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# Barriers to health service delivery in Uganda: analysis of performance reviews at the sub-national level in the Mbale Region

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## Abstract

# Background

Low- and middle-income countries, including Uganda, continue to face many constraints to health care and service delivery. Uganda and other African nations are operating at approximately half of their achievable levels in health access, quality, community demand, and resilience. Challenges to health service delivery in developing nations are often captured in large-scale datasets, and often overlook operational barriers at the subnational level. Performance reviews provide unique insight into the health care challenges at the subnational level. We aimed to use 2024–2025 performance review data for districts in the Mbale Region of Uganda to describe sub-national health system gaps in Uganda and better guide investment and development.

# Methods

We analyzed district performance review findings presented for 11 of 17 districts at the 2024–2025 Mbale Regional Performance Review meeting. The findings were extracted, coded, and grouped into thematic categories under 8 domains, and summarized using descriptive characteristics.

# Results

Across all eight domains, the most commonly observed performance gaps in the 11 districts were staffing shortages (90.9%), excessive staff absenteeism (72.7%), lack of access to EMR (72.7%), and difficulties in operationalizing Health Unit Management Committee meetings (63.6%). Other notable deficiencies included a lack of patient feedback (54.5%), inadequate supplies (45.5%), inadequate workspace (45.5%), lack of training in health delivery (45.5%), and inconsistent data review (36.4%).

# Conclusions

At the sub-national level in Uganda, challenges to providing adequate healthcare service delivery were identified in the healthcare workforce, governance, digitization, infrastructure, and data systems. These findings support targeted district-level investment to improve the delivery of health services at the sub-regional level.

## INTRODUCTION

Despite global health initiatives, health care and services delivery in low- and middle-income countries (LMICs) continues to face significant constraints. A 2017 international quantitative study of the opinions of Global Health experts identified 66 barriers, varying in severity, to successfully “bridging the gap” in global health [1]. Of these, most had a root cause in resource limitations, priority selection, corruption or

incompetence, or social and cultural factors. Across Africa, the continued impact of these challenges is readily apparent. The WHO's "State of Health" of the African Region states that the region is only functioning at 49% of its achievable performance in access to, quality and effective demand for essential services, and the resilience of the system to shocks [2]. Furthermore, in 2017, the African population received only 48% of the health-related services needed for their well-being, including service availability, Sustainable Development Goal 3 (SDG-3) and non-SDG-3 interventions, financial risk protection, service satisfaction, and health security [2]. Within this data, Uganda's health utilization was at 46% of its achievable potential; notably, it underperformed in service availability, SDG-3 service coverage, financial risk protection, service responsiveness, system access, system demand, and system resilience.

While these large-scale findings are informative and do inform global health practice, national and regional health system indicators may not adequately capture operational bottlenecks at the sub-national level, where health services are implemented and supervised. One way health systems evaluate and guide response to these needs is through regular performance reviews. The WHO defines performance assessment as essential for strengthening health systems, as it helps identify where health systems are meeting goals and uncover areas of deficiency [3]. Although routine district performance reviews can be used for health system management, we found little within the peer-reviewed literature in Uganda. As a result, there is limited evidence about how routine performance review data can identify action points in sub-national health systems. A review of performance assessment offers a unique snapshot of the challenges of administering Primary Health Care at the sub-national level in developing nations.

In 2025, inspired by the Ugandan National Support Supervision Guidelines for Health Services, the Mbale Regional Referral Hospital in Eastern Uganda conducted a regional performance review of the 17 sub-national units it serves [4]. This study aimed to use district performance review data from the Mbale region in Uganda to describe common challenges to LMIC health service delivery at a sub-national level. We conducted a retrospective descriptive content analysis of the Mbale Region performance review to identify recurring health system gaps within participating districts. By presenting these findings, we aim to identify practical actions to better guide the distribution of funding and assistance from both internal and external agencies at the district level in Uganda. Additionally, we aim to illustrate the value of routine performance review data as a source of operational health system data and to encourage other facilities and health services in LMICs to conduct performance reviews and publish their quality-improvement data.

# METHODS

## Study Setting

Uganda utilizes a decentralized public health system involving district, regional, and national levels [5]. The Ugandan Ministry of Health and District Health Teams oversee the delivery of health services across Uganda's 146 districts. Each district has varying health facilities, including village health teams in

communities, health centers of varying capacity, designated as Health Center II, III, and IV based on human resource projections and capacity of care, and general hospitals [5, 6]. If a patient's needs exceed the capacity of local facilities, 13 regional referral hospitals and five national referral hospitals are available for patient transfer. Mbale Regional Referral Hospital is a referral hospital in the Eastern region of Uganda that serves over 4.6 million people within 16 districts and one city: Bududa, Budaka, Bukwo, Bulambuli, Busia, Butaleja, Butebo, Kapchorwa, Kibuku, Kween, Manafwa, Mbale, Namisindwa, Pallisa, Sironko, Tororo, and Mbale city [7].

## Data Source and Participants

We analyzed the 2024–2025 performance review findings presented at the Mbale Regional Integrated Performance Review Meeting. Regional performance reviews are conducted annually across Uganda's regions. They are overseen by the regional referral hospitals, which house a community health department with an epidemiologist, a biostatistician, and a regional Public Health Emergency Operations Center. Of the 17 sub-national units within the Mbale regional referral network, 11 submitted performance review reports were available for analysis. These districts included Bududa, Budaka, Bukwo, Bulambuli, Kween, Manafwa, Mbale district, Namisindwa, Pallisa, Sironko, and Tororo. The districts initially delivered reports in standardized slide decks during the meeting. These slide decks served as the basis for our data for the domains outlined below.

We assessed and analyzed the District Health Teams' Performance review reports for the respective districts with regard to leadership and governance; human resources; health service delivery and quality; medicine and health supply management and accountability; integration of services; health infrastructure and equipment; the state of digitization; and data utilization for decision-making. These domains were based on the six WHO health system strengthening block areas [14] and supplemented with recent areas of focus from the Ugandan Ministry of Health, including integration and digitization. In the initial performance review, each of these domains had further sub-domains, which formed the basis of the evaluation.

## Coding and Analysis

We independently analyzed data within these presented categories and sub-domains for reported deficiencies. A Deficiency was defined as any explicitly documented challenge or gap in a domain as presented in the district's report. The district was the unit of analysis. For each domain, a district was coded as having a given deficiency if that challenge was explicitly documented anywhere in its submitted performance review report. Districts could report multiple deficiencies within one domain. Extracted deficiencies were recorded verbatim in Microsoft Excel, open-coded, and then grouped into broader categories using inductive reasoning and thematic analysis. A structured coding framework was developed after initial familiarization with the reports and refined iteratively during analysis. The data were then summarized by category, using counts and percentages in Microsoft Excel. Frequencies

represent the number of districts documenting a deficiency. One author conducted the initial extraction and coding of all reported deficiencies. A second reviewer independently reviewed the coded outputs and thematic grouping. Discrepancies were discussed and resolved by consensus with co-authors familiar with the Ugandan health system context.

# RESULTS

Within the leadership and governance domain, we identified four overarching themes. Seven of the 11 districts (64%) had a deficiency with the functionality of the district's health facilities' Health Unit Management Committees (HUMC), including irregular meetings (n = 5), frequently absent members during meetings or a lack of HUMC (n = 2), poor documentation (n = 1), and concern for poor implementation of HUMC meeting conclusions (n = 1). Six districts lacked reporting or collection of patient feedback, including not collecting feedback in every health center (n = 5), concern about low patient literacy in the region (n = 1), and concern about a lack of patients' technological savviness or access in the region (n = 1). One district had concerns that political interference was inappropriately influencing patient care and that district oversight was weak. Lastly, one district lacked funding to hold regular meetings (Table 1).

Table 1
Reported deficiencies within the leadership and governance domain of the 2024–2025 Mbale Region performance review conducted by the District Health Team.

| **Leadership and Governance Gaps** | **# of Districts n (%)** |
|---|---|
| Struggle implementing the district's HUMC | 7 (63.6%) |
| Lack of patient feedback | 6 (54.5%) |
| Political influence / Poor oversight | 1 (9.1%) |
| Lack of funding to conduct meetings | 1 (9.1%) |

Regarding human resources, we identified four common themes. 10 districts (91%) had staffing deficiencies. Among districts that reported staffing gaps, position fill rates ranged from 25% to 51% in comparison to the recommended national staffing norms. Three districts had difficulty scheduling staff, monitoring staff attendance, or monitoring workload. Two districts experienced delays in salary administration. Finally, eight districts had high rates of unapproved staff absenteeism (Table 2).

Table 2
Reported deficiencies within the human resources domain of the 2024–2025 Mbale Region performance review conducted by the District Health Team.

| Human Resource Gaps | # of Districts n(%) |
|---|---|
| Staffing shortages | 10 (90.9%) |
| Deficient staff scheduling, workload monitoring, or attendance monitoring | 3 (27.3%) |
| Excessive unapproved staff absenteeism | 8 (72.7%) |
| Delay in salary administration | 2 (18.2%) |

In terms of “service delivery and quality,” we identified 12 different themes. Two districts reported inadequate infection control measures. Two districts documented overcrowded health facilities, long waiting times, or limited access to health facilities. Other documented deficiencies included presumptive malaria treatment without a confirmed diagnosis (n = 1), treatment for uncomplicated Malaria with intravenous therapies in the outpatient setting (n = 1), a deficiency in malaria vaccination for children (n = 1), no patient death review (n = 1), frequent medical errors, poor adherence to treatment guidelines, and a deficiency in patient-centered care (n = 1), irregular treatment of HIV and TB (n = 1), late presenting mothers to antenatal care (n = 1), inadequate usage of provided medical supplies (n = 1), poor waste management (n = 1), and lack of nutrition services (n = 1) (Table 3.).

Table 3
Reported deficiencies within the service delivery and quality domain of the 2024–2025 Mbale Region performance review conducted by the District Health Team.

| **Service Delivery and Quality Gaps** | **# of Districts n (%)** |
|---|---|
| Poor infection control measures | 2 (18.2%) |
| Inefficient health facilities, long waiting times, or limited access to facilities | 2 (18.2%) |
| Frequent lack of laboratory confirmation before treatment | 1 (9.1%) |
| Treating disease in the wrong context | 1 (9.1%) |
| Low vaccination rate | 1 (9.1%) |
| Low patient death review | 1 (9.1%) |
| Frequent medical errors, poor guideline adherence, and a lack of patient-centered care | 1 (9.1%) |
| Irregular HIV and TB treatment | 1 (9.1%) |
| Inadequate nutrition services | 1 (9.1%) |
| Late presentation to antenatal care | 1 (9.1%) |
| Poor waste management | 1 (9.1%) |
| Misuse of medical supply | 1 (9.1%) |

We identified seven themes during the assessment of “medicine and health supply management and accountability.” Five districts lacked accurate reporting on supply and medication stock, or on sharing surplus across the district. Three districts were deficient in necessary medications. Two districts faced delays in ordering medication when needed. Other findings include a shortage of office supplies for documentation (n = 2), a low supply of HIV tests (n = 1), vaccine stockout (n = 1), and ordered supplies not arriving at health centers in time (n = 1) (Table 4).

Table 4
Reported deficiencies within the medicine and health supply management and accountability domain of the 2024–2025 Mbale Region performance review conducted by the District Health Team.

| **Medicine and Health Supply Management and Accountability Gaps** | **# of Districts n (%)** |
|---|---|
| Inaccurate supply stock reporting or sharing | 5 (45.5%) |
| Insufficient medication stock | 3 (27.3%) |
| Delay in ordering medication | 2 (18.2%) |
| Missing office supplies for documentation | 2 (18.2%) |
| Lack of disease test supplies | 1 (9.1%) |
| Low vaccine surplus | 1 (9.1%) |
| Ordered supplies not arriving | 1 (9.1%) |

During the review of “health infrastructure and equipment,” we identified 14 themes. Three districts reported inadequate workspaces, including supply storage space (n = 3), laboratory space (n = 1), staff housing (n = 2), private psychiatric assessment space (n = 1), and clinical space (n = 3). Similarly, documented equipment shortages included no ambulance within the region (n = 1), inadequate or malfunctioning laboratory and medical equipment (n = 3), and underequipped maternity wards (n = 1). One district reported an inability to service equipment. Two districts had a deficiency in hygiene facilities, including latrines (n = 1), handwashing facilities (n = 2), and the ability to sterilize materials (n = 1). Three districts had difficulty obtaining fuel for vehicles. Three districts reported frequent power outages, while two districts lacked backup power sources. Other observed shortfalls included lack of stable wifi (n = 2), no refrigeration (n = 1), loss of a health facility functionality during the review year due to a natural disaster or other reason (n = 2), scarcity of signage identifying the facility or equipment (n = 1), and lack of fencing resulting in the community using the health center grounds for non-health related activities (n = 1) (Table 5).

Table 5
Reported deficiencies within the health infrastructure and equipment domain of the 2024–2025 Mbale Region performance review conducted by the District Health Team.

| **Health Infrastructure and Equipment Gaps** | **# of Districts n (%)** |
|---|---|
| Inadequate workspace (supply, laboratory, staff housing, psychiatric, or clinical) | 5 (45.5%) |
| Lacking an ambulance in the district | 1 (9.1%) |
| Inadequate laboratory or medical equipment | 3 (27.3%) |
| Poor maternity ward supply | 1 (9.1%) |
| Lacking hygiene facilities (latrine, handwashing, or sterilization ability) | 2 (18.2%) |
| Difficulty obtaining fuel | 3 (27.3%) |
| Loss of a health facility | 2 (18.2%) |
| No refrigeration | 1 (9.1%) |
| Inability to service equipment | 1 (9.1%) |
| Frequent power outages | 3 (27.3%) |
| Lack of power backup | 2 (18.2%) |
| Unstable Wifi | 2 (18.2%) |
| Lack of facility/equipment signage | 1 (9.1%) |
| Lack of facility walls/community using grounds for non-healthcare activities | 1 (9.1%) |

Four major themes emerged from the evaluations of the “state of digitization.” Eight districts reported no access to an Electronic Medical Records (EMR) within their facilities. Two reported a lack of electronic supplies, such as computers and printers. Four districts reported a lack of access to the District Health Information Software 2 (DHIS2) or Health Management Information System (HMIS) at some facilities. One district was noted to lack staff competency in using the EMR or DHIS2 (Table 6).

Table 6
Reported deficiencies within the state of digitization domain of the 2024–2025 Mbale Region performance review conducted by the District Health Team.

| **State of Digitization Gaps** | **# of Districts n (%)** |
|---|---|
| No access to electronic medical record systems | 8 (72.7%) |
| Lack of electronic supplies (computers, printers, etc.) | 2 (18.2%) |
| Lack of access to DHIS2/HMIS | 4 (36.4%) |
| Lack of competency in using EMR/DHIS2 | 1 (9.1%) |

We identified five themes within “data utilization for decision-making.” Four districts were not conducting regular data reviews. One district lacked funding to conduct a data review. Two districts lacked the supplies to collect data accurately. Two districts had deficient data archiving or incomplete and late reports. Two districts had a shortfall in utilizing data to improve patient care (Table 7).

Table 7
Reported deficiencies within the data utilization for the decision-making domain of the 2024–2025 Mbale Region performance review conducted by the District Health Team

| Data Utilization for Decision-making Gaps | # of Districts n (%) |
|---|---|
| Not conducting regular data review | 4 (36.4%) |
| Lack of funding to conduct a data review | 1 (9.1%) |
| Lack of data collection supplies | 2 (18.2%) |
| Lack of use of data to improve patient care | 2 (18.2%) |
| Inadequate data archiving or incomplete/late reports | 2 (18.2%) |

Finally, in the “integration of the health service delivery” sector, we identified eight themes. Five districts lacked training in health care service delivery, while two separate districts had concerns about staff “knowledge gaps” in healthcare delivery. Two districts had poor integration of health system services, and one reported poor integration between the private and public sectors within its system. Other concerns included lack of community engagement (n = 1), weak data reporting systems (n = 1), weak referral pathways or patient flow efforts (n = 1), and provider stigma affecting healthcare (n = 1) (Table 8).

Table 8
Reported deficiencies within the Integration of healthcare service delivery domain of the 2024–2025 Mbale Region performance review conducted by the District Health Team.

| Integration of Healthcare Service Delivery Gaps | # of Districts n (%) |
|---|---|
| Lack of training in health care service delivery | 5 (45.5%) |
| Lack of staff knowledge on healthcare service delivery | 2 (18.2%) |
| Poor integration between the public and private sectors | 1 (9.1%) |
| Poor integration of health services | 2 (18.2%) |
| Limited community engagement | 1 (9.1%) |
| Weak data systems | 1 (9.1%) |
| Weak referral pathways or patient flow issues | 1 (9.1%) |
| Stigma by providers affecting care | 1 (9.1%) |

# DISCUSSION

The analysis identified several recurring and significant barriers to adequate care at the subnational level in the Mbale region of Eastern Uganda. Regarding leadership and governance, seven districts (64%) had deficiencies in the implementation of the Health Unit Management Committees (HUMC), including a lack of regular meetings, absenteeism, and failure to implement completed plans. In Uganda, the HUMC comprises community representatives, members chosen by the political leadership, and representatives of the health facility, who provide oversight for the health center's operations, advise and represent the community on public health, provide community feedback to the health system, and mobilize resources for the development of the health sector. [9, 10]. The HUMC deficiencies are a concerning finding, as in other districts of Uganda, such as Sheema, the HUMC's planning and incentives, supervision, and feedback have been noted to improve health service delivery [8]. The inadequacy of the HUMCs in our review may be due to several factors. A 2019 study of the HUMC in eastern Uganda noted that barriers to HUMC performance included a lack of funding, limited interaction between the HUMC and the Ministry of Health and district health teams, and a lack of performance incentives [10]. All of these areas offer potential intervention points to improve governance, feedback, and public involvement in the Ugandan health system through the HUMCs, which could be a low-cost way to increase facility accountability and community engagement in the health system. The need for increased training is further evident in the observation that 5 districts reported a lack of training in health care delivery, and 2 districts reported staff knowledge gaps within the health service delivery domain.

The most frequent deficiency across all domains was healthcare staffing. Although the Uganda government put in place staffing norms for all the different levels of health facilities, very few facilities have received the required staff for the different positions; 10 districts (91%) reported staffing difficulties; the lowest filled position rate was 25% in one district [22]. Lack of staffing is a well-documented systemic problem within African nations, with the average density of physicians, nurses, and midwives per 1000 people in the African WHO region being 1.55:1000 [11]. Uganda was noted to have fewer than 1.0 doctors, nurses, and midwives per 1000 people: a critical finding [11]. Exacerbating the need for health care workers, eight districts (73%) had excessive unapproved staff absenteeism. Absenteeism is also a known challenge in Primary Healthcare in sub-Saharan Africa, with prevalence reaching up to 49% in some studies [12]. Documented reasons for absenteeism in sub-Saharan Africa include dual practice by physicians, low wages, and insufficient supervision. The observed impact of these absences includes delayed access to care, excessive workload for other providers, and increased costs to patients due to the need to attend private facilities [12]. Staff shortages and absenteeism may contribute to several downstream deficiencies observed in this review, including a lack of patient feedback, poor oversight, long waiting times, frequent medical errors, inaccurate stock reporting, and inadequate data review. Commonly recommended solutions to these issues include increased salaries, greater supervision, and rewarding good outcomes or performance [12]. Though these are tangible ideas, implementing them would likely put more strain on the already under-resourced health system. However, based on our data, workforce strengthening in eastern Uganda could be a high-yield intervention to improve health delivery.

A large proportion of districts lacked access to both Electronic Medical Records and hard copies of the national patient data collection and reporting tools. The lack of implementation and access to Electronic Medical Records (EMR) in developing countries is well known to the global health community [15]. Common barriers to EMR access worldwide include: no access, a lack of training or information technology experience, insufficient time to familiarize oneself with the system, resistance to change among older providers, improper planning, lack of expert guidance, unreliable power, and the costs of implementing and maintaining the EMR system [15, 16]. Additionally, barriers to DHIS2 utilization and data reporting in Uganda include limited staff training, unreliable internet, limited access rights for key team members, and competing responsibilities [6, 17]. In our data set, we see some common themes: districts reporting a lack of Wi-Fi, computers, a stable power supply, staffing, and EMR training.

It is important to realize that this lack of access to electronic health records and connectivity also creates delays and inefficiencies in the collection, protection, and publication of nationwide and worldwide data, likely delaying data utilization for quality improvement, patient care, workplace efficiency, and potentially even affecting the accuracy of the data represented in this study [18]. Additionally, in our data, 36% of districts failed to conduct regular data reviews, and 18% lacked sufficient supplies for data collection in the data utilization domain (Table 7). It is unclear whether this was a direct result of a lack of access to EMR or connectivity; however, it raises the possibility that digitization should also be viewed as a potential enabler of data utilization and performance growth. It also emphasizes the need for continued supply, oversight, and education regarding the need for regular data review.

Other notable findings from this performance review are that, within the health delivery and quality domain, there was no unifying challenge affecting more than 20% of the assessed districts. This discovery may reflect local variations in operations across districts. Alternatively, this finding may represent that despite the exposed barriers, most districts were providing care that met the standards set by their district health teams. Further assessment is required to assess the root cause of this finding.

Additionally, despite years of medical supply donations from various organizations, a large proportion of districts still reported shortages of supplies and infrastructure. Most notably, the lack of infrastructure or surplus was prominent in the amounts of workspace, affordable fuel, medications, and a sustainable power supply. The continued infrastructural and supply deficiencies highlight that, despite improvements in health care delivery, districts will not be able to improve access to care without physical investment in facilities, a pattern exemplified in other African nations [13]. It is also important to recognize that this data collection occurred during the United States of America’s withdrawal from the WHO and a reduction in USAID funding, which potentially further exacerbated many of these findings [19, 20]. As the WHO and the global health system adapt to these abrupt changes, we hope to see these indices improve.

There are several limitations to our study. Performance review findings were accessed and analyzed for only 11 of the 17 districts that participated in the annual regional performance review meeting, resulting in an incomplete picture of the region's individual deficiencies. These findings likely reflect common operational challenges across the participating districts in the Mbale region. Still, they should not be

assumed to fully represent the challenges faced by all districts in the region. Each assessment was conducted by the respective district health team, potentially introducing bias into observations and data presentation or overlooking unrecognized deficiencies despite the use of standardized Ministry of Health guidance tools. As this is a one-year review of strictly structured health system building blocks, there is no assessment of trends in this data, the interconnectedness of the data, or the exact impact of these observed barriers on healthcare functionality and outcomes of each district. In our performance review, there is also no data representing community feedback regarding the quality of health service delivery in the Ugandan health care system. As performance reviews continue, we plan to further analyze these trends, client feedback, and their impact on health system metrics. Additionally, our study does not assess the functionality of the health system. Functionality is a measure of a health system's capacity to provide effective, equitable, and sustainable care, and is a newer focus of the WHO [21]. A recent preprint article measured functionality in terms of access, demand, quality, and resilience across 109 districts in Uganda and reported an average functionality of 72% [21]. However, this study did not include the Mbale region districts. We also hope to assess functionality in future studies. Finally, the data itself could have been affected by the barriers identified, such as a lack of training or staffing, potentially leading to incomplete, inaccurate, or rushed performance reviews.

Despite these limitations, our study shows that performance reviews can be a valuable tool for highlighting the challenges in health delivery at the sub-national level. By using performance reviews, these findings offer a glimpse into the struggles of service delivery at the sub-national health system level in LMICs as they evolve into fully functional care teams. Though these findings align well with overarching global health themes, by presenting this data, we identify individual, potentially high-impact opportunities for lower-cost investment and intervention in local health systems that do not require macro-level planning or implementation, potentially impacting thousands of patients. For example, based on our data, the highest-impact intervention for the Mbale region is likely to address staff shortages, given the high prevalence of this deficiency and its likely impact on training, oversight, data accuracy, and efficiency. Additionally, this study establishes a framework for ongoing performance review and data aggregation, both geographically and temporally, to analyze the impact of performance review and the responses to its findings on patient and health system outcomes.

## Conclusion

Using subnational performance review data from the Mbale Region of Eastern Uganda, we identified multiple recurring challenges to health service delivery. These difficulties included workforce staffing, access to EMR, functional infrastructure, data use, and community-based governance. These findings identify potential interventions to improve subnational health systems, thereby strengthening the entire Ugandan health system. Additionally, these findings indicate the value of district performance reviews as a practical and reliable source of data for health system strengthening.

## Abbreviations

LMIC
Low-and middle-income countries
WHO
World Health Organization
SDG-3
Sustainable Development Goals-3
HUMC
Health Unit Management Committee
EMR
Electronic Medical Record
DHIS2
District Health Information Software 2
HMIS
Health management information system

# Declarations

### Ethics approval and consent to participate

The performance reviews are required by the Uganda Ministry of Health and are routinely conducted to identify areas for improvement. For confidentiality purposes, districts included in the analysis were de-identified. All districts consented and voluntarily submitted their data to the annual performative review to be utilized in this study.

Study performed in accordance with the Declaration of Helsinki. This study involved secondary analysis of de-identified routine programmatic performance review data collected as part of ongoing health system quality-improvement and performance-monitoring activities. No individual patient-level data was included and thus no individual consent is required. In accordance with local administrative practice for routine programmatic review, formal research ethics committee approval was not required.

### Consent for publication

All districts consented and voluntarily submitted their data for review and publication.

### Availability of data and materials

The analytical dataset supporting the conclusions of this article is not publicly available because it was derived from routine district performance review reports that contain operational information from participating districts. However, a de-identified summary dataset and coding framework are available from the corresponding author upon reasonable request.

### Competing interests

The authors declare that they have no competing interests.

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**Authors' contributions**

**Connor P. Horne:** Conceptualization, data curation, formal analysis, writing original draft, writing review, and editing.

**Richard Ssekitoleko:** Formal analysis (validation of coding), writing, review, and editing.

**Godfrey Maiteki:** Writing, review, and editing.

**Tom Wanasolo:** Writing, review, and editing, Resources (facilitation of access to performance review data).

**Benjamin Fuller:** Writing, review, and editing.

**James Obbo:** Writing, review, and editing.

**Christopher Moore:** Writing, review, and editing.

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