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# Why did performance-based financing in Burkina Faso fail to achieve the intended equity effects? A process tracing study

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ABSTRACT

In recent years, performance-based financing (PBF) has attracted attention as a means of reforming provider payment mechanisms in low- and middle-income countries. Particularly in combination with demand-side interventions, PBF has been assumed to benefit also the most vulnerable and disadvantaged groups. However, impact evaluations have often found this not to be the case. In Burkina Faso, PBF was coupled with specific equity measures to enhance healthcare utilization among the ultra-poor, but failed to produce the expected effects. Our study used the process tracing methodology to unravel the reasons for the lack of impact produced by the equity measures. We relied on published evidence, secondary data analysis, and findings from a qualitative study to support or invalidate the hypothesized causal mechanism, that is the reconstructed theory of change of the equity measures. Our findings show how various contextual, design, and implementation challenges hindered the causal mechanism from unfolding as planned. These included issues with the identification and exemption of the ultra-poor on the demand side, and with financial issues and considerations on the supply side. In broader terms, our findings underline the difficulty in improving access to care for the ultra-poor, given the multifaceted and complex nature of barriers to care the most vulnerable face. From a methodological point of view, our study demonstrates the value and applicability of process tracing in complementing other forms of evaluation for complex interventions in global health.

## 1. Introduction

Performance-based financing (PBF) has attracted attention as a means of reforming provider payment mechanisms in low- and middle-income countries (Witter et al., 2013). By linking provider payments to the achievement of pre-defined indicators and/or targets, PBF is expected to motivate healthcare providers to increase quantity and quality of healthcare services (Fritsche et al., 2014). PBF proponents further postulate that PBF is likely to result in equity gains, particularly in combination with demand-side interventions, since the expansion of service provision resulting from PBF is presumed to benefit also the most vulnerable and traditionally disadvantaged groups. Impact evaluations, however, frequently detect limited or no impact of PBF programs on both targeted and non-targeted indicators (Diaconu et al., 2021), with impacts of particularly negligible magnitude when equity considerations are factored into the assessment (Mwase et al., 2022; Ridde et al., 2018a; Priedeman Skiles et al., 2013). That is to say that PBF programs are usually found to be equity-neutral rather than to reduce existing equity gaps in health service coverage.

In spite of impact evaluations consistently indicating that PBF is mostly falling short of the expectations placed on it (Diaconu et al., 2021), only a limited number of studies have attempted to understand why this is the case. A number of qualitative and/or mixed-methods studies have been conducted alongside the implementation of PBF programs (Singh et al., 2021). These studies, however, have rarely assumed an explanatory function, trying to explain what allowed PBF to achieve or not to achieve its outcomes. They have rather focused on documenting implementation processes and challenges (Coulibaly et al.,

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2020; Petross et al., 2020; Zitti et al., 2019), or on exploring healthcare provider (Lohmann et al., 2018, 2021; Zitti et al., 2019; Rudasingwa and Uwizeye, 2017) and community responses (Petross et al., 2020) to implementation. Furthermore, they have rarely been conducted in conjunction with the related quantitative impact assessment. We are only aware of one study in Cameroon which used the impact evaluation results as starting point to explore and explain achievements and shortcomings of the large-scale national PBF pilot (De Allegri et al., 2018a). Singh et al. (2021) conclude from their recent realist review that more and systematic evidence on the various mechanisms and pathways through which PBF operates is necessary.

As many other sub-Saharan African countries, Burkina Faso, one of the poorest countries in the world, implemented a large-scale PBF pilot program between 2014 and 2018 (Ministère de la santé, 2013). A distinguishing feature of this program were the equity measures implemented alongside standard PBF. In the catchment areas of a subset of PBF health facilities, a community-based selection process was set in place to identify ultra-poor individuals. Once identified, these ultra-poor received cards entitling them to accessing healthcare free of charge, in a setting where at the time user fees were still being charged for the vast majority of services (Ridde et al., 2018b). In turn, healthcare providers were offered higher fee-for-case reimbursements for treatment of the selected ultra-poor than standard PBF reimbursements, to compensate for loss of income from user fees and in some facilities including an additional financial reward for treating the ultra-poor.

The implementation of the equity measures was expected to narrow gaps in access across different socio-economic strata. On the one hand, explicitly targeting the ultra-poor through means of a community-based selection was expected to enhance awareness of their entitlement to free healthcare, as stipulated by ministry directives since 2009 (Ministère de la santé, 2009). On the other hand, pre-selecting ultra-poor individuals was expected to allow providers to identify those entitled to free healthcare, and allocating higher fee-for-case reimbursements was expected to enable and motivate them to treat these individuals free of charge (De Allegri et al., 2019b).

To quantify the benefit of providing the equity measures in addition to standard PBF, facilities were randomly allocated to receive standard PBF or either one of the equity measures (De Allegri et al., 2019b). The results of the impact evaluation as well as additional parallel analyses of routine data showed that the expectations placed on the equity measures were not met. While PBF produced moderate effects on some indicators of service use overall, the equity measures did not increase health service utilization among the ultra-poor (De Allegri et al., 2018b; Mwase et al., 2022; Koulidiati et al., 2021).

The unexpected lack of effect produced by the equity measures together with the awareness that PBF mechanisms and pathways of action, particularly in regards to equity effects, are not yet fully understood (Singh et al., 2021) represent the starting points for our work. Situated against this background, our study relied on *process tracing* as a technique to understand why the equity measures did not produce the anticipated impact. In pursuing our research objective, we also strive to demonstrate the applicability of *process tracing* to empirical global health research, particularly to the evaluation of complex health interventions.

## 2. Methods

Process tracing is a qualitative method originating in political science, which has recently started to find application also in other social sciences as a theory-driven and probability-based alternative to standard impact evaluation based on a counterfactual understanding of causality (Collier, 2011; Beach and Pedersen, 2013; Punton and Welle, 2015). Process tracing uses single-case designs without control group to establish confidence in how and why something occurred, by formulating detailed hypotheses to specify the assumed causal mechanisms and using probability tests to assess the strength of evidence for each hypothesis about causal relationships.

Our use of process tracing is somewhat unconventional in that we used the method as a complement rather than as an alternative to a counterfactual-based impact evaluation. Specifically, we knew *a priori* that the intervention had not achieved its intended result, and employed process tracing as a technique to understand in detail why it did not, by investigating how the intervention's theory of change played out in practice – and where and why it did not do so as intended. Despite our unconventional use of process tracing and our *a priori* knowledge about the lack of impact, we approached the investigation as if naïve to the outcome of the intervention. We did so expecting that in testing the intervention's theory about how the intended outcomes would be achieved, our investigation would reveal where, how, and why the anticipated change did not occur.

Below, we outline how we worked through the five main steps recommended by Beach and Pedersen (2013): 1) Developing the causal mechanism; 2) operationalizing the causal mechanism; 3) collecting evidence; 4) assessing the inferential weight of evidence; and 5) conclusion.

### 2.1. Developing the causal mechanism

The first step – using process tracing in its theory-testing form – entails the elaboration of a detailed theory of change of the intervention to be tested empirically. To do so, we used program documents from the intervention inception stage as well as notes from our own observations of the intervention design stage. Specifically, we outlined the expected mechanisms of change, developing working hypotheses as to how the implementation of the equity measures should have led to a reduction in inequalities in service use across socio-economic groups. We then reviewed, discussed, and refined the theory of change – in an iterative process – with key stakeholders involved in the intervention design. In the following, we will refer to the theory of change as "causal mechanism" in line with process tracing terminology.

### 2.2. Operationalizing the causal mechanism

The second step entails specifying observable manifestations, i.e. empirical traces of whether or not each element of the mechanism happened as intended or not. We did so by reflecting on what would constitute high-certainty evidence to support or invalidate each element of the causal mechanism, based on our own intimate knowledge of the context.

### 2.3. Collecting evidence

The third step entails gathering specific evidence for the observable manifestations specified in step 2. We started by considering already available evidence, including policy documents, documents and data produced as part of the PBF implementation, published literature on equity in Burkina Faso, published and forthcoming data from the PBF impact evaluation, and evidence from two other relevant evaluations, namely a process evaluation of the PBF intervention (Ridde et al., 2014) and a longitudinal survey conducted among the ultra-poor (e.g., Beaugé et al., 2020), which we refer to as the *indigent survey* (i.e. ultra-poor survey). The former used a longitudinal multiple case study design, including 21 purposely selected facilities across three implementation districts. The latter involved a randomly selected panel of 1652 ultra-poor sampled among all the ultra-poor targeted by the PBF intervention, with data collected in 2015, 2017, and 2019.

We carefully mapped the identified published evidence against the hypotheses within the causal mechanism and explored the existing raw data from the impact evaluation, the process evaluation and the indigent survey for unpublished, but pertinent material and conducted respective additional analyses. Where high-certainty evidence was not available, we looked for evidence of lower certainty.

To fill remaining gaps, we then planned and conducted additional

qualitative data collection (De Allegri et al., 2019a). Respondents were purposely sampled to represent all key stakeholder groups involved in PBF across the districts where PBF was implemented alongside the additional equity measures. Respondents included central-level as well as regional- and district-level representatives from the implementing agencies (MoH and contractors) as well as key MoH officials with particular oversight and insight into how PBF fit into the broader health system. At regional and district level, being aware of remarkable heterogeneity, we interviewed regional health directors (or their deputies) from all regions and district health officers (or deputies) from all intervention districts. To account for the time lag between the impact evaluation period and the qualitative study, we traced and interviewed managers who had been in place during the introduction of PBF and/or had followed implementation for a substantial period of time. At the lowest level of decentralization, we collected data from 24 health facilities chosen for maximum variation in healthcare utilization and quality, accessibility at time of data collection, and presence of a health facility in-charge who had been in place for long enough to have followed PBF implementation closely. We further sampled one village within the catchment area of 15 of these health facilities in which the selection of the ultra-poor had taken place, and conducted focus group discussions with 8–12 community members purposely selected with support of key informants to represent different stakeholder groups in the village. To the extent possible, we also interviewed the community health worker in the selected villages. Data was collected in September 2018, four and a half years after the start of the intervention and one and a half years after the impact evaluation endline, while the program was still ongoing. The first, second, and fourth author, assisted by trained interviewers, conducted the in-depth interviews and focus group discussions, using semi-structured interview guides. We analysed data following a largely deductive process, along a predefined codebook rooted in the abovementioned causal mechanism. Further detail on data collection and analysis can be found in De Allegri et al., 2019a. Emerging findings were discussed among all members of the research team to consolidate their final interpretation.

Finally, we verified the resulting collection of mapped evidence with several researchers familiar with both the context and research on the intervention, to ensure not having missed any pertinent piece of evidence.

### 2.4. Assessing the inferential weight of evidence

The fourth step entails weighing the strength of different pieces of evidence in order to determine the degree of confidence that each part of the mechanism has or has not played out as theorized, following Bayesian probability logic. We assessed the extent to which evidence supported or invalidated the hypotheses within the causal mechanism using the four "tests" proposed by Beach and Pedersen (2013) building on Van Evera's (1997) framework. Specifically, evidence is considered to have 'only' passed the *straw-in-the-wind test*, the weakest level, if the available evidence is neither sufficient nor necessary to judge on the hypothesis. If the available evidence is necessary, but still not sufficient to judge on the hypothesis with a reasonable level of certainty, the *hoop test* is passed. The *double decisive test* is passed when the available evidence is both necessary and sufficient to support or invalidate the hypothesis. Finally, the *smoking gun test* is passed when evidence is so powerful and unambiguous that even somewhat less powerful evidence would have been sufficient for a robust judgement on the hypothesis (sufficient, but not necessary).

The first and senior author independently assessed the evidence along these four tests and discussed results for convergence. The ratings were then validated by the other co-authors. In the few instances when we faced uncertainty in determining the direction of evidence, we consulted as team and then based our collective decision on prior knowledge about the context and environment. On occasion, this necessitated making a judgement call as to the extent to which shortfalls in ideal implementation were within reasonable range, possibly extenuating, but not completely hindering the success of the intervention. We took these judgement calls in light of our knowledge on fidelity of implementation realities in the wider global health financing landscape.

### 2.5. Conclusion

Step 5 summarizes the above-evaluated evidence into conclusions as to the extent to which the hypothesized mechanism operated as intended.

Specifically, we discussed as a research team the evidence collected and the strength of evidence ratings to come to a final conclusion on why the targeting scheme failed to produce its intended effects. Up to this point, our analysis had been driven by empirical data, reconstructing the implementation stakeholders' logic during conception of the intervention and assessing evidence in relation to this logic. We used this last step to situate the mechanism and related evidence in the broader discourse around access to care, in the awareness, however, that both PBF and the equity measures did not explicitly aim to tackle all existing issues in access to care.

### 2.6. Ethical considerations

This study makes use of different data sources, including both primary and secondary data as well as published materials. Secondary data and published material contain exclusively fully anonymized data, hence do not pose ethical concerns. All primary data used for this publication comes from studies we conducted under existing protocols approved by both the Burkina Faso National Ethics Committee [protocol number 2013-7-06] and the Ethics Committee of the Medical Faculty at Heidelberg University (protocol S-272/2013).

It is important to note that at the outset of this process tracing study, our team had already conducted the impact evaluation, following the intervention from its design and inception throughout the implementation period, and was closely involved also in other research projects evaluating the PBF implementation processes and outcomes. Hence, we were familiar with all aspects of the intervention and had access to all relevant documentation. To ensure that prior knowledge of the context and the intervention could be used to inform, but not bias, the work presented in this manuscript, we engaged in frequent discussions over a period of nearly two years, challenging each other's views on emergent interpretations and seeking to triangulate findings across data sources and analysts. We cannot exclude, however, that different researchers, with different background and knowledge, might have reached different conclusions.

## 3. Results

Hereafter, we first describe the causal mechanism developed in step 1, and then present the evidence associated with each hypothesis within the causal mechanism, along with our evaluation of the strength of evidence and whether it supports or invalidates the respective hypothesis.

### 3.1. Causal mechanism

The causal mechanism of the intervention, specifically the equity measures built into PBF, developed in step 1 is depicted in Fig. 1.

On the demand side, ultra-poor individuals in need of assistance were to be selected via a community-based process previously developed and tested in Burkina Faso (Ridde et al., 2010) and to then receive cards entitling them to receive care free of charge at their local health facility. The expectation was that the ultra-poor would react positively to being selected and understand their entitlement to free healthcare, resulting in an increased inclination to utilize health services in case of need.

On the supply side, PBF provided elevated reimbursements,

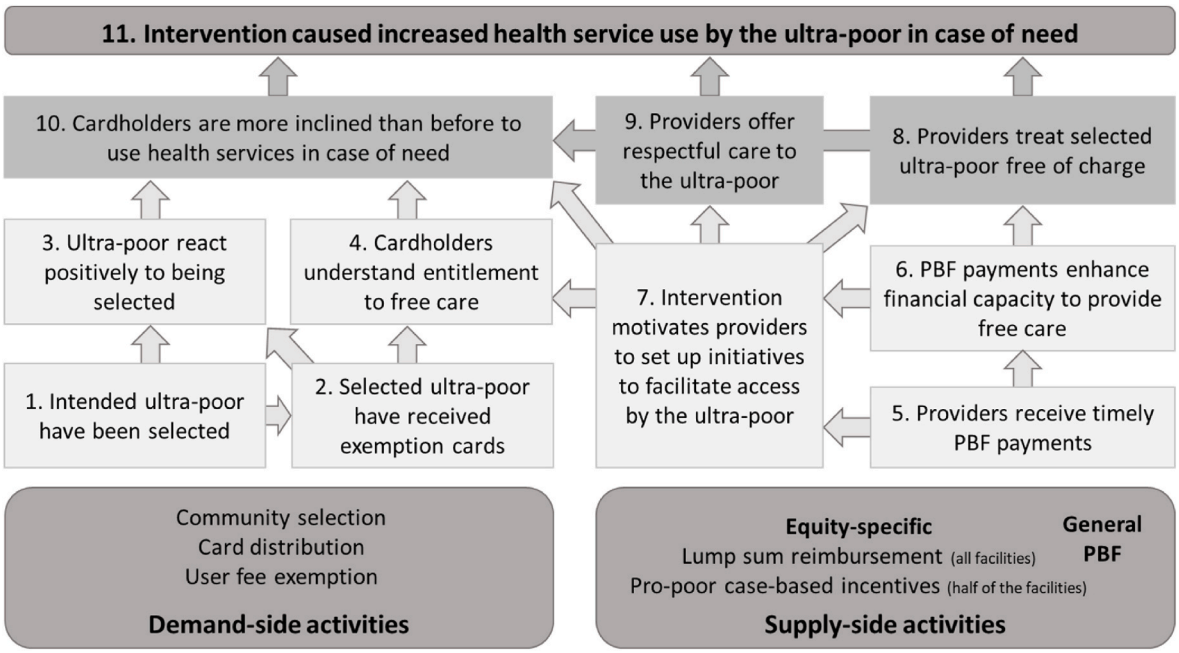


**Fig. 1.** Causal mechanism of how the equity measures aimed to enhance health service utilization among the ultra-poor.

compared to the general PBF, for treating ultra-poor patients. Half of the facilities received reimbursements for the ultra-poor expected to on average cover forgone user fees, while the other half received even higher reimbursements as an additional incentive to make an effort to attract and treat ultra-poor patients. Providers were thereby assumed to have enhanced financial capacity and motivation to provide care free of charge to the selected ultra-poor. This would result in the offer of high-quality services free of charge to the selected ultra-poor.

Improved availability of respectful and affordable services and increased inclination to seek care was finally expected to result in enhanced health service utilization by the selected ultra-poor.

### 3.2. Evidence

Below, we present the identified and collected evidence for each hypothesis we postulated along the mechanism displayed in Fig. 1.

#### 3.2.1. The intended ultra-poor have been selected

The intervention employed a community-based selection process to identify the ultra-poor, adapted from a strategy previously tested successful in Burkina Faso (Ridde et al., 2010). Specifically, individuals were to be considered ultra-poor if they had no means to support themselves and were not receiving assistance. The process was facilitated and supervised by the local NGO SERSAP, who had been involved in the adaptation and testing of the approach. It was expected that an average of 10–15% of the population would be selected as ultra-poor (SERSAP, 2014a).

Implementation documents and evidence from our qualitative study indicate that at least in part, there was a mismatch between the selection target and the community's perception of who fulfills the ultra-poor criteria. Reports show (SERSAP, 2014b) and stakeholders explained that in the first round of selection, the selected proportion of the population was substantially lower than the 15% target, only around 7% on average, albeit with strong variation between districts. Selection committees then received orders to slightly expand the target group to not only include the very poorest 7–10%, but also the next poorest individuals so as to reach the approximately 15 poorest percent of community members foreseen by the program. Our qualitative study and the process evaluation (Turcotte-Tremblay et al., 2018) indicated that this process, in some communities, led to the inclusion of individuals which community members or health workers did not perceive as being so poor as to deserve exemption from user fees. Turcotte-Tremblay et al. (2018) found that this perception was in part due to confusion around the loosening of the initially very strict ultra-poverty definition, but in part also due to inclusion of actual "false ultra-poor" for political or other considerations, for instance community health workers and village counsellors as well as their family members. Turcotte-Tremblay et al. (2018) report a few instances in which "false ultra-poor" were selected despite unselected "real ultra-poor" still being present in the community.

In summary, the evidence suggests that the vast majority of intended ultra-poor were selected, but that the pool of selected individuals also included non-eligible individuals. We have judged the evidence as of having only passed the hoop test: while qualitative evidence tells a convincing story (necessary), population-based quantitative evidence to ascertain that the vast majority of ultra-poor were indeed selected is not available (not sufficient).

#### 3.2.2. Selected ultra-poor have received exemption cards

In the 2017 round of the indigent survey, around 75% of respondents declared having received their card at some point (Beaugé et al., 2020). Community accounts in the context of our qualitative study corroborated that not everybody selected had in fact received their card. A respondent at national level reported that he had heard of cases where the health facility in-charges, who were tasked to pass on the cards, retracted cards of individuals they regarded as "false ultra-poor". This was also observed in the process evaluation (Turcotte-Tremblay et al., 2018).

We evaluated the evidence as strong (necessary and sufficient, therefore passing the double decisive test) in invalidating the hypothesis, with a representative survey among the selected ultra-poor themselves revealing that a substantial share of selected individuals had not received their card, and qualitative evidence corroborating this.

#### 3.2.3. Ultra-poor react positively to being selected

Community focus group discussions in the context of our qualitative study indicated that the selection aim (i.e., supporting the destitute) was evaluated largely positively in the communities, whereas opinions on

the selection process and its fairness varied substantially. As the focus groups were comprised primarily of respondents not selected as ultra-poor, there were no data from representatives of the ultra-poor themselves on how they perceived their selection. One implementation stakeholder and several health facility in-charges indicated that not all ultra-poor reacted positively. However, it is unclear whether these were isolated cases or frequent occurrences.

The evidence is therefore mixed in regards to the hypothesis. As it is only anecdotal and does not include tangible data from the ultra-poor themselves, we judged it to only pass the straw-in-the-wind test (evidence neither necessary nor sufficient).

#### 3.2.4. Cardholders understand entitlement to free care

In the 2017 follow-up of the indigent survey, 22.3% of surveyed ultra-poor who had received a card stated that they did not know they were entitled to free medical care when presenting their card at the health facility, while 77.7% were aware (unpublished additional analyses).

Against our knowledge of the context and the wider literature on implementation of user fee removal policies (Meessen et al., 2011), we judged the proportion of individuals with knowledge of their entitlement to be high compared to what could have realistically been expected and therefore supportive of the hypothesis, with the strength of evidence being high (double decisive; necessary and sufficient).

#### 3.2.5. Providers receive timely PBF payments

Ministry of Health financial documents show that PBF payments were paid, but with significant delays. Specifically, high variability in amounts suggests a disconnect between due and paid amounts throughout the implementation period, although health facilities received all outstanding amounts eventually. These delays were confirmed by respondents at all levels in our qualitative study, with varying narratives as to the why, as well as by the process evaluation (Turcotte-Tremblay et al., 2022; Ridde et al., 2018c).

We judged the evidence as representing a smoking gun (sufficient, but not necessary), invalidating the hypothesis.

#### 3.2.6. PBF payments enhance financial capacity to provide care to the ultra-poor free of charge

In the impact evaluation endline, 81% of health workers stated that the amounts paid by PBF for consultations of the selected ultra-poor were not sufficient to cover actual service provision costs (additional unpublished analysis). Similarly, respondents spoke of complaints about reimbursement amounts in light of the ultra-poor's morbidity profile in our qualitative study as well as in the process evaluation (Turcotte--Tremblay et al., 2018). Combined with the payment delays incurred by PBF and given that facilities effectively had to advance money to cover the revenues forgone by waiving user fees and drug charges for ultra-poor patients, to be reimbursed by PBF later, health facilities reported to have struggled with liquidity and drug stocks (Lohmann et al., 2022). In the impact evaluation endline, however, 89% reported that these financial difficulties did not lead to suspension of treatment of the selected ultra-poor (unpublished additional analysis).

Data from a micro-costing study based on facility registers suggests that PBF reimbursements in many facilities might have indeed been somewhat lower than average actual facility expenses for the selected ultra-poor (Beaugé et al., forthcoming). Drug and other non-personnel costs – so cost for which the health facility actually incurred expenses – for adult curative consultations was estimated to average 859 FCFA (653 FCFA = 1 EUR), while PBF reimbursed between 400 and 1010 FCFA, depending on the specific equity measure. True costs of all indicated treatment might have been slightly underestimated as evidence from the process evaluation suggests health workers might have capped free treatment of the ultra-poor at the level of the PBF reimbursement price (Turcotte-Tremblay et al., 2018).

While evidence therefore converges in supporting that many facilities, on average, incurred losses when treating the selected ultra-poor patients at least in outpatient consultations, it is important to remember that already in 2009, a government directive had asked health facilities to provide care to the ultra-poor free of charge, without offering any *ad hoc* reimbursement, assuming that facility budgets could cover these costs. Implementation of the policy had been poor prior to PBF (Ridde et al., 2018b), so in this sense, PBF did enhance facilities' financial capacity to provide free care to the ultra-poor. In light of this, we judged the evidence in regard to this hypothesis as mixed, and its strength as double decisive (necessary and sufficient).

#### 3.2.7. The intervention motivates providers to set up initiatives to facilitate access by the ultra-poor

Narratives from our qualitative study and the process evaluation (Turcotte-Tremblay et al., 2018) converge in revealing that health facilities did not feel specifically motivated by the targeting scheme. This was due to two issues: the above-outlined perceptions of reimbursement prices being too low to cover incurred expenses, let alone offer opportunities for revenue generation; and issues related to health workers' endorsement of the selection mechanism.

In relation to the former, evidence from our qualitative study indicated that in the context of the overall PBF intervention, most health facilities were content with the "effortless" earnings from providing business-as-usual services to patients and did not perceive potential additional earnings linked to the equity measures worth the additional effort. This corroborates findings from the process evaluation, which also conclude that no additional efforts or innovative strategies were put in place given the perceived inadequacy of reimbursement and the payment delays (Turcotte-Tremblay et al., 2018).

In relation to the latter, the endline health worker survey of the PBF impact evaluation showed that most health workers (84% in PBF2 facilities, 94% in PBF3 facilities) were aware of the targeting scheme in the context of PBF, and those health workers who were aware generally endorsed enhancing financial accessibility to health services for the ultra-poor (unpublished additional analysis). However, our qualitative study revealed that – similar to the community perspectives reported above – many health workers were dissatisfied with both the selection process and its outcome, reporting that frequently individuals were chosen for political reasons rather than for necessity. Others, however, had no complaints and were happy with the outcome of the selection process. In the endline health worker survey, when asked about which selection model they would generally favor, only 26% referred to the implemented community-based model, whereas the remaining 74% would have preferred a selection by the healthcare staff, the health facility management committee, or social service staff (unpublished additional analysis).

The process evaluation further found that while health workers in principle supported the notion of enhancing financial accessibility for the ultra-poor, they were not in favor of user fee exemption mechanisms, due to concerns related to the facility's financial viability partially grounded in unfavorable prior user fee removal experiences (Turcotte-Tremblay et al., 2018). Several district, regional, and national level stakeholders in our qualitative study corroborated this view, indicating that the intervention had failed to convincingly communicate to health workers the benefits of the approach.

Both aspects taken together, we judged the evidence as convincing (double decisive; necessary and sufficient) in invalidating the hypothesis.

#### 3.2.8. Providers treat the selected ultra-poor free of charge

In our qualitative study, health facility in-charges stated that they usually treated selected ultra-poor patients free of charge. Similarly, community focus group discussants reported that the selected ultra-poor were mostly able to receive free care at the health facility, although there had been instances in which cardholders continued to pay at least part of the treatment costs. Similarly, several implementation agency

stakeholders, regional, and district managers confirmed instances of continued payment. In contradiction to the notion that these were exceptional cases, in the 2017 round of the indigent survey, 74% of surveyed ultra-poor who attended a health facility reported paying for treatment, on average 11080 FCFA (16.97 EUR; unpublished additional analysis).

In explanation, qualitative data from the process evaluation indicated that in line with the above-detailed complaints on a mismatch between reimbursement amounts and expenses for ultra-poor patients, some health facilities seemed to have limited treatment or capped free treatment at the level of reimbursement, leaving the patient to pay the difference out of pocket (Turcotte-Tremblay et al., 2018).

We evaluated the evidence as convincing (double decisive; necessary and sufficient) in invalidating the hypothesis, as substantial user fees persisted despite some reductions in user fees charged to the ultra-poor.

#### 3.2.9. Providers offer respectful care to the ultra-poor

Beyond the above-reported issues related to finances, in our qualitative study, community members confirmed that by and large, ultra-poor patients were treated as well as any other patient. More generally, community members reported that treatment at the health facility had improved since the introduction of PBF, particularly in regard to interpersonal aspects.

As the evidence does not include data from the ultra-poor themselves, we judged it as supportive of the hypothesis, but as having passed only the straw-in-the-wind test (neither necessary nor sufficient).

#### 3.2.10. Cardholders are more inclined than before to use health services in case of need

Evidence from the process evaluation and our qualitative study implied that the ultra-poor might have been deterred from seeking care by the above-reported implementation issues. Specifically, in the process evaluation, in one of four health facilities included in a sub-analysis, ultra-poor patients reported being discouraged from seeking care as they did not know in advance of the health facility visit whether they would be required to pay or not despite being in possession of the exemption card (Turcotte-Tremblay et al., 2018). Community focus group discussions in the context of our qualitative study similarly indicated that difficulties encountered by ultra-poor in using their exemption card might have disinclined them from using health services more frequently.

An analysis of data from the indigent survey found no differences in utilization rates between the selected ultra-poor who had received their exemption card and those who had not (Beaugé et al., 2020), also suggesting that ownership of the card did not enhance inclination to use health services.

The evidence therefore indicates that the targeting scheme had not achieved its aim of enhancing inclination to use health services, and suggests that the above-reported implementation challenges played an important role. However, we evaluated it as having only passed the straw-in-the-wind test (neither necessary no sufficient) as we did not have concrete information on their inclination to seek care from the selected ultra-poor themselves.

#### 3.2.11. The intervention caused an increase in health service use by the ultra-poor in case of need

As disclosed in the introduction, the impact evaluation clearly showed that the equity measures did not increase health service utilization among the ultra-poor (De Allegri et al., 2018b; Mwase et al., 2022; Koulidiati et al., 2021). The various challenges reported above strongly suggest that implementation issues played a key role in hindering impact, particularly in light of the overwhelming international evidence on the beneficial effects of user fee removal on health care seeking among the poor (Lagarde and Palmer, 2008; James et al., 2006). However, among potential alternative explanations as to why the intervention failed to enhance service use by the ultra-poor are in particular the two main premises upon which the intervention was built, namely that the ultra-poor had unmet need for health care prior to the intervention, and that user fees were a main barrier to accessing care.

In relation to the former, evidence on unmet need for primary healthcare services among the ultra-poor is unfortunately not available from Burkina Faso. This is with the exception of one analysis based on data from the baseline survey of the impact evaluation, estimating unmet need for family planning at around 18% across all socio-economic groups (Wulifan et al., 2017). In the 2017 round of the indigent survey – three years into implementation – 63% of respondents indicated having been ill in the last six months, but of those only 40% went to a health facility for treatment. Of those who did not seek care, over 70% stated main reasons unrelated to perceived need for care, such as financial considerations or distance (unpublished additional analysis). Finally, population-based estimates of service utilization levels for maternal and child health services from the impact evaluation baseline survey as well as the latest Demographic and Health Survey (2010) show substantial utilization gaps for the poor (Koulidiati et al., 2018; Mwase et al., 2018; INSD and ICF International, 2012). Although absolute utilization gaps do not perfectly correspond to perceived unmet need, the magnitude of the gaps make it reasonable to infer that an important proportion of the ultra-poor at the time did not seek care even in case of perceived need. Taken together, this strongly indicates that a lack of perceived unmet need is unlikely to be the reason the intervention failed to produce its intended effect.

In relation to the latter, in the 2017 round of the indigent survey mentioned above, 55% of those who did not seek care stated costs of treatment as the main reason, while for 45%, other reasons prevailed, including perceived lack of need due to mildness of illness, distance, lack of a person to accompany them, and lack of trust in the healthcare staff (unpublished additional analysis). This was echoed in community focus group discussions in our qualitative study, in which non-ultra-poor discussants pointed out that even though the financial barrier was (partly) lifted, lack of means for transport and related costs persisted as an important barrier to accessing care. The evidence therefore suggests that if implemented as intended, the intervention might have successfully removed the main barrier to accessing care for about half of the selected ultra-poor. However, it equally suggests the continued existence of other important barriers to seeking care.

In summary, the evidence strongly invalidates the hypothesis that the intervention enhanced health service utilization among the ultra-poor (double decisive; necessary and sufficient). The evidence further strongly suggests that implementation challenges played a major role, but likely not the only, in hindering intervention impact.

## 4. Discussion

Our study aimed to provide insight into why the equity measures built within the PBF program in Burkina Faso did not produce the expected effects by investigating the extent to which the intended theory of change played out in practice, contributing to the yet scarce body of evidence on the mechanisms and pathways through which PBF may or may not enhance equity (Singh et al., 2021). From a methodological perspective, our study aimed to demonstrate the value and applicability of *process tracing* (Collier, 2011; Beach and Pedersen, 2013; Punton and Welle, 2015) in evaluating complex health interventions.

Fig. 2 summarizes the hypothesized causal mechanism, the extent to which available evidence supported or invalidated its translation into practice, and the strength of evidence in allowing us to reach conclusions. With a few exceptions, evidence allowed sufficiently robust insight, although some question marks remain particularly in regard to the selected ultra-poor's perceptions and attitudes. Findings suggest various implementation challenges particularly on the supply side, hindering the intended theory of change from fully translating into practice. Many of these implementation challenges are not surprising, having been reported in relation to PBF and targeting experiences elsewhere (Singh et al., 2021). The Burkina Faso experience therefore

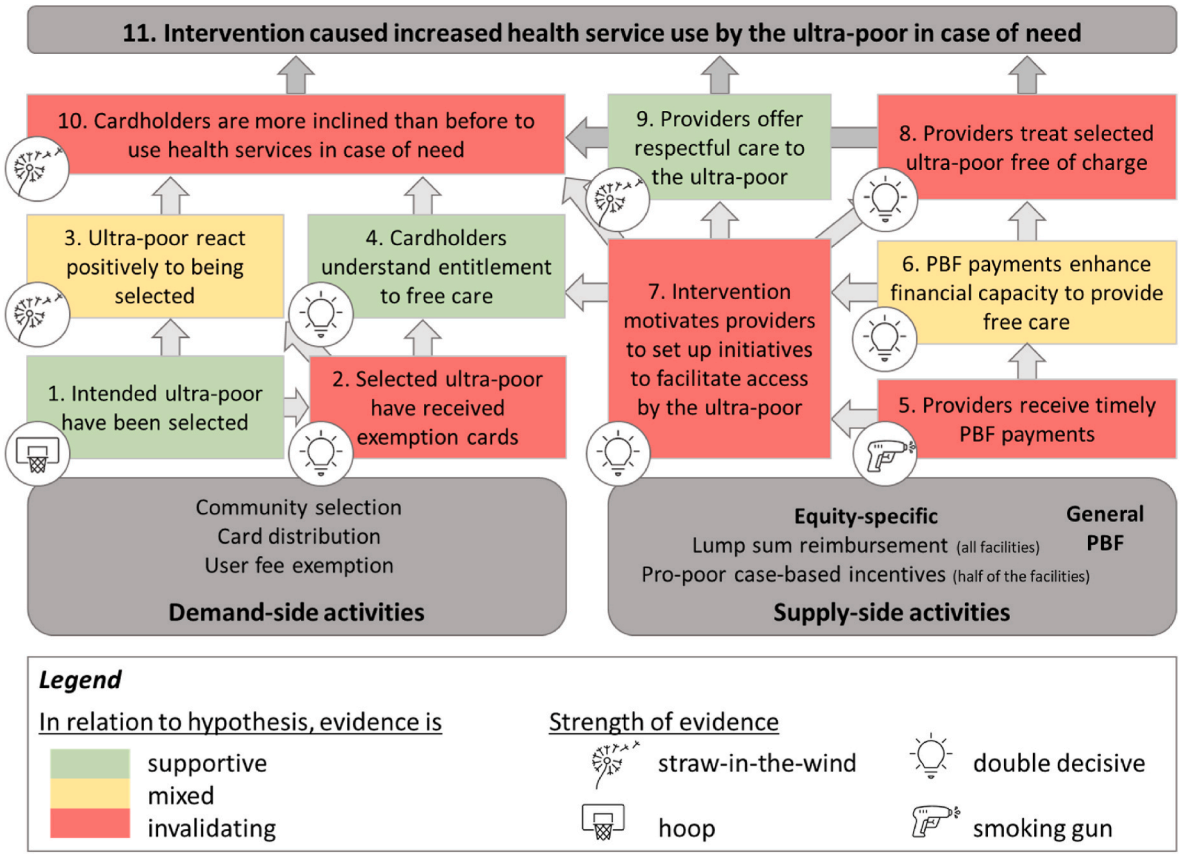


**Fig. 2.** Direction and strength of evidence regarding the elements of the hypothesized causal mechanism.

once again underlines the vital importance of care in design and fidelity of implementation in achieving intended program effects (McMahon et al., 2018; Breitenstein et al., 2010). While these implementation challenges likely constituted a main contributing factor to the lack of impact observed, investigated alternative explanations suggest that even if perfectly implemented, the intervention might have not fully achieved its intended effect due to other, unchanged barriers to access.

In appraising our findings in relation to the wider discourse around access to care for the ultra-poor, we use Levesque, Harris, and Russell's healthcare access framework depicted in Fig. 3 (Levesque et al., 2013). The framework posits five supply-side dimensions of accessibility as well as five corresponding population abilities to interact with the health system.

We would like to start by pointing out clearly that it was never the intervention's intention to explicitly address all five dimensions of accessibility and all five abilities. However, comparing what the intervention planned and managed to achieve to an absolute standard is useful to illustrate not only what might have been done differently, but also the limitations of the PBF model and design applied in Burkina Faso, and likely any stand-alone intervention given the complex nature of the problem.

The equity components built into PBF most directly addressed the

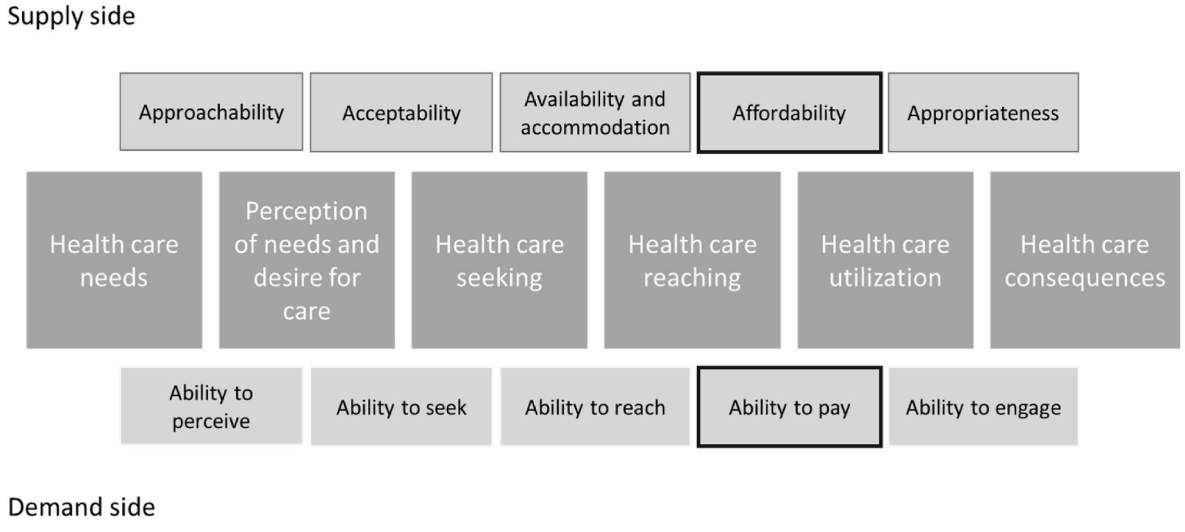


**Fig. 3.** Levesque, Harris, and Russell's (2013) conceptual framework for healthcare access.

match between expenses for health care (*affordability*) and the client's *ability to pay*, by selecting the ultra-poor and removing user fees for the services for which user fees were still being charged. In practice, however, it appears that some selected ultra-poor continued to pay for all or part of their care because they never received their exemption card or because providers capped free treatment at the reimbursement level. PBF further did not address financial barriers beyond user fees, such as expenses for transport to the health facility as well as direct expenses (e.g., food) and indirect costs (e.g., caregiver expenses) associated with a visit to the health facility, which have been found important cost categories in prior studies (Nakovics et al., 2019; Su and Flessa, 2013). Especially for the worst-off, these persisting financial barriers might have been high enough to keep them from seeking care even in the presence of (partial) exemption from user fees, as also argued by Atchessi et al. (2016) in a study on the impact of user fee removal on healthcare utilization among the ultra-poor in Burkina Faso's Ouargaye district.

By providing incentives for service use and quality and tiding additional payments specifically to provision of care for the ultra-poor, the overall PBF intervention aimed to act on the *approachability*, *availability and accommodation* and *appropriateness* dimensions, attempting to redirect service provision towards meeting clients' needs and preferences, including those of the ultra-poor. It was expected that the elevated reimbursement prices would incentivize health facilities to act as entrepreneurs and set up specific initiatives to attract and facilitate access to care for the ultra-poor, for instance by using their PBF funds to use the well-established network of community health workers to sensitize ultra-poor individuals to their health care needs (*ability to perceive* and *ability to seek*) and to help them access the health facility (*ability to reach*). It was also expected that entrepreneurial facilities would adjust their service provision to the specific needs of the ultra-poor (*appropriateness; ability to engage*) so as to ensure successful experiences of care and thereby continued demand.

We found very little evidence of such a purposive redirection of service provision towards more and higher quality care for the ultra-poor specifically. Reasons were primarily financial, related to delays in payment resulting in liquidity issues in many health facilities, and to reimbursement prices for treating ultra-poor patients, which providers perceived as too low to even cover expenses, let alone generate motivating additional income for the health facility. This underlines the importance of investing into careful price setting, including detailed costing studies, in designing financial incentives, particularly when these replace rather than supplement existing financing mechanisms. The implementation team in Burkina Faso had in fact conducted a survey among health facilities to estimate average costs of care, but it remains unclear why the resulting price levels did not sufficiently motivate specific efforts in healthcare provision to the ultra-poor.

We have shown that the lack of such specific efforts to facilitate access to care for the ultra-poor meant that PBF did not modify the ultra-poor's *abilities to perceive, seek,* and *reach,* which user fee removal alone could have not addressed even if implemented as planned. In fact, an explicit community health worker component had initially been built into the PBF design. However, it was never implemented due to cost-estimated benefit considerations as well as the fact that the ministry of health had fundamental concerns about offering financial incentives to community health workers who otherwise work as volunteers. Appraising the fact that four out of five ultra-poor in Burkina were aware of their entitlements against the fact that only a small fraction of them actually made use of this entitlement speaks in favor of experimenting for instance with health navigators, people specifically trained to guide the most vulnerable through the process of seeking care (Louart et al., 2021), as a means of closing the gap that persisted between awareness and action, impeding the equity measures embedded within the PBF to achieve the expected outcome.

Beyond specific initiatives for the ultra-poor, however, it was expected that the overall PBF intervention would result in quality improvements (*appropriateness*) from which ultra-poor patients would similarly benefit. Results from the impact evaluation and our qualitative study provide limited evidence that this was the case (Koulidiati et al., 2021; Lohmann et al., 2022; De Allegri et al., 2018b) beyond a few improvements in inputs (De Allegri et al., 2018b) and interpersonal aspects of care (De Allegri et al., 2019a). The latter is promising as shortfalls in perceived respectful and person-centered care have been identified as an important barrier to seeking care in Burkina Faso (Mugisha et al., 2004) and beyond (Lythgoe et al., 2021; Bohren et al., 2014). However, improvements were clearly not powerful enough to encourage increased healthcare seeking among the ultra-poor against the other persisting barriers to access discussed above and below.

Our findings also suggest that the equity measures had limited effect on *appropriateness* and *ability to engage*. It is difficult to judge from our evidence the extent to which implementation challenges were responsible for the findings we observed or if financial incentives altogether do not represent an effective means of stimulating more responsive health service provision. Further research is needed to unravel the potential of financial incentives to result in provision of more responsive care, especially for the ultra-poor, since existing evidence looking at patients' satisfaction in the context of PBF has not paid sufficient attention to this specific aspect of service provision (Petross et al., 2020; Lannes, 2015). Nonetheless, we also note that decades of neglect are likely to have eroded trust among the most vulnerable (Peters et al., 2008), as also suggested by the above-reported findings regarding reasons for not seeking care in the 2017 round of the indigent survey. Rebuilding trust in the system is a complex process (Østergaard, 2015) to which PBF can contribute, but which cannot be shaped by supply-side responses to financial incentives alone.

### 4.1. Methodological considerations

Our work elucidates the feasibility of using process tracing, a methodological approach with yet extremely limited application in the empirical global health literature, to examine mechanisms of action of complex health interventions. While we have largely been able to adapt the methodology to our specific research question, proving the complementarity of this approach vis à vis other standard implementation science approaches, we need to acknowledge a number of challenges encountered along the way. First, it is recommended that the causal mechanism to be tested by using process tracing should be broken down into its smallest feasible number of parts (Punton and Welle, 2015). We struggled with reconciling our wish to be as detailed as possible with feasibility concerns in terms of readability, in light of our wish to produce not only an academic piece, but also one informational to policy makers. We ended up taking a pragmatic approach – retaining what we considered the smallest feasible parts, largely informed by stakeholder narratives of the causal chain. However, we acknowledge that a more fine-grained approach could have been taken. Second, process tracing relies on multiple sources of evidence to be pulled together to make sense of reality. This reliance on data and analyses produced by other researchers bears important implications on the credibility and validity of the findings. We made almost exclusive use of peer-reviewed analyses or analyses which were conducted by our own research team and close network in order to guarantee validity, but also reflecting the fact that a limited number of research teams work on access to health for the ultra-poor in Burkina Faso. For analyses produced by other teams, we undertook extensive efforts to understand background and theoretical assumptions and validate analyses in order to feel confident in basing inferences on them, but cannot entirely rule out that any conceptual or methodological issues have escaped us. Third, for some of the elements within the causal mechanism, notably elements related to perceptions and attitudes by the selected ultra-poor themselves, we were unable to obtain the data we would have wished for. This could have probably been avoided by planning a process tracing analysis ex-ante, alongside implementation, but was inevitable

in our case with the research question emerging only ex-post, and limited resources to conduct retrospective data collection, particularly in regard to a hard-to-reach population. Fourth, we acknowledge that the retrospective qualitative study to close gaps in existing evidence took place quite some time after the end of the impact evaluation, but while implementation of the intervention continued. Although we undertook various efforts to optimize recall of relevant events and experiences, we cannot exclude certain memory biases. Finally, we recognize a challenge in assessing direction and strength of evidence for some of the hypotheses within the causal mechanism. For instance, we were faced with decisions as to whether certain observations – such as incidents of card retraction by health workers – constituted singular exceptions or rather the norm. Similarly, we were faced with judgement calls as to whether shortfalls from ideal implementation constituted implementation failure, breaking the causal chain, or whether despite shortfalls from ideal, implementation was good enough to realistically trigger the next step in the causal chain, even if reducing anticipated magnitude of impact. We counteracted this challenge by engaging in continued and detailed discussions within and beyond the team, ensuring that each and every decision was reached by consensus. As such, we worked extensively to triangulate information across data sources and emergent interpretations across researchers as carefully as we could.

## 5. Conclusion

Our process tracing study showed that the lack of effects attributable to the measures intended to increase equity within the performance-based financing pilot intervention in Burkina Faso was due to various design and implementation challenges obstructing the assumed mechanisms of action from unfolding as planned, particularly on the supply side. The experience also underlines the difficulty in improving access to care for the ultra-poor, given the multifaceted and complex nature of barriers to care for the most vulnerable. From a methodological point of view, our study demonstrates the value and applicability of process tracing in complementing other forms of evaluation for complex interventions in global health.

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## Author contributions

Substantial contributions to: J Lohmann, M De Allegri: conception and design of the work. J Lohmann, JL Koulidiati, PJ Robyn, PA Somé, M De Allegri: OR acquisition, Formal analysis, or interpretation of data for the work. J Lohmann, JL Koulidiati, PJ Robyn, PA Somé, M De Allegri: Drafting the article or revising it critically for important intellectual content. J Lohmann, JL Koulidiati, PJ Robyn, PA Somé, M De Allegri: Final approval of the version to be published. J Lohmann, JL Koulidiati, PJ Robyn, PA Somé, M De Allegri: Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

## Declaration of competing interest

Some of the data used in this study were collected as part of the impact evaluation of the performance-based financing program in Burkina Faso, which was funded by The World Bank's Health Results Innovation Trust Fund (HRITF) through grants to Heidelberg University, Germany, and Centre MURAZ, Burkina Faso, as well a qualitative study to unpack some of the impact evaluation findings, also funded by The World Bank's HRITF through a grant to Heidelberg University. MDA was the principal investigator (PI) of the impact evaluation and the qualitative study. JL and JLK were fully or partially funded by the HRITF grants to Heidelberg University from 2016 to 2019. PJR is a World Bank employee and Co-PI of the impact evaluation, but participated in writing of this paper independently of his professional engagement. PAS was contracted by Heidelberg University as a consultant for the qualitative study. The analyses presented in this manuscript were performed independent of contractual obligations in the context of the impact evaluation and qualitative study; all researchers involved in the production of this manuscript worked independently and without involvement or payment from the World Bank for the purpose.

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