Factors Contributing to Overcrowding at Public Healthcare Facilities Offering Delivery Services in Kampala, Uganda: Desk Review and Secondary Data Analysis of HMIS Data

USAID's Maternal and Child Health and Nutrition (USAID MCHN) Activity

The USAID MCHN Activity is a five-year program (January 2020 to December 2024) funded by USAID/Uganda to improve maternal, newborn, and child health, and nutrition (MCHN) outcomes in Uganda. This is achieved through the provision of targeted technical support at national and subnational levels to (1) develop and roll out MCHN strategies, and high-impact practices and interventions; (2) strengthen coordination and cooperation within and between Government of Uganda (GOU) sectors; and (3) increase the use of data for planning, decision-making, and learning. The Activity also supports improved delivery of maternal and child health and nutrition services in Kampala, particularly for the urban poor, through strengthened service delivery systems in the public and private sectors. The MCHN Activity closely collaborates with GOU structures at all levels, private sector entities, other USAID-supported activities, and development partners to support and leverage their efforts to improve MCHN outcomes in Uganda.

The MCHN Activity is implemented by a consortium led by FHI 360 that includes EnCompass LLC, Makerere University School for Public Health, Save the Children, and the Uganda Healthcare Federation.

BACKGROUND

Many government-managed (public) healthcare facilities in Kampala are characterized by overcrowding, particularly those providing delivery and emergency obstetric and newborn care services — health center (HC) IIIs, HC IVs, regional referral hospitals (RRHs), and national referral hospitals (NRHs). Understanding the context and causes of overcrowding is necessary to design context-appropriate solutions.

Overcrowding limits patient access to services through difficulties securing appointments, long waiting times, and limited patient-caregiver interactions. It exacerbates stock-outs of drugs and commodities and constraints related to clean water and sanitation services. Service providers working in such conditions usually improvise to cope with inadequate resources, and this further degrades quality of services and patient satisfaction. These factors can potentially increase nosocomial infections, mortality, and patients' adverse outcomes, and increase health worker burnout and discontent.[1,2,3,5, 9,10]

Overcrowding is a systemic challenge across Kampala's health system

Healthcare facilities in Kampala on average conduct more than 7,000 deliveries per month (an average of 231 per day, including 60 caesarean sections). Demand for services exceeds available resources and is exacerbated by referrals from outlying districts of Wakiso, Mukono, Mpigi, Luwero and Kayunga, among others.

Kawempe National Referral Hospital (KNRH) receives and manages many of these clients – monthly volumes average at about 1,931 deliveries. Over a recent 14-month period, maternal and perinatal admissions constituted 51% of all admissions at KNRH and of these, 75% were referrals in from other healthcare facilities or self-referrals.[1]

However, the challenge is not limited to KNRH. Public HC IVs and HC IIIs managed by Kampala Capital City Authority (KCCA) routinely provide delivery services per month to more numbers of clients than expected, and serve many clients referred in from other healthcare facilities, with substantially fewer beds, staff, and other resources than KNRH.

	Jan - Aug 2020	
Facility	Average monthly deliveries	Average monthly referrals
Kawempe NRH	1931	515
5 high-volume KCCA facilities	1922	293
Kisenyi HC IV	695	140
Kawaala HC III	442	85
Kisugu HC III	192	54
Kitebi HC III	356	4
Komamboga HC III	237	10

GOAL AND OBJECTIVES

- Describe primary factors that contribute to overcrowding in public facilities in Kampala
- Identify and discuss potential solutions

METHODOLOGY: DESK REVIEW AND SECONDARY DATA ANALYSIS

Makerere University School of Public Health (MakSPH) conducted a desk review of grey and peer-reviewed literature on factors that cause overcrowding at health care facilities in Kampala, Uganda. The team searched documents published between 2015 and 2020 and identified 10 relevant ones. By scanning titles and executive summaries, six documents were identified for in-depth review (Appendix 1). From these, we extracted and summarized relevant data on primary causes and internal and external factors of overcrowding. MCHN Activity supplemented these observations through secondary data analysis of Kampala's health management information system (HMIS) data and the program's referral mapping data.

KEY FINDINGS

Factor 1. Population-driven overcrowding

Dynamic population

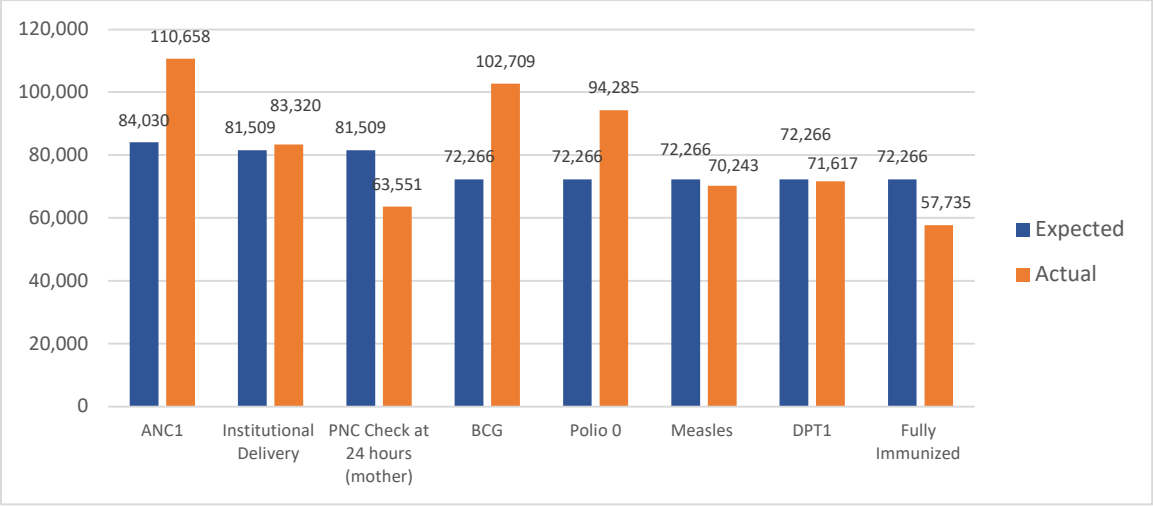
Night population: **1.6 million**

Day population: **4.5 million**

Kampala City's population has grown rapidly (4.5% annual growth rate between 2011 and 2016) due to rural-urban migration and natural population increases. Its resident population grew from 330,000 in 1970 to 1,680,600 in 2019.[3,4] In 2019, the daytime population for Kampala was estimated at 4,500,000,[3] representing residents and those commuting to the city from the surrounding districts as day workers.

The population growth combined with the city's daily population fluctuations places pressure on the existing health care system and health service providers.[3-5] Regardless of residence, anyone can access free health services at any public healthcare facility without referral.[1,2] Kampala's health service delivery data from HMIS (i.e., DHIS2) illustrates the overburdening of the city's health system (Figure 1).

Figure 1. Expected versus actual number of maternal, newborn, and child health services provided based on Kampala's resident (night-time) population (DHIS2 July 2020 to June 2021)



More first antenatal care consultations (ANC1), institutional deliveries, and birth dose immunizations (BCG and Polio 0) are registered in the city, than the expected number of

women and children requiring these services. The greater-than-expected number of clients for these services is attributed to maternal and newborn care-seeking in Kampala by residents of nearby districts.[1,10] There is a need to engage healthcare facilities and their respective management structures in Kampala's neighbouring districts to improve the quality of services there to help reduce referrals and decongest healthcare facilities in Kampala. Thus, a Greater Kampala Health Plan, beyond the KCCA geographical boundaries, is needed.

Factor 2. High fees reduce accessibility of private-for-profit (private health provider) facilities

Approximately 60% of Kampala's population lives below $2 a day, and 65% reside in informal settlements (i.e., slum dwellers).[9,10] There are almost 1,500 healthcare facilities: 1,410 are private-for-profit (PFP), 61 are private-not-for profit (PNFP), and 28 are public (Table 2).[6] A majority of the private health providers charge high fees that cannot be afforded by most of City's urban poor and slum-dwelling population.[4,6] Many residents, therefore, opt to seek for services from public healthcare facilities where services are free, concentrating demand among these few facilities (Figure 2).[3]

Table 2. Distribution of Kampala facilities by level of care and ownership (Directorate of Public Health and Environment (DPHE) Health Facility Inventory 2019)

	All health care facilities	Ownership			Percent distribution by facility level
		Public	PNFP	PFP	
Kampala City	1,497	26	61	1,410	100%
Level of facility					
NRH/RRH	6	6	0	0	<1%
General Hospitals	25	0	6	14	2%
HCIV	12	2	2	8	<1%
HCIII	53	6	17	30	4%
HCII	1,406	12	36	1,358	94%
Percent distribution by ownership	100%	2%	4%	94%	-

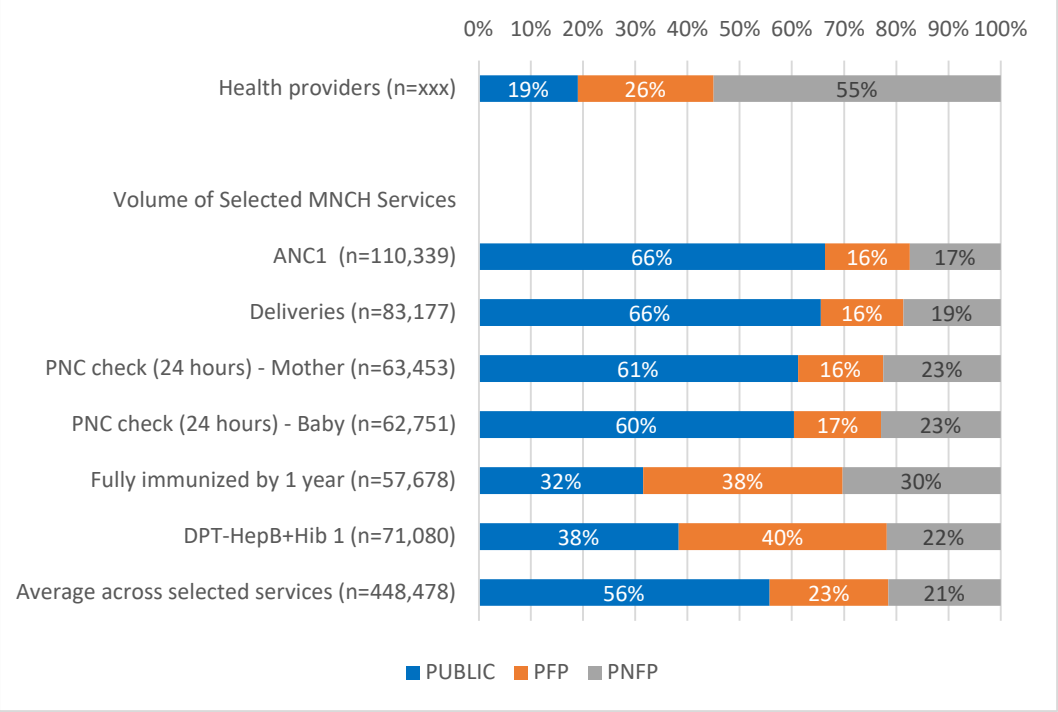
Factor 3. Limited regulation of services in private-for-profit health facilities

Many PFP facilities lack appropriate human resources, expertise, and equipment to handle complex medical cases, particularly obstetric and new-born emergencies.[8] Where specialized health care cadres are available at private facilities, they are often sourced from public facilities. These specialized cadres usually do not have a fixed schedule but serve on-call. To-date, many PFP facilities in Uganda (such as clinics, nursing homes, and drug shops), do not demarcate services offered, nor their capacity to provide these services. This inconsistency has made it very difficult for government to monitor the quality of services provided. Further, maternal, newborn, and child health services are not comprehensively available at all PFP facilities: while the vast majority of PFP facilities (97%) provide family planning services, only about half provide delivery and immunization services, and fewer than half offer ANC services. The limited availability of these key services means that the public sector and PNFP facilities must respond to most of the demand, resulting in a concentration of clients for these services at only 6% of the public and PNFP facilities in Kampala City (Table 2).

Factor 4. Inadequate staffing at government healthcare facilities relative to volumes of clients

Inadequate staffing to meet client needs exacerbates overcrowding and its consequences. One in five (19%) of all health care providers in Kampala are posted at public facilities, compared to 26% at PFP facilities, and 55% at PNFP facilities (Figure 2).[7,8] Relative to patient volumes, public facilities have a disproportionately smaller percentage of Kampala's health care workforce. This pattern is observed across the entire maternal, newborn, and child health (MNCH) continuum of services. Between July 2020 and June 2021, public facilities provided 66% of ANC1 services, attended to 66% of deliveries, and served between 32% and 38% of immunization visits. In aggregate, public healthcare facilities in Kampala provided more than half of the selected MNCH client services, and yet employ under 20% of the health workforce. The workforce in PFP facilities is more proportionately aligned with their share of the services (26% of the workforce and 23% of the services), and PNFPs are well-staffed relative to MNCH services provided.

Figure 2. Percent distribution of providers and of patient volume of key selected MNCH services by managing authority (July 2020 – June 2021, DHIS2)



Factor 5. Supply of health services misaligned with demand and client preferences, and inadequate information to efficiently plan

A misaligned supply of health care facilities relative to facility capacity, demand, and client care-seeking preferences contributes to overcrowding. A non-standardized classification of healthcare facility levels relative to services — particularly among the private sector — severely hamper efficient planning. HC IIs are intended to be the first point of contact, offering primary, out-patient services such as ANC, immunizations, and post-natal care (PNC), and provide referrals to a higher level of care as needed. However, clients often choose to seek these primary health care services at HC IIIs, and the few HC IVs and referral hospitals, contributing to client congestion, overburdened staff, and frequent stock-outs of drugs and supplies at higher-level facilities. In Kampala and Uganda in general, "referral" is a term used plainly, as

there is no gate keeping, meaning clients can walk into a referral level facility without a referral note.

Women appear to be seeking primary (e.g., ANC, PNC, and immunization) and secondary in-patient services (i.e., delivery and thus the related birth dose vaccinations) equally from HC IIs and HC IIIs (Figure 3). Women could be better served by a system that provides high-quality primary care services at geographically distributed healthcare facilities, including public and private HCIIs. Lack of standardized classification of private sector health facilities and misclassified (or outdated classifications) public facilities presents challenges to both efficient planning and attempts to realign supply with demand. For example, Figure 3 does not include private sector facilities because they are not correctly classified down to the HC III and HC IV level. Further, by definition, HC IIs ought not to provide delivery services, yet many facilities classified as HC IIs are providing this secondary tier service, and thus should be reclassified.

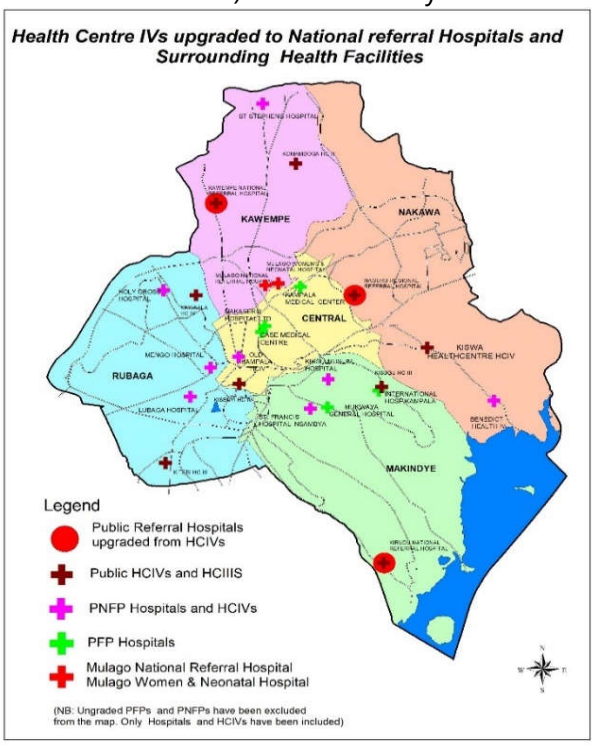


Figure 3. Percent distribution of key MCH services by level of health facility (public facilities only, July 2020 – June 2021, DHIS2)

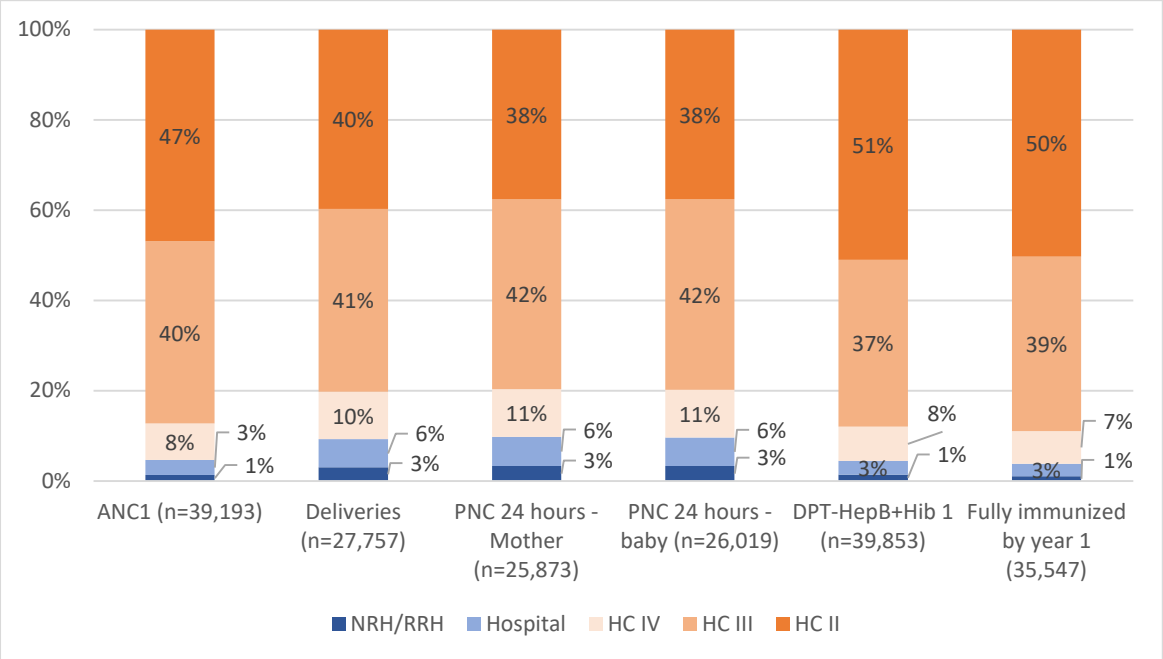


Figure 4. Location of private health facilities in Kampala relative to upgraded public HC IVs

Misalignment exists among tertiary facilities, as well. For example, Mulago National Referral Hospital has been undergoing renovation since October 2014. Its delayed opening has kept patients from accessing specialized MNCH services there (e.g., caesarean deliveries). In response, the MOH elevated three former government HC IVs — Kawempe, Naguru, and

Kirrudu — to referral hospital status in 2016, leaving only two public HC IVs (and six public HC IIIs) in the city, and no public general hospital (Figure 4). The lack of replacements for the former HC IVs has exacerbated the shortage of secondary public healthcare facilities that would be more easily physically accessible to the urban poor.

Factor 6. Unregulated and self-referrals

Types of Referrals

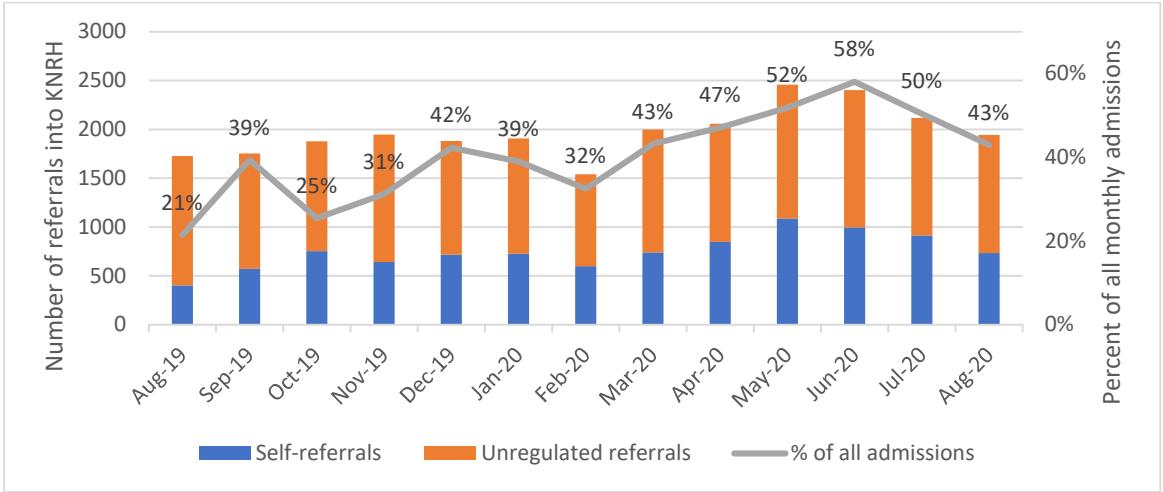
Unregulated referrals: When health facilities refer patients to a higher level of care for conditions that should/could have been managed at the original health facility (e.g., labor without complication), or refer patients according to the patients' wish.[11]

Self-referrals: When clients bypass lower-level facility that should/could provide the service needed for a higher-level facility. In many cases, client choices are rational, as they may seek care at a higher-than-necessary level because it is the nearest facility or because they perceive the higher level to provide better quality services.[1,2]

Kampala's healthcare facilities should ideally be linked to each other by a referral system.[4,5] Primary health care units (HC IIs) are intended to serve as the first point of contact for patients for primary services such as ANC. HC IIIs offer delivery services and basic emergency obstetric and newborn care (EmONC) services. When there is a need, patients are referred to higher levels of the health care system for further diagnosis, treatment, and management. HC IVs are the first level of comprehensive EmONC for women requiring surgical intervention or management of complex complications. Higher-level facilities are typically equipped with more expertise and resources such as specialists, drugs, and medical equipment.[7] In practice, the referral system in Kampala does not work along such a design, with primary and secondary health care facilities referring clients that they should be able to treat on-site (i.e., unregulated referrals) and many women seeking care directly from HC IVs and hospitals (i.e., self-referrals). There is no workable gate keeping in the system.

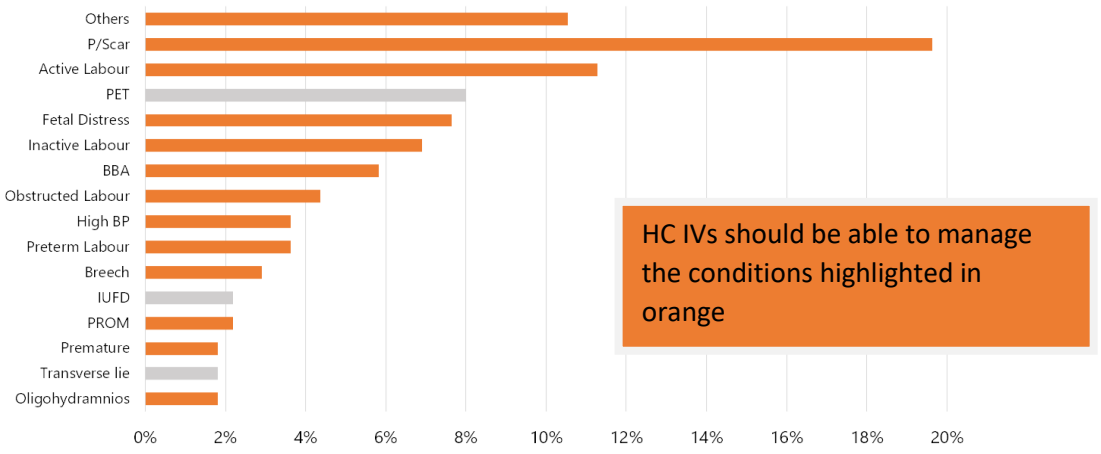
According to referrals data collected at KNRH, the hospital received 25,601 referrals during the period August 2019 - August 2020, including self-referrals and referrals from facilities within Kampala and peripheral districts (i.e., Mukono, Mpigi, Luwero, etc.). Referrals-in (self-referrals and unregulated referrals) accounted for between 21% to 58% of all admissions to the hospital (Figure 5).[1] Each month in the same period, the number of unregulated referrals was substantially higher than the number of self-referrals, between 1.3 to 3.0 times more in any given month.

Figure 5. Volume of unregulated referrals and self-referrals into KNRH, August 2019 – August 2020



Referral data collected at KNRH indicated that between August 2019 and August 2020, Kisenyi HC IV referred on average 165 women per month to KNRH. Separate data collected at Kisenyi HC IV indicated that 54% of pregnant women referred to KNRH had normal delivery, and many of the conditions listed as reason for referral ostensibly could have been very well managed at the health centre (Figure 6).

Figure 6. Main reasons for referrals from Kisenyi HC IV to KNRH (December 2020 – January 2021)



Altogether, unregulated referrals and self-referrals contribute a large volume of patients to KNRH, overcrowding the facility and overwhelming its capacity to provide timely and quality health services.[1,2] Furthermore, unregulated, and self-referrals impede effective health system planning and cause shortfalls in planned services by KCCA, including staffing shortages and frequent stock-outs of commodities.

CONCLUSION

Overcrowding at high-volume public healthcare facilities in Kampala is caused by several factors that challenge effective health planning for the city: rapid urbanization and a dynamic day-night population increases pressure on the existing health system; a limited number of lower-level public health centres (HC IIs) to offer basic, free primary health services (e.g., ANC, immunization) pushes such clients to secondary-level facilities (HC IIIs and IVs); and limited emergency obstetric and newborn care capacity at HC III and HCIV public facilities results in unnecessary referrals to tertiary level facilities. Inadequate health workforce relative to demand further constrains public healthcare facilities. A sub-optimally functioning referral system with high levels of unregulated referrals and self-referrals further exacerbates the problem. Finally, the lack of a national health insurance system further complicates meeting the cost of services for the poor, amidst a rapidly increasing population.

Table 4. Summary of factors contributing to overcrowding in Kampala, and mitigation approach

Overcrowding at NRHs + RRHs	Overcrowding at HC IIIs & HC IVs
Factors	
• Inadequate number of lower-level facilities implementing routine maternal deliveries • Inadequate staffing • Unregulated and self-referrals • Unregulated admissions	• Population-driven overcrowding • High fees at private facilities • Shortage of lower-level facilities conducting primary services • Limited regulation and services at private health facilities

Mitigation approach	
Improve staffing levels within facility and capacity of health workers at lower facilities to improve real and perceived quality of services, reduce unnecessary referrals to higher facilities, and improve admission protocols.	Cross-sectoral collaboration with public-private facility partnerships within Kampala and surrounding districts, KCCA/MOH, medical associations, federations and regulatory bodies, and academia to mitigate the health needs of the urban poor in Kampala, and residents of nearby districts of Kampala.

RECOMMENDATIONS

Factor 1: Population-driven overcrowding

Recommendation: Approach health system planning inclusively by including neighbouring districts (the greater Kampala health planning area); and reviewing existing standards.

- Establish processes and mechanisms for cross-district health planning and planning that considers population dynamics in and around Kampala. Currently, each unit (district, municipality, and KCCA) plans independently based on geographical boundaries without consideration for the care-seeking patterns of clients.
- Engage healthcare facilities and their respective management structures in Kampala's neighbouring districts to develop strategies that improve the quality of services to help reduce unnecessary referrals to health facilities in Kampala. This is a role that the Ministry of Health and local governments should coordinate.
- Reconsider some aspects of the health care system in Kampala by revising staffing norms that suit the city context, improving physical infrastructure, improving availability of functional equipment, beds, and other health supplies, and ensure improved support supervision of staff.
- Develop guidance that identifies the optimal number of HCI IVs, HCIIIs, and HC IIs for the population's needs relative to the services offered at these health facilities and their geographic location, particularly in relation to slum areas.
- Develop a data0driven approach to planning and implementation of health care service delivery in Kampala and the surrounding areas. A special surveillance system (and surveys) is needed for Kampala and the surrounding areas as they have a very dynamic population.

Factor 2: High fees reduce accessibility of private for-profit facilities

Recommendation: Strengthen public-private partnerships for MNCH services to increase affordability of quality services.

KCCA and MOH should offer incentives for selected private facilities to offer critical MNCH services freely or at a reduced cost through memoranda of understanding (MOUs) or contracts between the MOH/KCCA and the private health facilities. KCCA must ensure private facilities delivering MNCH services on their behalf:

- Meet defined standards
- Receive compliance visits to reduce the likelihood of informal fees
- Provide e-Voucher (electronic) contracts with KCCA and health insurance. Through such schemes, services at PFPs can be obtained by the urban poor at subsidized prices or freely as voucher programs pay for services such as immunization, ANC, and transport to private facilities, which reduces the burden on the few public facilities.

Factor 3: Limited regulation and services in private health facilities

Recommendation: Strengthen public-private partnerships for MNCH services to increase availability of quality services.

KCCA must ensure private facilities delivering MCH services on their behalf:

- Receive compliance visits to reduce the likelihood of poor patient-provider interactions
- Receive the support needed to provide high-quality services, such as support staff to undergo required training in MNCH service delivery, membership to Uganda Private Midwives Association, and frequent support supervision by KCCA/MoH

- Have a targeted strategy for and provide technical support for forecasting, procurement, and distribution of commodities, logistics, and equipment to ensure adequate supplies (e.g., share health commodities between public and private facilities with a public-private partnership agreement)

Factor 4: Inadequate staffing at public healthcare facilities relative to client volumes

Recommendation: Revisit staffing norms for public health facilities to ensure the availability of critical cadres for MNCH services.

- KCCA to revisit staffing norms to ensure adequate availability of critical cadres to meet the needs of client demands
- KCCA to ensure the staffing needs are met, particularly availability of medical officers and anaesthetic officers, to functionalize Comprehensive Emergency Obstetric and Newborn Care (CEmONC) services at HC IVs. The functionalization of CEmONC services can reduce unnecessary referrals to the national and regional referral hospitals.

Factor 5: Supply healthcare facilities is misaligned with demand and client preferences, and inadequate information to efficiently plan

Recommendation: Strengthen decentralized primary health services.

Expand preventive and basic care approaches that alleviate the need for mothers to visit overcrowded facilities and expand strategies that improve risk-stratification and referral for mothers, newborns, and children. These approaches can also ease the burden on public health facilities that are under-resourced. Such innovations could include:

- Deliver MNCH services such as ANC, postnatal care, and immunizations, closer to communities through mobile health (mHealth) and peer health worker approaches
- Expand linkages between public health facilities and community-linkage facilitators, e.g., Living Goods and Kawempe Home Based Care CBO
- Tap into the thousands of students from the various health training schools in the greater Kampala area as a resource for health care service delivery, especially primary health care
- Support strategies that encourage facilities to register and follow pregnant mothers through PNC
- Develop innovative approaches for contracted out PHC services in slum settings
- Develop innovations to engage communities in preventive care in urban settings

Factor 6: Unregulated and self-referrals

Recommendation: Clarify referral pathways with private health facilities and communities.

Improving the referral system between private and public facilities, and from community to facilities can reduce self-referrals and referrals from private to public facilities. Strengthen designated referral pathways by improving health workers' knowledge of referral protocols and communication between PFPs and public facilities, as well as free transport options between facilities. The lessons learned from the KCCA-Kampala Slum Maternal and Newborn (MaNe) project should be used to strengthen and scale up MNCH referral in the greater Kampala area.

Recommendation: Address poor quality of care at lower-level facilities.

Unnecessary referrals and patient self-referrals to higher-level health facilities take place, in part, because of the perception that lower-level facilities offer poor quality services. Interventions to enhance the quality of care and build the capacity of lower-level facilities to offer a full range of services that comply to quality standards can reduce bypassing and ensure women are confident seeking services closer to home. As mentioned above, there is a need to engage the neighbouring districts of Kampala in collaborative planning, and to improve the quality of services in peripheral districts to decongest Kampala's health facilities and ensure women can access appropriate, high-quality care close to where they live.

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Appendix 1: List of reports and documents reviewed in-depth

No.	Title
1	MaNe (2019) "MaNe Situation Analysis Report: The State of Maternal and Newborn Health in Kampala City"
2	KCCA (2020) "KCCA Directorate of Public Health and Environment Annual Report Financial Year 2019/20"
3	MaNe (2019) "MaNe Health Facility Assessment Report 2019"
4	KCCA (2020) "KCCA Annual Health Sector Report 2019/20: HMIS Data"
5	MOH, World Health Organization, Makerere University School of Public Health (2018) "Countdown to 2030 for Women's Children's and Adolescents' Health, University of Manitoba. Statistical Review of Progress to Inform the Mid-Term Review of the Uganda Health Sector Development Plan 2015/2016 - 2019/2020."
6	USAID's MCHN Activity (2020) "USAID's Maternal and Child Health and Nutrition Activity Baseline Assessment: Kampala Capital City MCHN Desk Review"

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