

# Data Validation as a Key Step in Payment of Performance Based Financing Subsidies in Low- and Middle-Income Countries

Olusola Olabisi Ogunseye

Department of Environmental Health Sciences, University of Ibadan, Ibadan, Nigeria

## ABSTRACT

Data validation is a crucial process in any performance-based financing (PBF) scheme as it a precursor to the payment of PBF subsidies to beneficiaries. Through literature review and collection of supplementary data from PBF scheme in Nasarawa State of Nigeria, this paper analyses key elements of the data validation process in PBF schemes in low- and middle-income countries (LMICs). Analysis shows that data validation is a rigorous, time-consuming and costly activity. Data validation in PBF is a combination of health facility level quantity and quality verifications and counter-verifications with variations in methodology and intensity according to country-specific preferences. In Nasarawa State PBF scheme, result shows that 19.7% and 11.9% of total earnings were retained as a result of counter-verification sanctions on health facilities while 44.5% and 41.0% of total earnings were retained due to counter-verification sanctions on administrative entities in the first and second quarters of 2018 respectively. Even though data validation is a rigorous, time-consuming and costly process, if applied strictly within the PBF framework, it could serve as a mechanism for fund recovery. Country-specific, cost-effective and robust data validation mechanism should be incorporated into the design of PBF schemes in implementing countries, while PBF schemes with weak data validation processes should be strengthened and enforced to check fraud, over-reporting and gaming.

**Keywords:** Data validation; Performance based financing; Subsidies; Verification; Low and middle income countries; LMICs

## INTRODUCTION

Performance based financing (PBF), also known as payment for performance (P4P), is a health system reform approach with an orientation on results in terms of quantity and quality of healthcare services [1-8]. PBF entails the payment of incentives or subsidies to beneficiaries (health facilities and administrative entities) upon achievement of pre-agreed performance targets [1,9-11]. Experiences in some countries indicate that PBF led to improvement in coverage and utilization of healthcare services, particularly primary health care [1,10-12]. PBF has received considerable acceptance especially in low and middle-income countries in which more than 30 countries are currently implementing the scheme [4,5,7,13-17].

Data validation, in the context of PBF, refers to all data-related activities carried out internally within contracted health facilities and externally in the community to determine incentives or subsidies paid to health facilities and other participating entities

[5,7]. Data validation is a key component of most PBF designs because it strengthens health information system, guarantees evidence-based subsidy calculation and disbursement, shields the systems from fraud and empowers community's voice [13,16,18-19]. Data validation at district, regional and central levels strengthens governance structures and enhances decision making capacity [18]. Data validation is crucial, not only for computing subsidies for health facilities, but also for fraud detection and application of appropriate sanctions [7,16,18]. Since PBF rewards health facilities with financial incentives when agreed upon deliverables have been achieved, there are concerns about appropriate data validation processes to check false reporting and erroneous payment of subsidies [20]. Hence, the objective of this article is to analyse key elements of the data validation process in PBF schemes in low- and middle-income countries (LMICs).

## Methodology

The methodology adopted for this article is a review of peer-

**Correspondence to:** Ogunseye OO, Department of Environmental Health Sciences, University of Ibadan, Ibadan, Nigeria; E-mail: sholybliss4eva@yahoo.com

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reviewed articles and grey literature. A search of articles and literature on databases such as Google scholar, PubMed and Elsevier was carried out using key words such as performance based financing, data validation, payment cycle in PBF, PBF in low and middle income countries etc. A total of 154 publications consisting peer-reviewed articles and grey literature, were exhaustively reviewed covering diverse themes of performance-based financing from 16 countries including Benin, Burundi, Tanzania, Rwanda, Cambodia, Nigeria, Cameroon, Gambia, Afghanistan, Uganda, Burkina Faso, Haiti, Democratic Republic of Congo, Mozambique, Lesotho and Malawi.

### Identification and selection of literature

For the purpose of this review, literature was selected based on the criteria that country-context PBF payment cycle was explicitly analysed and the article provided information on key data validation processes. Of 154 publications, only 6 met the inclusion criteria from which data and relevant information on data validation processes was extracted

### Data extraction strategy and analysis

Information on data validation was retrieved using specific themes that are in consonance with the objective of this review. Supplementary data was also collected from documents containing quarter 1 and quarter 2 PBF payment orders for the PBF scheme in Nasarawa State, Nigeria to corroborate the findings. Supplementary data was analysed with Microsoft Excel using descriptive statistics.

## RESULTS

### Country context data validation processes

In PBF, data validation is a rigorous and time-consuming activity [18]. In countries implementing PBF, data validation follows similar processes with little changes based on country contexts [16,18]. In PBF designs, payment of subsidies is based on either carrot-carrot approach or carrot-stick approach, with technical quality of services being the determinant [5]. According to [21], data validation prior to payment of PBF subsidies should follow a number of regulated steps, including internal health facility verification of health service volume claims, monthly verification of claims by a verifier or representative of the purchasing agency, quarterly district-level verification of consolidated invoices of health facilities, quarterly purchaser-level verification, due diligence on all invoices for all participating districts and production of payment order, fund holder verification and final payment of subsidies directly to the account of health facilities and participating agencies.

In Benin, data validation follows a sequence of procedures categorized into 3 domains, namely; monthly quantity verification, quarterly quality verification and quarterly counter-verification [18]. The implementing agency carries out quantity verification, district health management team is in charge of quality verification while counter-verification is carried out by community-based organizations (CBOs) contracted by the implementing agency

[18]. With support from technical assistants, the implementing agency coordinates all data validation activities in the 3 domains including data entry on the Open RBF portal and subsidy calculations [18]. It is however noteworthy that in the Benin PBF scheme, the rigorous and time-consuming data validation exercise is not used for the application of sanctions in cases of over-reporting or fraud, rather, the system employs dialogue [18]. This unwillingness to apply sanctions based on evidence from data validation makes the entire data validation and its cost a sheer waste [18]. It was also reported that the payment cycle in the Benin PBF scheme could take as long as 8 months from the period of service production to eventual subsidy payment and the cost of data validation could be as much as 50% of the total subsidy [16,18].

In Burkina Faso, data validation procedure is similar to what obtains in Benin. Data validation occurs at health facility and community levels handled by medical and community verifiers respectively [16]. The first round of quantity and quality verification is done by medical verifiers and quality assessment team respectively [16] and in order to mitigate fraud and inappropriate subsidy payment, counter-verifications (also referred to as community verifications) are carried by CBOs to assess the authenticity of health facilities' claim of service volumes and perception of clients on satisfaction, quality of services received and necessary feedbacks to health facilities [16]. There are reports that stakeholders in Burkina Faso PBF project question the methodology and usefulness of data validation results and its utility to ascertain fraudulent practices in relation to the amount of money spent to carry out such exercise [16].

In Burundi, data validation is also an integral part of the process that leads to payment of subsidies to health facilities [21]. Data validation is the statutory responsibility of the purchaser at the province and it is carried out after monthly verification of service volumes by provincial verifiers [21]. The validation process involves rigorous evaluation and onward transmission of payment order to fund holder (Ministry of Finance) for payment [21]. In the Burundi PBF scheme, payment for health facility quantity earning is monthly while quality bonus is incorporated into the quantity earning of the third month of the quarter under review and the entire payment cycle takes about 50 working days [21].

In Nigeria, data validation prior to payment of subsidies follows a holistic and robust mechanism that ensures strict adherence to the project implementation and user manuals [7,22]. State Primary Health Care Development Agency/Board (SPHCDA/B) of implementing states are the purchasers [7]. The Project Implementation Unit (PIU), with embedded technical assistance, is an organ within SPHCDA/B with the responsibility of implementing PBF in Nigeria under the project name; Nigeria State Health Investment Project (NSHIP) [7,22]. Ex-ante quantity verification is done every month by verifiers contracted by SPHCDA/B and data is entered into a web-enabled portal system (OpenRBF portal). Ex-ante quality assessment for primary

health care centres is carried out quarterly by trained and certified supervisors of Local Government Authority Primary Health Care Department (LGA PHCD), which is equivalent to district level primary healthcare department in other country contexts, while trained and certified supervisors of Hospitals Management Board (HMB) are saddled with the responsibility of ex-ante quality assessment of general hospitals or first level referral hospitals every quarter [7,22].

Similar to PBF design in other countries, counter or ex-post verifications are carried out by designated entities [16,18]. Quantity counter-verification, also referred to as community client satisfaction survey (CCSS) is carried out by contracted CBOs domiciled within communities where participating health facilities are located [7,22]. With assistance from SPHCDA/B verifiers, CBOs carry out CCSS to ascertain the authenticity and veracity of quantity of services claimed by health facilities and also provides recommendations on areas requiring improvements to health facilities [7,22]. Quality counter verification (QCV) is performed by a team of experts assembled by SPHCDA/B to counter-verify quality assessment done by LGA PHCD and HMB [7,22].

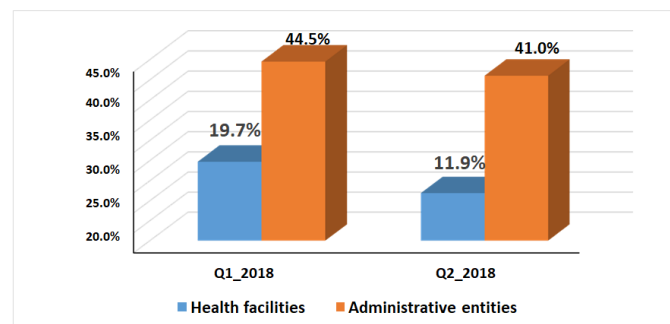
In the Nigeria PBF design, there are explicit sanctions that must be applied to health facilities in cases of discordance arising from CCSS and discrepancies in ex-ante and ex-post quality scores with the ex-post score reported during QCV being the benchmark [7]. There are also provisions for sanctioning LGA PHCDs and HMB for discrepancies in the quality scores reported for facilities they assess in relation to QCV scores which is the benchmark [7]. During quarterly steering committee meetings at LGAs, consolidated invoices of health facilities are approved and sent to SPHCDA/B for processing [7,22]. SPHCDA/B processes consolidated invoices for contracted health facilities across implementing LGAs and invoices for administrative entities (LGA PHCDs and HMB) into a payment order [7].

The payment order is a carefully prepared and detailed document that presents lucidly health facilities' quantity earnings, ex-ante quality scores, CCSS and QCV scores and appropriate percentage retention for CCSS and QCV sanctions for health facilities and administrative entities as specified in the user manual [7]. Due diligence is greatly required in the preparation of the payment order. The processes involved in the preparation of the payment order is a critical data validation step at the level of SPHCDA/B and same will be transmitted to the fund holder (State Project Finance Management Unit). The final data validation step takes place at the level of the fund holder, who also reviews the payment order diligently alongside accompanying reports to make payments directly into the bank accounts of health facilities and administrative entities after obtaining "No Objection" from the World Bank [7,22]. The Nigeria PBF design incorporates a web-enabled portal, OpenRBF portal with front and back ends, for data entry, analysis, presentation and generation of invoices for health facilities and administrative entities with different

levels of access determined by individual's role and hierarchy in the project [7,22].

#### Fund retention in Nasarawa State PBF scheme

Figure 1 shows percentage fund retention for contracted PBF health facilities and administrative entities in Nasarawa State PBF scheme for the first and second quarters of 2018. The result shows that 19.7% and 11.9% of total earnings were retained as a result of cumulative counter-verification sanctions on health facilities while 44.5% and 41.0% of total earnings were retained due to counter- verification sanctions on administrative entities in the first and second quarters of 2018 respectively.



**Figure 1:** Percentage fund retention of PBF health facilities and administrative entities in first and second quarters of 2018 for PBF scheme in Nasarawa State, Nigeria

## DISCUSSION

Evidence from this review shows that data validation is a laborious, time-consuming and costly activity [7,16,18]. This is due to the several layers of verification and scrutiny involved in the process. The user manual for the Nigeria PBF scheme enumerates six levels of data validation and controls [7]. According to PBF schemes reviewed, data validation is a combination of health facility level quantity and quality verifications and counter-verifications with variations in methodology and intensity according to country-specific preferences. Contrary to the Benin PBF system, the Nigeria PBF design enforces the use of data validation for the application of sanctions on health facilities and administrative entities [7,18].

It has been reported that data validation is a costly exercise [16,18], however, this assertion is at variance with evidence from the Nigeria PBF design where up to about 20% and 45% of the total earnings of health facilities and administrative entities respectively, can be retained by the purchasing agency. In Benin, counter-verifications are not employed for the application of sanctions; hence, the rationale for embarking on such rigorous exercise is forfeited [18]. With stringent and concerted application of data validation, it could serve, not only as deterrent against gaming, over-reporting and fraud; it could also be a means of fund recovery.

As a health system reform approach, PBF has the capacity to improve healthcare service delivery at health facilities, however, weak data validation is the bane to the achievement of set

objectives within the PBF framework [18,20]. A robust and stringent data validation regimen is required to detect fraud, gaming and false reporting in PBF schemes [20,23].

## CONCLUSION

This article analyses key elements of the data validation process in PBF schemes in LMICs. Data validation is a rigorous, time-consuming and costly activity; however, if applied strictly within the PBF framework, it could serve as a mechanism for fund recovery. PBF has capacity to improve coverage, service utilization and accountability at health facilities, however, inherent weaknesses in data validation mechanisms should be strengthened to ensure accurate and timely payment of subsidies to health facilities and administrative entities. It is therefore recommended that a country-specific, cost-effective and robust data validation mechanism should be incorporated into the design of PBF schemes in implementing countries, while PBF schemes with weak data validation processes should be strengthened and enforced to check fraud, over-reporting and gaming.

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