SHC	**-9.8%**	**8.5%**	**-27.4%**	**-10.8%**	**-5.2%**
SHC – PHC difference (p-value)	9.54% (0.104)	10%	-9.8	-39.8	-9.4%

It is valid to ask if rural facilities, which are further from distribution channels and have a poorer demographic composition of clientele, might have more drug expiry and/or lower sales and hence higher decapitalization. In our data there was no statistically significant difference between rural and urban facilities on the ACR. While urban facilities in our sample had an average ACR of -16.1% (-27.4%,-4.8%), rural facilities had -16.6% (-22.7%, -10.5%). The difference in the two average ACRs was not significant at a p-value threshold of 10%.

A similar hypothesis may be attached to facility type. Larger facilities, i.e. secondary facilities such as hospitals, have a higher utilization rate, better facilities and more staff on hand to manage the DRF system. Therefore, they may enjoy a higher ACR. From Table 10, the average ACR in government primary healthcare facilities (PHC) was -19.3% (-26.1%, -12.6%) while that in government secondary healthcare facilities in the sample was higher at -9.8% (-17.7%,-1.9%). The difference was not statistically significant at 10%.

2.2.3 What are important trends in decapitalization?

Time of initial capitalization: We could hypothesize that the date the facility was first capitalized should not affect the ACR, except when the facility has been capitalized very recently and hence has not been in operation for long. Such newly capitalized facilities may not have had time to build up drug sales and/or processes, and this may have a negative effect on their capitalization. However, we selected only facilities with at least a year of operations since the date of first capitalization at the point of time when we drew the sample (March 2009). Table 12 below shows the mean ACR by year of first capitalization.

Table 12. Annualized capitalization rate (ACR) by year of initial capitalization

Year of initial capitalization	Average ACR	95% Confidence Interval	Number of facilities
2005	-23.1%	-30.9%, -15.3%	4
2006	**-1.8%**	-8.2%, 4.7%	33
2007	**-8.1%**	-18%, 1.6%	38
2008	**-30.3%**	-39%, -21.6%	56

The difference between facilities capitalized in 2006 and 2007 vs. those capitalized in 2008 is significant, statistically (at 5%) and materially. The small number of facilities in our sample that were initially capitalized in 2005 can be ignored since they do not constitute a statistically significant group. This result indicates that recently capitalized facilities were likely to be more decapitalized on annual basis.

Facility size: We are interested in the relation between facility size and the decapitalization rate. Larger facilities may have more staff and more revenue due to higher volume of patient utilization. These facilities may also be closer to distribution channels and have stronger processes. We used the 'total number of staff' as a proxy for the size of the facility in all aspects. We created the following groups:

Group 1: Total number of staff < 20
Group 2: Total number of staff > 20

The difference suggested in Table 13 is striking, and it is statistically significant at 5%. The basic difference modeled here is similar to that between PHC and SHC government facilities on the ACR (Table 10), but that difference was not statistically significant.

Table 13. Annualized capitalization rate (ACR) by facility size (no. of staff)

Facility size	Average ACR	95% Confidence Interval	Number of facilities
Total number of staff <20	**-22.2%**	-29.3%, -15.1%	74
Total number of staff >20	**-9.1%**	-16.9%, -1.3%	57

Free services: Many of the respondents in the qualitative interviews of State DRF Committee members found the free MCH drugs service a potential source of problems for DRF implementing facilities because of non-recovery of drug costs or delay in such recovery. Based on facility survey questions, we created a dummy variable which would allow us to investigate this further. From this dummy variable, the following groups were created:

Group 1: Drugs free only for MCH, or for MCH and other services
Group 2: Drugs free for any service other than MCH
Group 3: No free drug service

Some facilities in our sample offered free DRF drugs for services such as TB, Malaria, Emergency Services, and 'Other' services. Some facilities also offered free drugs for those patients that qualified for under criteria for D&E (deferrals and exemptions). Under 'Other', a few facilities noted providing free services for the CSM epidemic or HIV/AIDS. A total of 58 facilities provided some free drugs for a service.

The results in Table 14 indicate a trend in the ACR which goes contrary to the views expressed by the State DRF Committee interviewees and common intuition. The facilities that offered free MCH drugs (or a slew of free drugs for services including but not limited to MCH) had a lower decapitalization rate than other facilities with no free drug services, or free drugs for services other than MCH. This may indicate that free drugs for MCH services were offered either at better managed facilities, or the free drugs for MCH were associated with some other factor (size, ownership) which also favored higher capitalization.

Table 14. Annualized capitalization rate (ACR) by type of free drugs policy (service)

Type of free drug policy	Average ACR	95% Confidence Interval	Number of facilities
Only MCH, or MCH plus other services from list*	**-1.35%**	-8.2%, 5.5%	37
Any service other than MCH from list*	**-24.6%**	-37.7%, -11.5%	15
No free drug services	**-22%**	-29.5%, -14.5%	79

* List includes: TB, Malaria, Emergency Services, D&E qualifying patients, and 'Other' (CSM epidemic, HIV/AIDS)

***Change in drug prices over time*:** An important factor in the sustainability of the DRF system is the 'real' value of the capital existing in DRF facilities. The 'nominal' value of the capital is the value of non-expired drugs in stock at sale prices, cash in hand, and bank savings. However, the 'real' value of this capital is measured at the value of the drugs to be repurchased. For example, if drug prices never changed, then the sale of 100 units of a drug that the facility was initially stocked with would still buy 100 units today. If drug prices have increased by 5% over time, then the sale of the 100 units would buy less. Box 1 explains the mechanism. If the facility can smoothly increase its sale prices, then the nominal value can more closely match the real value; or in other words, it can repurchase close to its original stock of drugs (but never the same amount). However, basic drug prices in DRF facilities do not change that flexibly; therefore a portion of the markup on price has to be set aside as an 'inflation reserve'. The markup is shared with uses such as D&E, management, and bank charges on the facility DRF account.

Box 1. A simple example of the effect of price inflation on capitalization in a DRF facility

Assume that there is only one drug 'A' in the essential drugs list, and there is no drug expiry, pilferage, bank charge, etc. The following is an example using a single facility.

Initial capitalization = 60,000 Naira
Initial CMS/wholesale drug price = 100 Naira per unit
→ This implies initial stock in facility = 600 units of drug A

Current CMS/wholesale drug price (after 1 year) = 105 Naira per unit (5% inflation)
Current cost to restock facility with 600 units = 63,000 Naira

	Units	Value in Naira	
		If retail drug prices fixed	If retail drug prices flexible
Annual sales	200	200 x 100 = 20,000	200 x 100 = 20,000
Drug in stock	400	400 x 100 = 40,000	400 x *105* = 42,000
Total capital	-	60,000	62,000
Gap vs. repurchase	-	-3,000	-1,000

Fig. 2 above shows that there was significant inflation in price for most of the drugs in the essential list in the PATHS-2 states, based on data reported by our sample facilities. We calculated the annual price changes between 2006-2007 and 2007-2008, as percentages using the available data. Fig. 3 reflects the average of these two data points for each of the drugs. The two low ACR (i.e., high decapitalization) states of Jigawa and Kaduna faced some of the highest rates of drug price inflation (Table 15).

Fig. 2 Average annual drug price inflation in PATHS-2 states across 2006-2008 (essential drugs list)

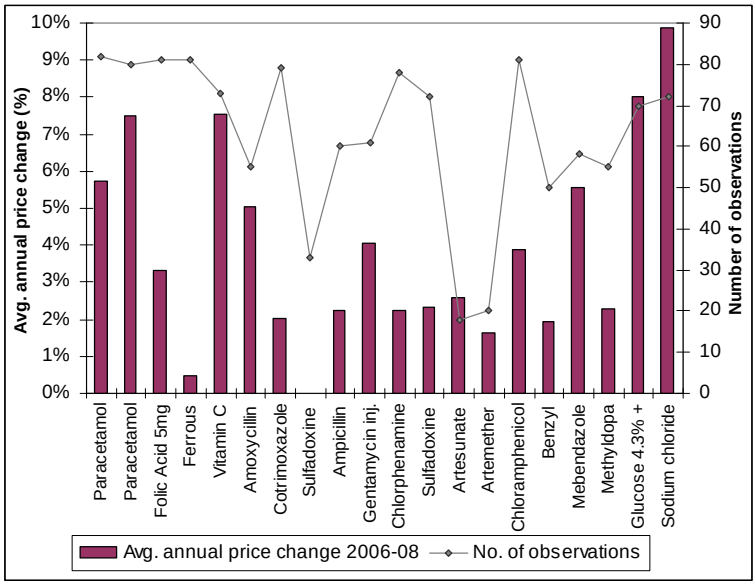


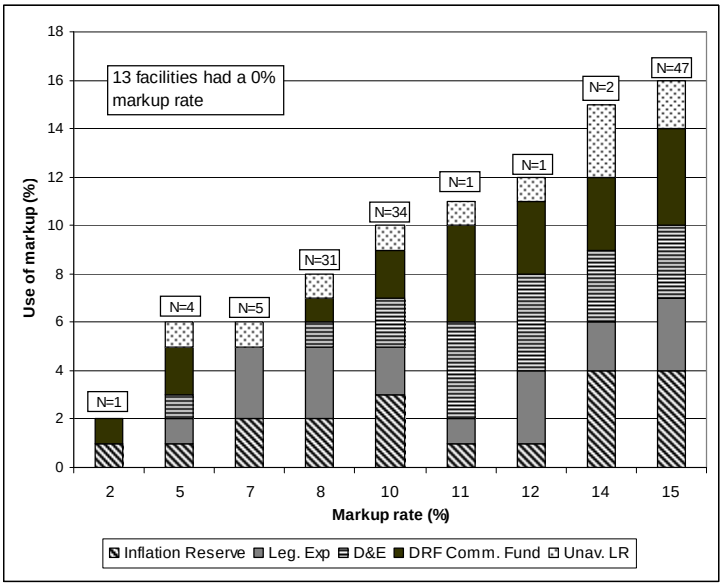
Table 15. Average annual price inflation in DRF essential drugs, across 2006-2008, by state

Essential drug formulation	High ACR states		Low ACR states	
	Enugu	Kano	Jigawa	Kaduna
Paracetamol 500 mg tabs.	1.4%	-0.3%	11.1%	18.9%
Paracetamol 125 mg/5mL 60 mL syrup	6.3%	3.3%	9.2%	13.6%
Folic Acid 5mg tabs.	0.3%	3.5%	5.5%	11.6%
Ferrous sulphate 200mg	-4.4%	-2.5%	7.4%	8.1%
Vitamin C 100mg/5mL syrup	1.8%	3.7%	14.1%	20.1%
Amoxycillin trihydrate 500mg caps.	4%	-3.4%	8%	8.1%
Cotrimoxazole 240mg/5mL 50mL susp.	-0.2%	1.6%	3.4%	9.5%
Sulfadoxine 500m + Pyrimethamine 25mg/5mL susp.	1.4%	-8.6%	3.7%	9.9%
Ampicillin trihydrate 250mg + Cloxacillin sodium 250mg caps.	6.3%	-0.9%	-4.1%	10.1%
Gentamycin inj. 40mg/mL	1.1%	8.7%	2.5%	11.7%
Chlorphenamine maleate 4mg tabs.	1.4%	-2.9%	7.6%	-1.6%
Sulfadoxine 500mg + Pyrimethamine 25mg tabs.	-2%	-0.2%	7.3%	11%
Artesunate 200mg + Mefloquine 275 mg (3+3) tabs.	2.2%	excl.*	excl.*	8.4%
Artemether 20mg + Lumefrantrin 120mg tabs.	1%	excl. *	1.1%	5.7%
Chloramphenicol 0.5% eye drops	2.3%	-0.4%	8.1%	5.8%
Benzyl benzoate 25% cream	-1.9%	excl. *	4.2%	4%
Mebendazole 100mg chewable	8.4%	-2.5%	0%	13.1%
Methyldopa (anhydrous) 250mg	0.9%	-1%	3.5%	10.8%
Glucose 4.3% + sodium chloride 0.18% 500mL	0.1%	12.5%	15.7%	18.2%
Sodium chloride 0.9% 500mL	0.5%	12.9%	18.1%	18.5%
Average	**1.5%**	**1.4%**	**6.7%**	**10.8%**

* Excluded if average is calculated from less than three observations

The drug price inflation data suggests that across the PATHS-2 states, DRF facilities needed to set aside a significant portion of the markup in order to build an 'inflation reserve', and thus avoid the real loss of capitalization when repurchasing drugs. However, this need was less acute in Enugu and Kano, based on Table 14. Figure 3 below shows the performance of DRF facilities in our sample on the markup. A number of facilities charged no markup at all (N=13), of which all but two were government PHCs.

Fig. 3 Markup rate and average use of markup by rate, in sampled DRF facilities (N=139)



* Unav. LR: unavoidable loss reserve; Leg. Exp.: Legitimate Expenses; DRF Comm. Fund: DRF Committee Fund

The average markup rate in Enugu was 14.4%, and the average use for inflation was 4.1%. In the other high ACR state, Kano, the average markup rate was 10% and the average use for inflation was 3%. These rates were more than adequate for the average rates of drug price inflation that were faced in these states. However, the corresponding average markup values in the two low ACR states: Jigawa and Kaduna were respectively 7.4% and 8.3%; and the corresponding use for inflation values were only 1.7% and 1.9% respectively. These suggest that the markup use for inflation in Jigawa and Kaduna were inadequate for the levels of drug price inflation in these states.

2.2.4 PREDICTED THE LIKELIHOOD OF DECAPITALIZATION

We tested what predicts if a facility will be decapitalized using a logistic regression, using a binary variable which takes the value 0 if there is a positive annualized capitalization rate (ACR>0%) and 1 if there is negative ACR (decapitalization). We investigated whether the likelihood of being decapitalized was predicted by facility type, state in which the facility is located, location, value of total drug returned, total DRF recapitalization, total capitalization, total drug value remained, value of capitalization received from other units, total bank saving, total drugs purchased from CMS, total drugs purchased elsewhere, total drugs lost, and finally total drugs expired. Only 'state' was the predictor that statistically significant at a 5% level of significance. So we used the regression with only the 'state' variable for further analysis.

Table 16 reports the results in terms of probabilities. Belonging to Jigawa or Kaduna was associated with an above 80% risk of being decapitalized. This indicates that substantial work must be done to strengthen the DRF facilities in these states against such risk.

Table 16 Probability that a facility is decapitalized (ACR<0%) based on state

State the facility belongs to	Probability a facility in the state is decapitalized
Enugu	45.2%
Jigawa	82.4%
Kaduna	88.9%
Kano	56.7%

2.2.5 CONCLUSIONS FROM THE FACILITY-BASED SURVEY ON DRF PERFORMANCE

Unlike the responses from state DRF committees members who we have interviewed, our analysis of facility-level data indicates that decapitalization in PATHS-supported states is occurring, and for the states of Jigawa and Kaduna, it is very significant. The DRF will not be sustainable in these two states at this high rate of decapitalization. In comparison, Enugu and Kano had relatively little decapitalization. Across the states, government primary healthcare facilities (PHC) had higher rates of decapitalization than government secondary healthcare facilities (SHC). There is no significant difference between urban and rural DRF facilities in the annualized capitalization rate (ACR). Facilities with a higher total net capitalization ever received were associated with less decapitalization as were facilities which were capitalized prior to 2008. Another trend related to facility size, as measured by the proxy of total number of staff, was that larger facilities (> 20 staff) were likely to be less decapitalized compared to smaller facilities (< 20 staff).

The likelihood that a DRF facility would have negative ACR (progressive decapitalization) was strongly predicted by the state it belonged to. If the facility was in Jigawa or Kaduna, there was an above 80% probability it would have negative ACR and lose capital over time.

There is the counterintuitive finding – given the responses from the state DRF committees survey – that provision of free MCH services leads to higher capitalization. However, the provision of free TB services had an effect of lowering capitalization.

It is not statistically possible to detect the reasons why Enugu and Kano have had better performance in implementing and sustaining the DRF system. Analyzing the DRF-related variables at the facility level across states, there is no significant trend of the variables associated with capital stock or inflow being on average higher in Enugu and Kano than the other two states; nor variables associated with outflows being lower in the same (Table A1, Annex A). However, Kaduna had the highest drug purchases from sources other than CMS of all the four states; and also the highest decapitalization rates. We return to a discussion of the importance of learning from these findings for future implementation in Chapter 3.

2.3 HOW ARE PATIENTS AFFECTED BY DRF PROJECT?

2.3.1 AVAILABILITY OF DRUGS

One of most important potential benefits that DRF project brought to the consumers is increased the availability of essential drugs at the facility. We examined the availability issue in general with the data from the patient exit interviews. The background characteristics of the sampled patients such as demographics, health problems, and etc., are summarized in Table B1 and B2 in Annex B

The results display that although majority of the patients who visited the DRF facility is able to obtan the prescribed drugs in the facilities that they have visited, about 41% of 657 individuals who had drugs prescribed were not able to get all of the prescribed drugs at the facility (Table 17). There was no systematic bias in this against patients from lower income percentiles. Note that we do not have data on whether this rate of prescription fulfillment is worse, the same, or better than other non-DRF facilities. Therefore we are not able to assess if DRF system improved the drug's availability or not quantitatively.

Table 17. Availability of drugs at the DRF facility, by household income percentiles

Income percentile (based on monthly household earning, Naira)	Able to get all the prescribed drugs at the facility on the day		
	No	Yes	Total
Below 25th percentile	39.2%	60.8%	100%
Above 25th, below median	39.3%	60.7%	100%
Above median, below 75th percentile	43.6%	56.4%	100%
Above 75th, below 100th percentile	40.6%	59.4%	100%
Overall	40.6%	59.4%	100%

When we review the reasons for the inability to get all the prescribed drugs, lack of drug availability at the facility was the single most important reason why patients were not able to get all the drugs prescribed. For the poorest percentile, inability to afford the drugs was the second most important reason (Table 18).

Table 18. Reason not all drugs received, by household income percentiles

Income percentile (based on monthly household earning, Naira)	If unable to get one or more prescribed drug, reason given:				
	Not available at the facility on the day	Can't afford it	Refer to get from elsewhere	Other reason	Total*
Below 25th percentile	71.4%	21.4%	3.6%	3.6%	100%
Above 25th, below median	87.8%	5.4%	0%	6.8%	100%
Above median, below 75th percentile	81.9%	12.5%	0%	5.6%	100%
Above 75th, below 100th percentile	82.9%	4.3%	1.4%	11.4%	100%
Overall	81.6%	10.3%	1.1%	7%	100%

* Numbers in previous columns may not add to 100% because of rounding

We investigated this issue further by constructing a binary variable which took the value of 1 if an individual was unable to get all their prescribed drugs due to a lack of availability at the facility. The

results were disaggregated by state and facility type and are shown in Table 19. It is suggested that the problem is particularly severe in Kano, and moderately so in Enugu and Kaduna. Government health facilities operating the DRF whether PHC or SHC suffered from a near equal level of lack of drug availability, as per the responses of the patients visiting these facilities.

Table 19. Percent of patients who did not get all drugs due to lack of availability in the facility

Facility	Number of patients	Percent of patients*
State		
Enugu	238	34%
Jigawa	126	18%
Kaduna	227	32.4%
Kano	312	44.6%
Type		
PHC	218	31.2%
SHC	232	33.2%

* As a percent of all patients corresponding to the state or the facility type in the sample

2.3.2 AFFORDABILITY OF DRUGS AT DRF FACILITIES

Although the State DRF Committee members felt that the DRF system made drugs more affordable to the local population and the patient also perceived that the prices of drugs are below local chemists and other public sector facilities, about 71% of individuals in our sample of 700 were very or 'fairly' worried about their ability to afford medical costs since they still need to pay out-of-pocket payment to obtain these prescribed drugs at the point of services. DRF is the mechanism of making drug available but not the mechanism of making drug financially accessible.

Table 20 presented the financial burden of the patients by income group. The results display that although the obsolete value of expenditures is higher in higher income groups, which means that the rich benefit more from DRF than the poor, the percentage of drug expenditure and total medical expenditure are much higher in lower income groups than in higher income groups. Although the patients who visited visiting DRF facilities might be able to obtain relatively inexpensive drugs from DRF facilities, the drug and medical costs still impose a substantial burden on those with lower incomes. This indicates that the DRF system is only *partially* meeting its pro-poor objective.

Table 20. Spending on drugs at the facility by income category (Naira)

Income percentile (based on monthly household earning, Naira)	Average monthly income	Average payment for drugs (% of average monthly income)	Average of total spent on visit (% of average monthly income)
Below 25th percentile	3,918	381 (9.7%)	489.3 (12.5%)
Above 25th, below median	15,469	303 (2%)	391.8 (2.5%)
Above median, below 75th percentile	29,268	407.6 (1.4%)	458.6 (2%)
Above 75th, below 100th percentile	70,989	592.6 (0.8%)	646.8 (0.9%)

2.3.3 THE USE OF 'DEFERRALS AND EXEMPTIONS' SERVICE

In order to ensure the access of the drugs that provided by the DRF system, DRF project allocated about 2% points of its markup to a fund called Deferral and Exemptions' (D&E) account. This account finances the provision of free drugs (exemptions) or for deferred payment to those people who are poor and not able to afford the prescribed drugs.

The results from this study shows that only 9% of lowest income patients (first income percentile) had heard of the provision to *defer* payments, while 12% of higher income patients (second income percentile) were aware of it. Knowledge of the deferred payment provision was highest in Kaduna state, and lowest in Kano. Among the 72 individuals in our sample who were aware of deferrals, 71% knew if they were eligible or not to the D&E program at the facility they were visiting (Table 21). and 76% (55 individuals) actually had accessed the service.

Table 21. Knowing the eligibility to D&E service by income group

	Heard of Deferrals		Know if eligible (if heard of deferrals)	
Monthly household income category	Number	%	Number	%
Below 25th percentile	14	9.0	10	71.4
Above 25th, below median	24	12.4	17	70.8
Above median, below 75th percentile	15	8.7	9	60.0
Above 75th, below 100th percentile	19	10.7	15	79.0
Total	72	10.3	51	70.8

Among all interviewed patients, about 8% (55 patients) of them actually had accessed the D&E fund. Those patients who had accessed the D&E fund are almost equally distributed across different income groups (table 22).

Table 22. Obtained D&E services by Income group

Monthly household income category	Number of patients obtained the deferrals	Total number of interviewed patients	% actually accessed Deferrals.	Avg. value of deferred payment
Below 25th percentile	10	156	6.4%	98
Above 25th, below median	21	193	10.9%	248
Above median, below 75th percentile	12	174	6.9%	335
Above 75th, below 100th percentile	12	177	6.8%	628
Total	55	700	7.9%	341

Knowledge of the provision to gain an *exemption* from payments altogether (based on eligibility) was even lower. Only 5% of our sample of 700 individuals had heard of this provision. Of these 32

individuals, only 18, or 56%, knew if they qualified for an exemption, and 13, or 1.9% of interviewed patients, had actually received an exemption.

2.3.4 CONCLUSIONS FROM THE PATIENT-BASED ANALYSIS OF DRF PERFORMANCE

Our analysis of the patient exit interview data suggests the availability of drugs at the DRF facilities is a problem. About 41% of the 657 individuals who had drugs prescribed were not able to get all of the prescribed drugs at the facility. Much of this was due to a lack of one or more of the drugs prescribed at the facility during the patient visit. The problem was particularly severe in Kano, Enugu, and Kaduna.

Many patients in our sample were worried about their ability to meet medical costs. The costs of drugs and medical services at DRF facilities imposed a much larger burden on lower income patients. D&E program function inappropriately from two aspects. First, very few people are able to access the benefit from it; second, the mis-targeting is very high.

2.4 HOW ARE HEALTHCARE PROVIDERS AFFECTED BY DRF PROJECT?

2.4.1 WORKLOAD OF PRESCRIBING HEALTHCARE PROVIDERS IN DRF FACILITIES

Workload increase due to DRF is one of the concerns proposed by the State DRF Committee interviewees. A high DRF-related workload and ensuing dissatisfaction would detrimentally impact the functioning of DRF in the facilities, and potentially lead to poor service quality and sustainability. We investigated this issue in our sample survey of 310 prescribing healthcare providers in the 152 DRF facilities we visited. The background characteristics of the sampled healthcare providers such as demographics, details of training and experience, etc., are summarized in Table C1 in Annex C. In Table 23 below, we summarize the data related to workload for the five main cadres of prescribing healthcare providers in our sample of DRF facilities.

Table 23. Workload characteristics of prescribing healthcare providers in DRF facilities

Cadre	Avg. no. of hours worked / day	Avg. no. of hours with patients / day **	Avg. no. of patients seen / day	Avg. time spent with each patient	Minutes per week of admin. work*	Health work outside the facility	Non-health work outside facility
CHW (N=170)	7.9	4.9 (62%)	18.4	15.7 min.	281.3	8.2%	38.2%
Doctors (N=48)	10	7.2 (72%)	36.6	11.8 min.	317.3	23.7%	13.6%
Nurses (N=43)	8	5.4 (68%)	28.7	13.8 min.	320.4	8.5%	23.4%
Pharmacists (N=8)	8.5	5.1 (60%)	47.8	7.8 min.	615	25%	37.5%
Midwife/other (N=23)	9.4	5 (53%)	19	16.9 min.	331.2	12%	36%

* Administration and supervision work in the facility ** Also shown: patient hours as % of total hours worked per day

Table 23 reveals interesting aspects of the prescribing process. While pharmacists see the most patients per day, they spend very little time with each. Nurses and community health workers spend the most time with patients. Doctors see many patients per day, and spend about 12 minutes with each on average. Pharmacists, who were not extensively sampled, are heavily burdened with non-clinical work (administration and supervision). As concepts of task-shifting become more popular, there is speculation

whether pharmacists can dispense advice on medication for common ailments, and inform patients on side-effects and dosage. However, pharmacists in our sample were likely to have little time for these responsibilities given their administrative workload. Additionally, 38% of pharmacists worked on a non-health related activity and 25% worked on a health-related activity outside their facility (almost no pharmacist did both). This means that at least 60% of pharmacists had additional remunerative work outside their DRF facility.

Among the 23% of doctors who worked in other health-related activities outside the DRF facility, the average amount of time spent on such activity was one working day per week (about 8.1 hours). Nurses who worked on outside health-related activities spent 19 hours per week, and CHW spent about 13.4 hours per week on average. Pharmacists who worked on outside health-related activity spent the most time: 34.5 hours per week. In comparison, the amount of time spent on non-health activities outside the facility per week was about 7.5 hours for CHW, 4.2 hours for doctors, 7 hours for nurses, and 9 hours for pharmacists. Again, there was little overlap between those who worked outside on health-related activities vs. those who worked on non-health related activities (farming, running a store, trade).

The above are significant factors to consider in any future interventions to improve the sustainability of DRF activities at the facility level, or to improve the patient experience. If substantial numbers of healthcare providers spend significant time outside the facility per week, there is less working time available to sustain such interventions, without hiring additional workers. Conversely, there is less need to hire additional healthcare providers for DRF if current staff could devote more time to in-facility activity, and are more motivated to do so by pay or other forms of motivation. These issues are explored next.

2.4.2 INCENTIVES AND SATISFACTION OF PRESCRIBING HEALTHCARE PROVIDERS REGARDING THE DRF

The study results in Table 23 displayed that majority of healthcare providers that we have interviewed responded that DRF increased per day work hours. The average stated increase in the work hours per day due to DRF varied from 2.5 hours per day for CHWs to 2.7 hours for nurses, with doctors falling in the middle (2.55 hours). Almost 21% of the CHWs said they had lost some income in this context, compared to 5% of the doctors and 8.5% of the nurses. However, very few (less than 2%) of the healthcare providers surveyed had salaries or allowances which were linked to performance, as defined either in terms of number of patients seen or the quality of services provided. Therefore, there was no direct financial incentive linked to the DRF. The sources of motivation are the basic salary and the healthcare providers' attitudes towards its works.

The levels of salaries are also listed in Table 24. Almost all types of Cadres are expected to be paid twice as much as what they have earned currently. The dissatisfaction with the present role/position in the facility and the overall standard of living (which also affects the motivation level) were high especially among doctors and nurses. These are critical cadres in the health facilities we visited, in charge of defining the prescription and sometimes, in the absence of pharmacists, the management of the DRF ledgers and inventory.

Table 24. Attitudes toward DRF of prescribing healthcare providers in DRF facilities, by cadre

Cadre	% 'Yes': DRF increased work hours /day	Average monthly salary+allowance (Naira)	Average expected monthly salary+allowance (Naira)	% satisfied or very satisfied about role / position	% satisfied or very satisfied about standard of living
CHW (N=170)	90.6%	45,698	86,482	68.2%	54.7%
Doctors (N=48)	64.4%	130,175	219,583	35.5%	20.8%
Nurses (N=43)	89.4%	68,775	152,698	48.8%	39.5%
Pharmacists (N=8)	100%	83,794	153,750	100%	37.5%
Midwife/other (N=23)	76%	26,454	60,435	77%	44.5%

2.4.3 CONCLUSIONS FROM THE HEALTHCARE PROVIDER BASED ANALYSIS OF DRF PERFORMANCE

Our survey data shows that the workload of healthcare providers in DRF facilities is high. Although DRF increased the workloads to the healthcare providers, there is no financial incentives that directly links to their performance.

Both CHWs and pharmacists are quite commonly involved in the works outside the facilities. About 37% of the doctors regularly conduct either a health-related or non-health activity outside the facility, with the average amount of time spent on just the outside health activities equaling nearly a full day or 8 hours per week. These sampled facts imply that the problem of DRF imposing extra workload on healthcare providers can be ameliorated if healthcare providers can be motivated to devote all of their time to the facility they are assigned to. This also suggests that improvements in DRF processes or patient experience will be difficult to execute without reduction in outside work or hiring new workers.

One way that the outside work issue could be eased is if motivation levels increase and more healthcare providers can be motivated to stay more time in the facility. However, general satisfaction with standard of living or role/position is low across the cadres, Given such low levels of satisfaction with roles and standards of living, it is even more worrying that large proportions of the healthcare providers across cadres see the DRF as raising the patient intake and hence their workload. The general enthusiasm with the DRF as an approach towards sustainable drug supply will not be sufficient if satisfaction levels do not rise, and perceptions on DRF related to workload are not addressed.

The ongoing reform and expansion of the DRF system must be cognizant of the low satisfaction levels of DRF healthcare providers, and take human resource management steps which can either deploy more workers or motivate them through pay-for-performance schemes that reward higher levels of service, whether in terms of quantity or quality.

3. POLICY RECOMMENDATIONS

3.1 THE DRUG REVOLVING FUND STRATEGY IN NIGERIA

The drug revolving fund program in Nigeria was set up under the auspices of the Bamako Initiative, which aimed to ensure the availability of basic healthcare services and essential drugs to populations that had not traditionally had access to these; and to do so on a sustainable footing. The drug revolving fund (DRF) was the main mechanism by which countries such as Nigeria attempted to fulfill the promise of sustainable access to essential drugs. However, within the DRF concept, there have been ongoing debates on what goals can be or should be targeted by DRF project. Our recommendation from this study is that the DRF must be targeted primarily at the goal of ensuring availability of low cost-high quality essential drugs for the population in general.

The results of this study showed that DRF project fulfilled the goal defined above partially. As a provider-side health financing mechanism, DRF project is able to bring the essential drugs with relatively lower cost and potentially high quality (with bulk purchase mechanism) to the healthcare facilities and make the essential drugs available to the consumers. However, the availability of drug may or may not be sustainable. As we see in our data, in two PATHS-2 states, Enugu and Kano, the average DRF facilities has broadly managed to remain positively capitalized. There the system works on the level of sustainability. However, in Kaduna and Jigawa, the average DRF facility is severely decapitalized. If the DRF system remains unsustainable as in these two states, it may not meet its goal – availability of drugs. Therefore, there is still a lot more to be done to ensure the basic sustainability of the DRF system in Nigeria such that it can continue to function and provide to essential drugs for the population.

From demand side, the financing mechanism of ensuring accessibility of low cost-high quality essential drugs for the population, especially for the poor, need to be developed and strengthened. DRF does not increase financial accessibility of the patients to DRF drug. Patients have to pay out-of-pocket in order to obtain the benefit from DRF project. In order to “revolve” the initial capitalization, the DRF facility has to sell drug to the patients. If patients can’t purchase drug due to the financial constrain, the drug may expire over time, and DRF facility will not be able to obtain enough revenue to revolve the initial capitalization. The availability of drug will not be sustainable. Therefore, the demand-side financing mechanism that is able to ensure the patient financial accessibility to the DRF drug will be a critical components to ensure the sustainability of DRF system in long run.

From provider side, there is a great need to improve DRF management in order to reduce the “leakage” of DRF capitalization. Facilities must ensure that sufficient numbers of patients procure from DRF facilities and leave satisfied such that sale revenues are adequate and sustained, and also ensure that staff remains motivated to ensure quality and minimize losses. An appropriate monitoring and evaluation system need to be built and implemented in order to track the capitalization and decapitalization status. From DRF project development aspect, it is important to develop appropriate

policy regarding the price, markup, the use of markup policies in order to make sure sustainability of DRF fund. As the study demonstrated, the use of the markup for countering inflation in drug prices or other unanticipated loss such as pilferage/expiry is statistically essential to remaining capitalized at the facility level.

In addition to the availability issue, who will benefit from the DRF project is another issue of debate, which related to the equity in access of the DRF drug. Certainly, DRF project is designed to be implemented in resource scarce area where the poor people usually resident in. In addition, if DRF is able to low the cost of drug, as demonstrated in this study, the DRF will make the drug more accessible. This in itself meets a significant social objective. However, again the DRF relies on the out-of-pocket payment from patients to purchase drug. It does not function as pro-poor mechanism at implementation region. Our results displayed that the poor spent less on drug than the rich; however, their financial burden is higher than rich. These results demonstrated the inequity of distribution of the benefits from DRF project. In order to target to the poor, DRF project in Nigeria developed deferrals and exemptions mechanism (D&E). However, this components does not works from both concept and practice prospective. Conceptually, D&E is trying to "tax" patient who already have a significant financial burden due to healthcare utilization to subsidize the poor who can't afford the cost of drugs, which should be the obligation of overall society. Practically, our results displayed that on the one hand, very few patients knew about the D&E and obtained the benefit from D&E program; on the other hand, the people who finally received the benefits from D&E program are not necessary the poor.

Therefore, in order to improve the performance of DRF project, PATHS need to reprioritize the objective of the DRF project in overall health system strengthening in Nigeria. The efforts should be focus on ensuring the sustainable availability of low cost-high quality essential drugs for the population in general. The Government and donor partners must conceive of alternative financing mechanisms which can pay the costs of drug purchase at the DRF system's already affordable rates, for the lowest income and indigent groups.

3.2 Improving the Management of the Drug Revolving Fund in Nigeria

We have identified several actions that PATHS-2 as well as the DRF committees can take to improve the management of the DRF system in their states. This is urgent in Kaduna and Jigawa. The steps include those from the supply side (improving the facility-level performance of the DRF), from the demand side (patient experience), and via addressing the concerns of the prescribing healthcare workers.

3.2.1 Improving facility-level performance of the DRF

The better performance of DRF facilities in Enugu and Kano state on the annualized capitalization rate (ACR) indicator cannot be easily tied to a specific factor or aspect of DRF management. However, there are some aspects on which facilities in these states differ from those in Jigawa and Kaduna. In the high ACR states of Enugu and Kano, the DRF facilities set higher *markup rates* compared to the low ACR states. This allowed sufficient allocation across legitimate expense, inflation, and unanticipated loss

reserves (Table A2, Annex A). Enugu and Kano also benefited from lower average levels of drug price inflation as discussed in Section 2. Given this and the state-level variation discussed previously, it is strongly suggested that at the facility level, there should be comprehensive guidance on the setting of markup rates and their allocation across uses. At the state policy level, the CMS and the state DRF committee must monitor the resupply prices for the drugs on the essential list (based on prices charged by manufacturers or wholesalers) and communicate unanticipated price changes to the facilities such that markup may be adjusted, and the allocation to the inflation reserve be increased.

At the point of capitalization, the *initial retail prices* of the drugs must also be set such that the affordability criterion is met, but the prices are not set so low that even with the markup they do not match the resupply prices at a later date. In Enugu and Kano, the prices in DRF facilities were on average higher or about the same as a local chemist; and overall at much higher levels compared to Kaduna and Jigawa. Both of the latter states suffered from decapitalization. Similarly, Enugu and Kano DRF facilities also had more facilities with higher or about the same prices as other public sector facilities (Table A3, Annex A), again at higher levels than Kaduna and Jigawa. These trends suggest that a proper pricing policy at the time of stocking of facilities is essential to maintain capitalization. But the pricing policy also needs to be sensitive to the fact that many Nigerians depend on the DRF facilities to supply affordable and higher quality drugs.

Our analysis suggests that the oft-mentioned burden of the government free MCH drug on the DRF system is not borne out in the data. The free MCH *services* program has a statistically significant positive association with the capitalization of the DRF facility. However, the free TB services program *does* have a strong negative effect on capitalization and hence DRF sustainability. Whether the facility specifically provides free TB or MCH *drugs* under DRF is not related to any statistically significant effect on capitalization, though the direction of the effect given the drug type (TB or MCH) is the same as that for the two free services in general (TB or MCH). Other services and related drugs (malaria, emergency services, or even providing D&E) were not significant factors. We did not have enough data to delve into this contrast and explore the reasons why free TB services might have negative effect compared to free MCH services. However, we may hypothesize pending further investigation that the TB drugs are more expensive and must be prescribed at higher intensity compared to drugs for mothers and children, which are often cheaper and not prescribed intensively over durations as long as short course chemotherapy for TB.

3.2.2 Improving patient level and prescribing healthcare provider issues in the DRF

A significant proportion of patients (41%) who had drugs prescribed were not able to get all the drugs on their visit, and the main reason for this was the *lack of availability of the drug* at the facility. Effectively, 36% of our sample of patients was unable to get all of the drugs due to a lack of availability at the facility. This problem was particularly severe in Enugu and Kaduna, followed by Jigawa and Kano. Lack of affordability was a significant reason for the inability to get drugs only in Kano. The DRF system must investigate the reason for the stock outs leading to patients being unable to get their prescribed drugs.

Our data shows that up to 35% of doctors and 28% of nurses who prescribed drugs in DRF facilities worked outside of the health facility in either health or non-health related work. There was little overlap between those who worked outside the facility for health and those who did non-health work outside, so the effect is cumulative. Working more than one job might leave them unable to devote extra effort to improve performance in the DRF facilities as is necessary. Since 85% of healthcare providers felt that the DRF increases their workload per day, the extra effort is quite unlikely unless a way is found to reduce the tendency to take outside remunerative work. This can be done by improving the financial situation of healthcare providers through positive financial incentives (increase in salaries tied to performance or service quality) or motivation-building training and reinforcement measures.

3.3 Issues to Consider in Further Scale-up of the DRF in PATHS-2 States

The average facility in the DRF system in the PATHS-2 states has achieved a negative capitalization of -16.5% on the annualized capitalization rate (ACR) basis (Table 25). This suggests that without recapitalization and without any other dynamic factors, such a facility would be unable to restock 50% of its drug stocks within three years. However, even with a 16.5% decapitalization rate there are dynamic factors in play that accelerate the problem: as increasing numbers of patients are unable to find the prescribed drugs at the facility, their patronage will decline, which will leave remaining drugs, especially the low volume specialty drugs, unsold. These unsold drugs are often prone to expiry or pilferage, increasing the losses at the facility level. Therefore, a facility with a present decapitalization rate of 16.5% will probably fare worse in the subsequent years.

Table 25. Proposed scale-up of DRF activities in PATHS-2 states

State	Phase 1-2	Phase 3	Average ACR Phase 1-2	Proportion of overall scale-up	Proportion of all DRF facilities over three phases
Enugu	182*	106	1.04%	22%	23%
Jigawa	362	76	-20.7%	16%	35%
Kaduna	58**	150	-41.7%	31%	16%
Kano	183*	146	0.4%	31%	26%
TOTAL	785	478	-16.5%	100%	100%

** Expected number by start of Phase 3 ** Phase 2 only*

The PATHS-2 scale-up plan includes several steps which will help the next phase of DRF facilities prepare for DRF, which steps include:

- Strengthening the state DRF committee prior to the next phase of scale-up
- Conducting an assessment in the Phase 3 facilities to gauge readiness for DRF, and providing support to make them compliant (in conjunction with the state MOH)
- Conduct training of facility-level prescribing healthcare providers prior to the distribution of capitalization (drugs)
- Putting in place a system of supportive supervision / mentoring visits to the facilities to be conducted by the state MOH officers to the DRF facilities. New facilities (Phase 3) will receive more visits than Phase 1 or 2 facilities.

However, 47% of the new scale-up will be in the two states (Kaduna and Jigawa) that are performing quite poorly on capitalization and hence sustainability in the existing facilities from Phases 1 and 2. With the scale-up, these two states would account for more than the majority of the facilities implementing DRF under PATHS-2. There would be benefit in approaching the scale-up more incrementally such that the learning on sustainability and achieving higher capitalization rates can be transferred from the high performing states to the low performing states with PATHS-2 facilitation. This incremental approach should also allow for greater investigation into the possible reasons, beyond those outlined in our study as candidates, for the poor performance of the DRF system in Kaduna and Jigawa.

Use of peer 'champions' to spread best practices: Using the positively capitalized DRF facilities from Enugu and Jigawa, drawn appropriately from government SHC and PHC facilities, along with positively capitalized facilities from Kaduna and Jigawa as 'champions' would allow peer to peer sharing of best practices and keys to successful management of the DRF at the facility level. Such exchange of ideas between facility-level healthcare providers is essential to the continuing health of the DRF system, which needs to incorporate facility-level management at the core of the state-level DRF committee system.

Update of the monitoring reports to include sustainability related information: We suggest that a continuing review of the DRF system should stress improvement in the monitoring and evaluation mechanism. The reviewers can build on the materials developed during this study in order to add to the routine monitoring format for DRF facilities. The monitoring reporting from the facility level should incorporate variables that aid in calculating the ongoing capitalization of the facility, performance on serving patients, and prescribing providers' workload intensity. This will provide an early warning system for emerging issues in the DRF system at the local level and allow a prioritized response coordinated by the state DRF committee, state MOH, and the PATHS-2 coordinators.

3.4 Issues to Consider in Recapitalization of Existing DRF Facilities in PATHS-2 States

As this study indicated, the decapitalization of DRF may happen due to many reasons, which include policy design, DRF management, human resource management, and patient health seeking behaviors. It relies on the overall health system strengthening, which is what PATHS2 intended to do. These health system strengthening efforts may takes sometime to be in effect. One of possible short-term solutions is to consider the recapitalization of existing DRF facilities in order to ensure the availability of low cost-high quality essential drugs for the population in general in poor area. PATHS2 project needs to weight the pros and cons on approaches of expanding its DRF project into new facilities or recapitalizing the existing DRF facilities. The results of this study demonstrated that without appropriate control decapitalization, the DRF may not be sustainable. Therefore, making current DRF facility more sustainable before expand it might be a better short-term strategy for PATHS2 project.

3.5 DRF and Overall Health System Strengthening

As we have discussed in the introduction section, Drug supply is essential but only one part of overall health system. In order to ensure the function of DRF project, the supply of drug to the health facility

and make it available is not sufficient to ensure the sustainability of DRF project and to ensure the achievement of ultimate goal of the project, which is benefit to the people, especially to the poor. Clearly, the PATHS2 project provided a unique opportunity to improve the performance of the DRF project. First, DRF is part of output 3 in PATHS2 to ensure the readiness of service delivery. The other activity in output 3, such as human resource improvement, will be also able to contribute to the performance of the DRF project. Second, in order to make the people benefit from the DRF, appropriate demand-side health financing policies and practices should be in the place, which will link the output 1 and output 2 activities in PATHS2 project. Third, based on the original design of the DRF project, community needs to play a critical role in terms of monitoring and supervising the performance of the DRF. Due to the resources constrain, we were not able to include this type analysis in this study. The roles of community participation in DRF project could and should be linked with the output 4 activities in PATHS2 project. Last but not least, in order to make the DRF benefit the people, we need patients know and understand the DRF project, such what are available, how to access healthcare service, and how to purchase and use medicine appropriately. These can be linked to the activities in output 5 in PATHS2 project. In summary, the success of DRF not only relies on the supply of drug, but also relies on the overall health system development, which is the goal of PATHS2 project.

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ANNEX A

Table A1. Average value of DRF-related variables by state (Nigerian Naira)

DRF variable at facility level (at March 2009)	All states' average	High ACR (%) states		Low ACR (%) states	
		Enugu	Kano	Jigawa	Kaduna
Variables associated with capital/inflow					
Total Capitalization Received (all)	4,088,920	873,983	5,805,572	1,840,988	8,100,422
Total Recapitalization Received	1,108,265	50,748	1,543,595	1,486,180	1,452,871
Total Drug Value Remaining at date	-411,837	148,521	-2,245,848	195,905	668
Total Bank Savings at date	3,744,698	1,058,158	6,894,011	312,432	7,130,882
Total Monthly DRF Revenue till date	8,304,147	7,497,846	11,454,066	10,889,336	3,907,039
Variables associated with outflow					
Total Drugs Purchased from CMS	4,737,938	808,101	13,840,359	4,685,859	989,372
Total Drugs Purchased elsewhere	9,260,444	2,430,855	519,991	3,131,895	29,764,555
Total Drugs Returned till date	326,475	353,752	461,997	47,611	452,860
Total Drugs Lost till date	10,348	4,094	19,462	14,577	4,814
Total Drugs Expired till date	83,680	29,127	163,808	141,018	15,004

Table A2. Average DRF markup rate and its allocation by state

State	Average **markup rate**	Average use for **inflation reserve**	Average use for **D&E**	Average use for **legitimate expenses**	Average use for **unavoidable loss reserve**
Enugu	14.4%	4.1%	1.9%	2.8%	1.9%
Jigawa	7.4%	1.7%	1.7%	1.9%	0.8%
Kaduna	8.3%	1.9%	1.3%	2.3%	0.9%
Kano	10%	3%	2.4%	2.1%	1.03%

Table A3. Relative drug prices in DRF facilities based on patient opinion

State	**Price compared to the local chemist**			**Price compared to other public sector**		
	Higher	About same	Lower	Higher	About same	Lower
Enugu	13.9%	19.6%	66.5%	8.3%	50.5%	41.2%
Jigawa	0.5%	9.1%	90%	0.5%	18.2%	81.3%
Kaduna	5.1%	5.1%	89.8%	1.7%	31.3%	67.1%
Kano	6.1%	18.8%	75.1%	2.8%	53%	44.2%
Overall	6.4%	13.2%	80.4%	3.3%	38.1%	58.6%

ANNEX B

Table B1. Patient characteristics from exit interview

Number of respondents	749
Urban	28.7%
Rural	71.3%
Male	35.5%
Female	64.5%
Average age	34 years
Current marital status:	
Never married	10.3%
Currently married	82.4%
Widow/widower	6.3%
Separated/divorced	1.1%
Average years of formal education	6.2 years
Average number of persons in household	8.8
Average monthly household expenses (Naira)	18,937
Average monthly household health-related expenses (Naira, % of monthly expenses)	3170.5 (16.7%)
Average monthly household income (Naira)	33,034 (all)
In households self-rated as 'higher' income	64,450
In households self-rated as 'about the same' income	31,800
In households self-rated as 'lower' income	22,245
Time taken to travel to health facility	
Less than 30 minutes	67.6%
31-59 minutes	20.8%
1-2 hours	10.2%
3-6 hours	1.2%
More than 6 hours	0.3%
Mode of travel to the facility on day of interview	
Walking	48.3%
Motorcycle	33%
Public bus or taxi	14%
Own car	2.7%
Bicycle	1.9%
Other	0.13%
Average amount of money spent on travel to facility on the day	87.3 Naira
Proportion of individuals with no cost to travel to facility	54.7%
Average cost to travel to facility, by facility type:	
Government primary health facility	37.6 Naira
Government secondary health facility	180 Naira

Table B2. Type of health problem for the visit*

Type of health problems	Number of patients	Percentage (%)
Essential Obstetric Care	29	3.9%
Antenatal Care	82	10.9%
Child care (under 10 years)	197	26.3%
Malaria	191	25.5%
TB	9	1.2%
Other Inf. Disease (Skin, STI)	23	3.1%
Non-infectious disease	50	6.7%
Common ailment (cold, pain, nausea, stomach)	158	21.1%
Others	128	17.1%

* Percentages are calculated based on N=749, but totals do not add up to 749, as individuals may have had more than one health problem

ANNEX C

Table C1. Additional characteristics of prescribing healthcare providers in DRF facilities

Number of respondents	309
Male	59.2%
Female	40.8%
Average age	38.6 years
Current marital status:	
Unmarried	18.1%
Currently married	79.3%
Legally separated/divorced/widowed	2.3%
Other	0.3%
Average years of formal education	16.1 years
Average number of persons in household	8.4
Relative household economic status in community	
Among the highest	2.9%
Above the average	25.2%
At the average level	69.6%
Below the average	4.9%
Among the lowest	0.3%
Total number of years of medical / health related education (average)	
CHW	3.7
Doctors	7.8
Nurses	5.4
Pharmacists	4.6
Midwifes/others	3.1
Years of experience at the current position	
CHW	10.4
Doctors	9.2
Nurses	16.4
Pharmacists	14.8
Midwifes/others	7.6