



REPORT

Mapping of Networks of Healthcare in Nairobi County, Kenya.

August 2021



About Presidential Policy & Strategy Unit

The Presidential Policy and Strategy Unit (PASU) provides strategy, policy and advisory services to the President through objective, quality policy analysis, coordination of complex multi-stakeholder engagements and strategic partnerships, incubation and alignment of emerging presidential commitments and investment opportunities for a transformed nation. Recognizing that health is a critical determinant of family welfare, equity, productivity and long-term socioeconomic growth, H.E. President Uhuru Kenyatta has put Universal Health Coverage (UHC) at the core of his legacy agenda. Under UHC, which is one of the "Big Four", the goal is to ensure that within five years every Kenyan has access to quality and affordable health care. PASU plays a critical role in translating this ambitious goal into reality by inter alia, strengthening policy coordination, thought leadership and working in close partnership with line ministries and key stakeholders.

About Nairobi Metropolitan Services (NMS)

The Nairobi Metropolitan Services (NMS) was established by H.E. President Uhuru Kenyatta through Executive Order No. 3 of 2020 to oversee the four transferred functions in the Deed of Transfer between the Nairobi County Government and the National Government. The transferred services include: County Health Services; County Transport Services; County Public Works, Utilities & Ancillary Services; and County Physical Planning & Development. In fulfilling its mandate, the NMS seeks to provide reliable, efficient, safe and sustainable integrated infrastructure systems and services for socioeconomic development in the Nairobi Metropolis.

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Abbreviations

CS	Caesarean Section
CCGs	Clinical Commissioning Groups
DHIS	District Health Information System
HRH	Human Resources for Health
KEPH	Kenya Essential Package for Health
KHIS	Kenya Health Information System
KMHFL	Kenya Master Health Facility List
KNH	Kenyatta National Hospital
KUTRRH	Kenyatta University Teaching, Referral & Research Hospital
MOH	Ministry of Health
NHS	National Health Services
NMS	Nairobi Metropolitan Services
OPD	Out-Patient Department
SARA	Service Availability and Readiness Assessment
UHC	Universal Health Coverage

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Executive Summary

Kenya has made a commitment to achieve UHC by 2022. The government has taken several steps to reform its health care system to achieve this goal. In December 2018, the government kicked off the UHC pilot in 4 counties (Nyeri, Isiolo, Machakos and Kisumu). Findings from the pilot program have demonstrated a surge in utilization of care hence access to health care across respective public facilities. It is therefore anticipated that there will be a significant increase in the number of people seeking care in public facilities in the country as a result of the national scale-up of UHC which was launched in December 2020.

Effective and efficient health service delivery towards achievement of Universal Health Coverage demands for an integrated and functional health system comprising the primary, secondary and tertiary health facilities. However, the secondary healthcare systems in Kenya, comprised of the level 4 and 5 facilities, and the referral systems that ought to support the integration, are neither well established nor effectively implemented. This threatens the aspiration for Universal Health Coverage in Kenya by 2022.

This study aimed at evaluating secondary care within Nairobi County as a case study in anticipation of an increased demand for health care services. A mixed methods approach was used to collect primary and secondary data concurrently. A desk review and analysis were carried out to collect secondary data on: i) the density of health facilities within Nairobi County using Kisumu and Mombasa Counties as comparators; ii) catchment demographics, economic indicators, and service utilisation data of the healthcare services within the sub-counties;

iii) Human Resources for Health Staffing Norms and Standards; and iv) pricing data for various health services. Quantitative and qualitative data collection methods were applied for primary data collection from mid to end of February 2021. Five public level IV health facilities in the county were included while purposive sampling of the private facilities was done. A total of eighteen public and private hospitals level 4 health facilities, in eight sub-counties of Nairobi County, were sampled.

The assessment demonstrates that the current capacity of public secondary healthcare services in Nairobi County is inadequate for the population. Findings indicate that there is a predominance of private sector level IV health facilities (92%) compared to public health facilities (8%) in Nairobi county. There are no public level V health facilities in Nairobi. Additionally, the number of public health facilities relative to the population in Nairobi is significantly low. While a ratio of 1:4125 for both private and public facilities appears to meet the recommended WHO threshold of 1:5000, the majority of all primary facilities are private hence reducing the effective number accessible to the general public. There are eight (8) level IV facilities in the county but only five (5) are accessible to the public as three (3) public facilities are in secure installations inaccessible by the public.

Additionally, 2 of the 5 accessible public facilities (Mutuini and Kayole II) do not offer referral level services due to inadequacies in infrastructure and health workforce. This hinders access to critical health services and suggests that specialized care and surgical care are out of reach for the majority of the population in the county.

Therefore, patients are forced to travel long distances to seek level IV type services, another significant barrier to access and occasions high workloads in the tertiary level facilities. In other instances, patients are forced to seek alternatives in the private health sector which has grave implications on affordability, access and equity of care.

The study highlights organizational inefficiencies in allocation and utilization of available resources, including human resources and infrastructure. Mbagathi hospital serves the highest catchment population and had the highest inpatient services utilization rate in 2019, while Mama Lucy was the busiest facility in terms of outpatient (OPD) services. There was a mismatch of workload and available resources. For example, Mama Lucy had the highest number of theatres but performed the least surgeries in 2019 while Pumwani Hospital, with the least number of theatres had the highest number of major surgeries, mainly caesarean deliveries. Neonatal care capacity was found to be weak in almost all public facilities due to few or complete unavailability of cots. This presents a high risk of neonatal mortality and morbidity alongside a high rate of referral for maternal and neonatal cases.

HRH staffing of the public level IV facilities does not conform to the staffing norms defined by the Ministry of Health and the Kenya Medical Practitioners' and Dentists' Council¹. Some level IV facilities had no consultants while others exceeded the recommended number. This has implications on service delivery and utilization of health care.

Low utilization rates in public facilities were also attributed to service disruptions occasioned by labour related disputes which resulted in low utilization of surgical services, poor perceived quality services due to long queues and waiting times, poor staff

attitudes, lack of essential drugs, poor facility hygiene, lack of inpatient services, and claims of informal payments.

Additionally, the study demonstrates inadequacies in the integration of secondary care services to primary and tertiary care services in Nairobi County.

The recommendations of this study aim to strengthen the linkage of primary health care facilities with secondary and tertiary care networks as well as their capacity for service delivery in the grand scheme of having a well-coordinated referral system. **The continuum of care comprising of primary, secondary and tertiary healthcare systems, needs efficient integration and coordination. Adequate and concurrent resourcing is critical to ensuring efficient integration and functioning across the levels of care. Strengthening governance across the continuum of care within the health system will bolster efficiency within each level of care.**



Introduction

1.1. Background

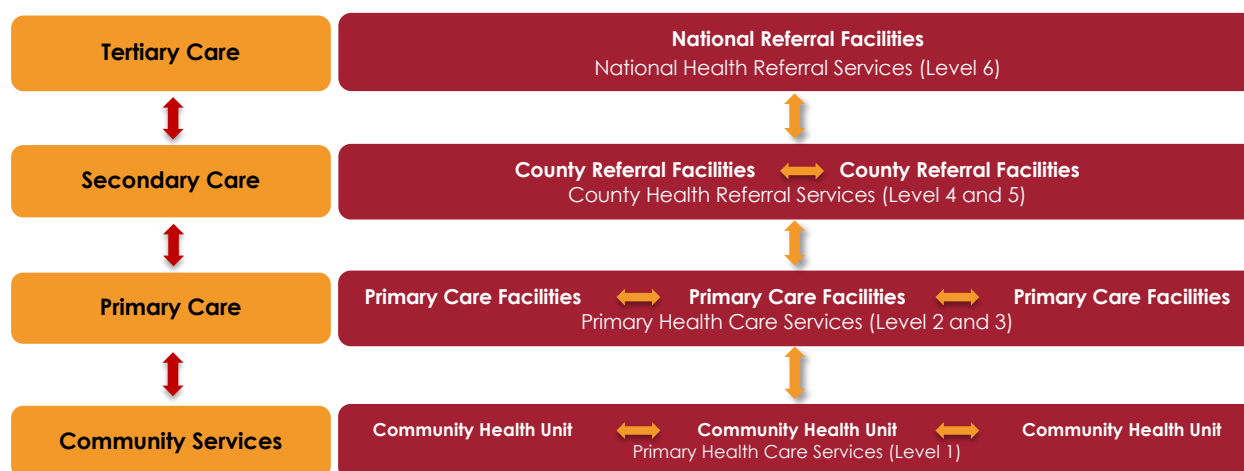
There has been a steady improvement in the level of service availability of primary care services in public health facilities between 2013 and 2016 as demonstrated by the Service Availability and Readiness Assessment (SARA) report in 2016. The mean service availability of the identified tracer services increased from 41% to 55% during the said period². National and County Government investments in healthcare alongside donor funding have contributed to the increased availability of the primary and secondary care services. Notably, the Government has recently made steady effort at increasing access to primary care services in Nairobi County through the commissioning of more than 15 level 2 and 3 health facilities in the first half of 2021.

The Government's prioritization of healthcare through the Big Four Agenda and the subsequent pilot and nationwide rollout of the Universal Health Coverage programme further bears the potential of not only increasing healthcare service utilization but also strengthening the health system in Kenya. These changes necessitate streamlining of coordination of care within the health system across the different levels of care to ensure cost effective and efficient service delivery.

1.2. Organization of the Referral System in Kenya

Effective and efficient health service delivery towards achievement of Universal Health Coverage further demands for an integrated and functional health system comprising the community, primary, secondary and tertiary health systems.

Figure 1: Organization of the Referral System in Kenya



Source: Kenya Health Sector Referral Strategy, 2014-2018

Community Health Services (level 1) comprise all community-based demand-creation activities, organised around the Community Health Strategy complete with community-based referral mechanisms to facilitate linkage with primary care services. Primary care networks comprise a virtual network of primary care facilities (all dispensaries, health centres, and maternity and nursing homes - public and non-public)³. Primary care networks should manage referrals from communities and facilitate referrals to the nearest county referral facility. Currently, Primary care networks serve as the first point of call for the majority of the population hence critical to the gate-keeping role within the system.

Secondary care networks comprise a virtual network of referral services from linked primary healthcare facilities, other referral facilities and any linked community health units³. It is envisioned that the secondary care networks should provide specialized care services and ought to facilitate referral of more complex cases to the tertiary level facilities.

The UN defines a referral system as a comprehensive institutional framework that connects various entities with delineated (albeit in some cases overlapping) mandates, responsibilities and powers, whose main aim is to protect, promote and

restore the health of an individual into a network of cooperation⁴. A referral system is thus a critical component of the care networks as it can; a) enable patients to access care at health centers closest to them before accessing higher-levels of care such as secondary and tertiary hospitals; b) ensure hospital facilities are used optimally and cost-effectively; c) ensure clients who need specialist services can access them in a timely way; and d) ensures a close relationship between all levels of the health system^{5,6}.

Further, as noted in Figure 1 above, there is significant interlinkage across the different levels of care demanding of concurrent investment and improvements. However, the secondary healthcare systems in Kenya, comprised of the level 4 and 5 facilities, and the referral systems that ought to support the integration, are neither well established nor effectively implemented at both county and national levels. This threatens the aspiration for Universal Health Coverage in Kenya by 2022.

This evaluation was aimed at building on the existing knowledge on primary care networks in the country with a view to strengthening their linkage with secondary and tertiary care networks in the grand scheme of having a well-coordinated referral system using Nairobi County as a case study.

1.3. Objectives

Main Objective

To conduct a rapid secondary care network mapping study involving level 4 and 5 public facilities in Nairobi County.

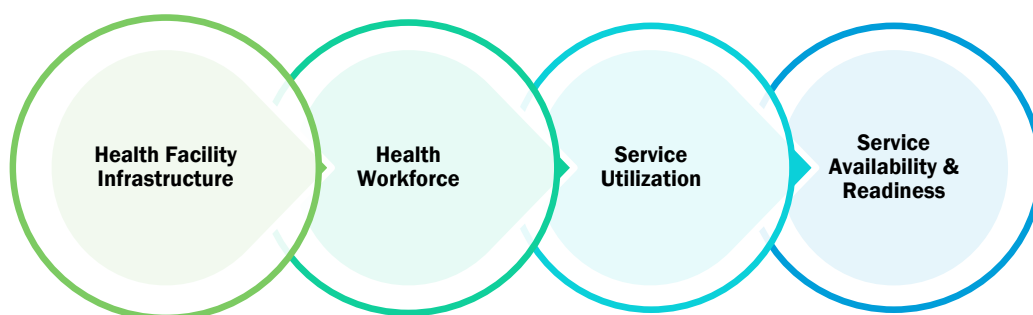
Specific Objective

The specific objectives of this mapping included the following:

- a. To assess the capacity for secondary care in Nairobi County
- b. To review and make recommendations on the existing secondary care organizational structure in Nairobi County
- c. To review opportunities for strengthening integration within the referral system in Nairobi County

1.4. Technical Approach

The mapping study was conducted in keeping with the World Health Organization Service Availability and Readiness Assessment (SARA) indicators¹. The framework considers the health facility service availability in three tracer categories listed below: a) Health Facility Infrastructure; b) Health Workforce; and c) Service Utilization.



Analysis of the organizational structure and opportunities for strengthening integration will be anchored on the existing referral system structure as proposed by the Kenya Health Sector Referral Strategy, 2014-2018.



ZIMMERMAN-PICKENS LEVEL 2 HOSPITAL



Methodology

2.1. Setting

A total of eighteen public and private hospitals, level 2 to level 4 health facilities, in eight sub-counties of Nairobi County, were sampled. A detailed list is provided in Appendix 4. Both quantitative and qualitative data collection methods were applied as described below.

2.2. Desk Review

A deep-dive desk review and analysis of existing information and data from varied sources was carried out to find out the following:

- The density of health facilities in Nairobi County with Kisumu, Mombasa and Uasin Gishu Counties as comparators
- Profiles of the various Sub-Counties of interest in terms of catchment demographics, economic indicators, and service utilisation data of the healthcare services within those sub-national units.

The information was largely sourced from the Kenya Health Information System (DHIS /KHIS), and the Master Health Facility List and Kenya National Bureau of Statistics. Benchmark information on service providers to population ratio was sourced from the WHO and the Kenya National Guidelines on HRH staffing Norms and Standards. Pricing data for various health services was retrieved from the Kenya Medical and Dental Council (KMDC) Professional Fees Guidelines (2016). Corroborating information on global best practice was retrieved from peer reviewed journals as well as grey literature.

2.3. Field Work

Quantitative and qualitative data collection was conducted concurrently to get further insights from the sampled facilities and beneficiaries of the health services from the catchment areas. Non-random sampling technique was adopted in this assessment. Purposive sampling was used to identify the level III and IV public facilities and patient respondents whilst snowballing technique was used to determine the respective two private facilities per sub county.

Quantitative data on service availability and utilization, pricing of key services and medicines¹, Human Resources for Health (HRH), and referral systems were collected for all the public and private entities while information on health financing was only collected for the public hospitals as the interest was on their autonomy.



Insight on willingness and ability to pay for healthcare services, perceptions on the facilities' service capacity and the referral systems were collected through informant interviews from patients found seeking care at the facilities and community members from around the health facilities. Appendix 5 captures the data tools.

Authority to collect data from facilities was sought from the Nairobi Metropolitan Services, and respective facility leads. All data from the respondents was obtained voluntarily.

¹Tracer drugs included in the analysis included: Amoxil 500mg capsule (per 5 day dose), Paracetamol tabs (500mg), Nifedipine tabs (20mg) (OR per monthly dose), Metformin tabs (500mg) (OR per monthly dose)

2.4. Data Analysis

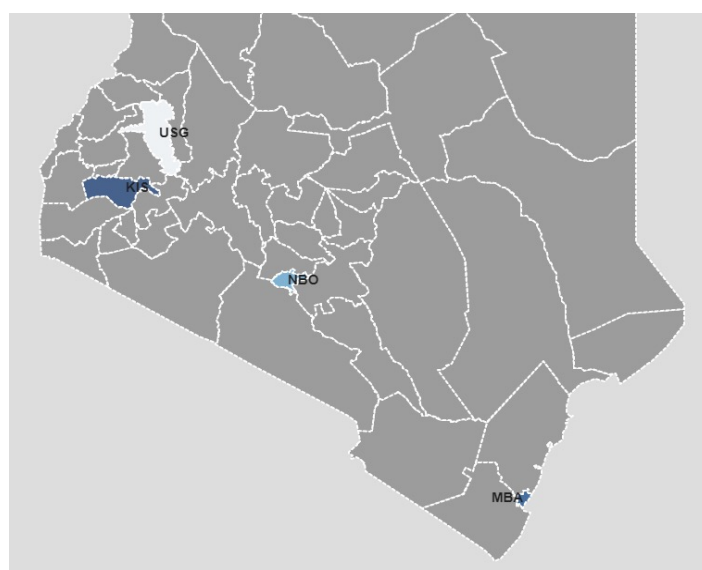
The qualitative data was analysed through content analysis and the insights gained collated into the report. The quantitative data was analysed through descriptive statistics. Average prices were calculated for medicines and services in both private and public hospitals, while the referral distance was compared from the public hospital in each sub-County to the main public referral centres using Google Maps. Distribution of HRH was compared against the Kenya National Guidelines on HRH staffing Norms and Standards. For service capacity, number of patients per consultation room per facility, number of inpatients per bed, number of deliveries per maternity bed and number of baby cots per deliveries was calculated for each of the public hospitals. The qualitative and quantitative data analysed were triangulated and weaved into the full report.

Findings & Analysis

3.1. Capacity of Secondary Care Services

3.1.1. All facilities (Up to Level IV) available for the population

Figure 1: Density of level I-IV public and private facilities in four counties



Source: Kenya Master Health Facility List

The findings demonstrate that Kisumu County had the highest density of level I-IV health facilities, public and private, (1:3728) for its population compared to other counties with major cities and towns. Mombasa County follows with (1: 3787), Nairobi (4125) and Uasin Gishu (1:4767) respectively as shown in table 1 and figure 1.

Table 1: Distribution of primary care facilities across selected counties in Kenya.

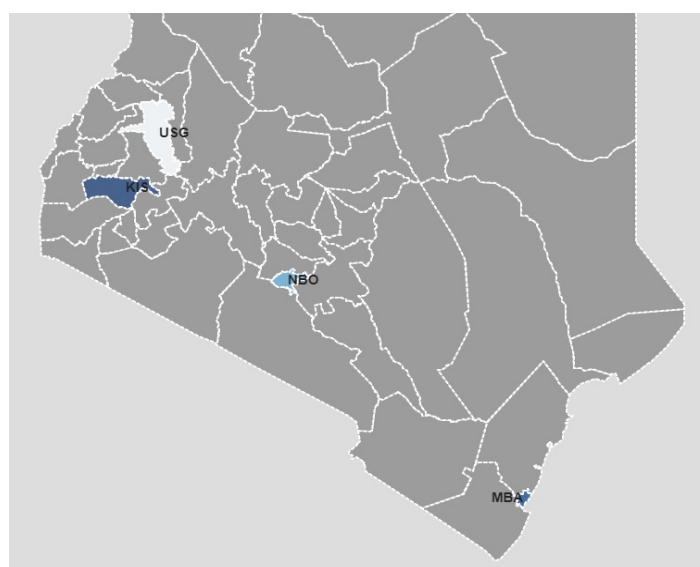
County	All Facilities (Up to level 4)	Population	Ratio
Kisumu	310	1,155,574	1: 3,728
Mombasa	319	1,208,000	1: 3,787
Nairobi	1066	4,397,073	1: 4,125
Uasin Gishu	244	1,163,000	1: 4,767

Source: Kenya Master Health Facility List, 2019 Kenya Population and Housing Census (KPHC)

3.1.2. Level 4 Facilities (Public and Private) available for the population

Of the three largest urban towns in Kenya, Nairobi has the least number of level IV health facilities for its population. There is one level IV hospital for every 47,000 people in Nairobi, compared to Mombasa's 46,000 and Kisumu's 26,000.

Figure 2: Density of public and private level IV health facilities in four counties



Source: Kenya Master Health Facility List

Of the ninety-four level IV facilities in Nairobi, only 8 (8%) were public. (I Would propose that we name the 8 before we go ahead and describe why only 2 are the truly functional/accessible as comprehensive level 4s). Of the 8 public level four hospitals, only 5 were accessible to the general public as Defence Forces Memorial Hospital, Moi Airbase Hospital and Kamiti Prison Hospital were in secure installations beyond access by the general public.

The capacities of the available level IV facilities vary to a great extent. Two of the five public level IV hospitals in Nairobi (Mutuini and Kayole II) do not offer the requisite referral services due to challenges including infrastructure and HRH. Also, there is great variance in the case types across the three functional public level IV facilities resulting in a higher workload in Mama Lucy and Mbagathi hospitals as Pumwani handles mainly maternity cases. This reduces the functionally available referral facilities for the population in Nairobi County to only two. This increases the number of people served by each level IV facility in Nairobi to 2,198,537, against MOH's recommended ratio of 1:100,000. This exerts a significant strain on the two public level IV facilities as they consequently cater for more than twenty times the recommended population.

Table 2: Distribution of level IV facilities in selected counties

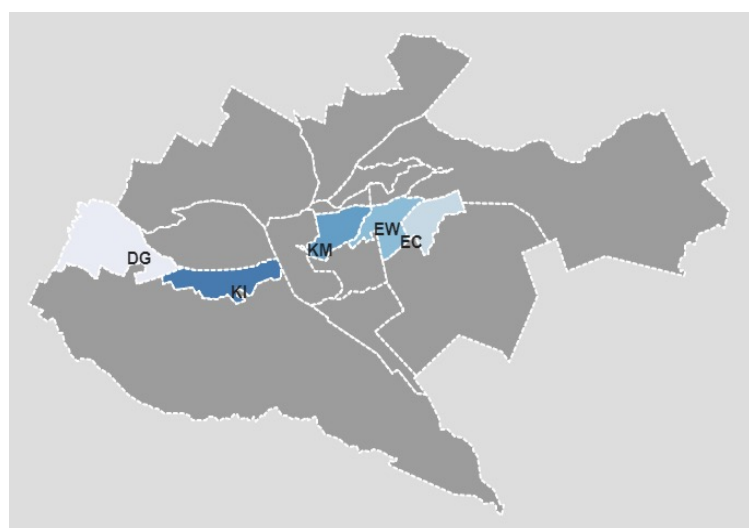
County	All Facilities (Up to level 4)	Population	Ratio
Kisumu	44	1,155,574	1: 26,263
Mombasa	26	1,208,000	1: 46,462
Nairobi	94	4,397,073	1: 46,777
Uasin Gishu	244	1,163,000	1: 4,767

Source: Kenya Master Health Facility List; 2019 Kenya Population and Housing Census (KPHC)

3.1.3. Public Level IV Facilities available for Sub County Populations in Nairobi County

Amongst the sampled public facilities, Mbagathi Hospital in Kibra Subcounty appears to have the highest immediate catchment population followed by Kamukunji, Embakasi West, Embakasi Central and Dagoretti respectively as shown in figure 3 and table 3.

Figure 3 & Table 3: Immediate Catchment Population for Public Level IV facilities in Nairobi



Region	Population
Dagoretti South	178,962
Kamukunji	211,991
Kibra	354,598
Embakasi West	187,020
Embakasi Central	185,948

Source: Kenya National Bureau of Statistics

3.1.4. Outpatient Services

Mbagathi Hospital had the highest number of outpatient consultation rooms (33) while Pumwani Maternity Hospital had only two (2) and mainly handled maternity cases. Mutuini and Kayole II hospitals had two (2) and four (4) consultation rooms respectively. Noteworthy, in 2019, all the sampled facilities had a higher outpatient workload than the recommended level, with Mbagathi having the highest workload as depicted in figure 4.

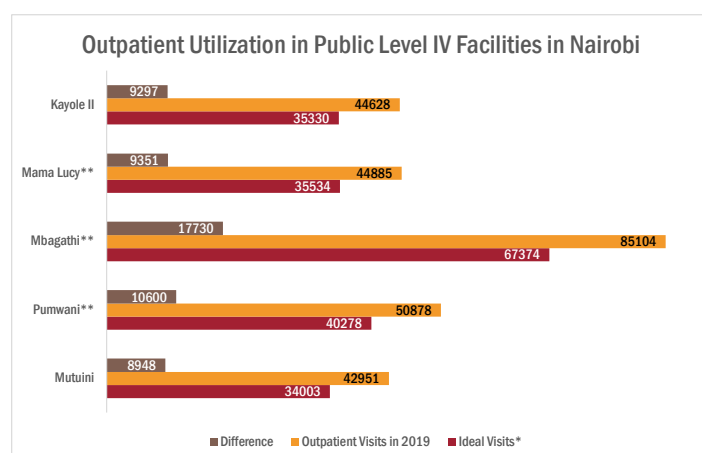


Table 4: Distribution and utilization of outpatient facilities among public level IV facilities in Nairobi County

Hospital	Ideal Visits*	Outpatient Visits in 2019	Difference
Mutuini	34003	42951	8948
Pumwani**	40278	50878	10600
Mbagathi**	67374	85104	17730
Mama Lucy**	35534	44885	9351
Kayole II	35330	44628	9297

Source: MOH Facility Workload Reports; Analysis by Consultant

Assumptions:

*KHHEUS 2018 estimates an average of 19 outpatient visits per 100 population.

**Facilities serve more than the population in their immediate locale.

Most respondents rated outpatient services highly, with majority giving a rating of the maximum score of 5. The reasons attributed to this high rating included; availability of health workers, competency of doctors with overall good patient outcomes, good attitude from the health care workers, availability of 24-hour outpatient services, perceived good quality of care due to short queues and prompt services, free services or availability of credit facilities in some of the facilities.

However, a few respondents rated the outpatient services poorly with a score as low as 2 out of a possible 5. This was attributed to the facilities opening late, slow services, no services offered after 12 noon and poorly perceived quality of care. For example, one respondent from a public facility felt that the services were poor as drugs had been prescribed prior to blood work.

"If you go past 12 Noon they turn you back. They refuse to attend to you." (Patient, public facility)

"The quality of care is not so good as they (health workers) give you drugs before doing blood work" (Patient, public facility)

Laboratory services were highly rated with reasons reported such as; accurate results which ensured correct treatment was administered and hence better clinical outcomes, fast turn-around time in getting the results, clean laboratory spaces, good laboratory staff attitudes and free laboratory services.

"Laboratory results are quick and you get the correct treatment in this facility" (Patient, public facility)

Most drugs were available at sampled public and private facilities hence a high satisfaction index by the respondents. The drugs were also affordable and/or free in most instances. However, some respondents noted that prescribed drugs were sometimes unavailable and hence referral to buy them outside the facility would be required. This was especially so for blood pressure and diabetes drugs.

"I have always found the drugs that were prescribed in this facility hence no referrals outside".
(Patient, public facility)

"Most times they don't have drugs here especially blood pressure and diabetes medication"
(Patient, public facility)

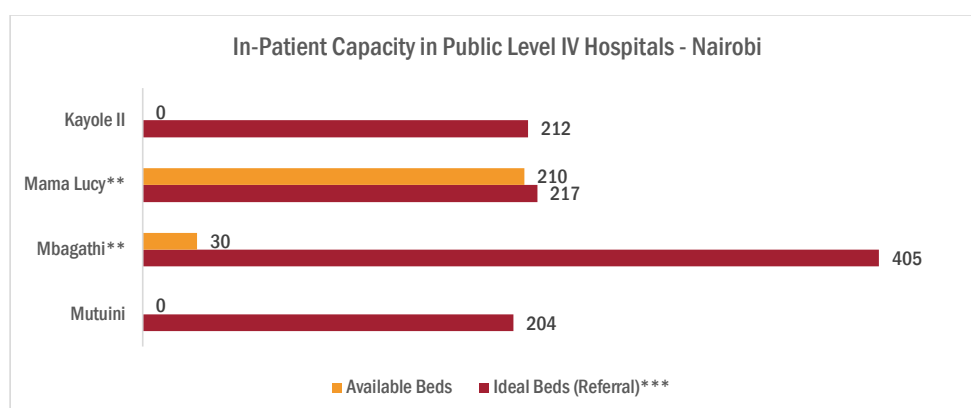
Another important factor influencing patient satisfaction was the medical advice offered by the health workers concerning the drugs which enhanced patient knowledge and confidence in the outpatient services.

"They offer good advice on how to take the medication hence their services are very good"
(Patient, public facility)

3.1.5. In-Patient Services.

The public level IV facilities in Nairobi have inadequate inpatient capacity for their immediate populations as demonstrated in figure 5 and table 5. Noteworthy, Mbagathi Hospital in Kibra Sub-County, has a significantly lower number of beds at 7% of the expected bed capacity. This increases the risk of overcrowding at the facility as well as unnecessary referrals to higher level referral facilities. Additionally, Dagoretti South, served by Mutuini Hospital, and Embakasi Central, served by Kayole II Hospital, were significantly disadvantaged as the two facilities lack inpatient beds (non-maternity) despite being ranked as level IV facilities.

Figure 5: Number of In-Patient beds in public level IV facilities available for immediate catchment population



Source: Analysis by Consultant

Table 5: In-Patient (Non-Maternity) Capacity in Public Level IV Facilities in Nairobi

Hospital	Population	Ideal Target Beds*	Available Beds	Ideal Beds (Govt Referral)***	Gap
Mutuini	178962	448	0	204	-204
Mbagathi**	354598	888	30	405	-375
Mama Lucy**	187020	475	210	217	-7
Kayole II	185948	465	0	212	-212

Assumption:

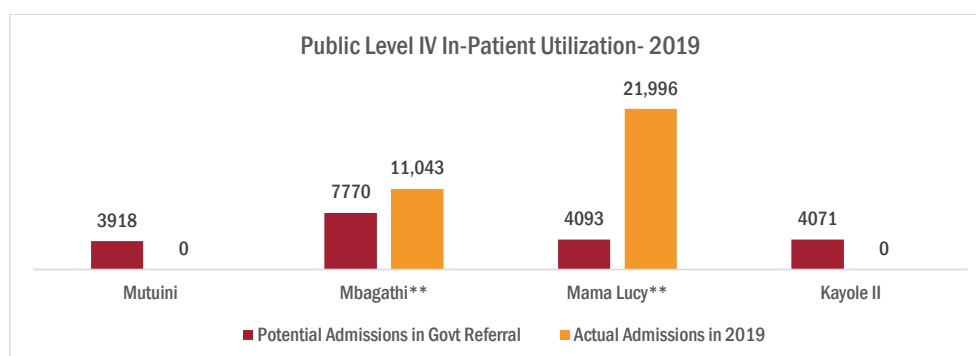
*WHO recommends 25 inpatient beds per 1000 population

**Facilities serve more than immediate population

***KHHEUS 2018 estimates that 45.6% of inpatient cases were handled by Government referral hospitals.

Notably, facility inpatient data for 2019 demonstrates that at Mama Lucy Kibaki Hospital in Embakasi handled 5 times its expected inpatient workload while Mbagathi Hospital handled approximately one and a half times its expected workload. Mutuini and Kayole II Hospitals did not handle any non-maternity admissions for the same period. Figure 6 and Table 6 depict the service utilization levels for the sampled facilities.

Figure 6: In-Patient Utilization in Public Level IV facilities in Nairobi, 2019



Source: Analysis by Consultant

Table 6: Number of In-Patient Admissions (Non-Maternity) in public level IV facilities in Nairobi

Hospital	Population	Potential Admissions*	Potential Admissions in Govt Referral***	Actual Admissions in 2019
Mutuini	178962	8592	3918	0
Mbagathi**	354598	17040	7770	11,043
Mama Lucy**	187020	8976	4093	21,996
Kayole II	185948	8928	4071	0

Source: Analysis by Consultant

Assumption:

*KHHEUS estimates 48 Inpatient Admissions per 1000 population.

**Facilities serve more than immediate population.

***KHHEUS 2018 estimates that 45.6% of inpatient cases were handled by Govt referral hospitals.

Patient satisfaction with inpatient services in general was reportedly influenced by adequate bed capacity, good care while admitted as well as clean services within the wards. Good clinical outcomes from surgical procedures including caesarean sections (CSs) resulted in patient preference for certain facilities. Free and efficient surgical procedures such as CS also resulted in a high rating of inpatient services.

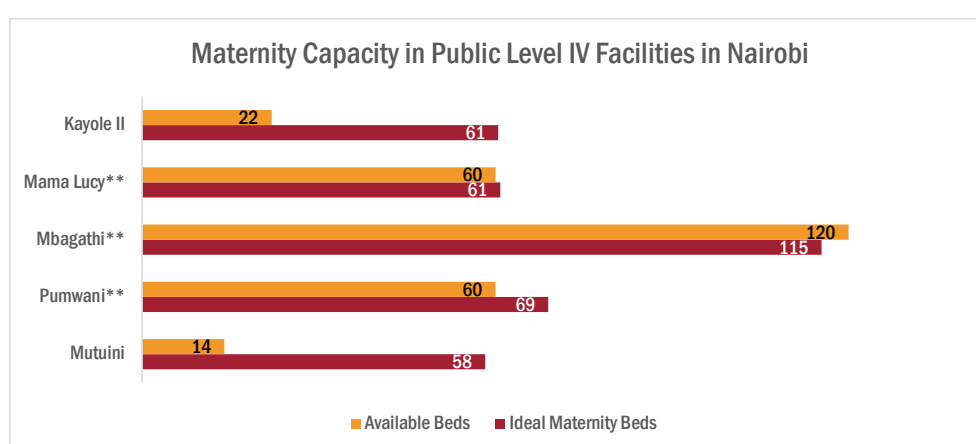
“The facility had enough beds and clean services and hence I would rate it highly” (Patient, public facility)

“After CS the care I received from the doctors and nurses was very good and I would use the facility again.” (Patient, public facility)

3.1.6. Maternity Services

Kibra, with 120 beds at Mbagathi Hospital, has the highest number of maternity beds consequently exceeding the estimated ideal number of maternity beds for its immediate population as shown in figure 7 and table 7. Notably, the greatest deficit is seen in Dagoretti South (Mutuini), and Embakasi Central (Kayole II), followed by Kamukunji (Pumwani) and Embakasi West (Mama Lucy).

Figure 7: Capacity for Delivery Services in Public Level IV Facilities in Nairobi County



Source: Analysis by Consultant

Table 7: Maternity Capacity in Public Primary Referral Facilities in Nairobi County

Hospital	Population	Estimated Live Births**	Estimated Still Births & Miscarriages***	Expected Pregnancies	Ideal Maternity Beds#	Available Beds
Mutuini	178962	5065	760	5824	58	14
Pumwani*	211991	5999	900	6899	69	60
Mbagathi*	354598	10035	1505	11540	115	120
Mama Lucy*	187020	5293	794	6087	61	60
Kayole II	185948	5262	789	6052	61	22

Source: 2019 Kenya Population and Housing Census (KPHC); Service Availability and Readiness Assessment (SARA) Reference Manual, Version 2.2; Analysis by Consultant

Assumptions

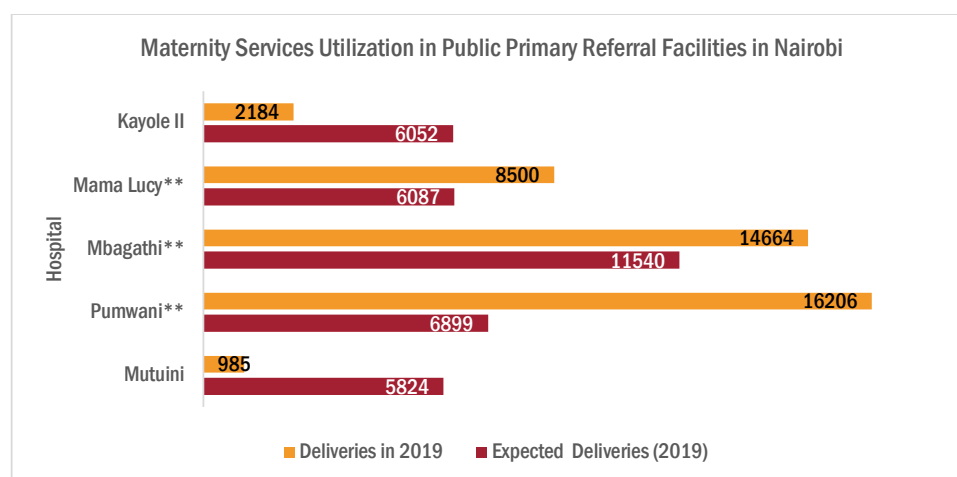
* Facilities serve more than immediate population.

** Crude Birth Rate in 2019 estimated to be 28.3 per 1000 People.

*** WHO estimates that 15% of pregnancies end in Still Births and Miscarriages.

Recommended Target of 10 Maternity Beds per 1000 Pregnant Women (WHO).

Figure 8: Utilization of Maternity Services in Public Level IV Facilities in Nairobi



Source: Analysis by Consultant

Facility data for 2019 suggests that Pumwani Hospital by far exceeded its expected workload for deliveries in 2019 having handled approximately two and a half times its ideal workload. Similarly, Mbagathi and Mama Lucy Hospitals handled approximately one and a half times their ideal maternity workload. On the contrary, Mutuini and Kayole handled significantly lower workloads estimated to be 20 and 40% of their respective capacities.

Table 8: Number of Maternity Beds available for immediate catchment population

Hospital	Expected Deliveries in 2019	Facility Deliveries in 2019
Mutuini	5824	985
Pumwani	6899	16206
Mbagathi	11540	14664
Mama Lucy	6087	8500
Kayole II	6052	2184

Source: Analysis by Consultant

Maternity services in most public facilities received a high index of patient satisfaction. This was attributed to the following reasons; affordability due to Linda Mama program which catered for all maternity costs, clean rooms within the facilities, good food for the mothers, good outcomes and good knowledge sharing habits by the health workers for example on how to take care of babies.

“Linda Mama covers maternity costs and has greatly eased the burden for mothers” (Staff, public facility)

“The clean rooms and the good food given to the mothers made my maternity experience quite pleasant” (Patient, public facility)

“After delivery, the health workers showed me how to take care of the baby very well.” (Patient, public facility)

However, a few respondents were dissatisfied with maternity services due to the following reasons; unavailability of baby cots which were considered critical for mothers who had delivered via CS for nursing during the initial stages of wound healing, unnecessary referrals of first-time mothers to bigger and often far-off facilities, high patient numbers and regular strikes by health workers.

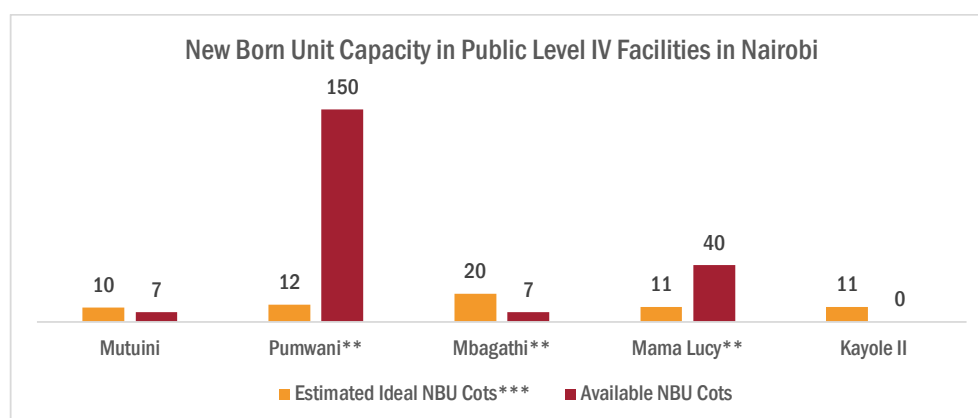
“Their services are good, though they don’t have baby cots for the babies. Especially after CS one needs some space to turn in the bed.” (Patient, public facility)

“They refuse to deliver first time mothers. They tell you to go to Mama Lucy or any other hospital.” (Patient, public facility)

3.1.7. Nursery Services

Kamukunji sub county, with 150 cots at Pumwani Hospital, had the highest number (approximately 13 times the recommended minimum) of Nursery cots. Similarly, Mama Lucy Hospital met its recommended minimum cot capacity as it had approximately 4 times the ideal number of cots for its population. On the contrary, Kayole II had none, Mbagathi had 30% the estimated minimum cots, and Mutuini had 70% of the recommended minimum as depicted in Figure 9 and Table 9.

Figure 9: Neonatal Care Capacity in Public Primary Referral Facilities in Nairobi



Source: KMFL and Analysis by Consultant

Assumptions

*7.2% of newborns need NBU care.

**Facilities serve more than immediate population.

***Recommended Target of 2 NBU Cots per 1000 Live Births.

Table 9: Nursery Service Capacity in Public Level IV Facilities in Nairobi

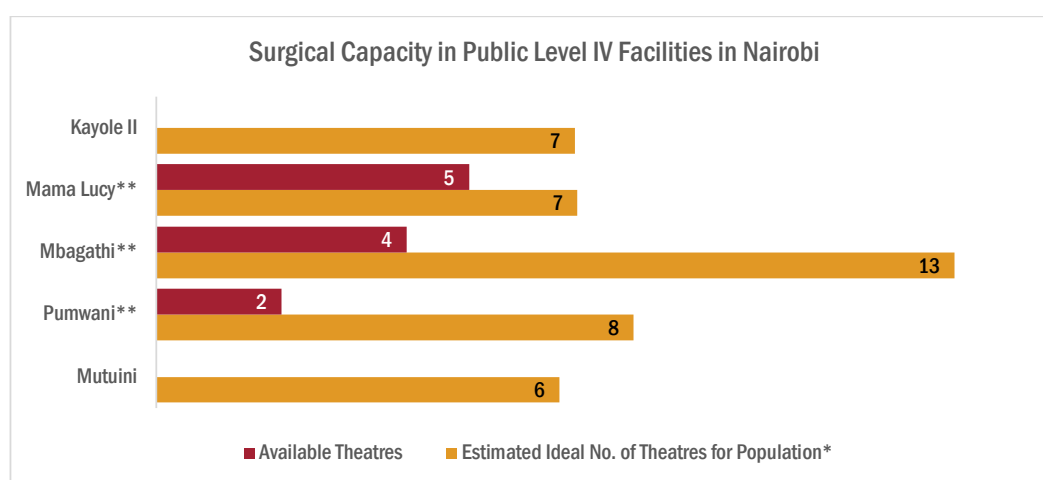
Hospital	Estimated Live Births in 2019	Estimated Ideal NBU Cots***	Available NBU Cots	Difference
Mutuini	5065	10	7	-3
Pumwani**	5999	12	150	138
Mbagathi**	10035	20	7	-13
Mama Lucy**	5293	11	40	29
Kayole II	5262	11	0	-11

Source: MOH Facility Workload Reports, Analysis by Consultant

3.1.8. Theatres available for Sub-County Population

All the public level IV facilities sampled did not have sufficient theatres for their respective catchment populations as shown in figure 10. Relative to the recommended number of theatres for the catchment population, Mbagathi had the greatest shortage having only four (4) theatres rather than thirteen (13). Kayole and Mutuini had no theatres while their respective populations would need a minimum of 7 and 6 theatres respectively. Given its immediate population, Pumwani would need at least six more theatres.

Figure 10: Surgical Capacity in Public Primary Referral Facilities



Source: Analysis by Consultant

Assumptions:

*3.6 per 100,000 population in South Sub-Sahara⁷

**Facilities serve more than immediate catchment population.

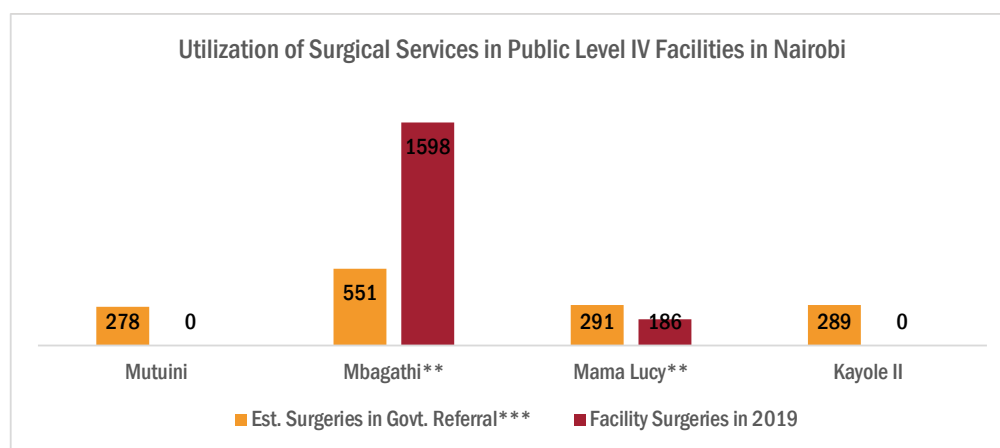
Table 10: Number of theatres in relation to the immediate subcounty population

Hospital	Total Population	Estimated Ideal No. of Theatres for Population*	Available Theatres
Mutuini	178962	6	0
Pumwani**	211991	8	2
Mbagathi**	354598	13	4
Mama Lucy**	187020	7	5
Kayole II	185948	7	0

Source: Analysis by Consultant

Facility data on major surgeries in 2019 suggests that Mbagathi Hospital had approximately thrice its expected surgical case load while Mama Lucy Hospital, which has the highest number of theatres (5), had 60% of its expected case load. Kayole II and Mutuini had no major surgeries due to lack of theatres as depicted in Figure 11 and Table 11.

Figure 11: Utilization of Surgical Services in Public Level IV Facilities in Nairobi



Source: Analysis by Consultant

Assumptions:

***KHHEUS 2018 Estimates that 7.1% of admissions are surgical; 48 Inpatient Admissions per 1000 population; and 45.6% of admissions are in Government Referral Facilities

**Facilities serve more than immediate catchment population.

Table 11: Utilization of Surgical Services in public level IV facilities in Nairobi

Hospital	Total Population	Est. Admissions*	Est. Surgeries in Govt. Referral***	Facility Surgeries in 2019
Mutuini	178962	8590	278	0
Mbagathi**	354598	17021	551	1598
Mama Lucy**	187020	8977	291	186
Kayole II	185948	8926	289	0

Source: Analysis by consultant

Service disruptions due to labor related disputes in the public sector were cited to account for the low utilization of surgical services at the public facilities.

"Frequent strikes from the health workers scare us from seeking care from the public facilities" (Patient, public facility)

3.1.9. Diagnostic Imaging Services

Most respondents had not used imaging services before. This was either due to low demand for the services or unavailability of the services in some instances which necessitated referrals. Availability of ultrasound services was considered extremely helpful for women in the reproductive age. Magnetic Resonance Imaging (MRI) and Computer Tomography (CT) scan services were often not available. Factors that made imaging services to be highly rated included; fair prices and friendly and informative radiographers.

“MRI and CT Scan services are not offered here hence we refer the patients elsewhere” (Staff, public facility)

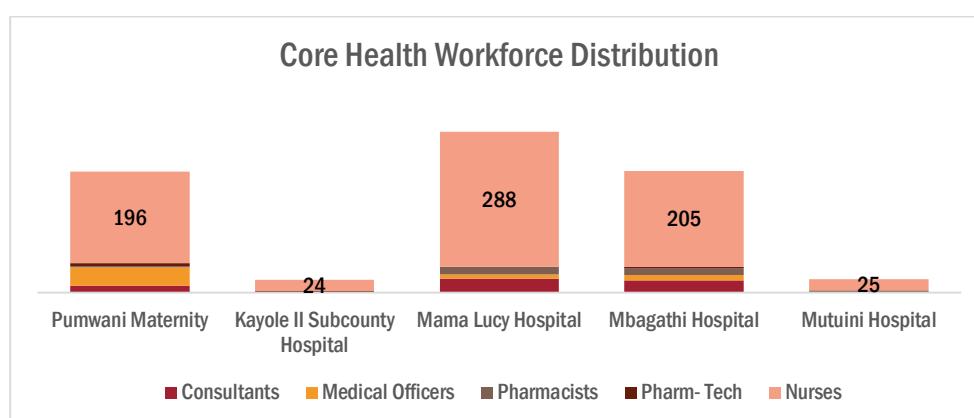
“The X-ray prices here are fair and the radiographer talks to you through the process.” (Patient, public facility)

3.2. Health Care Workforce

3.2.1. Staff distribution across level IV public facilities in Nairobi County

The findings of the study suggest that the staffing of the public level IV facilities does not conform to the staffing norms defined by the Ministry of Health and Kenya Medical Practitioners' and Dentists' Council for level IV facilities. Further, there was an imbalance in the skill distribution across the sampled facilities with nurses accounting for more than eighty percent (80%) of the health workforce as shown in figure 12 and table 12.

Figure 12: Core Health Workforce Distribution in Public Level IV Facilities in Nairobi



Source: Analysis by Consultant

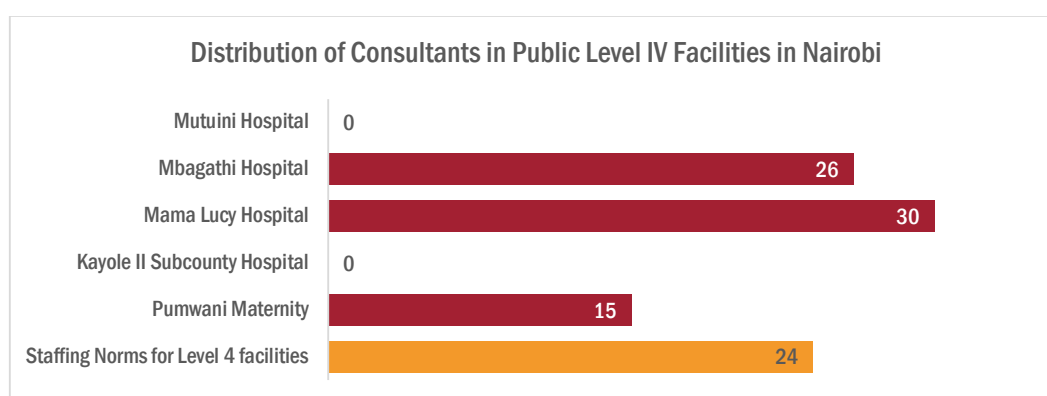
Table 12: Distribution of core HRH across the level IV public hospitals in Nairobi

Facility	Consultants	Medical Officers	Pharmacists	Pharm- Tech	Nurses
Staffing Norms for Level 4 facilities	24	16	4	8	46
Pumwani Maternity	15	39	2	7	196
Kayole II Subcounty Hospital	0	1	0	2	24
Mama Lucy Hospital	30	9	16	0	288
Mbagathi Hospital	26	11	14	4	205
Mutuini Hospital	0	1	2	1	25

Source: Analysis by Consultant

Only Mama Lucy and Mbagathi Hospitals had the recommended number of consultants (specialists) in keeping with the set thresholds by the Kenya Medical Practitioners' and Dentists' Council as shown in figure 13. Kayole II and Mutuini had no specialists.

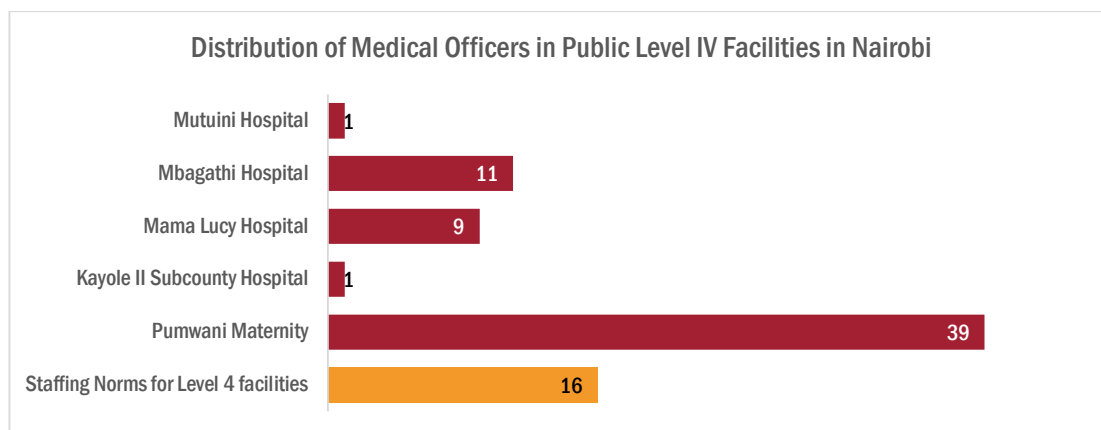
Figure 13: Consultant Distribution in Public Level IV Facilities in Nairobi



Source: Analysis by Consultant

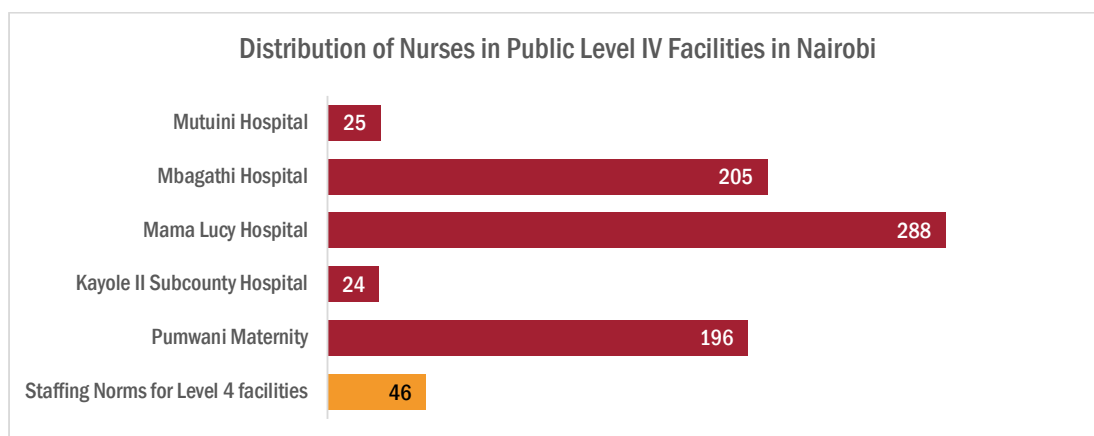
Only Pumwani had and exceeded the recommended number of medical officers (39 against the recommended minimum of 16) as shown below. Mutuini and Kayole II each had only one medical officer.

Figure 14: Distribution of Medical Officers in the Public Level IV facilities in Nairobi



Source: Analysis by Consultant

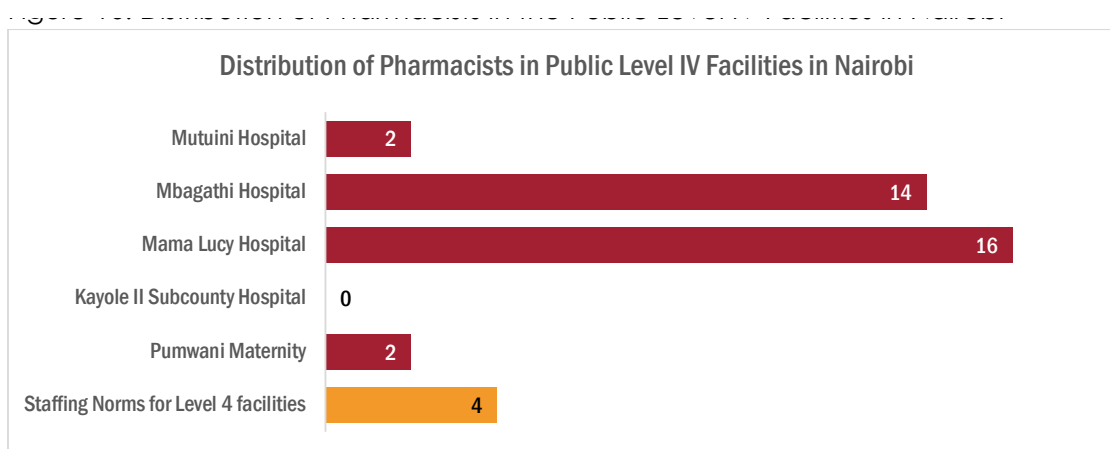
Figure 15: Distribution of Nurses in the Public Level IV facilities in Nairobi



Source: Analysis by Consultant

While 46 nurses were considered appropriate for level IV facilities, Mutuini and Kayole II had near half the recommended number at 25 and 24 respectively. The rest had almost four to six times the recommended number with Mama Lucy Kibaki having the highest at 288, Mbagathi having 205 and Pumwani having 196.

Figure 16: Distribution of Pharmacists in the Public Level IV Facilities in Nairobi



Source: Analysis by Consultant

While four (4) pharmacists were considered appropriate for level IV facilities, only Mama Lucy and Mbagathi Hospitals had met and exceeded the recommended norm (16 and 14 respectively). Pumwani Hospital, handling the greatest traffic of deliveries in the county had two (half the recommended number), while Kayole II had none.

3.2.2. Staff impact on service utilization

Friendliness of health workers and follow up on their patients contributed to positive patient experiences and higher utilization of health services. Negative past experiences such as rude and lethargic health workers deterred the respondents from seeking services in the public facilities. Corruption was cited as a key factor that contributed to negative patient attitudes and perceptions. For example, some staff circumvented the system and charged patients fees for services such as radiology and ambulance services. Informal payments were also sometimes solicited to enable patients to jump the long queues. These issues resulted in perceived low quality of services in the public facilities.

"I understand the ambulance for example is supposed to be free but I have used it and was charged Kes. 2,000" (Patient, public facility)

"In the clinics, there is supposed to be a queuing system but you see patients coming long after you and they are seen almost immediately. This is because they know someone; a nurse or doctor or someone" (Patient, public facility)

"There is also immense corruption when it comes to X-rays. The technicians approach us and tell us that instead of paying 1,500/- we pay them directly 1,000/- then they skip the registration and take you straight to do the X-ray." (Patient, public facility)

3.3. Ability to Pay

Most of the demand side respondents (patients and community members) reported that outpatient services were affordable to the local community. This was because there were no user fees charged at most of the facilities for consultation purposes. In facilities where a consultation fee was charged, it was perceived as being low as it ranged between Kes. 0 to 100/- for outpatient services in the public facilities compared to the private facilities (Kes.300-800/-). However, some respondents reported that even Kes.100 fee in public facilities was relatively expensive to the majority of the population from informal settlements.

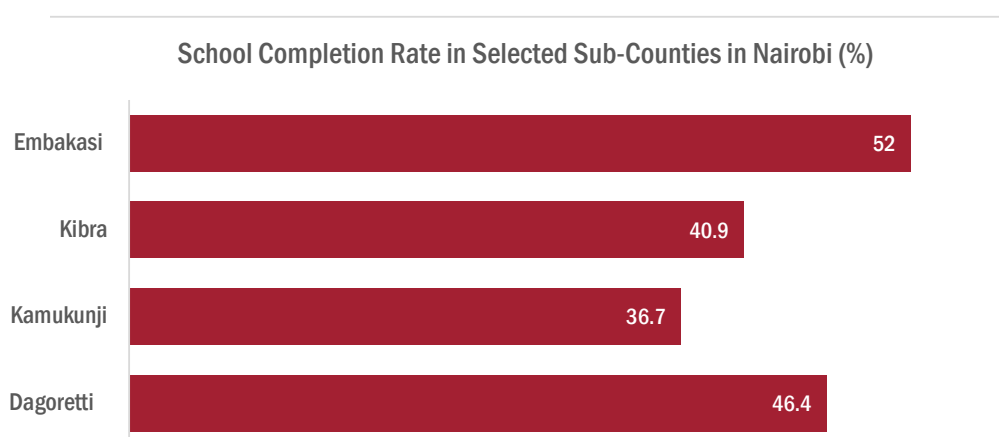
"It is cheap as we only pay Kshs. 100 for consultation and the services are good" (Patient, public facility)

"The services are affordable and we get many patients. They pay 300/= for consultation and the medicine is affordable" (Staff, private facility)

"The people who live around here are poor. They do not have money to pay for some of the services. Even that Kshs. 100/- for consultation is a struggle for some" (Patient, public facility)

Low levels of literacy have been shown to increase financial vulnerability of the communities, as this limits ability to earn sustainable income and hence lower ability to pay for services. Kamukunji and Kibra had the lowest school completion rates estimated at 36.7% and 40.9%, while Embakasi had the highest at 52% as shown in Figure 17 below⁸. The potential vulnerability is demonstrated by the reported high proportion of patients unable to pay for services (80%) at Mbagathi Hospital in Kibra Subcounty compared to the rest where only about 20% of patients were unable to pay for health care services they had received. The social work department would waive the fees for such patients.

Figure 17: Literacy levels of population around public level IV facilities in Nairobi



Source: 2019 Kenya Population and Housing Census: Volume IV

The selected services across the sampled facilities were noted to be more expensive in the private facilities relative to the public facilities as shown in figure 8. These findings were supported by the patients through the interviews.

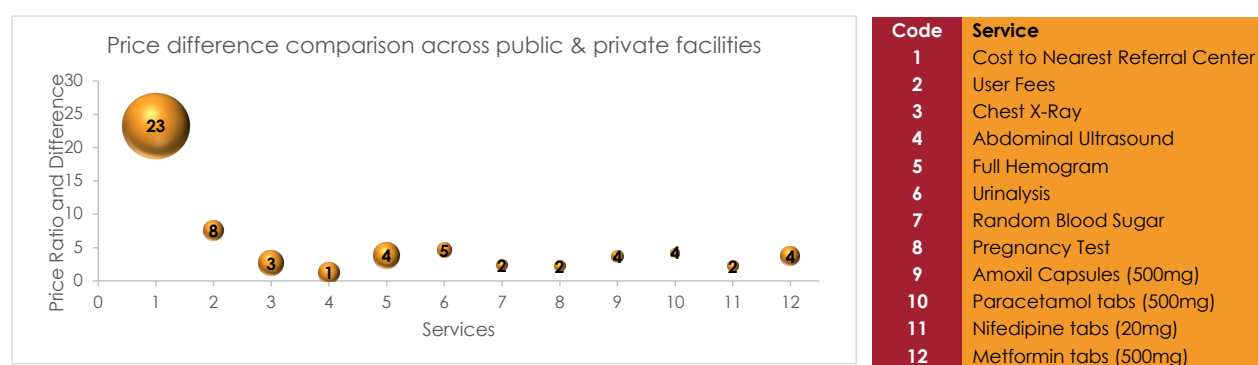
"The services provided here in the public facility are cheaper compared to nearby private facilities."
(Patient, public facility)

However, in some instances, patients still preferred the more expensive private facilities due to the perceived better quality of care - shorter queues and better services. Services that were deemed to be expensive amongst the respondents sampled in both public and private facilities included imaging services (such as MRI Scans), medicines and surgical services. Lack of drugs at the public facilities also made care expensive as patients had to buy the drugs from private institutions outside the facility.

"The number of referrals our facility receives is high because we offer better services and there are no long queues." (Staff, private facility)

"Surgery and Imaging (especially MRI) are expensive for most patients." (Staff, Public facility)
"Sometimes they do not have the drugs they prescribe and we have to buy them outside at private facilities which is expensive." (Patient, public facility)

Figure 18: Price variations for services in sampled facilities in Nairobi



Source: Analysis by Consultant

All sampled services were more expensive in the private sector compared to the public sector facilities. Referral services were most expensive (approximately 23 times more costly) in the private sector relative to public sector. Pregnancy tests and Urinalysis were estimated to be 8 and 5 times more expensive in the private facilities whilst the tracer drugs were between twice and five times more expensive.

There was a variance in pricing of tracer services even for the same level of facilities (level IV) with similar ownership (public/private). For instance, two level IV government facilities charging different prices for the same service such as Abdominal Ultrasounds at Pumwani costing Kes 1800 and Kes 1500 at Mbagathi Hospital.

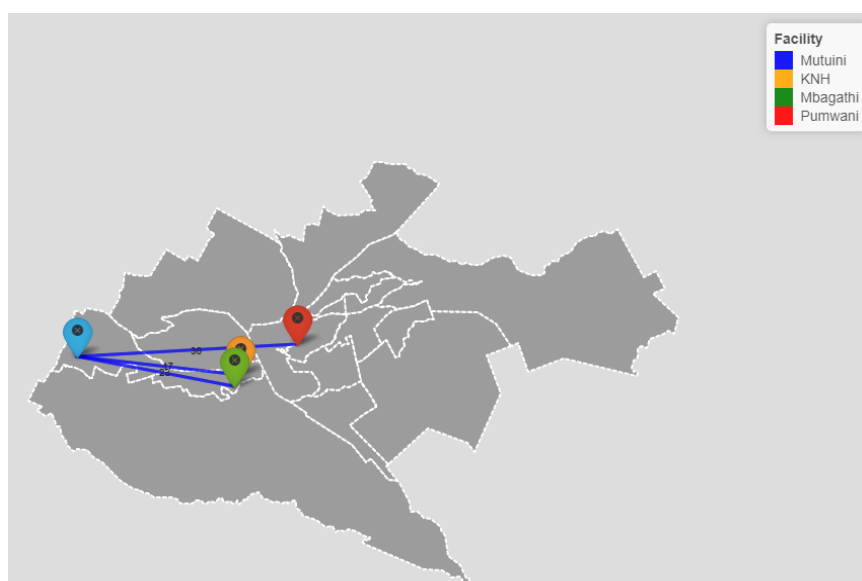
3.4. Referral Systems

3.4.1. Mutuini Hospital (Dagoretti South)

Most referrals into Mutuini were noted to be self-referrals from the community, predominantly complicated labor and specialist medical cases. Outbound referrals were reported to mainly be for surgical and specialized medical services to Kenyatta National Hospital, Pumwani Maternity and Mbagathi Hospital.

Noteworthy, the average distance covered across the top three referral destinations was highest at 21.7 kms, the nearest facility being 12kms (KNH) and the farthest being Pumwani Maternity, 30 kms away as shown in figure 19.

Figure 19: Top 3 Outbound Referral Destinations for Mutuini



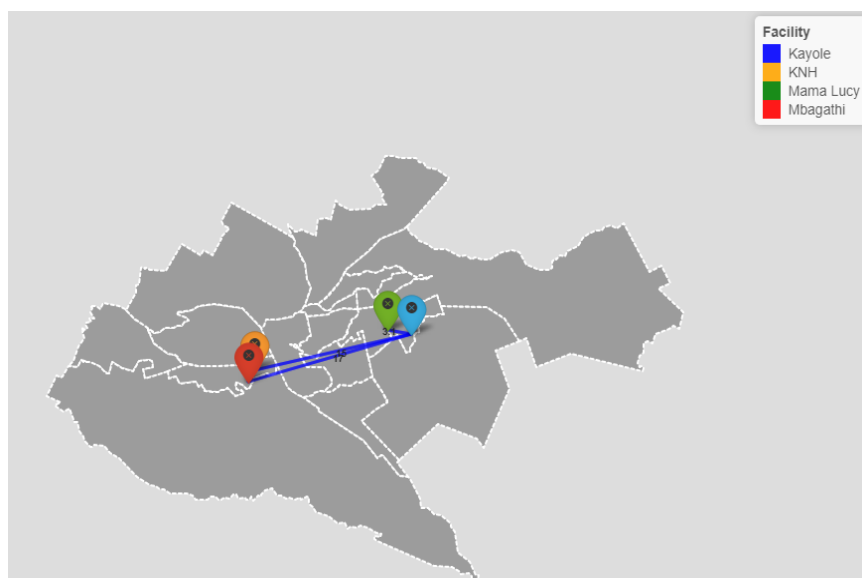
Source: Analysis by consultant

3.4.2. Kayole II Hospital (Embakasi Central)

Most referrals into Kayole II were noted to be from surrounding level II and III private facilities alongside self-referrals from the community. Most of these were for laboratory diagnostic services, specialist reviews and maternity services. Outbound referrals were reported to mainly be for surgical and specialized medical services to Kenyatta National Hospital, Mama Lucy Kibaki Hospital and Mbagathi Hospital.

Noteworthy, the average distance covered across the top three referral destinations was at 11.7 kms; the nearest facility being Mama Lucy Kibaki 3.1kms away and the farthest being Mbagathi, 17kms away as shown in figure 20.

Figure 20: Top 3 Outbound Referral Destinations for Kayole II



Source: Analysis by consultant



3.4.3. Mama Lucy Kibaki Hospital (Embakasi West)

Most referrals into Mama Lucy Kibaki Hospital were noted to be from surrounding level II and III public and private facilities alongside self-referrals from the community. Most of these were for specialized services such as COVID-19 care, rehabilitative services and maternity services. Most outbound referrals were reported to be for surgical care, and intensive care (ICU) services. Additionally, some referrals were as a consequence of lack of drugs, overcrowding of wards and service disruptions due to frequent health worker strikes.

The top referral destinations for Mama Lucy Kibaki Hospital were on average 14.7kms away, with Pumwani Maternity being nearest (10kms) and KUTRRH being farthest (20kms) as shown in figure 21.

Figure 21: Top 3 Outbound Referral Destinations for Mama Lucy



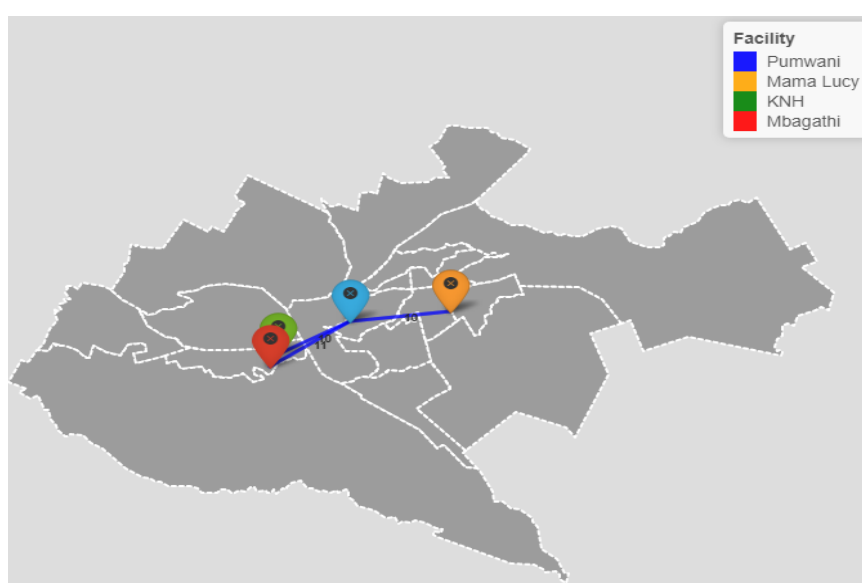
Source: Analysis by consultant

3.4.4. Pumwani Maternity Hospital (Kamukunji)

Most referrals into Pumwani Maternity Hospital were noted to be from diverse sources including surrounding and distant level II, III and IV public and private facilities alongside self-referrals from the community. Most of these were for normal and operative maternity services. Most outbound referrals were reported to be for intensive care (ICU) services and specialist services.

The top referral destinations for Pumwani Maternity Hospital were on average 10.3 kms away, with the nearest being KNH and Mama Lucy Kibaki Hospital (10kms) and Mbagathi Hospital being farthest (11kms) as shown in figure 22.

Figure 22: Top 3 Outbound Referral Destinations for Pumwani Maternity Hospital



Source: Analysis by consultant

3.4.5. Mbagathi Hospital (Kibra)

Most referrals into Mbagathi Hospital were noted to be from diverse locations including surrounding and distant level II, III and IV public and private facilities alongside self-referrals from the community. Most of these were for specialist reviews (paediatric and adult) and maternity services. Most outbound referrals were reported to be for intensive care (ICU) services, diagnostic imaging services (CT Scan and MRI Scan), surgical care and specialist services.

The top referral destination for Mbagathi Hospital was KNH 1.6 kms, the shortest referral distance among the sampled facilities.

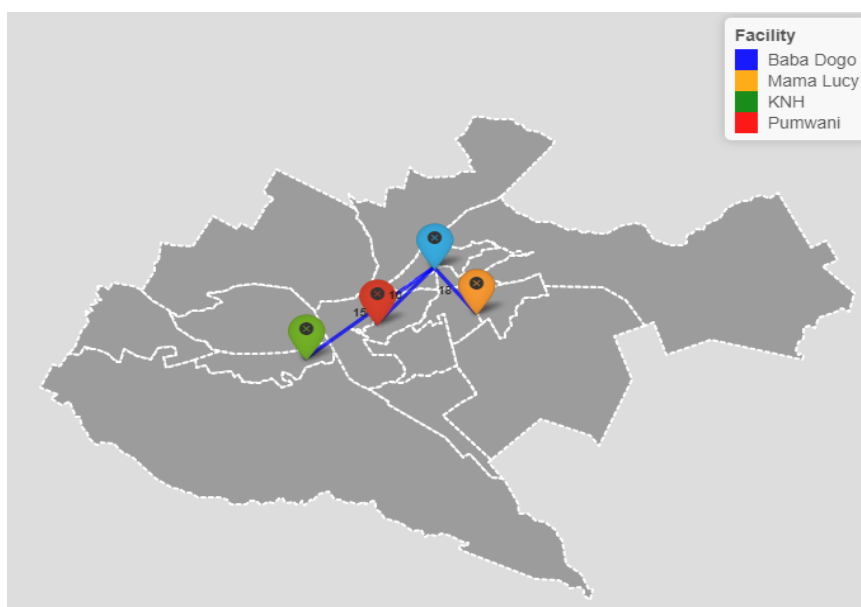
3.4.6. Baba Dogo (Ruaraka)³

Most referrals into Baba Dogo Hospital and Jamii Kipawa Health Centre were noted to be from surrounding level II and III facilities alongside self-referrals from the community. Most of these were for maternity services, trauma care, and child welfare service such as immunization. Most outbound referrals were reported to be for trauma care, complicated obstetric care, surgical care and specialist services.

The top referral destinations for Baba Dogo Hospital were on average 14.3 kms away, with the nearest being Pumwani Maternity Hospital (10kms) and Mama Lucy Kibaki Hospital being farthest (18kms) as shown in figure 23.

Figure 23: Top 3 Outbound Referral Destinations for Baba Dogo

Source: Analysis by consultant



³Baba Dogo Hospital was considered as a proxy for the upcoming level V Mathare Nyayo public hospital.

3.5. Referral process in sampled facilities

Most of the sampled public and private facilities followed the defined referral processes. This involved communication between the referring facility and the referral facility. Telephone communication and official referral letter were the most commonly used methods of communication. The severity of illness often determined whether an ambulance would be used or whether the patient would present themselves to the referral facility. In cases of emergencies, other informal modes of transport were used such as taxi and motorcycles.

The cost of the referral by ambulance was sometimes borne by the patient and sometimes by the facility. Where patients could not afford, a waiver of fee option was available, a process that would involve social workers to document the details of the referral.

"Once diagnosis is done and the facility establishes that it cannot handle the case, they call the referral facility to confirm availability of space, an external referral letter is written to the facility which passes through the social worker for recording. An ambulance is called beforehand to pick the patient. If they are not able to find an ambulance, the very sick patients are taken to the referral facility by a nurse/ community health worker at the expense of the hospital by a taxi/ boda boda. In cases where the patient is not very sick, they are given the referral letter to go to the facility on their own. Having passed by the social workers desk, she/he follows up with the patients to see if they visited the referred facility." (Staff, Public facility).

3.6. Referral Patterns

Most referrals reported in the study were from level III to level IV (50%) and from level IV to level VI (48%). There was still a high number of direct referrals from primary care level to tertiary level- 30% of referrals from level III to level VI and a third of referrals from level II facilities destined to the level VI facility as shown in figure 24.

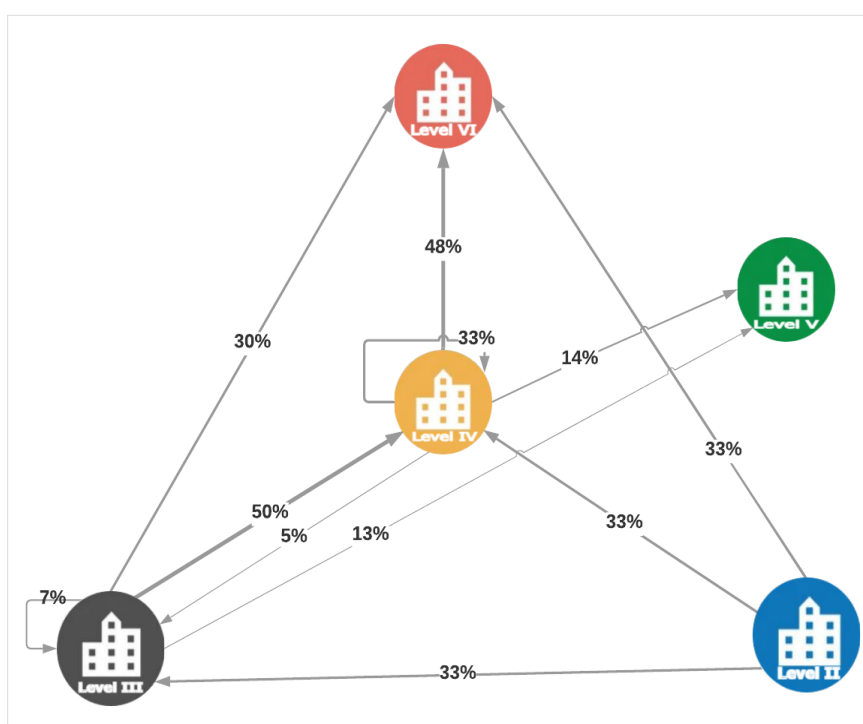


Figure 24: Referral patterns by level among sampled facilities in Nairobi

Source: Analysis by consultant

3.7. Case Studies on Management of Care and Referral Networks

3.7.1. Referral Systems in The Republic of South Africa

Highlights

- Integrated health care delivery anchored on the District Health Services.
- Robust gatekeeping through the District Hospitals.
- Clarity and explicit nature of service entitlements at different levels of care (Standardized care).
- Standardized referral systems
- Clear referral monitoring systems across all levels

Organization of the Health System

The Health System has 3 main components⁴:

- District Health Services
- Hospital Services
- Emergency Medical Services

a. District Health Services

Comprised of a network of Primary Healthcare Facilities linked to District Hospitals. These serve as the operational anchor for the South African health system and performs the gatekeeper role filtering cases to be escalated to the hospital services. District Health Services serve a defined population within a health district and support primary healthcare.

b. Hospital Services

i. Regional Hospitals

These serve a defined regional population and support several District Hospitals. They have the additional obligation of health worker training.

ii. Tertiary Hospitals

These support several regional hospitals and also facilitate training of health workers.

iii. Central Hospital

This hosts the national referral services. Additionally, training of health workers is a mandatory obligation for this level of care and is linked to a medical school.

c. Emergency Medical Services

EMS support the service delivery platform through ambulance services, aeromedical services and planned patient transport services. Ambulance services are required to transfer acutely ill or injured patients between their homes and nearest health facility (pre-hospital) as well as between the various levels of facilities (inter-facility transfers). Planned patient transport services are available for all non-emergency patients referred for consultation, from one health institution to another that is a significant distance away.

3.7.2. The UK National Health Service and Referral Management Centers

Highlights

- Robust gatekeeping through the GPs in the clinical commissioning groups (CCGs)
- Coordination of care through CCGs
- Integration of service delivery through a network of care within the CCGs
- Standardized referral processes through Referral Management Centers
- Patient/ Community involvement in care through the health and wellbeing boards

The United Kingdom's healthcare system, established in 1948, is a national system available to all residents, funded through taxation, provided using publicly owned hospitals and free at the point of use.

The Department of Health is the central government body principally responsible for setting policy for the health and social care system in England. Following the 2012 Health and Social Care Act, the specific roles of the Department changed from direct responsibility for the delivery of the NHS, to one that provides strategic direction and acts as steward for the system, develops national policies and provides leadership. Responsibility for the delivery of the NHS and care services shifted to NHS England⁹. NHS England is an executive body accountable to the Secretary of State and the public. It oversees the delivery of NHS services and is responsible for the contracting and purchasing of primary care health services.

The main responsibilities of NHS England are:

- To provide national leadership for improving outcomes and enhancing the quality of care;
- To oversee the operation of clinical commissioning groups (CCGs);
- To allocate resources to clinical commissioning groups; and
- To purchase primary care and directly commissioned services such as specialized services, offender health care and some services for the armed forces.

Primary care in the United Kingdom serves three main roles:

- It is the first point of contact when a person has a health concern;
- It provides on-going care for common conditions and injuries; and
- It is a gatekeeper to more specialized care, which is generally provided in hospitals.

Most NHS secondary care is provided in state-owned hospitals. Tertiary services offer more specialized care, and are often linked to medical schools or teaching hospitals. These often focus on the most complex cases and on rare diseases and treatments. The specialized services are concentrated in fewer centres in order to improve quality.

For patients to receive care from specialists, they must be referred by a GP or admitted to the hospital as an emergency case. Patients may pay privately for a private consultation, but most still require a GP referral. Recent policies have focused on reducing demand for emergency care through public information campaigning and broadening access to urgent care services. It is hoped that improving the integration of health and social care should also reduce demand for emergency care services and unnecessary hospitalizations.

Since 2013, primary care trusts have been replaced by 221 clinical commissioning groups (CCGs), led by general practitioners. The idea behind the creation of the clinical commissioning groups was that GPs should have more control over decisions about spending as GPs see patients more regularly than other health care providers and so theoretically have a better understanding of their needs.

Clinical commissioning groups commission urgent and emergency care, elective hospital care, community health services, mental health services, maternity, new born, and children's healthcare services, among others.

They commission these services from a range of providers such as public hospitals (NHS trusts and foundation trusts, which are semi-autonomous organizational units within the NHS) and community and mental health providers. CCGs are supported in their purchasing services by commissioning support units, strategic clinical networks and multi-professional advisory groups ("clinical senates").

Referral Management Centres

These are autonomous bodies contracted by CCGs to coordinate referrals within respective care networks with the aim of: i) Improving the quality of referrals and patient care; ii) Reducing referrals to secondary care; and iii) Increasing efficiency in the referral process^{10,11}.

Additionally, they do the following:

1. Standardize referral processes
2. Collect and analyse data on referral quality
3. Performance management of GPs in respective networks
4. Educate GPs to facilitate change in referral behaviour

Despite the cited aims; the RMCs are considered by some as an intrusion to clinical care; struggle with buy-in of the providers; add administrative costs to the system diverting resources from core care; and the efficiency of RMCs is yet to be proved.

The Care Quality Commission licenses, monitors and inspects health and social care organizations, and enforces national legal requirements for the organizations in its purview. Monitor is the economic regulator in the health sector in England. It sets and enforces the regulatory framework for providers and commissioners, as well as licensing NHS providers. Monitor and the Care Quality Commission are both non-departmental bodies which are accountable to parliament. The NHS Trust Development Authority monitors the performance of NHS

Trusts and supports them in improving the quality and sustainability of their services.

Health and Wellbeing Boards, formed by the local authorities, comprise representatives from the NHS, public health, adult social care, children's services and Healthwatch. These are anchored on the belief that local groups can best know how to address inequalities in health and how to meet the needs of the local population.

3.7.3. Care Coordination in Thailand

Highlights

- Comprehensiveness of care through clearly defined benefits
- Integration of service delivery within networks of care
- Community focus in care delivery

The Thai population is eligible for health services financially covered by three main schemes – the Universal Coverage Scheme, the Civil Servants Medical Benefits Scheme, and the Social Health Insurance Scheme. Structurally, there is at least one Tambon health-promoting hospital in each sub district, which covers approximately 5,000 people.

At the district level, there is at least one district hospital with 30–120 beds covering a population of around 50,000. At the provincial level, there is a general hospital covering a population of approximately 600,000, and some general hospitals have been upgraded to regional hospitals for referrals. At the top level of the system, there are 11 medical school hospitals. PHC in Thailand is mostly provided by government healthcare facilities at all levels^{6,7}.

The Bureau of Primary Care Development Coordination holds that Thai primary care has five important dimensions⁸:

- **Accessibility** so that service users can obtain initial care for most health needs from their registered primary care facility.

- **Comprehensive care package** that includes all necessary services, including health promotion, disease prevention, and curative, rehabilitative and supportive care for long-term conditions, provided both in the clinic and the home.
- **Well-coordinated services** so that local providers are able to refer service users to other specialized facilities and monitor progress on an ongoing basis.
- **Continuity of care**, with providers maintaining accessible medical records and meeting patients' health needs over time.
- **Community orientation** of care so that providers manage health problems at the population as well as the individual level, and the community has some influence on how primary care services are delivered.

Three governance models are implemented:

a. Region-based health services system.

Thirteen regional management offices have been established to facilitate better sharing of related resources within each region – not only finances, but also human resources, information, medicines and technologies – and to strengthen the referral system across care levels within regions to enable more efficient services.

b. District health system.

Health management at district level aims to coordinate and work effectively through multisectoral collaboration. It is the official mechanism at local level to streamline health in all policies, strengthen implementation and monitor progress, as well as operating as a channel to co-invest available resources from local stakeholders into health systems development. These adopt such strategic approaches as “U-CARE” – an acronym denoting Unity district health team, Community participation, Appreciation, Resource sharing and human development, and Essential care provision.

c. Primary care cluster.

Health prevention, promotion, and other primary care services are provided comprehensively through family care teams comprising family physicians and local multidisciplinary health personnel. Under the Universal Coverage Scheme, care is delivered through contracting units for primary care, which have minimum staffing requirements and consist of networks of Tambon health-promoting hospitals and a district or other hospital. Each contracting unit for primary care can comprise several health centres plus one hospital, or a group of health centres or even private clinics if they fulfil the human resources criteria.





Discussion

The assessment demonstrates that the current capacity of public secondary healthcare services in Nairobi County is inadequate for the population. It further highlights organizational inefficiencies in allocation and utilization of available resources, including human resources and infrastructure. Additionally, the study demonstrates inadequacies in the integration of secondary care services to primary and tertiary care services in Nairobi County.

a. Capacity of Secondary Care Facilities in Nairobi

The assessment demonstrates that the current capacity of public secondary healthcare services in Nairobi County is inadequate for the population. While all the counties under focus meet the WHO minimum threshold for health facilities (public and private) for the population (1:5000)¹², the majority of all primary health facilities (76%) are private hence reducing the effective number accessible to the general public due to the attendant costs of care. This lends itself as an opportunity for the respective counties to increase the number and capacity of public primary health facilities with a view to improving access by the public and reducing distances to care facilities.

Additionally, all the counties have a significant need for functional level IV public facilities providing specialized services and surgical care but the need is much dire in Nairobi County as only two level 4 facilities (Mbagathi and Mama Lucy Hospitals) are functionally accessible to all members of the public. This is further compounded by the high workload across most service areas

(outpatient, inpatient, maternity, nursery, and surgical), inadequate staffing, inadequate infrastructure and equipment, and service disruptions due to labor related disputes in the sampled facilities. The Linda Mama free maternity and post-natal services have also made maternal care affordable hence increasing demand for the services in public facilities hence an increase in the need for assisted delivery and caesarian section deliveries.

Increasing access to public level IV facilities, efficient redistribution of available resources, including the health workforce and infrastructure, to standardize services across facilities; poor patient experience as they seek care; and sensitization of health workers on quality would help reduce the congestion of cases at the few tertiary level facilities in Nairobi and its neighboring counties.

The predominance of private sector level IV facilities in the county (92%) provides an opportunity for possible structured public private partnerships (PPP) as the county simultaneously invests in establishing and strengthening public sector referral facilities. Such an approach must prioritize safeguarding public interest and resources; financial protection of the public in view of the high costs of care in the private sector; quality of care; accountability in view of prevailing limitations in regulatory and contractual capacities; and must draw and integrate lessons from the existing experience and evidence on PPPs in healthcare.

Further, with the high proportion of private level IV facilities, there is a high likelihood of limited access to services to the general public due to relatively higher costs of care

hence the need to mitigate against this risk. This necessitates improved access to prepaid schemes such as NHIF by the population to remove financial barriers of access to health care.

b. Organizational structure of secondary care systems in Nairobi County

This assessment highlights organizational inefficiencies in allocation and utilization of available resources, including the health workforce and infrastructure. Most of the outbound referrals from the sampled public level 4 facilities were for services that should be addressed at the level of care, hence preventable with efficient governance that ensures appropriate mix and distribution of the requisite service inputs and resources.

The reasons for referrals included caesarean sections, surgical services, medical products, diagnostic imaging services, and service disruptions due to labour disputes.

Additionally, the assessment highlights the imbalanced staff mix for the core medical personnel across the public level 4 facilities sampled with most lacking adequate numbers of specialists and medical officers deemed critical the operations of specialty and surgical services. Beyond the imbalanced staffing, there is limited evidence of measures instituted to ensure effective staff performance management with a view to improving productivity in the secondary care facilities.

The disparities in service capacities across the sampled level 4 facilities, specifically at Mutuini and Kayole II, elevate the need for efficiency analysis of resources deployed at public facilities to identify inefficiencies that may arise from imbalances between investments made and outputs achieved. This would yield insights that would help improve allocation of key yet scarce resources in health. These organizational inefficiencies that engender in inappropriate referrals from secondary care facilities put the vulnerable

patients at risk of poor health outcomes as some of the distances covered during the referrals are long. Additionally, the poor who rely on these facilities are disproportionately disadvantaged as they are unlikely to afford medical care at alternative private facilities.

c. Strengthening integration within the referral system in Nairobi County

This evaluation demonstrates inadequacies in the integration of secondary care services to primary and tertiary care services in Nairobi County. While all facilities sampled had clear internal processes for outbound referrals, there were a significant proportion of cases of referrals from primary care facilities and the community directly to the tertiary care facilities bypassing secondary care facilities. These were largely accounted for by organizational inefficiencies, inadequate capacity at the public level IV facilities and limited awareness on the referral processes among the public. This highlights weak adherence to and enforcement of the existing national referral guidelines. Evidence from the case studies on South Africa, Thailand, The United Kingdom and Canada demonstrates the value of standardization of services across the levels of care; clarity of entitlements across the levels of care; integration of care across all levels; and regular monitoring of referral systems to ensure efficient and responsive referral systems^{13,4,14-16}.

d. Country-wide policy on networks of care and centres of excellence

This evaluation, alongside review of global best practice, expose the potential of expanding the breadth and depth of services provided at referral and tertiary care facilities to the benefit of communities in Nairobi and by extension, Kenya through Centers of Excellence. While all sampled public level IV facilities had varied levels of maternal and child health services, Pumwani Hospital, a designated maternal care facility, had the highest utilization for maternity and neonatal



care in Nairobi. Additionally, it had a greater breadth of related services including the innovative yet first human breast milk bank in Kenya¹⁷. This evaluation however highlights that its potential is not fully realized due to organizational and health system inefficiencies.

While Centers of Excellence bear the potential of improving targeted niche care within referral networks, Elrod and Fortenberry¹⁸ and Mehrota and Dimick¹⁹ propose that their establishment and sustenance ought to be anchored on the following administrative and clinical pillars:

- i. a series of initial assessments to conceptualize the offering and ascertain contextual feasibility
- ii. detailed plans to address each component of the center of excellence including governance, service environment addressing contextual needs of the community, personnel, integration of medical care, financing, and branding
- iii. continuous learning and development of knowledge resources
- iv. monitoring systems for superior outcomes



Recommendations

a. Capacity of Secondary Care Facilities in Nairobi

Adequate resourcing of improvements in secondary care facilities in Nairobi County is critical to strengthening their capacity. Notably, for the investments in secondary care to bear lasting value, investments need to be concurrent across all levels of care given the interconnectedness in the continuum of care.

b. Organizational structure of secondary care systems in Nairobi County & in Kenya

Strong governance and coordination of secondary care networks is critical to driving efficiency in allocation and utilization of resources and ultimately maximizing the value in the investments made across the continuum of care.

This may entail establishment of coordinating mechanisms that establish care networks and oversee service delivery within the respective care networks as in the NHS Clinical Commissioning Groups (UK), Regional Health Services System (Thailand) and Regional Health Authorities in the decentralized health systems in Canada¹¹. Appendix 1 and 2 provide an appraisal of proposed approaches.

c. Strengthening integration within the referral system in Nairobi County

Clarity of scope and standardization of services for each level of care; regular monitoring of referrals; and continuous cross-talk and learning within and across the levels of care are critical to strengthening integration in the continuum of care in Nairobi County.

d. Country-wide policy on networks of care and centres of excellence

Formulation and enforcement of a national policy capturing the administrative and clinical requisites for establishment and operation of centers of excellence within referral networks is essential. Such a policy would be critical to ensuring feasibility, contextual responsiveness, operational efficiency, knowledge management, quality of care and accountability in governance and service delivery.



Conclusion

The evidence from the pilot of the UHC in Kenya demonstrated a surge in utilization of care hence access to health care across respective public facilities. It is therefore anticipated that there will be a significant increase in the number of people seeking care in public facilities in the country as a result of the national scale-up of UHC which was launched in December 2020. This necessitates improved coordination of care and referral networks to ensure that facilities are not only adequately staffed and equipped, but also operate efficiently for the respective level of care and resource allocation.

Limitations

While this study reviewed supply and demand side determinants of care and referral management in selected primary and secondary care facilities in Nairobi, it did not assess the efficiencies in resource allocation and use. A functional mapping that incorporates efficiency assessments is therefore recommended with a view to drawing better insights to inform reforms to the referral system and care networks.

This study evaluated the level IV public facilities which account for only eight percent (8%) of the level IV referral facilities in the county. A further analysis that also includes the private level IV facilities is recommended as this would provide more holistic insights on the factors that influence service utilization and the referral system in a mixed system as is characterized in Nairobi.

Additionally, a study that reviews the tertiary care networks within the country is recommended to complete the loop on insights on strengthening referral systems through the entire health system in the country.



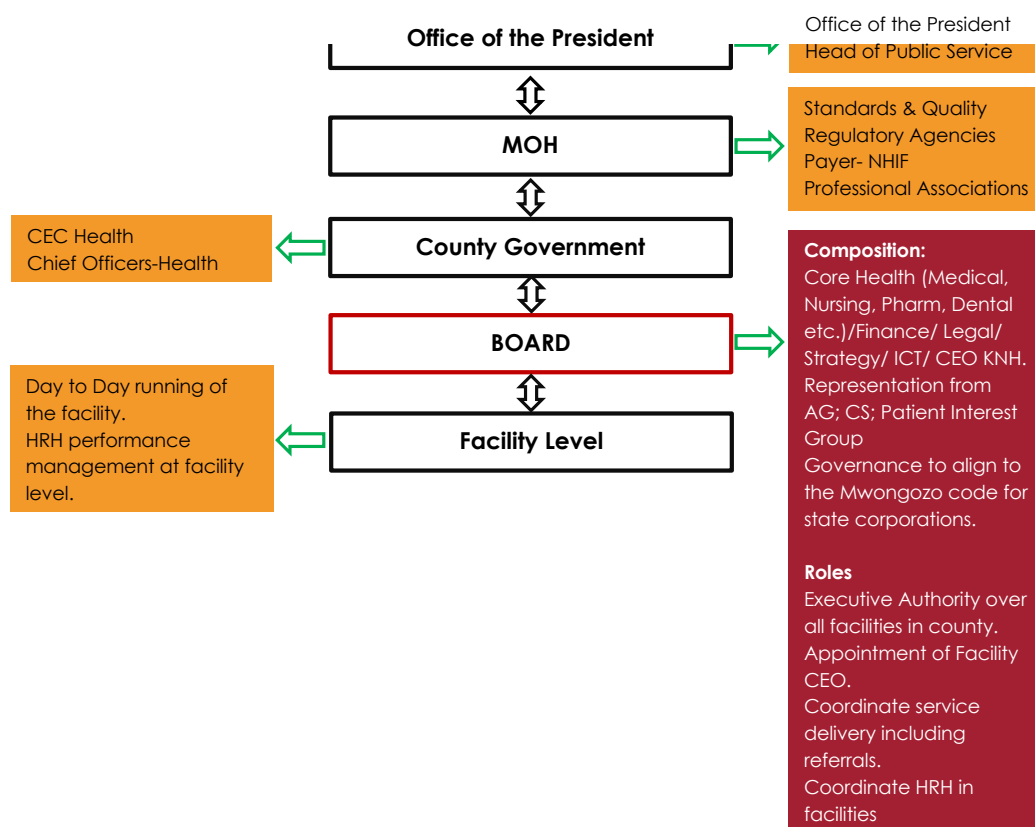
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Appendix

Appendix 1: Primary Care Coordinating Board Structure



Pros	Cons	Mitigation
The board reduces current bureaucracies in decision making and service delivery	Lack of buy-in by stakeholders (county, ministry, facility level) as it disrupts existing norms (and legal framework)	Leverage existing political goodwill in OP and NMS to implement. Active stakeholder engagement to ensure buy-in necessary for sustainable implementation.
Potential for effective governance and performance management	Short timeline given the potential for political transitions in 2022.	
Multiple stakeholder involvement in the governance structure	Additional administrative costs to sustain the proposed framework	

Appendix 2: Centers of Excellence

a. Trauma Services

- Convert Mbagathi Hospital into a designated Trauma Centre supported by Nairobi Spinal Injury Hospital.
- Transfer all Trauma Cases from KNH to Mbagathi and Nairobi Spinal Injury Hospital
- Station trauma teams in Mbagathi and Nairobi Spinal Injury
- Only highly specialized cases to be seen at KNH.

b. Maternal and New-born Care

- Station Maternal and Neonatal Care teams at Pumwani
- Only highly specialized cases to be seen at KNH.

Pros	Cons	Mitigation
Potential to decongest KNH	Does not address the system wide gaps in the referral network	Implement alongside strengthened system wide referral network.
Potential for improved management of Trauma and MNC care (and any other identified service)	Lack of buy-in by stakeholders (county, ministry, facility level) as it distorts existing norms (and legal framework). It would require the county to give up the target facilities to the national government. May be perceived to undermine devolution.	Leverage existing political goodwill in OP and NMS to implement
	Mbagathi Hospital serves a significant number of patients, majority being from the neighbouring Kibra slums. It is also the designated infectious disease centre in the county. Closing off the facility for other cases denies the vulnerable patients in the area an alternative facility.	Equip, staff and, where feasible, elevate level III facilities in the affected areas to ensure continuity of care.
	Closure also undermines the specialty function Mbagathi serves in infectious disease care.	

Appendix 3: Referral System Monitoring and Evaluation

Dimension	Indicators
a) Client Movement	1. Service utilization rates (number of clients attended and population) 2. Referral rate from referring service (number of clients referred and number of clients seen) 3. Referral uptake rate (number of referred clients seen at receiving service/facility and number of clients referred) 4. Median delay in completion of referral (median time in days from referral to capture at receiving service/facility) 5. Median emergency referral waiting time (median time taken after referral decision was made to the actual transfer of the client from the referring facility) 6. Counter-referral rate (number of clients received back at original referring service/facility with adequate information from receiving service and number of clients referred) 7. Client satisfaction (number of clients satisfied with referral service and number of clients referred)
b) Client Parameter Movement	8. Number of counties with enabling ICT infrastructure to support referrals 9. Number of e-health hubs established 10. Number of Web portals established (plus inventory) 11. Number of call centres to support e-referrals 12. Number of trained staff in client exchange parameters from county for e-referral
c) Specimen Movement	Network effectiveness 13. Number of specimens sent from satellite sites 14. Number of new nodal or satellite sites established in support of care and treatment for priority diseases 15. Number of new tests added to the test menu in the nodal sites Network efficiency 16. Number of referral costs 17. Median turn-around time for results Quality assurance 18. The specimen rejection rate 19. The volume of specimens referred to the nodal site for testing per given period of time, usually one year versus the staff establishment in the facility
d) Expertise Movement	20. Number of out-reach and mission services from county and out of county 21. Number of foreign, national, and county out-reaches and missions per county per year
e) Referral System	22. Number of health facilities with Emergency Operating Procedures (EOPs) 23. Number of fully equipped ambulances and trained personnel in emergency procedures 24. Number of counties with integrated emergency preparedness plans 25. Number of staff trained in emergency care 26. Proportion of health facilities with referral guidelines and protocols 27. Number of counties with a central command and coordination centre 28. Number of complaints about client rights per facility 29. Number of counties with functional ambulances as per the ambulance norms and requirements (number, type: basic, intermediate, and advanced) 30. Proportion of facilities with focal person for referral 31. Accessibility of e-referral guidelines in counties
f) Referral Processes	32. Proportion of referrals with completed referral forms 33. Number of self-referrals 34. Proportion of appropriate referrals as determined by receiving facilities (number of appropriate referrals and total number of referrals received) 35. Proportion of service providers that report satisfaction with referral services

Appendix 4: Respondents' Profiles

Facility Name	Ownership	Facility Level	Sub County	Staff Interviewed	Patients/Community Members Interviewed
1. Good Shepherd Clinic	Private	Level III	Dagoretti South	1	3
2. Mutuini Hospital	Public	Level IV	Dagoretti South	1	6
3. Nile Nursing Home	Private	Level III	Dagoretti South	1	4
4. Kayole II Subcounty Hospital	Public	Level IV	Embakasi Central	1	2
5. Diwopa Health Center	Private	Level III	Embakasi West	1	1
6. Mama Lucy Hospital	Public	Level IV	Embakasi West	2	3
7. Penda Hospital	Private	Level III	Embakasi West	1	
8. Radiant Hospital	Private	Level IV	Embakasi West	1	1
9. The Phadam Hospital	Private	Level III	Embakasi West	1	2
10. Umoja Hospital	Private	Level III	Embakasi West	1	1
11. Victory Hospital	Private	Level III	Embakasi West	1	1
12. Pumwani Maternity	Public	Level IV	Kamukunji	5	3
13. Mbagathi Hospital	Public	Level IV	Kibra	1	5
14. Shofco Kibera	Private	Level III	Kibra	1	2
15. St. Mary's Mission Hospital	Private	Level IV	Kibra	1	2
16. Jamii Kipawa	Private	Level III	Ruaraka	1	1
17. Baba Dogo	Public	Level III	Ruaraka	1	1
18. Ladnan	Private	Level IV	Starehe	7	2
TOTAL				29	40

Appendix 5: Data Collection Tools

Appendix 5.1: Health Facility Administrator

Theme 1: Patient's willingness and ability to pay for Healthcare

1. Do you think the services provided at the facility (specify) are affordable to the local community? Briefly explain.
2. What proportion of the patients you treat are unable to pay for services at the facility? (E.g. outpatient consultation) (in every 10, how many cannot pay?)
3. Which particular services would you say most patients in this community are unable to pay for? Probe for any of these and more)
 - Outpatient clinics
 - Admission
 - Surgery
 - Laboratory services
 - Medicines
 - Imaging tests (Probe for these, if available X-Rays/ CT-Scan/Ultrasound/MRI)
 - Ambulance Services
 - Others

Pricing Data	Description	Price (Kes)
Ambulance Services	Cost to Nearest Referral Center OR KNH OR Within Nairobi (Specify)	
Outpatient Consultation	User Fees	
Imaging Services	Chest X-Ray	
	CT Scan Head	
	Abdominal Ultrasound	
	MRI Lumbar Spine	
Laboratory Services	Full Hemogram	
	Urinalysis	
	Random Blood Sugar	
	Pregnancy Test	
Medicines	Amoxil 500mg capsule (per 5 day dose)	
	Paracetamol tabs (500mg)	
	Nifedipine tabs (20mg) (OR per monthly dose) Specify	
	Metformin tabs (500mg) (OR per monthly dose) Specify	
Surgical Service	Caesarean Section	

Theme 2: Facility Capacity

Please fill up the table below (probe and fill as respondent provides the information).

Description	Result	
a. Facility Capacity		
Inpatient Beds		
Maternity Beds		
Cot capacity (Beds for the new-borns under a month old)		
Theatres		
Functional Ambulance		
Consultation Rooms		
b. Health workforce		
How many of these do you have in your facility?		
Consultants		
Medical Officers		
Dentists		
Pharmacists		
Clinical Officers		
Nurses		
Pharmaceutical Technologists		
Radiographers		
Lab Technologists		
Oral Health Officers/ Dental Assistants		
Health Records Officers		
	2019	2020
c. Service Capacity		
Outpatient Visits		
Inpatient admissions		
Discharges		
Children Immunized		
Total Deliveries		
• Spontaneous		
• Caesarean		
Major Surgeries		
Minor Surgeries		

Theme 3: Referral Systems

1. What are the most common reasons for referral out of this facility? Allow for responses then probe for these and more. Allow them to rank top 3.
 - Minor surgeries
 - Major surgeries
 - Unavailability of drugs (to buy from private pharmacies)
 - Unavailability of lab services
 - Theatre equipment
 - Shortage of specialized healthcare workers (consultants, etc)
 - Cost of procedures/treatment-unaffordability to patients
 - Low number of healthcare workers
 - Others e.g strikes, absenteeism
2. What are the cases of referrals into this facility (Allow to rank top 3)?
3. Which are the facilities that refer most to your facility? (Top 3)
4. Which facilities do you mostly refer to? (Top 3)
5. How is referral of cases done? (probe on processes, who is involved, communication avenues between facilities etc).

6. How do you think we can decrease the number of self-referrals and referrals from lower facilities (so that the 'minor' cases could be handled by lower facilities?
7. How do you think we can decrease the number of self referrals and referrals away from this facility? (to make patients get good care at this facility without leaving)

Theme 4: Financing

1. Does your facility have its own bank account?
2. Do you, as a facility, have control over the account? Who controls the account? Please explain
3. Who decides on how the funds/ revenues generated by the facility are used? (e.g. Linda Mama/ NHIF/ Facility Improvement Funds (FIF) Please explain.
4. What would you say is an adequate budget to run this facility per month?



Appendix 5.2: Patient/ Community Members

Theme 1: Ability and Willingness to Pay for Healthcare

1. Do you think the services provided at facility (specify) are affordable to:
 - b. You?
 - c. The local community?
 Briefly explain.
2. The facility (specify) charges (X Shillings-Specify) for outpatient consultation/ registration. Do you think the price is Fair? Cheap? Expensive?

Theme 2: Perceptions on Service Capacity

3. On a scale of 1-5, how would you rate each of the following aspects of the services at facility (specify) (1 Poor, 5 Excellent)

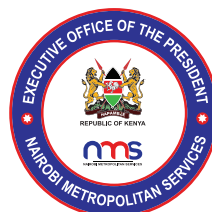
Service	Poor					Excellent				
	1	2	3	4	5	1	2	3	4	5
a) Outpatient Clinics										
b) Laboratory Services										
c) Imaging (Radiology..X-Ray etc) Services										
d) Inpatient (Wards)										
e) Surgical Services										
f) Maternity Services										
g) Ambulance Services										

Briefly explain reasons for your ratings?

Theme 3: Perceptions on Referral Systems.

4. What are the reasons why patients are referred from this facility? (Self referral or indicated by a health worker)? Probe for these and more?
 - Minor surgeries
 - Major surgeries
 - Unavailability of drugs (to buy from private pharmacies-)
 - Unavailability of laboratory services (to find in private or other facilities)
 - Theatre equipment
 - Shortage of specialized healthcare workers (consultants, etc)
 - Cost of procedures/treatment- unaffordability to patients
 - Low number of healthcare workers
 - Others e.g. strikes, absenteeism of staff etc
5. What alternative facility do most people in the area visit other than this facility?
6. How do you think we can decrease the number of self referrals and referrals away from this facility? (to make patients get good care at this facility without leaving)
7. On a scale of 0-10 (0, Never; 10, very likely) how likely are you to recommend anyone to seek treatment at this facility?





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