

Pathways to high and low performance: factors differentiating primary care facilities under performance-based financing in Nigeria

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Abstract

The determinants of primary health facility performance in developing countries have not been well studied. One of the most under-researched areas is health facility management. This study investigated health facilities under the pilot performance-based financing (PBF) scheme in Nigeria, and aimed to understand which factors differentiated primary health care centres (PHCCs) which had performed well, vs those which had not, with a focus on health facility management practices. We used a multiple case study where we compared two high-performing PHCCs and two low-performing PHCCs for each of the two PBF target states. Two teams of two trained local researchers spent 1 week at each PHCC and collected semi-structured interview, observation and documentary data. Data from interviews were transcribed, translated and coded using a framework approach. The data for each PHCC were synthesized to understand dynamic interactions of different elements in each case. We then compared the characteristics of high and low performers. The areas in which critical differences between high and low-performers emerged were: community engagement and support; and performance and staff management. We also found that (i) contextual and health system factors particularly staffing, access and competition with other providers; (ii) health centre management including community engagement, performance management and staff management; and (iii) community leader support interacted and drove performance improvement among the PHCCs. Among them, we found that good health centre management can overcome some contextual and health system barriers and enhance community leader support. This study findings suggest a strong need to select capable and motivated health centre managers, provide long-term coaching in managerial skills, and motivate them to improve their practices. The study also highlights the need to position engagement with community leaders as a key management practice and a central element of interventions to improve PHCC performance.

Keywords: Health facilities, health sector reform, health services, health systems, health workers, international health, management, maternal and child health, primary health care, community

Key Messages

- PHCCs which manage to improve performance under PBF in Nigeria do so through dynamic interactions between contextual factors (e.g. staffing, access, competition), strong health centre management (performance management, staff management and community engagement), and community leader support.
- PHCC performance improvement under PBF requires the development and/or identification of officers in charge (OICs) with strong management capacity.
- It is important to look at community leaders as a critical driver to improve PHCC performance: selection of OICs and health workers, and PHCC-level interventions need to be centred on gaining support from community leaders and more broadly the community, as a central element of an integrated approach to improve performance.

Introduction

In low-income countries, primary-level health services are often the only type of formal health care accessible to a majority of the population (Schneider *et al.* 2006; Komatsu *et al.* 2008; Gormley *et al.* 2011). Given their importance for reducing preventable deaths of children and mothers, numerous initiatives exist to improve the performance of primary health services. However, the determinants of primary health care facility performance in poor resource setting have not been well studied (Marchal *et al.* 2010), and there is a dearth of evidence on what works to improve health facility performance (Dieleman *et al.* 2009). While multiple factors, from the strength of broader health systems, to accountability relationships are likely to influence facility performance (Topp *et al.* 2015), the nature of management practices within the health care facility has been argued to be a critical determinant (World Health Organization 2007). Further, the quality of health facility management may be particularly important in the context of performance-based financing (PBF) where, typically, facility managers receive both greater incentives for good performance, and greater autonomy to innovate and manage. This article explores the connections between facility performance and health centre management within PBF schemes.

Determinants of health facility performance and health centre management in developing countries

Despite the widespread acknowledgement of poor primary health care facility performance in low resource settings, little is known about management practices in these contexts. Empirical studies that have explored the relationship between health facility management practices and performance are skewed towards hospital-based studies in developed countries (Shortell and LoGerfo 1981; Shortell 1985; Davies and Ware 1988; Shortell *et al.* 1994a, b, 1998; Mitchell and Shortell 1997; Davies and Nutley 2000; Donaldson *et al.* 2000; Ferlie and Shortell 2001; Meyer and Collier 2001; Bloom *et al.* 2009; Bloom and Van Reenen 2010; Dorgan *et al.* 2010; McConnell *et al.* 2013). There are few empirical studies that look at management-related issues at the primary health care level in developing countries (Topp *et al.* 2015), and many approaches to improve health facility management in developing countries are not based on evidence.

Rowe *et al.* (2005) and Dieleman *et al.* (2009) reviewed published studies on factors that affect health worker performance and interventions that improved health worker performance in low- and middle-income countries. Also, Marchal *et al.* (2010) examined practices in a well-performing hospital in Ghana, and Topp *et al.* (2015) explored the factors that drive health centre performance in Zambia. Important elements related to health facility management identified through these studies included: (i) engaging and problem-

solving with local stakeholders (e.g. involvement of local authorities and communities; adaptation of approaches to the local situation; active involvement of local staff to identify and implement solutions to problems) (Dieleman *et al.* 2009); (ii) building a system of accountability (visibility of performance; rewards and sanctions based on performance) (Topp *et al.* 2015); (iii) motivating health workers for change (e.g. enhancing health workers' awareness of local problems; showing visible improvements in quality of care; peer pressure; staff empowerment; and salary supplements) (Rowe *et al.* 2005; Dieleman *et al.* 2009); (iv) building team work and creating a sense of belonging, trust and respect, and support by the management team (Dieleman *et al.* 2009; Marchal *et al.* 2010); and (iv) leadership to help build such supportive environments (Rowe *et al.* 2005; Topp *et al.* 2015). These findings provide a useful list of important elements of health centre management. However, such studies provide little insight on key drivers that improve performance and differentiate high and low performers, and pathways through which such drivers influence performance of primary health facilities.

PBF in developing countries

PBF has been implemented or is under discussion in > 30 countries in sub-Saharan Africa (World Bank 2013). Major design features of PBF include: (i) providing finance to health facilities based on quantity and quality of services provided; and (ii) providing autonomy for health facilities to plan and implement activities to improve their health services. PBF allows primary health care facilities to use the received funds at their discretion to improve health services. Health facilities, for example, can use a part of the received funds to purchase drugs from certified local pharmacies, refurbish facilities, buy equipment, carry out more outreach activities and provide monetary or non-monetary incentives to patients. The rest of the funds can be allocated to health workers based on their performance and responsibilities (Fritzsche *et al.* 2014).

Providing autonomy and PBF to health facilities can create large variations in performance among them. Well-performing facilities will receive more performance incentives, can invest to further improve their performance and thus receive more funds, creating a virtuous cycle. In contrast, health facilities that cannot use the received finance to attract more patients, or have problems that cannot be addressed by having cash on hand, will receive limited financial incentives, which in turn will limit their ability to improve health services (vicious cycle). With increased attention to the PBF approach, many impact evaluations of the overall effect of PBF on health service coverage, structural and process quality, human resources and cost effectiveness have been initiated, with at least nine evaluations disseminated by the end of 2016 (Kandpal 2016). The results from Argentina, Cameroon, Rwanda, Zimbabwe, Zambia and to a limited extent the Democratic Republic of Congo

suggest that PBF can be highly effective in improving coverage and the quality of services across many aspects of maternal and neonatal health (Kandpal 2016). They also provided evidence of general health system strengthening such as more active supervision, more involvement of communities, and increased health worker satisfaction (Kandpal 2016). However, how PBF works in different contexts has been regarded as a 'Black Box' (Renmans *et al.* 2016), and little research has tried to understand what determines the performance of health facilities under a PBF scheme, and in particular the role of health facility management.

PBF in primary health care centres (PHCCs) in Nigeria

Nigeria is an economic giant in Africa with a GDP of US\$414.5 billion, and an economy that has been consistently growing at a rate of 7% per annum. However, Nigeria has made limited progress in delivering critical health services. Institutional delivery and DPT3 coverage remain very low at 35.8 and 38.2%, and contraceptive prevalence rate is only 9.8% (NDHS 2013). While the average catchment population for a PHCC providing first-level essential health services is around 7600 people, PHCCs on average see only 1.5 patients per day, even when they have >10 staff (World Bank 2014). Poor performance despite relatively abundant human resources for health relates to weak accountability and motivation due to the 'fundamental problem of the lack of clarity in responsibilities for PHCC between state and local government' (Oxford Policy Management 2011), coupled with health financing arrangements whereby no cash flows to health centres.

To address these problems, the World Bank-funded Nigeria State Health Investment Project (NSHIP) introduced PBF that finances a comprehensive essential package of services (Supplementary Appendix S1) and also incentivizes improvements in quality of care. During the pre-pilot phase in 33 PHCCs in Adamawa, Nasarawa and Ondo states which started in December 2011, the PBF created large variations in performance among the participating PHCCs. For example, coverage of institutional delivery was around 10% of catchment population before the PBF in all target PHCCs, and began to diverge significantly between good and poor performers shortly after the scheme was initiated and these differences increased over time, with high-performers achieved 80–90% coverage while low-performers struggled with 20–30% coverage (National Primary Health Care Development Agency 2016). This suggests that good performers achieve high uptake by using PBF wisely, while poor performers struggle with translating the opportunities that PBF provides into results.

In sum, there are clear knowledge gaps in drivers that improve performance of primary health facilities, and in particular how management practices in health facilities influence the performance of primary health facilities in poor resource setting. This article aims to address these knowledge gaps, particularly in the context of PBF schemes, through an in-depth case study in Nigeria.

Methods

Study objectives

This study aims to provide an in-depth understanding of the determinants of PHCC performance in the context of PBF, with a focus on management practices at the PHCCs. The study is a part of a broader effort to understand the relationship between management and performance at PHCCs under the NSHIP. The following specific research questions were explored:

1. What differentiates good and poor performers among the PHCCs under the PBF scheme in Nigeria?
2. Particularly, which management factors differentiate the performance of the PHCCs?
3. Through what mechanisms do these factors affect the performance of the PHCCs?

This research seeks to address these questions in order to help policy makers and program managers decide what to prioritize and where to start to improve health centre performance in Nigeria and similar countries.

General approach

This research used a multiple case study approach. A case study is 'an empirical inquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used' (Yin 2009). In contrast to experimental designs that seek to test a specific hypothesis through the comparison of treatment and control groups, the case study approach lends itself well to capturing information on more explanatory 'how', 'what' and 'why' questions (Creswell and Plan Clark 2010). This study was informed by the extreme or deviant case sampling approach that looks into unusual cases (in this research, high performers and low performers) that provide rich information (Patton 1990). This approach allows us to 'understand under what conditions programs get into trouble and under what conditions programs exemplify excellence' (Patton 1990), and integrate organizational contextual factors in thinking about what works (Bradley *et al.* 2009).

Sampling and selection of cases

The research was carried out in two Local Government Areas (LGAs) in Nasarawa and Ondo states that started the pre-pilot PBF activities in December 2011. Due to security reasons, another target state for the NSHIP, Adamawa state, was dropped from the selection of PHCCs. The number of cases (eight cases—two high-performers and two low-performers for each of the two LGAs) was determined considering the transferability of findings to other PHCCs. Although PHCCs in the target LGAs are mostly rural and have a small number of staff, the contextual factors and management practices of the PHCCs can be diverse. By having more than one high and low performer in each LGA, the research aimed to develop a good understanding of what are common and distinctive factors that influence performance.

We selected high and low performers in each LGA based on the quantity and quality of essential health services provided by the PHCC. The package of services that PBF incentivizes in Nigeria covers essential services including outpatient visit, vaccination, referral to hospitals, ANC, delivery, PNC, family planning, PMTCT, STD, TB, Malaria net, etc. (see Supplementary Appendix S1 for details), and total monthly PBF earnings was used as a proxy measure for the level of utilization and quality of essential health services.¹ The PHCCs were ranked using three methods: (i) total PBF earnings adjusted for catchment population of each PHCC; (ii) unadjusted total PBF earnings (as official catchment population data is not always accurate); and (iii) percentage improvement in total PBF earnings from baseline. For the ranking, 2-month data from before and after the payment delay that occurred between October 2012 and February 2013 were used. Among the 12 consistently high or low performing PHCCs identified through these rankings, eight PHCCs were selected through discussion with state and LGA staff in

each state who had been supervising the PHCCs for more than 2 years. The PHCCs that recently experienced changes (e.g. change of Officers in Charge (OICs²)) and a particularly large PHCC that was not comparable with other PHCCs were excluded. [Supplementary Appendix S2](#) describes details of the rankings and selection of the PHCCs.

Conceptual framework

[Table 1](#) presents a conceptual framework outlining factors that would lead to differentiation in PBF performance. This was built on the conceptual framework developed by [Health Results Innovation Trust Fund \(2015\)](#) on PBF performance, by adding constructs around health facility management from an extensive literature review in PubMed and Google scholar.³ In addition, the lead author also drew upon his own knowledge and experiences in supporting PHCC performance as a core team member of the NSHIP at the World Bank. In summary, four main explanatory factors were identified: (i) community; (ii) health systems; (iii) PBF design and implementation; and (iv) health centre management, together with more specific items (sub-factors) within each of these categories. The shaded rows in [Table 1](#) reflect sub-factors related to PBF design that are unlikely to vary by PHCC in the same LGA. These four factors and sub-factors were used to design interview guides, code transcribed data, and analyse data.

Based on the themes that emerged through data collection and analyses, we adjusted these four main factors developing an alternative three factors that seemed to better frame the influences on performance: contextual factors; community engagement and support; and performance and staff management. [Table 1](#) explains the changes and reasons for the changes. Case study findings are presented based on these factors.

Data collection approach

In order to develop a thorough understanding of the cases and increase credibility of the study, the research involved the multiple sources of evidence, using a range of quantitative and more commonly qualitative techniques ([Creswell and Plan Clark 2010](#)). Information was compiled from operational data from the PBF reporting system, interview data, documentary data and observations ([Table 2](#)).

Two teams of two local researchers who have experience in qualitative research and speak the local languages spent about 1 week per PHCC and carried out data collection. They were trained by the lead author through discussion of interview questionnaires, observation protocols and mock interviews, and the second author leads the data collection team. During the data collection period, the team had initially daily and subsequently weekly calls with the lead author to debrief findings, review emerging themes and data collection plans.

Data analysis

Analysis was carried out in three phases. Phase 1 started concurrently with data collection, as transcribed data, interview notes and observation notes were generated for each PHCC. Coding and subsequent case analyses used both deductive and inductive approaches. Transcribed interviews were imported into NVivo 10 for electronic coding based on a code book developed by the lead and second authors according to the conceptual framework ([Table 1](#)). The code book is presented in [Supplementary Appendix S3](#). Throughout the data collection process, many different elements of community

engagement and support, and staff management and motivation emerged as potential key differentiating factors of PHCC performance, and additional factors and sub-factors related to community engagement and staff management were added to the code book for coding and subsequent analyses.

In Phase 2, data were organized to produce a case description for each PHCC. The interview and observational data were compared and synthesized in order to develop a comprehensive picture of each case and understand dynamic interactions of different elements in each case. To minimize social desirability bias, interview results, particularly of OICs, were compared with interviews with other stakeholders (non-OIC health workers, Ward Development Committee (WDC)⁴ chairpersons, and LGA PHCC coordinators) and observation notes. To avoid a biased interpretation, texts that contradicted emerging key features were carefully reviewed, and described in the case synthesis (rival explanation).

Phase 3 focused on cross case comparisons. Individual case descriptions were summarized and compared in tables for high performers (four PHCCs) and low performers (four PHCCs). For each case syntheses of the three key areas of differentiating factors of performance were compared: Contextual and health system factors; Community engagement and support; and Performance and Staff Management. Again, variations within the good performers and poor performers, especially examples that contradicted the emerging interpretations or patterns were closely examined.

Results

Findings from this study are presented in two sections. First we provide a summary profile of the eight PHCCs, outlining overall patterns observed in high and low performing PHCCs, and key areas of differentiating factors of performance. The second section compares the eight PHCCs for each area of potential differentiating factors.

Key features and differences of good and poor performers

[Table 3](#) describes basic information of the high and low-performing PHCCs studied, and [Tables 4](#) and [5](#) summarize their key features. They suggest diverse and dynamic characteristics of high and low performers. Among the high-performers, PHCC-1 has many contextual and health system-related advantages such as abundant staff and good road access from/to communities. These favourable features were fully leveraged through good management practices by the OIC. She not only served as a role model for other workers in hard work, and patient care and support, but also carried out numerous strategic actions to motivate staff and gain support from the WDC and traditional leaders. She also tracked key services indicators (e.g. institutional delivery, fully vaccinated child, ANC) on a wall, regularly updated targets to stretch staff, compared results with targets and agreed on specific activities for further improvement by fully involving WDC and traditional leaders. Abundant staff were managed with clear roles and responsibilities under three-shift 24/7 operations.

In contrast, PHCC-2, 3, and 4 had many contextual and health system-related disadvantages such as poor staffing (five staff for each PHCC only), rural location, and very bad road access. However, they overcame or minimized such disadvantages through dedicated work (e.g. making themselves available 24 h a day by sleeping in or next to the PHCCs) and good management practices mainly driven by the OICs. Notably, in PHCC-2 and 3, rural location is linked to the existence of very influential chiefs who enforced

Table 1. Potential differentiating factors of PBF performance—conceptual framework (non-differentiating factors shaded in blue)

Initial Factors	Sub-Factors	Initial supposition prior to data collection	Final factors used
Community/ Demand	Cultural values, relationships and perceptions	Different communities can have different values and relationships with PHCCs and alternative health providers (e.g., traditional healers and birth attendants). This influences the utilization of the PHCCs, and may directly influence facility accountability and management. Also, support from community leaders can vary and affect utilization of PHCCs significantly.	A. Contextual and health system factors <ul style="list-style-type: none"> - Broader contextual sub-factors, such as competition with other providers (e.g., hospitals) and security issues were identified and included. - Differences in health systems and PBF design and implementation did not appear to be significant explanatory factors and thus were integrated into this category rather than kept as standalone factors.
	Geography and access	Access to health centers can vary significantly and influence people's willingness to visit PHCCs. Access to competing providers, such as hospitals can also influence the utilization of the PHCCs.	
	Affordability of services	Income level of patients can be different between urban and remote PHCCs, which may affect service utilization.	
Health Systems	Leadership and governance, key stakeholder support	Although the health centers in the same LGAs are under the same leadership and governance, its influence on the health centers can be different. For example, the health centers close to an LGA or with close relationship with LGA staff may receive more support from the LGA. Leadership with strong focus on or less attention to equity may or may not support remote facilities more than urban ones	B. Community engagement and support <ul style="list-style-type: none"> - Throughout the data collection and analyses, many differences between high and low performers emerged in terms of community engagement with PHCCs and support from community leaders. Community engagement and support was thus elevated to become a factor in its own right.
	Human resources (HR)	Too few skilled staff (e.g., nurses, midwives) and too many unskilled staff (often the case in Nigeria) can affect performance and individual performance bonuses through the PBF. However, HR environment issues such as job security, opportunities for promotions and level and regularity of salary payment will not vary by facility within the same LGA.	
	Financing	PHCCs in Nigeria do not receive funds from the states or LGAs except for PBF performance bonuses. Yet some PHCCs may receive more commodity (e.g., free drugs) or infrastructure support than others, which can affect the performance of the PHCCs.	

	Supply chain	PBF allows the local purchase of drugs from certified distributors, so the influence of government's supply chain performance on PBF PHCCs will be limited to vaccines that are not available in local pharmacies. However, access to the certified pharmacies may be different, and remote facilities may face challenges in purchasing drugs when needed.	
	Supervision and training	Frequency and quality of supportive supervisions may differ by supervisors and access of PHCCs.	
PBF Design and Implementation	Autonomy to health centers	Same level of autonomy (e.g., local purchase of drugs and other equipment/supplies, no control on hiring and firing of health workers) are applied across health centers through PBF.	
	Performance based payment	Delays in performance based payment will negatively affect PHCCs' performance. However, since the state governments pay to all PHCCs at a time, timing of the payment will not vary across PHCCs in the same state.	
	Verifications	Same verifiers (SPHCDA and consultant) visit health centers every month, though the time they spend and interactions during the verification visits may be different by access, relationship, etc.	
Health Center Management	Overall	Management practices of PHCCs will differ significantly depending on OICs and other skilled health workers who support them.	C. Performance and staff management <ul style="list-style-type: none"> - A set of performance management activities including planning, target setting, performance tracking and reviews, and problem solving emerged as a key sub-factor. - We also found clear differences between high and low performers in practices to motivate staff and build teams,
	Planning	Health facilities that defined a clear investment and activity plan based on a clear understanding of key issues can improve performance. Active involvement of stakeholders in the planning process can motivate the facilities to implement the plan.	
	Problem solving	How health workers identify issues, analyze root causes, develop solutions, turn them to specific actions and implement them can influence performance.	
	Performance management	Health facilities that set appropriate targets, track the achievement of the targets, review performance rigorously with data, implement corrective activities	

		and follow up on the activities in a continuous way will be able to improve performance significantly.	making this another key sub-factor.
	Staff and team management	How health facilities: (i) nurture team work and trust; (ii) assess the individual health workers in fair way and reflect the results in rewards, and (iii) provide constructive feedback, coaching and training can influence motivation and growth of the health workers and performance of the health facilities.	- Community engagement, was originally viewed as part of relationship building and resource mobilization sub-factor, but as noted above emerged as a key factor in its own right.
	Communication	Effective communication of the performance targets, activity plan and progress to health workers can guide and motivate health worker to achieve the targets. Robust and frequent communication to communities about the improved care at the health facilities can attract the patients.	
	Relationship building and resource mobilization	How health facilities: (i) involve communities in planning and outreach activities; (ii) seek frequent help from LGA supervisors, PBF consultants and state staff proactively can improve quality of care and make outreach activities effective.	
	Financial and drug management	Good financial recording and management and drug management can maximize the value of investments using received performance based finance.	

informal laws to ban the use of unlicensed providers and eliminated competition. Also, being in very remote PHCCs made it necessary for staff to sleep in the community through weekly shifts, which enabled staff to build family-like relationship with communities (PHCC-3 and 4).

Contrary to the high-performing PHCC-2, 3 and 4 in rural locations, three of four low-performing PHCCs (PHCC-6, 7 and 8) are in semi-urban location, with good road access from/to the catchment communities. Further, all of the four low-performing PHCCs had more staff than PHCC-2, 3 and 4 (6–20 staff compared with 5 staff). It is important to note that semi-urban PHCCs can face additional challenges such as direct competition with general hospitals and security threats (PHCC-7 and 8). Also, the level of commitment by OICs and staff can be eroded leading to absenteeism given that they have other revenue-making opportunities (PHCC-5, 6 and 8). Comparison of PHCC-1 and low-performing PHCCs with similar semi-urban settings highlights the importance of the OIC's commitment and management capabilities. While PHCC-7 and 8 suffered from competition with general hospitals and other PHCCs, PHCC-1 with its close connection with the community and cheaper services leveraged PBF bonuses to take patients away from these competitors. Also, in general, staff at semi-urban PHCCs tend to have other revenue generating activities, whereas workers in very remote PHCCs do not have these activities.

However, the OIC in PHCC-1, in a semi-urban area, did not have any other revenue generating activities as she was committed to managing her PHCC well.

Differences in management practices became evident only after PBF was implemented. Before the PBF scheme, the performance of high-performing PHCCs was equally very low and the difference with low-performers was negligible. Although there were no visible differences in autonomy or the availability of performance based funds that the PBF platform provided to the PHCCs, the ways the PHCCs leveraged the opportunities were different between high and low performers.

- *Prior to PBF we had nothing and our structure here was very poor but PBF has been able to change that;* OIC; PHCC-1.
- *In fact, the situation was very poor. [...] Patronage was quite low because the people would see the dilapidated building and wouldn't want to be treated here. [...]. But the difference is clear now that the government has provided the PBF;* Non-OIC; PHCC-2.

Differentiating factors of performance by key areas

Area 1: contextual and health system factors

Among the potential contextual and health system factors that can differentiate performance in the original framework, key factors

Table 2. Data collected for each PHCC

Type	Data	Use
Operational data from PBF reporting system	Monthly quantity of the selected 21 services provided (e.g., Outpatient visit, vaccination, institutional delivery) for all the PBF PHCCs verified by an independent agency. Quarterly quality assessment score verified by local authority and counter-verified by the NPHCDA for all the PBF health centres (Since the launch of the PBF pre-pilot).	To analyze the performance (utilization) of the health centres To analyze the performance (quality) of the PHCCs Management indicators in the quality checklist were used to verify reported management practices
Interview data 2 interviews, 1 group interview, and 1 group discussion per facility	OIC for the selected PHCCs (transcribed) A group interview with 2–3 health workers (e.g., nurses, midwives, or community health extension workers) per case (transcribed) A chairperson of Ward Development Committee (WDC) ^a per case (transcribed) Group discussions with LGA PHCC Department supervisor and PBF consultant who visit the health centres regularly (not transcribed)	<ul style="list-style-type: none"> To understand specific organizational contexts, management practices at the PHCCs, and the support received from supervisors and communities To triangulate what OICs explained (e.g., check their understanding of PBF targets to assess the effectiveness of OIC's communications); To understand health workers' perception of the health centre's practices and changes observed (e.g., their perception on communication with the OIC) To understand community leader and community engagement practices by the PHCCs, and the activities of the community and their effects To understand how supervisors viewed the PHCCs and possible reasons for high and low performance. To understand the differences in their supervision activities across the PHCCs.
Documentary data	Review of reports and tools used at the health centres, including: (i) business plan, (ii) financial statement (indices tool), (iii) PBF invoices, quality checklist, and HMIS report, (iv) drugs records; (v) notices and graphs on the wall, (vi) staff evaluation sheet, and (vii) minutes of the health facility committees and other meetings, based on the observation protocols	To triangulate the responses of the OICs and other stakeholders, and assess the management practices at the PHCCs (e.g., review meeting minutes to see if the PHCCs analyze issues, conclude with clear actions with deadlines, and review the progress of what are agreed in previous meeting) The data review results were documented in the case summary note for each PHCC, and extracted through the individual case analysis
Observations	Observation of (i) facility, equipment, drugs and waste management and (ii) monthly meetings at the PHCCs based on the observation protocols	<ul style="list-style-type: none"> Triangulate the performance data by looking at the conditions of and services provided by the PHCCs Observe the meetings to see how performance and issues are discussed, actions are agreed and assigned, such actions are reviewed in the meeting, and health workers and communities are actively involved in open discussions. Triangulate this with interview data

^aA committee comprised of community, youth, women leaders, etc. that is responsible for reviewing performance of a PHCC, authorizing the use of PBF funds, and assisting the PHCC to improve utilization and quality of services.

Table 3. Basic information of selected PHCCs

State	Nasarawa		Ondo	
High-performers	PHCC-1 Semi-urban PHCC with catchment population ~7000. Has 17 staff, of which 6 are skilled. Opens 24 h/7 days, and patient per day after PBF is 11.3	PHCC-2 Rural PHCC with catchment population ~18 000. Has only 5 staff, of which 2 are skilled. Opens 24 h/7 days, and patient per day after PBF is about 12.6	PHCC-3 Rural PHCC with catchment population ~6000. Has only 5 staff, of which 2 are skilled. Opens 24 h/7 days, and patient per day after PBF is 8.3	PHCC-4 Rural PHCC with catchment population ~10 500. Has only 5 staff, of which 3 are skilled. Opens 24 h/7 days, and patient per day after PBF is 8.7
Low-performers	PHCC-5 Rural PHCC with catchment population ~6500. Has 8 staff, of which 4 are skilled. Opens from morning to evening, and patient per day after PBF is 3.8	PHCC-6 Semi-urban PHCC with catchment population ~8500. Has 20 staff, of which 10 are skilled. Opens from morning to evening, and patient per day after PBF is 3.2	PHCC-7 Semi-urban PHCC with catchment population ~8000. Has 6 staff, of which 3 are skilled. Opens from morning to evening, and patient per day after PBF is 3.2	PHCC-8 Semi-urban PHCC with catchment population ~10 000. Has 8 staff, of which 4 are skilled. Opens 24 h/7 days, and patient per day after PBF is 1.3

Table 4. Overview of high-performing PHCCs

State	Nasarawa		Ondo	
Names	PHCC-1	PHCC-2	PHCC-3	PHCC-4
Summary	Semi-urban PHCC with good access and abundant staff. The OIC carried out numerous strategic actions to motivate staff, gain support from WDC and traditional leaders, and solve problems identified in regular performance reviews. The PHCC was taking patients from bigger hospitals and PHCCs	Remote PHCC with serious shortage of staff and bad road access. The PHCC benefitted from full support by a very influential chief and a dedicated OIC . Although performance management did not seem to be as rigorous as other 3 high-performers, the OIC managed to build trust from traditional leaders and community, and motivate staff to achieve results	Remote PHCC with serious shortage of staff and bad road access. The PHCC benefitted from full support by a very influential traditional leader who enforces a law against unlicensed providers. Highly dedicated OIC and staff resided in the PHCC, reviewed performance on weekly basis and carried out numerous strategies to gain trust and attract patients	Remote PHCC with serious shortage of staff and bad road access. The OIC carried out numerous strategic actions to motivate staff, gain support from WDC and traditional leaders, build trust and attract patients. Staff were from the community and reside in the PHCC; OIC reviewed performance every week, and involved even LGA or state staff to solve problems
A. Contextual and health system factors	Favourable conditions: Relatively good access to catchment area, and abundant staff Proactive influence by PHCC on contextual and health system factors: e.g., hired extra staff from community to enable 3 shifts for 24/7 services; hired a doctor to attract patients; prioritized pregnancy test to enrol reluctant women; worked with TBA; convinced community to construct a road to improve access	Serious shortage of staff , yet was making health services available for 24/7 by OIC and staff living in and near the PHCC Very bad access during rainy season, yet mitigating it with planned outreach visits to affected communities No major competition with large-scale providers given its remoteness	Serious shortage of staff , yet was making health services available for 24/7 by using a weekly duty roster with 2 people on-duty sleeping at the PHCC each week Very bad access with 3H drive from LGA secretariat on unpaved roads with flooding in rainy season No competition: Traditional leader and WDC regulated and removed unskilled providers	Serious shortage of staff , yet was making health services available for 24/7 by staff sleeping at the PHCC Very bad access with 40 min drive from main expressway on unpaved rough roads which get heavily flooded during the rainy season. OIC mitigated it by paying staff and clients in cash or in kind often out of her pocket No major competition with large-scale providers given its remoteness
B. Community engagement and support	Strong support from WDC and traditional leaders for attracting patients and building infrastructure Engagement with WDC, traditional leaders: Strong support was attributed to the OIC's/PHCC's devoted work and active and open engagement with them. Staff were all remembered by name by community Community engagement: PHCC built trust and recruits patients through various measures, e.g., frequent health education, free mobile clinic to remote communities, free and discount services, services on credit.	Strong support by traditional leader/WDC chair: The village chief and has very strong authority over sub-village chiefs and residents. His communications to communities enhanced utilization of PHCC Engagement with WDC, traditional leaders: OIC built trust with the chief with hard work and by following his advice. Community engagement: PHCC built trust and recruited patients through numerous measures, e.g., health education, outreach even in rainy season, fee reduction and transparent operation, 24/7 services, provision of incentives/gifts, and laboratory investigation	Strong support from traditional leader: He set an unwritten law that banned unskilled providers and fined those who used them. Health committee monitored and eliminated competition Engagement with WDC, traditional leaders: The PHCC requested the WDC specific supports, e.g., addressing poor utilization by a specific tribe, countering a false rumour, regulating household waste, and shared large part of PBF bonus with them Community engagement: PHCC created bonds through residing in the PHCC, providing gifts, end of year parties, etc., and addressed barriers, e.g., follow-up with pregnant women and children; motor bike transport for pregnant women; services on credit	Strong support from traditional leader: Traditional leaders mandated community members to utilize PHCC and settle any problems Engagement with WDC, traditional leaders: Very open and proactive updates and consultation, in addition to gifts to appreciate them Community engagement: All staff except OIC was from the community, and all staff were sleeping in the PHCC, which helped gain trust by the community. There was a free flow of people to PHCC not just for health services. Numerous strategies to recruit patients, e.g., outreach 2–3 times a week; individual tracking of pregnant and postnatal women; gifts; free services

(continued)

Table 4. (continued)

State	Nasarawa		Ondo	
Names	PHCC-1	PHCC-2	PHCC-3	PHCC-4
C. Performance and Staff Management	<p>Strong performance management: OIC tracked key indicators, displayed them on a wall, compared targets and results at the monthly WDC meetings and discussed approaches to achieve targets, agreed on specific solutions with clear responsibilities, and followed up for implementation</p> <p>Staff management/motivation</p> <p>Role model: OIC was a role model of client service (e.g., paying costs for patients out of her pocket)</p> <p>Open environment to suggestion and correction from her subordinates</p> <p>Motivating by targets: regular communication and tracking of targets</p> <p>Staff support: OIC assisted staff from her own pocket when needed; monthly clinical training and step down training, made bonus transparent by evaluating through a committee, etc.</p>	<p>Strong performance management by OIC where he presented targets and results in regular meetings with health workers, WDC, and at the community town halls, addressed specific problems (e.g., fee levels, growth monitoring improvement), and followed up on results. There was some level of attention to targets and actuals among workers (not as strong as PHCC-1, 3, 4)</p> <p>Staff management/motivation</p> <p>Role model: OIC was a role model with his hard work and proactive covering of staff's absence</p> <p>Staff support: OIC provided personal gifts and feedback, training opportunities, step-down training, etc. The OIC changed the PBF bonus allocation formula to increase allocation to staff rather than OIC to motivate them to achieve targets</p>	<p>Strong performance management: OIC reviewed results on weekly basis with the other skilled staff by reviewing weekly handover notes, and addressed problems quickly by involving WDC and traditional leaders. All staff interviewed had clear attention to targets and performance of the PHCC and committed to achieving the targets</p> <p>Staff management/motivation</p> <p>Role model: OIC was a role model for dedicated work, communication, and tracking of pregnant women</p> <p>Intrinsic motivation: Highly motivated workers run two weekly shifts for 24/7</p> <p>Staff support and team building: OIC campaigned vigorously for a prize from state for a staff; OIC changed the PBF bonus allocation formula in favor of staff rather than OIC; staff in the same shift cooked food together; coaching and flat relationship with mutual feedback</p>	<p>Strong performance management: OIC updated and gave stretched targets to encourage improvement; tracked results every week; informed them to workers, and discussed ideas to improve. The PHCC involved WDC, traditional leaders, and even LGA and state staff to address problems as needed. Staff were fully aware of targets and performance, and highly committed to achieve the targets</p> <p>Staff management/motivation</p> <p>Staff support and team building: OIC fostered a family-like relations with her team by bringing food paid out of her own pocket and cooking and eating same food with staff, and giving small money to them</p> <p>Motivating by targets: OIC regularly updated stretched targets based on past results and community situation, and communicated results every week</p>

derived from the eight cases were: (i) staffing; (ii) distance and accessibility; (iii) security; and (iv) competition with other providers. Notable differences were not found in other factors such as community income, cultural and social norms and support from other partners and programs. Also, contrary to the hypothesis in the original conceptual framework (Table 1), except for staffing of the PHCCs, few notable differences were found in support by state or LGA, financing, supply chain, supervision and training, and PBF design and implementation among the PHCCs. At least for the PHCCs studied, differences in health system and PBF design and implementation were not the primary factors explaining differences in performance.

As described in Table 4, among the high-performers, PHCC-1, located in a semi-urban community, had favourable conditions for all the above factors except for competition. In contrast, PHCC-2, 3 and 4 in rural communities had challenges in staffing, and distance and accessibility, while security and competition issues were minimal. In contrast, among poor-performers, PHCC-6, 7, and 8 were semi-urban with more staff and good access, but PHCC-7 and 8 suffered from competition with other providers and security issues. PHCC-5 was in a rural community with the same challenges in staffing and distance and accessibility as high-performers in rural communities.

Contextual and health system factors need to be viewed in combination with other factors or drivers of performance such as community engagement and support, and performance and staff management. There seems to be no decisive contextual and health systems factor on the performance of PHCCs. The case studies suggest that the PHCCs can change or mitigate some contextual and health system-related disadvantages, and leverage contextual and health system-related advantages. For example, in rural areas, PHCC-2, 3 and 4 addressed potential staffing and accessibility issues by ensuring that staff reside in or next to the PHCCs, scheduling outreach activities to avoid rains, and providing additional funds to the team for outreach during the rainy season from PBF funds or the OIC's own pocket. In a semi-urban area, PHCC-1 was taking patients from competitors including a hospital, and did not suffer from absenteeism of staff due to other revenue-making opportunities that was otherwise found in low-performing PHCCs in semi-urban areas. It was evident that various activities to attract patients such as active community engagement, free and discount services and services on credit, and hiring of a doctor and extra staff from the community to build credibility helped attract patients from competitors, while the OIC's dedication and support to staff kept staff motivation high. In contrast, none of the high-performing PHCCs had security issues, and we did not have evidence to conclude whether security

Table 5. Overview of low-performing PHCCs

State	Nasarawa		Ondo	
Names	PHCC-5	PHCC-6	PHCC-7	PHCC-8
Summary	A relatively well-placed rural PHCC in access, staffing and competition. However, OIC was regularly unavailable and there were no visible efforts in community outreach, performance management, and staff motivation. Support from WDC and traditional leaders were <i>ad hoc</i>	Semi-urban PHCC with good access, abundant staff, less competition and good support from other programs. However, limited community engagement, poor performance management, problems in bonus allocation to staff seem to have resulted in staff absenteeism, poor support from WDC and traditional leaders, and drug stock-outs	A semi-urban PHCC that faced competition with a hospital and security issue. Poor performance management, staff shifts, and engagement with WDC and traditional leaders seem to have resulted in limited support by traditional leaders, difference in performance between shifts, and overall poor results. WDC Chair did not live in the community, which also limited his support	A semi-urban PHCC that faced competition with hospitals and public, private and unlicensed providers. WDC and traditional leaders did not regulate unlicensed providers. OIC's weak commitment and poor management also seem to have contributed to low staff motivation and limited community engagement
A. Contextual and health system factors	<p>Shortage of staff, but better than PHCC-2, 3, and 4; there were no visible actions to address it. The OIC was often not available due to other revenue generating activity</p> <p>Bad access to some communities during rainy season, but it was less serious than PHCC-2; there were no visible efforts to address it</p> <p>No major disadvantages in other areas; good support from other programs; some but not severe competition with other providers</p>	<p>Abundant staff: In addition to 15 original staff, 5 staff (nurse/midwife and CHEWs) from a national scheme</p> <p>Good regular access: It had access issue in rainy season, but regular access was good</p> <p>Some competition with a general hospital and 3 patient medical vendors, but this did not seem to pose particular challenge compared with other PHCCs</p> <p>Relatively abundant support from national and state programs for equipment and medicines</p>	<p>Competition with a hospital posed a major challenge. They also had competition with traditional providers</p> <p>Security challenge made the residents leave their community in the afternoon, making it difficult to attract patients</p> <p>Shortage of staff, but better than PHCC-2, 3, and 4 and they had less patients. OIC qualification (registered nurse) were the highest among those researched</p>	<p>Competition with various health providers. There were also private pharmacies and 7 unlicensed providers in the community. One of them was well integrated in the community, and known by traditional leaders and WDC</p> <p>Security challenge: Two years ago 24 thieves trooped in and killed people. Concern still existed</p> <p>Sufficient staff: 3 staff on duty all time for few patients</p> <p>Good access: Just off expressway to two towns and most could get there within 30minutes of walk</p>
B. Community engagement and support	<p>Limited engagement with and support from WDC and traditional leaders: Good relationship with WDC through consultation and sharing of PBF bonuses. However, the WDC supported only 'when the need arises'</p> <p>Limited community engagement: Outreach was only 2-3 times a month; OIC was unavailable in the PHCC regularly, which affected the level of patronage by community</p>	<p>Relationship issues with traditional leaders and WDC: No visible support from WDC and traditional leaders to address the competition with patent medical vendors. WDC Chair demanded share of PBF bonus, which led to relationship issues. No relationship established with traditional leaders</p> <p>Limited community engagement: No 24H services despite abundant staff; free services and incentives only when free drugs were available; PBF bonuses not used to address financial barriers for community</p>	<p>Limited engagement with and support from WDC and traditional leaders: Traditional leaders' support was only on-request basis. WDC chair did not live in the community and his engagement was limited. PHCC did not report specific performance to WDC</p> <p>Limited community engagement: No visible strategies were presented. There seem to be good practices in one of the two shifts, but the other shift were not performing well</p>	<p>Limited support from WDC and traditional leaders: A traditional leader and WDC did not regulate unlicensed providers, given their personal relationships with them. Their support was limited to ad hoc trouble shootings</p> <p>Limited community engagement: Outreach only once a month; lack of follow-up with pregnant women for delivery; no other visible engagement by the PHCC</p>
C. Performance and Staff Management	Poor performance management : No specific improvements were explained as a result of the performance reviews. Staff did not know	Poor performance management : No update of plan and targets, and regular discussion on the target and results. None of the health	Poor performance management : Little systematic process for planning for services, target setting, and performance tracking and	Poor performance management : No changes in targets since the beginning of PBF, and staff were not aware of the targets. There was no

(continued)

Table 5. (continued)

State	Nasarawa		Ondo	
Names	PHCC-5	PHCC-6	PHCC-7	PHCC-8
	<p>targets and plans of the PHCC, and neither attended the meeting nor got informed about the meeting results</p> <p>Staff management/motivation: Collaboration among staff, fairness in training opportunities and technical sessions among staff for learning was working well</p> <p>Poor motivation among staff: Workers were not aware of any efforts by the OIC in encouraging good performers; regular absence of the OIC affected the staff motivation; no specific team building efforts observed</p>	<p>workers interviewed knew targets or actual performance</p> <p>Stock-outs: The only PHCC that experienced stock-outs of essential medicines twice in recent months</p> <p>Staff management/motivation: There was collaborative relationship among staff and staff received fair training opportunities</p> <p>Poor motivation among staff: Absenteeism reported from multiple sources; non-transparent distribution of performance bonus; no proactive engagement by the OIC in motivating staff</p>	<p>review. Meetings with staff and WDC were irregular, performance were not discussed in numbers, and staff were not aware of plans and targets</p> <p>Staff management/motivation: Large disparity in the performance of the two shifts. Members of the better performing shift were more motivated and worked well as a team</p> <p>Lack of efforts to motivate staff: OIC was not seen to do much to motivate staff, except for using the performance bonuses to reward good performers</p>	<p>evidence of systematic performance review. Meetings were irregular – only one staff meeting and two committee meetings in 2013</p> <p>Staff management/motivation: Staff members covered for each other when someone was absent</p> <p>Lack of efforts motivate staff: OIC showed up late for work and was idling around the PHCC rather than going after patients; did not sleep in the PHCC like other staff do and did not come on weekends. She was not around much of the time to supervise work</p>

Table 6. Comparison of contextual and health system factors between high- and low-performers in semi-urban and rural communities

	High-performers	Low-performers
Semi-urban PHCCs	<p>PHCC-1</p> <ul style="list-style-type: none"> • Abundant staff (17 staff) • Good access from/to community • No security issue • Some competition with a hospital and a PHCC (but taking patients from them) 	<p>PHCC-6, PHCC-7, PHCC-8</p> <ul style="list-style-type: none"> • Abundant staff (20 staff, 6 staff, 8 staff) • Good access from/to community • Security issue (PHCC-7 and 8) • Tough competition with hospitals, PHCCs, medicine stores, unlicensed providers
Rural PHCCs	<p>PHCC-2, PHCC-3, PHCC-4</p> <ul style="list-style-type: none"> • Serious shortage of staff (5 staff each) • Very poor access from/to community • No security issue • Few or no competition with other providers 	<p>PHCC-5</p> <ul style="list-style-type: none"> • Shortage of staff but sufficient for the low patient load (8 staff) • Poor access from/to community (better than PHCC-2) • No security issue • Some but not severe competition with other providers

issue can be overcome. However, the fact that two of the four low performers did not have any security issue suggest that there are many other factors that contribute to low performance of PHCCs.

Further, as described below, competition particularly with unlicensed providers will differ according to the role that traditional leaders play in influencing community choice of provider. For the health system factors, in Ondo state, respondents from both high and low performers suggested that ad hoc provision of free drugs helped increase patient numbers when they were available, but had a negative impact in terms of failing to meet raised community expectations when they were not available. Differences were found in how PHCCs responded to the availability of free drugs—PHCC-3 and 4 made services free, or discounted the price for patients using PBF funds when free drugs were not available, and received support from community leaders in explaining the need for user fees to the

community, while such proactive actions were not observed in PHCC-7 and 8.

Area 2: community engagement and support

Table 6 summarizes the three main patterns of community engagement and support we found in the eight cases. First, in high-performing PHCCs, we identified a pattern where strong and multiple types of engagement by the OICs/PHCC staff to WDC, traditional leaders and community members enhanced the level of support from the PHCC. Second, we observed another pattern where traditional leaders/chiefs in rural communities spontaneously exercised very strong authority, enforced the use of PHCCs, and removed unlicensed providers.

Third, in low-performing PHCCs, in all four cases, although a few PHCCs shared their PBF bonus with WDC as an incentive, the

engagements of the OICs/PHCCs with WDC and traditional leaders were limited to trouble-shooting on ad-hoc basis. Direct community engagement by PHCCs were also limited in these four PHCCs (e.g. outreach once a month by PHCC-8, and two to three times a month by PHCC-5, compared with two to three times a week by PHCC-1) with few specific strategies to recruit patients. In PHCC-5, regular absence of the OIC eroded community trust. In some PHCCs, there were clear challenges in WDC or traditional leader support, due to the unavailability of WDC (PHCC-7) and lack of collaboration to address competition with unlicensed providers, given their personal relationships with the providers (PHCC-8).

The case studies suggest diversity in the pathways to gain community support. However, it was common across cases that community support could not be gained without support from WDC and traditional leaders, and that poor engagement of WDCs and traditional leaders by the OICs/PHCCs led to weak support.

Area 3: performance and staff management

Performance management. There were clear common performance management features among high-performers that were missing in low-performers including planning, target setting, performance tracking and review, and problem solving. All of the four high-performing PHCCs had clear commitments to achieve targets, carried out rigorous performance reviews, and addressed problems by involving WDC, traditional leaders and other stakeholders. All four high-performing PHCCs updated the target quantity of essential health services (e.g. outpatient visits, ANC, institutional delivery, fully vaccinated children) based on actual performance and the community situation to keep them as 'stretch' targets, and reviewed achievement of targets on a wall (PHCC-1), or on a monthly (PHCC-1 and 2) or weekly (PHCC-3 and 4) basis among staff and with WDC and traditional leaders. As a result, all health workers at the four high performing PHCCs (except one health worker at PHCC-2) could explain the targets and actual results in the last month. The OICs and staff in the high-performing PHCCs were able to explain many specific actions that came out of the performance review meetings, such as the use of a mobile clinic to access remote communities, negotiation with the LGA to purchase drugs from a certified vendor close to town rather than in the capital to reduce the cost of drugs, adjustment of the price of services using subsidies from the PBF bonus to ensure affordability to the community, and construction of a road to an underserved community by community groups. It should also be noted that, as shown in PHCC-1 (in Table 4(C) "Open environment") and PHCC-4 (in Table 7), OICs in the high-performing PHCCs created a flat and open environment for staff and other stakeholders to discuss issues and develop these creative solutions. In contrast, none of the health workers interviewed at low-performing PHCCs were aware of or remembered targets of the PHCCs, and they could not explain any of the actions that came out of the performance review meetings.

Staff management and motivation

There were also clear differences between high-performers and low-performers in staff motivation. In three of the four low-performing PHCCs, low staff motivation and absenteeism (PHCC-5, 6), and lack of trust in the OIC among staff (PHCC-8) were highlighted as an issue. In contrast, in high performers, highly motivated health workers clearly contributed to gaining support from WDC and traditional leaders and trust-building with the community.

Table 7 summarizes approaches observed in high-performing PHCCs. All four PHCCs used multiple approaches to motivate staff

and build team spirit. Of these approaches, training and coaching were also implemented in all of the poor performers to some extent. However, PHCC-6 suffered from non-transparent allocation of performance bonus among staff, and PHCC-7 did not involve health workers in deciding the use of PBF bonus for improving services. Other approaches, such as the OIC acting as a role model for other staff, providing rewards/gifts/assistance to staff, building of family-like relationship, and bonus re-allocation to benefit staff were not observed in any of the low-performing PHCCs. In PHCC-8, the OIC's regular absence while asking other staff to maintain 24 h/7 days a week operation by sleeping in the PHCC seem to drive staff's mistrust of the OIC and lack of collaboration with her.

Discussion

Drivers and pathways of performance improvement

On the factors that differentiate good and poor performers (Research question 1), we found critical differences in the areas of community engagement and support, and performance and staff management. For the community engagement and support, multiple types of engagement by OICs and PHCC staff to build trust and gain support from WDC, traditional leaders and community members, and spontaneous support from influential traditional leaders in some of rural PHCCs, enhanced the use of PHCCs by communities among high-performers. For performance and staff management, performance management activities, such as frequent updating of targets, visualized tracking of results, weekly or monthly reviews of performance and target achievement, and problem solving to improve performance with clear actions and follow-ups with WDC, traditional leaders, and other stakeholders appeared to be key differences between good and poor performers. Also, multiple approaches by OICs to motivate staff and build team spirit through providing an appropriate role model, setting stretch targets, providing rewards/gifts/assistance to staff, building a family-like relationship, and re-allocating bonuses in favour of staff emerged as critical differences between high and low performers. Among these factors, community engagement—engagement of WDC, traditional leaders and community members, performance management and staff management approaches are health centre management factors that seem to have differentiated high and low performing PHCCs (Research question 2).

In terms of the mechanisms through which such differentiating factors affect the performance of the PHCCs (Research question 3), although we do not have sufficient information to fully explain all the dynamic mechanisms, Figure 1 synthesizes the key pathways (presented as arrows) identified through the case studies. Contextual and health system factors, particularly staffing, access, and competition with other providers; health centre management including community engagement, performance management, and staff management; and community leader support, are highlighted as the three main drivers of performance improvement (shaded boxes in Figure 1) that have direct influence on the use of essential health services by the community.⁵

Importantly, these three main drivers of performance influence each other. The case studies particularly highlighted the influences that health centre management can have on the other drivers. High performing PHCCs employed management approaches to leverage positive contextual and health system factors and mitigate negative factors such as poor staffing and limited road access, whereas poor management cancelled the positive factors and worsened the negative factors. Also, as mentioned above, multiple types of engagement by PHCCs helped build trust and gain support from community

Table 7. Observed patterns of community engagement and support

Pattern	Description	PHCC	Quotes (selected examples)
Strong and multiple types of engagement by the OICs/PHCCs	Strong and multiple types of engagement by the OICs/PHCC staff to WDC, traditional leaders and community members enhanced the level of support from them. The OICs/PHCCs fully involved WDCs and traditional leaders in planning, performance monitoring, problem solving, and PBF bonus allocation, which appears to have encouraged the WDC members and traditional leaders to support the PHCCs. PHCC staff also had built strong trust with community members	PHCC-1, PHCC-4 (PHCC-2 and 3 also carried out similar activities)	<p>She (OIC) is very active and devoted to the facility. She also looks up to the WDC for discussion on problems associated with the PHCC, relates very well with the community and the LGA PHC coordinator. If there is any problem she always inform me and if there is anything that she needs that would improve the PHCC she also tell me; WDC Chairperson; PHCC-1</p> <p>Due to the help they render to people of the community, even if they (community members) don't see any of the health workers they keep asking about the person. Through being nice and rendering help to clients, for example, treatment on credit. The community members know all the workers individually; WDC Chairperson; PHCC-1</p> <p>I tell them that we just got this bonus. I don't hide it from them, because they are the ones who mark the scheme. I tell them, this is how much we were paid, and I give them N2, 000 each. They tell me they have never experienced this kind of openness before with the PHC; OIC; PHCC-4</p> <p>When I get here every Monday, I go round the community to greet people. [...] For pregnant women especially, when I haven't seen them in two or three days, I go to visit them [...] Some other OIC may sit in the PHCC and not reach out to the community this way; OIC; PHCC-4</p> <p>So I can say the chief is very much involved in the welfare of the ward as he represents the whole ward as the WDC chairman; OIC; PHCC-2</p> <p>I am the Chief. If I say anything, everybody cooperates with me. My late father had only one Mai unguwa (village sub-head) but I have four (4) Mai unguwas. If I want anything done I will tell them and they will go and inform people in their sub-wards [...] Through me they (PHCC staff) have been able to build relationship with the community. If I talk to them, other leaders of the community will do as I say; WDC Chairperson; PHCC-2</p> <p>Prior to PBF we didn't have this level of communication with the community [...] Really it was because the announcement (by village head) is made that everybody is listening; OIC; PHCC-2</p> <p>It is the traditional leader that will set down rules for the community members that if they do not come to the PHC for delivery, their lands which they are employed to will be collected from them; OIC; PHCC-3</p> <p>WDC is just like the police. If we see you going to a quack (unskilled provider), you had better leave this community for us, so you don't implicate us; WDC Chairperson; PHCC-3</p> <p>It helps a lot. You see, that is what has made it easy for us to gain ground in this place. Because we didn't meet quacks here; Non-OIC health worker; PHCC-3</p> <p>Community members are not able to access the OIC regularly in the PHC and that eroded his cordial relationship with and the level of patronage by the community; LGA supervisor; PHCC-5</p> <p>We aren't close to any of the traditional leaders; OIC; I am not aware of any support by the traditional leaders; Non-OIC health workers; PHCC-6</p> <p>I don't see any activity from them (WDC). The WDC chairman doesn't live here. I don't think I saw him once throughout the month of October [...] The chairman didn't attend the last meeting; Non-OIC Health Worker; PHCC-7</p> <p>The Oloja (community leader) made it clear that there is nothing that can be done about this particular quack (unlicensed provider). He said they can't chase him away because he is one of them in the community; OIC; PHCC-8</p> <p>He said he would ask them if their community members had any particular reasons for not patronizing the centre, note those down, and give us feedback. We have not heard any further word on the matter since then. He has not called us; Non-OIC health worker; PHCC-8</p>
Strong support by traditional leaders	Traditional leaders/chief in rural community (a traditional leader of the community for PHCC-2 is also the WDC chairperson) spontaneously exercised very strong authority, enforced the use of PHCCs, and removed unlicensed providers. Traditional leaders also influenced WDC members for them to engage with community and monitor unlicensed providers	PHCC-2, PHCC-3	
Weak pathways to gain community support (Poor performing PHCs)	The engagements of the OICs/PHCCs with WDC and traditional leaders were limited to trouble-shootings on ad-hoc basis. In some PHCCs, there are clear challenges in WDC or traditional leader support, due to the unavailability of WDC (PHCC-7) and lack of collaboration to address competition with unlicensed providers (PHCC-8)	PHCC-5, PHCC-6, PHCC-7, PHCC-8	

Table 8. Observed approaches in high-performing PHCCs in motivating staff (✓: observed)

Approach	Description	PHCC-1	PHCC-2	PHCC-3	PHCC-4	Quotes (selected examples)
Role model	OIC motivates staff through own behaviours such as hard work and good patient care.	✓	✓	✓	✓	<i>The workers in this clinic are good and have been really motivated especially through the OIC who supports the community members that come for treatment out of her pocket; WDC Chairperson, PHCC-1</i> <i>He makes sure he comes on time to observe those who also comes in time and late, by so doing he encourages us too since we are all close by. So by 7:30 to 8:00 we are already in the office. He shows good example; Non-OIC health worker; PHCC-2</i>
Stretched target and review	OIC sets 'stretch' targets and monitor achievement with staff rigorously	✓	✓	✓	✓	<i>It encourages the staff to achieve the targets because the bonuses boost their moral to work more. The volunteers are even more encouraged than the fulltime staff. For example, the lab technician comes to work on Sundays if there are tests to be carried out and analyzed; OIC; PHCC-1</i> <i>Yes, we have targets for the numbers of patient we expect for different services. For immunization, our target this month is 18 children and for pregnant women it is 20. Based on what the LGA gives us as our target numbers, the OIC sets the target for each month. For example, if we decide that OPD target is 300 for the month, then we know that we need to go out more into the community and do more outreaches to achieve the number. OPD target for October is 240; Non-OIC health worker; PHCC-4</i>
Involvement/transparency	OIC involves and consults with staff in key decisions, and ensure transparency	✓	✓	✓	✓	<i>There is no secrecy at the centre. All activities are open and clear to all staff so that in my absence any other staff can give a detailed report concerning our operations accurately; OIC; PHCC-2</i>
Flat and open environment	OIC open to listen to feedbacks from workers and reflect them	✓	✓	✓		<i>Our ability to sit/meet and discuss matters when they arise made us able to collaborate with each other. Through meeting and discussing issues team work is successful. I am on a statewide immunization exercise now, but it is even the OIC that is covering up for me; Non-OIC health worker; PHCC-2</i> <i>We do it (setting targets) together. I tell them, this month, we should have so-and-so numbers. They sit down and say, yes, it's true. How do we achieve the numbers? One person may say they'll go to this village, another will say they'll go to that village. And then, they know the tricks they use to bring people in; OIC; PHCC-4</i>
Training and coaching	OIC creates fair and frequent training and coaching opportunities to staff	✓	✓	✓	✓	<i>PHC staff who were opportuned to attend other external trainings are mandated to carry out a step down training for other staff and to make any relevant educational materials acquired during the course of such trainings available in the PHCC; WDC Chairperson; PHCC-1</i>
Reward/gift/assistance to staff	OIC provides personal gifts, appreciation, cash to appreciate and/or support staff	✓	✓	✓	✓	<i>It's the way I endear myself to them. When I'm coming here, I buy bread and other things - from my own pocket; I don't let them feel anything. I tell them our money has not yet been paid, but encourage them to keep working because it will become our burden if we don't do it. That lifts their spirits; OIC; PHCC-4</i>
Family-like relationship	OIC builds family-like relations, e.g., by cooking and eating together			✓	✓	<i>I bring raw food materials with me when I'm coming to the PHCC, and all the staff here cook and eat from the same pot. No one knows who owns what. But in (other PHCC), every staff member brings their own pot and cooks separately; OIC; PHCC-4</i>
Bonus re-allocation	OIC revise bonus allocation formula set by the project to benefit staff more than OIC		✓	✓		<i>So we rather amended the formula and raised the indices thereby encouraging the staff. This solution was arrived at during the HF PBF meetings were we discussed and reviewed the indices to encourage the staff to work more; OIC; PHCC-2</i> <i>Last year, for instance, when I did a lot of extra time, they gave me extra money. My boss got only a little more money than me. I was very happy; Non-OIC health worker; PHCC-3</i>

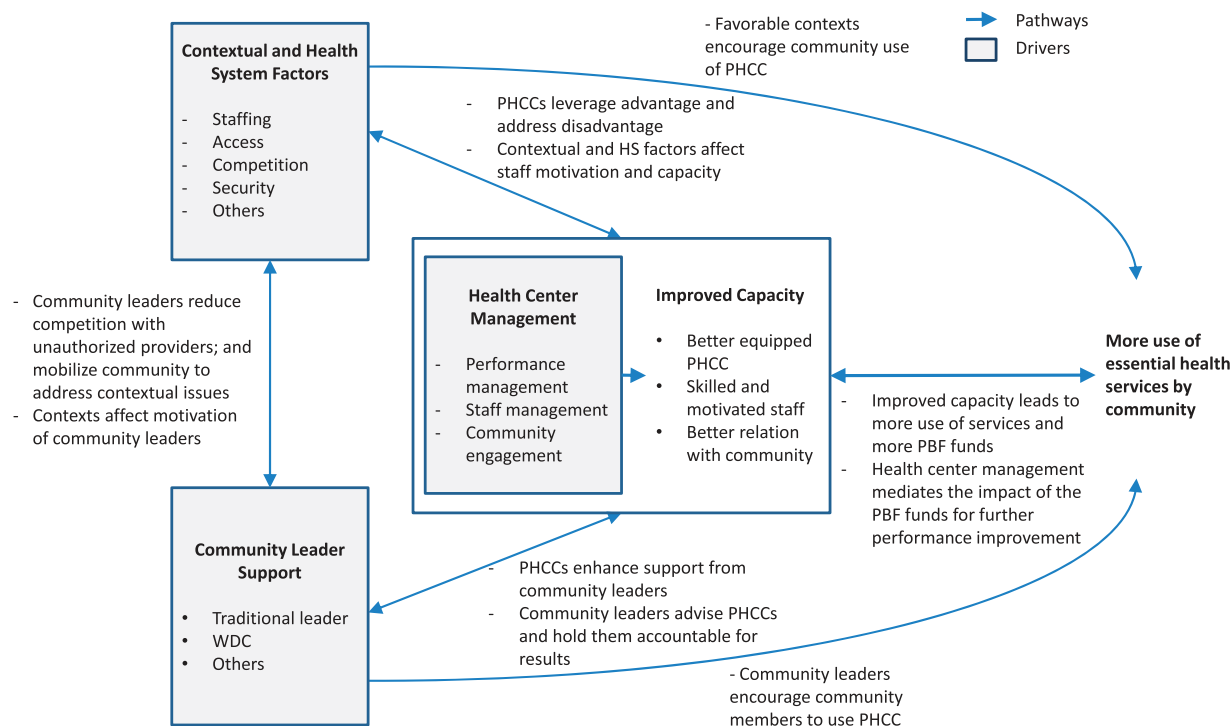


Figure 1. Pathways to improve the use of essential health services at the PHCCs under PBF

leaders in high performing PHCCs. Health centre management practices also mediated the impact of PBF bonuses on further performance improvement, as how the PBF bonuses were used for health centre management activities differentiated performance. The case studies also showed that community leaders can not only encourage and sometimes enforce the use of PHCCs, but also greatly influence contextual factors by regulating unlicensed providers and reducing competition, and advising PHCCs on necessary actions to attract patients. The case of PHCC-8 also shows that strong traditional leadership, when influenced by local politics such as personal relationships of community leaders with unlicensed providers, can negatively affect competition and PHCC performance.

Value and transferability of findings

This study intended to provide insights on what has been viewed as a ‘black box’ in past literature on the determinants of primary health facility performance, health facility management, and the PBF approach in developing countries. What we found is consistent with findings from previous studies, while adding new insights. First, our findings support the importance of involving local authorities and communities and adapting approaches to the local situation that Dieleman *et al.* (2009) identified. In addition, we found that proactive engagement by PHCCs to recruit patients, and community leaders’ support to encourage PHCC use and regulate unauthorized providers thus reducing competition, to be critical.

Second, we found a system of accountability that Topp *et al.* (2015) identified, and various measures to improve staff motivation and team work highlighted by Dieleman *et al.* (2009), Rowe *et al.* (2005) and Marchal *et al.* (2010). These performance and staff management activities were interlinked and mutually reinforcing as strong staff awareness of plans and targets motivated staff, and motivated collaborative teams appear to improve performance management and community engagement activities. Third, in addition to the above drivers of performance, we described the various

pathways through which these drivers of performance influence each other to improve performance. Understanding how each driver of performance can influence other drivers to improve performance will help policy makers and programs decide what to prioritize and where to start to improve health centre performance in developing countries.

The findings of this research need to be viewed in the particular context of rural and peri-urban Nigeria and the PBF scheme. For example, the influence of traditional leaders differs by area, and other contextual factors such as cultural barriers may play a larger or smaller role in other places in Nigeria or in other countries. More importantly, as shown in Figure 1, the presence of the PBF scheme is important in driving outcomes. For example, under PBF, greater use of essential health services by the community leads to a larger PBF bonus for the PHCC to use for further improving PHCC performance creating a virtuous cycle, whereas in contexts without PBF, an increase in service utilization may demotivate staff and deplete supplies thus undermining service quality (Gilson and McIntyre 2005). Although PBF is implemented in many developing countries, if it is not typically the standard arrangement. While some health systems may mimic certain aspects of PBF, for example by providing greater autonomy to facility managers, the result may well be different in contexts where there are no direct rewards based on performance. The importance of health centre management and the OIC’s management capacity will be larger under PBF than in settings where PHCCs do not receive any operational funds and have limited autonomy.

Limitation of the study

This study has a few limitations which imply a need for further research. First, although longitudinal data on performance is available, this study took a snapshot of PHCC activities. Further research with a longitudinal study design is needed to acquire a

more in-depth understanding of the dynamics of PHCC improvement. Second, the analysis of demand-side factors (e.g. how community members see PHCCs and make decisions on their use) was limited in this study, though interviews of health workers, WDC chairpersons and observations at the PHCCs allowed us to incorporate some dynamic interaction between PHCC's community engagement approaches and the community's reactions. Third, health systems factors were not important differentiators in this study as it was carried out in PHCCs with similar health systems conditions. However, the potential importance of health systems factors should not be underestimated. Further case studies across more diverse LGAs and states would cast light on how health system factors at these levels support high and low performers. Finally, as explained above, the findings need to be viewed in the context of PBF as an enabling environment for good management practices to produce results.

Conclusion

This study has several important policy implications. First, it suggests the importance of a platform that provides autonomy to primary health centres. The examples of high-performing PHCCs in Nigeria provide a clear picture of how primary health centres can improve their performance with sufficient levels of autonomy and support. It should be noted that the performance of high-performing PHCCs was equally very low and the difference with low-performers was negligible before the PBF scheme. In this regard, the key drivers and pathways for performance improvement of PHCCs identified in this study would be valid only in the context of PBF or similar schemes. Second, this research highlighted a need to develop and/or identify OICs with strong management capacity. The case studies described how OICs can influence contextual and health system factors, gain community leaders' support, identify issues and solve them by involving key stakeholders, and motivate staff—or alternatively fail to do so. They also highlighted the particular importance of performance management, staff management and motivation, and community and community leader engagement. Clear differences in practices of OICs between high and low-performing PHCCs suggest that these differences cannot be addressed through short-term training interventions alone—these differences are related to the OIC's mindset, managerial skills, and fit with a managerial position. This underlines the need for a set of interventions to select capable and motivated OICs, provide long-term coaching of managerial skills, and motivate OICs to improve their practices. Third, this research highlights the importance of looking at community leaders as a main driver to improve PHCC performance. Interventions targeted at PHCCs need to have a core focus on gaining support from community leaders as part of an integral approach to improve performance.

Supplementary Data

Supplementary data are available at *HEAPOL* online.

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Notes

1. Total PBF earnings is calculated by adding quantity-based earnings for all of the selected 21 essential health services (see details in [Supplementary Appendix S1](#)) and quality-based earnings based on quality assessment scores. The quantity-based earnings for each service is calculated by multiplying the number of the service delivered per month by unit PBF fees for the service that is defined by the government of Nigeria based on the importance of each service. Quantity of services is verified by teams of State Primary Health Care Development Agency (SPHCDA) staff and technical assistance agency staff.
2. OIC is a health centre manager position that all PHCCs have in Nigeria. They are also clinical staff, and typically community health extension workers, particularly in rural areas.
3. The reviewed literature include: Baldrige performance excellence program, 2011; [Karsten \(2010\)](#), [Kramer et al. \(2007\)](#), [Management Sciences for Health \(1998\)](#), [McCarthy and Fitzpatrick \(2009\)](#), [NHS Institute for Innovation and Improvement and Academy of Medical Royal Colleges \(2010\)](#), [Office for Health Management \(2004\)](#), [Omoike et al. \(2011\)](#), [Pillay \(2010\)](#), [Schmalenberg and Kramer \(2009\)](#), [Sherman et al. \(2007\)](#), [Squires \(2001\)](#), [Zori et al. \(2010\)](#); and literature on management practices scorecard including: [Dorgan et al. \(2010\)](#), [Bloom and Van Reenen \(2010\)](#); and [McConnell et al. \(2013\)](#), [Meyer and Collier \(2001\)](#), [Ohman-Stickland et al. \(2007\)](#).
4. WDC consists of various types of community leaders that reviews PHCC performance through regular meeting, support the PHCC and sign-off the use of performance based funds by the PHCC.
5. In [Figure 1](#), community engagement is included in 'Health Center Management' rather than in 'Community engagement and support' as categorized in [Tables 3 and 4](#). This is because community engagement refers to the management activities by PHCCs, and pathways can be described more clearly in this way than in the way that separates community engagement from health centre management.

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