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Situation of Routine Immunization in Urban Poor Areas of Kisumu City, Kenya

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MCSP is a global USAID initiative to introduce and support high-impact health interventions in 24 priority countries with the ultimate goal of ending preventable child and maternal deaths (EPCMD) within a generation. MCSP supports programming in maternal, newborn, and child health, immunization, family planning and reproductive health, nutrition, health systems strengthening, water/sanitation/hygiene, malaria, prevention of mother-to-child transmission of HIV, and pediatric HIV care and treatment. MCSP will tackle these issues through approaches that also focus on household and community mobilization, gender integration, and eHealth, among others.

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Abbreviations

BCG	Bacille Calmette-Guérin
CHV	community health volunteer
EPI	Expanded Programme on Immunization
FGD	focus group discussion
IDI	in-depth interview
MCSP	Maternal and Child Survival Program
NGO	nongovernmental organization
RI	routine immunization

Executive Summary

In Kenya, according to a 2013 assessment, approximately 353,000 people are unimmunized,[1] and DPT3 coverage in the poorest wealth quintile is 10% lower than in the highest quintile.[2] A situation analysis of routine immunization (RI) in Kisumu City was conducted to assess the immunization status of children, and to understand the challenges and barriers to access and utilization of immunization services among the urban poor.

This assessment was primarily qualitative. Methods included in-depth interviews (IDIs) and focus group discussions (FGDs). However, since disaggregated data for the slum areas were not available at the health facility level, a rapid survey of 75 households was conducted in each of the slum areas. The purpose of the slum survey was not to estimate the coverage in the slums but to gain firsthand knowledge of the immunization status of children living in close physical proximity to health facilities offering immunization services in the slum areas, and to identify mothers of partially and fully immunized children for FGDs.

Access to immunization in the urban poor areas of Kisumu City was found to be high. However, utilization of immunization services was not as high; 20–70% of children in each slum dropped out and did not complete the immunization series. Shortages of staff, lack of funds for outreach, large catchment areas, frequent in and out migration of people in slums, and lack of training were mentioned as challenges by the health facility nurses. Mothers of partially immunized children gave a number of reasons for not being able to complete vaccination for their children, including attitude of health care workers, quality of immunization services, competing priorities of parents, lack of information/misconceptions, and lack of motivation of mothers/caregivers.

The findings of this assessment are invaluable for the development of strategies and plans to strengthen RI services and for achieving equitable coverage among different populations in Kisumu City. The findings can also be applied to other Kenyan cities.

[1] Mihigo R, Anya B, Okeibunor J, et al. 2015. Routine immunization in the WHO African Region: progress, challenges and way forward. *African Health Monitor*, World Health Organization Regional Office for Africa. (19).

[2] Kenya National Bureau of Statistics, Ministry of Health/Kenya, National AIDS Control Council/Kenya, Kenya Medical Research Institute, and National Council for Population and Development/Kenya. 2015. *Kenya Demographic and Health Survey 2014*. Rockville, MD, USA: Kenya National Bureau of Statistics, Ministry of Health/Kenya, National AIDS Control Council/Kenya, Kenya Medical Research Institute, National Council for Population and Development/Kenya, and ICF International.

Introduction

Background

Rapid urbanization presents an urgent challenge for the world's low- and middle-income countries. Over half of the world's population (3.9 billion people) currently lives in a city. By 2050, that number is expected to rise to 6.3 billion,[3] with over 90% of the growth occurring in low- and middle-income countries.[4] Six of the 10 countries with the highest urbanization rates in the world are in sub-Saharan Africa.[5] People flock to cities for economic opportunities, education, and social services. Rapid urban growth causes many interrelated challenges, including overextended resources, substandard services, and an increased probability of social unrest. The children of rural-urban migrant families in low- and middle-income countries are less likely to be fully immunized than those of urban nonmigrants and the general population.[6]

In Kenya, according to a 2013 assessment, approximately 353,000 people are unimmunized, the fifth largest number in the African region.[7] Additionally, immunization coverage, as measured by the third dose of diphtheria-tetanus-pertussis containing vaccine, is 10% lower in the lowest wealth quintile than in the highest.[8]

Kisumu is the third largest city in Kenya, situated in the Lake Victoria basin. It has a population of over 500,000 people and is one of the fastest-growing cities in Kenya, with a population increase of almost 50% during the intercensus period of 1979–1999. It is the commercial, trading, industrial, and communication hub of the western region of the country and attracts migrants from the surrounding districts.

Kisumu City, which is also known as Kisumu East Subcounty, consists of a well-planned, central area with government offices, the port, an industrial area, and housing for middle- and high-income residents. Surrounding this central area to the east is a semicircle of unplanned slum settlements on flat ground, where the bulk of the poor migrant population settles. Beyond the slum belt, periurban and rural areas are incorporated into the city boundary.

The industrial areas provide about 30% of employment opportunities for the urban poor. Some employment opportunities are also available in the residential and market areas. In addition, the phenomenal growth of *boda boda* (private motorcycle) transportation has created employment for young people in slum areas and provides cheaper and more flexible transport during both day and night.

The Maternal and Child Survival Program (MCSP) is the United States Agency for International Development's flagship program in support of its goal of ending preventable maternal and child deaths. MCSP's program in Kenya was in operation from 2014 to 2017. The immunization component of the MCSP Kenya program focused on improving access to and uptake of RI services in Migori and Kisumu counties. MCSP conducted an assessment from March 5–April 4, 2017, to discern the situation of RI in urban poor areas of Kisumu City. The findings of the study will inform development of an urban immunization strategy focusing on urban poor populations that are growing rapidly.

[3] United Nations. 2014. *World Urbanization Prospects: 2014 Revision, Highlights*. New York: United Nations.
[4] Baker JL. 2008. *Urban Poverty: A Global View*. Washington, DC: World Bank.
[5] Ibid.
[6] Awoh AB, Plugge E. 2016. Immunisation coverage in rural-urban migrant children in low and middle-income countries (LMICs): a systemic review and meta-analysis. *J Epidemiol Community Health*. 70(3):305–11. doi: 10.1136/jech-2015-205652.
[7] Mihigo R, Anya B, Okeibunor J, et al. 2015. Routine immunization in the WHO African Region: progress, challenges and way forward. *African Health Monitor*, World Health Organization Regional Office for Africa. (19).
[8] Kenya National Bureau of Statistics, Ministry of Health/Kenya, National AIDS Control Council/Kenya, Kenya Medical Research Institute, and National Council for Population and Development/Kenya. 2015. *Kenya Demographic and Health Survey 2014*. Rockville, MD, USA: Kenya National Bureau of Statistics, Ministry of Health/Kenya, National AIDS Control Council/Kenya, Kenya Medical Research Institute, National Council for Population and Development/Kenya, and ICF International.

Purpose of the Assessment

The purpose of the assessment was to review the situation of RI in the urban poor areas of Kisumu City, understand challenges in providing services to people living in informal settlements, and identify the barriers the urban poor face in accessing RI services so that strategies can be developed to overcome these barriers.

Methods and Materials

The assessment methodologies and tools were developed by MCSP Kenya's senior immunization technical advisor in Washington, DC, with input from the country-based immunization technical advisors. A consultant was hired for data collection. The consultant was trained in the methods and tools by the senior immunization technical advisor and supervised by the county-based immunization technical advisors. The senior immunization technical advisor also analyzed the data and prepared the report.

Site Selection for the Assessment

Table 1: Name, ownership, and type of health facilities included in the assessment

Name of the Facility	Ownership	Type
Kisumu County Hospital	Public	Hospital
Lumumba Subcounty Hospital	Public	Hospital
Nyalenda Health Center	Public	Health Center
Jaramogi Oginga Odinga Teaching and Referral Hospital	Public	Hospital
Kowino Dispensary	Public	Dispensary
Nyalunya Dispensary	Public	Dispensary
Simba Opepo Dispensary	Public	Dispensary
Pandiperi Health Center	Faith-based	Dispensary
Our Lady of Perpetual Support Dispensary	Faith-based	Dispensary
Disciples of Mercy Health Center	Faith-based	Dispensary
Jalaram Nursing Home	Private	Hospital
Nightingale Hospital	Private	Hospital
Kisumu Medical and Education Trust Cockran Clinic	Private	Hospital
St. Jude Medical Center	Private	Hospital

Table 2: Name and population of the slums included in the assessment

Name of Slum	Population (Source: Health Facility Data)
Nyalenda	32,430
Dago	8,000
Ragumo	9,000
Manyatta A	47,000
Manyatta B	30,000
Nyawita	14,747
Shauri Moyo	14,800
Obunga	18,627

The assessment was conducted in 14 health facilities and eight slum areas located in the catchment areas of the facilities. The facilities, representing 20% of all health facilities in the city and 40% of those providing immunization services, were a convenience sample of facilities that provided immunization services and contained a slum in their catchment areas. The facilities selected included seven public facilities (three hospitals, one health center, and three dispensaries), three faith-based facilities (two health centers and one dispensary), and four private facilities (hospitals).

Assessment Tools and Processes

The data collection tools for the assessment included a form for the IDI with the subcounty Expanded Programme on Immunization (EPI) focal person, a form for IDIs with nurses at the facility, a form for FGDs with mothers of partially immunized children, a form for FGDs with mothers of fully immunized children, and a form for FGDs with community health volunteers (CHVs).

Table 3: Type and number of assessment methods used and number of participants

Assessment Methods	Number of Participants
In-depth interview (IDI) with subcounty Expanded Programme on Immunization focal person	1
IDI with nurses at the health facility	14
Subtotal for IDIs	**15**
Focus group discussion (FGD) with mothers of partially immunized children	4
FGD with mothers of fully immunized children	2
FGD with community health volunteers	2
Subtotal for FGDs	**8**
Household survey	600

In total, the interviewer conducted 15 IDIs: one with the subcounty EPI focal person and 14 with the nurses at the health facilities. The interviewer also conducted eight FGDs: four with the mothers of partially immunized children, two with the mothers of fully immunized children, and two with CHVs.

The assessment started with an IDI with the subcounty EPI focal person. In the health facilities, the interviewer conducted the IDI with nurses, then reviewed with them the cold chain, supply chain, and EPI data for their facility. Given the lack of disaggregated data at the health facilities, the interviewer conducted a survey with 75 households with children 12–23 months old in each of the eight slum areas visited using the World Health Organization 75 household survey protocol.[9] The purpose of the household survey was not to estimate immunization coverage but to gain insight into the immunization status of children in the slums living in close proximity of health facilities offering immunization services and to identify mothers of partially/fully immunized children for the FGDs.[10]

Mothers of partially immunized children were asked why they did not complete vaccination schedules. They were also asked to suggest ways to remind mothers/caregivers about vaccination due dates and how their health facility could improve RI services.

Mothers of fully immunized children were asked to explain what enabled and motivated them to fully vaccinate their children. They were also asked to give suggestions on how to improve RI services and their opinion on the best ways to remind people about vaccination due dates.

CHVs were asked about their roles in RI and the management of vaccine-preventable diseases, how they follow up on vaccination schedules, their perception of the reasons why children are never or partially immunized, their opinion on the best ways to remind people about return dates, what they believe the barriers are to accessing immunization service for the urban poor population, the duration of their immunization training and what content it included, and what they saw as their future training needs.

Written and verbal consent were collected from the assessment participants before conducting the IDIs and FGDs. The subcounty EPI focal person accompanied the team and observed the processes during the entire assessment period.

[9] United States Agency for International Development (USAID). 2003. *Immunization Essentials: A Practical Field Guide*. Washington, DC: USAID.
[10] WHO. 2015. Microplanning for Reaching Every Community. In: *Immunization in Practice: A Practical Guide for Health Staff*. Geneva: WHO; 4(1–25).

Findings

Expanded Programme on Immunization Services in Kisumu City

There are 70 health facilities in Kisumu City, of which 20 are public health facilities (five hospitals, one health center, and 14 dispensaries), while the rest are private, faith-based, or owned by a nongovernmental organization (NGO). Immunization services are provided by 35 health facilities. Of these, 20 are public facilities and 15 are faith-based, private, or NGO facilities. The rest of the private facilities were not interested in providing immunization services.

> *Microplan has not been developed because there is no resource available to implement the microplan.*
> – Subcounty EPI focal person

Immunization Services at the Fixed Facilities

Table 4: Routine immunization services in the assessment health facilities

Health Facility	Routine Immunization Microplan	Frequency of Vaccination	Outreach Service
Kisumu County Hospital	No.	Daily.	No.
Lumumba Subcounty Hospital	No.	Daily. Bacille Calmette-Guérin (BCG) twice a week.	No.
Nylenda Health Center	No.	Daily.	No.
Jaramogi Oginga Odinga Teaching and Referral Hospital	No.	Daily.	Two sessions per month.
Kowino Dispensary	No.	Daily. BCG once a week.	Two sessions per month.
Nyalunya Dispensary	No.	Daily. BCG and measles once a week.	No.
Simba Opepo Dispensary	No.	Daily. BCG once a week.	One session per month.
Pandiperi Health Center	No.	Daily. BCG and measles once a week.	One session per year.
Our Lady of Perpetual Support Dispensary	No.	Daily.	No.
Disciples of Mercy Health Center	No.	Daily. BCG and measles once a week.	No.
Jalaram Nursing Home	No.	Weekly.	No.
Nightingale Hospital	No.	Daily. BCG and measles once a week.	No.
Kisumu Medical and Education Trust Cockran Clinic	No.	Weekly.	No.
St. Jude Medical Center	No.	Twice a week.	No.

RI services in Kisumu City are primarily facility based and provided by nurses. There was no microplan for RI available at the subcounty office or in the facilities. Ideally, facilities provided vaccinations daily, but many public and faith-based facilities did not provide Bacille Calmette-Guérin (BCG) and measles vaccines daily to minimize waste. This practice began following stock-outs of these vaccines in 2016. Facilities were linked with communities through CHVs, but CHVs were not paid by the county, and their services were only available if partners provided a stipend.

Outreach Services

Kisumu East Subcounty has not adopted the Reaching Every District strategy for RI. As a result, there was no funding available for outreach services to hard-to-reach areas (e.g., slum areas). Consequently, people living in the slums get their children immunized at the health facilities. A few public and faith-based facilities conducted outreach sessions in the slums in 2016, but this practice is irregular. Private facilities never conducted outreach sessions, as outreach is not part of their business practice.

Strategy to Ensure Equity in Immunization Coverage

Kisumu City does not have a strategy or microplan to ensure equity in RI coverage for its population. There was no funding available from the county government to conduct outreach services in the slum areas. The health facilities did not monitor immunization coverage for slum areas separately. Disaggregation of data for slum and nonslum areas was not feasible due to the fact that mothers/caregivers visited multiple facilities to vaccinate their children, and there was frequent in and out migration of people living in the slums.

Health facility staff described slum areas ranging from 2 to 10 square kilometers in size, with populations between 8,000 and 47,000 in Kisumu City. The majority of the families live in overcrowded conditions with only one room per family, a limited drinking water supply (about one community piped water source or borehole tube well per block), limited sanitation facilities (one pit latrine for 10 to 15 families), and very poor drainage and waste disposal facilities (leaving waste scattered around). Diarrhea, measles, malaria, malnutrition, and pneumonia are the most common diseases among children under 5. A measles outbreak in 2016 affected most of the slums. Most people work as day laborers, own small-scale businesses, or are unemployed. Alcohol addiction is rampant.

Availability of Trained Human Resources for Routine Immunization

There were three supervisory staff in Kisumu East Subcounty: the medical officer of health, the public health nurse, and the EPI logistician (EPI focal person). The medical officer of health was not trained in EPI and mainly performs an administrative role, managing all public health programs in the subcounty. While both the public health nurse and subcounty EPI focal person were trained in EPI (using the midlevel manager training), EPI was primarily managed by the EPI focal person.

Almost one-third of the sanctioned positions for nurses in the public health facilities were vacant. Also, less than one-third of nurses in public health facilities had received EPI in-service training. However, they were providing EPI services with the EPI knowledge they acquired during pre-service training or learned from peers who participated in the in-service training. They also learned by doing. In most faith-based and private facilities, there was only one nurse available for EPI services.

Table 5: Status of nursing positions in the assessment health facilities

Facility	# Sanctioned	# Filled	# Vacant	% of Sanctioned Positions Unfilled	# Received EPI In-Service Training
Kisumu County Hospital	8	6	2	25%	2
Lumumba Subcounty Hospital	7	4	3	43%	0
Nylenda Health Center	3	1	2	66%	1
Jaramogi Oginga Odinga Teaching and Referral Hospital	3	2	1	33%	1
Kowino Dispensary	3	3	0	0%	0
Nyalunya Dispensary	5	5	0	0%	2
Simba Opepo Dispensary	4	2	2	50%	1
Pandiperi Health Center	3	3	0	0%	1
Our Lady of Perpetual Support Dispensary	3	3	0	0%	1
Disciples of Mercy Health Center	2	2	0	0%	2
Jalaram Nursing Home	2	1	1	50%	1
Nightingale Hospital	2	1	1	50%	1
Kisumu Medical and Education Trust Cockran Clinic	2	1	1	50%	0
Saint Judes Medical Clinic	2	2	0	0%	1

Cold Chain

The cold chain was found to be functional in the public health facilities, and vaccines were properly stored to remain potent. However, ice-lined refrigerators at the health facilities were found to be very old (procured more than 15 years ago), and in a few public health facilities, the ice-lined refrigerator (model RCW 42EG) was deteriorating and in need of replacement; for example, the doors did not close properly.

The cold chain was nonfunctional in the private facilities. Private facilities use small, domestic-type refrigerators to store vaccines, but these do not accommodate all EPI vaccines as per guidelines. Nurses do not know how to use and interpret the fridge tags and vaccine vial monitors. Unexpired vaccine vials with stage four vaccine vial monitors were found in the private facilities' refrigerators and were being kept for use.

Vaccine and Supply Logistics

EPI vaccines and supplies were provided to all facilities (public, faith-based, and private) from the subcounty stores through a pull system—facilities receive vaccines as per their requirement. All vaccines included in the national immunization schedule were available at the time of the assessment. However, eight out of 14 facilities had stock-out of BCG for 1 to 3 months in 2016. One public facility had stock-out of three vaccines (BCG, polio, and measles) for 2 weeks in 2016. Most of these facilities currently provide the BCG and measles vaccines once or twice per week to minimize waste of the BCG vaccine (20-dose vial), leading to missed opportunities for vaccination. National policy is to provide all vaccines daily at the health facilities.

EPI supplies were available at the time of assessment in all facilities. However, nine out of 14 facilities had stock-out of the mother and child booklet (home-based record) in 2016 and continued to have an erratic

supply of it in 2017. One facility reported stock-out of the BCG syringe and an inadequate supply of safety boxes in 2016.

Availability of Financial Resources for Routine Immunization

During the devolution that occurred approximately 5 years ago, responsibility for providing EPI operational funds and EPI logistics was shifted to the county government. Public health facilities receive a lump sum payment each quarter from the county health department to manage their health program activities, including EPI services. The in-charge of the health facilities included in the assessment indicated that the amount was not enough for running both the curative and preventive health services of the facility. All facilities (public, faith-based, and private) had available funds to bring vaccines and supplies from the subcounty store. A few facilities used their facility vehicle to do so. There was a shortage of operational funds and lack of EPI supplies, including recording and reporting tools. All EPI recording and reporting tools were supplied by the county health office, an outcome of advocacy efforts by partners. However, there was reportedly frequent stock-out of home-based records (mother and child booklet) in the assessment health facilities.

Supervision

As described above, there were three supervisory staff in the subcounty. The medical officer of health mainly performed administrative jobs. The public health nurse was supervisor of all public health programs in the subcounty. Supervision for RI was primarily conducted by the subcounty EPI focal person, who was also responsible for supply of vaccines and supplies in the subcounty. The subcounty health office did not have a vehicle for supervision.

The subcounty EPI focal person visits the facilities providing immunization services either monthly or quarterly, depending on the quality of service assessed during the previous visit, and sometimes makes unplanned visits when required. During the visit, the supervisor checks the condition of the refrigerator, arrangement of vaccines in the refrigerator, and the stock condition of vaccines and supplies. The supervisor records the findings and action points in the supervision booklet provided to each facility by the subcounty. The supervisor then immediately provides feedback to the nurses and leaves one copy of the report in the facility. Sometimes, the supervisor also sends a written report after 1 or 2 weeks.

As the EPI focal person is the only EPI supervisor in the subcounty, he has to visit more than one facility per day, so he does not have time to conduct on-the-job training or mentorship for the nurses on any weakness observed during the visit.

Use of Data for Decision-Making

The EPI permanent register was available in all facilities (public, faith-based, and private), but only a few facilities updated the permanent register after each vaccination, limiting its use for tracking defaulters. Some facilities recorded cellphone numbers of mothers/caregivers in the permanent register, but these were seldom used for tracking defaulters due to lack of funding for airtime. Two faith-based facilities had a phone and resources for airtime for defaulter tracking. Although nurses in public and faith-based facilities mentioned that they follow up with defaulters via CHVs, this system frequently fails because CHVs are only available if they are paid. Private facilities do not have any system or policy for tracking defaulters.

The coverage monitoring wall chart was provided by partners and available in almost all public, faith-based, and private facilities for 2016, but it was not updated for 2017 in most facilities.

Administrative reporting of immunization coverage for most antigens in the assessment facilities was high in 2016, except for BCG. The reason for this may be the stock-out of BCG that year and the facilities' resulting decision not to provide BCG daily. Coverage of other antigens in most facilities was over 100%, perhaps due to an unrealistic denominator that was not estimated based on population. Denominators provided by the subcounty health office to the facilities were based on the number of children vaccinated in the previous year.

Other data quality issues (see section 3.11 for more detail) further complicated estimations of coverage. The number of children receiving vaccines from in the private facilities was relatively low for all antigens compared to public and faith-based facilities, as very few people visited them for vaccination.

Table 6: Immunization service data and dropout rates in the assessment health facilities (source: administrative data)

Facility	BCG (%)	Penta1 (%)	Penta3 (%)	MCV1 (%)	% Drop out (Penta1 - Penta3)	% Difference between Penta 1 and MCV1 Coverage
Kisumu County Hospital	199	85	74	77	13	8
Lumumba Subcounty Hospital	71	125	113	89	10	36
Nylenda Health Center	69	107	138	119	-23	-12
Jaramogi Oginga Odinga Teaching and Referral Hospital	223	87	79	65	10	12
Kowino Dispensary	108	108	93	120	13	-12
Nyalunya Dispensary	56	112	112	99	-1	13
Simba Opepo Dispensary	50	97	97	114	0	-17
Pandiperi Health Center	N/A	116	112	153	3	-37
Our Lady of Perpetual Support Dispensary	N/A	58	66	78	-14	-30
Disciples of Mercy Health Center	N/A	114	105	84	8	26
Jalaram Nursing Home	72	82	52	50	37	32
Nightingale Hospital	12	57	43	103	26	-46
Kisumu Medical and Education Trust Cockran Clinic	92	48	71	91	-48	-43
St. Jude Medical Center	54	55	54	56	2	-1

Data Quality Issues

Issues with quality of RI data for administrative coverage reporting were found in all the surveyed facilities of Kisumu City. Problems with the denominator are described in the previous section. There were also issues with the numerator. For example, if children who are registered at another facility come for vaccination, they are not included in the vaccinating facility's register, but they are given the vaccination and are therefore included in the tally sheet. This situation frequently occurs when a child is vaccinated and registered in the hospital during his/her mother's postnatal visit, then visits the health facility nearest his/her home for the remaining vaccinations in the schedule. As a result, facilities' immunization data are skewed, with higher numbers of vaccinated children for Penta3 and MCV1 compared to Penta1, leading to high negative dropout rates. Negative dropout rates ranged from -14% to -48% for Penta1–3 and -2% to -90% for Penta 1-MCV1. Coverage of MCV1 was found to be higher than Penta1 in eight out of 14 assessment facilities.

Community Linkage

As per the national community health strategy, there is one community health coordinator at the subcounty level, one community health extension worker at each public health facility, and, based on the population in the catchment area of the health facility, a group of CHVs under the supervision of a community health extension worker, who assigns their work. However, the CHVs are not paid by the government, so their support is available only if they are paid some sort of stipend by partners. CHVs' knowledge of RI is limited, as they receive only 1 hour of training on EPI as part of the community health strategy training. Some NGOs paid CHVs to encourage linkage with the community for activities such as water and sanitation interventions or tracking HIV and TB patients.

Nurses mentioned that they could use their personal cellphone if money for airtime was provided to them to call clients. For example, they might use them to call pregnant women to remind them to attend antenatal visits or to track immunization defaulters.

Involvement of Civil Society in Routine Immunization

The subcounty EPI focal person stated that there is no involvement of civil society in RI at the moment and no ongoing effort to network with civil society. The lack of civil society involvement is due to the current focus on the national community strategy and the involvement of CHVs. None of the health facilities mentioned involving any person from civil society in RI.

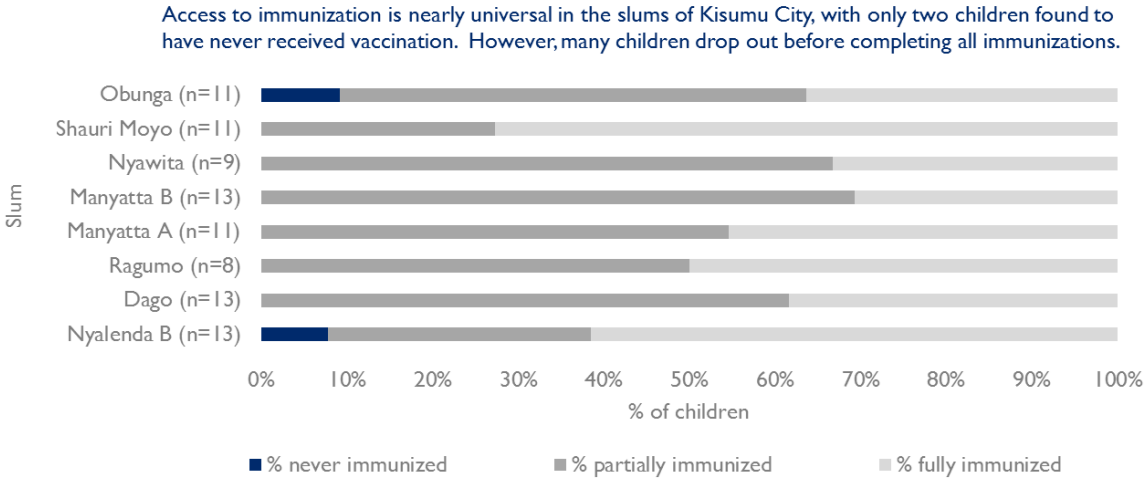
Challenges of Health Facilities in Providing Routine Immunization Services to Urban Poor Populations

The challenges in providing RI services to urban poor populations that the nurses in the health facilities mentioned included (ranked from most to least cited): shortage of staff, lack of funding (for outreach and airtime for defaulter tracking), large catchment areas, frequent in and out migration of people, lack of training for providers, inconsistent supply of home-based records (mother and child booklet), inactive CHVs due to lack of remuneration, religious beliefs against immunization, inadequate space in the health facility, and strikes by nurses or doctors.

Immunization Status of Children 12–23 Months Old in Slum Areas (Card Plus History), According to the Household Survey

Immunization status of each child was determined based on the vaccination card (mother and child booklet) or, if the card was not available, based on the mother's recollection. The mother and child booklet was available for about half of the children in the slums areas. Only half of the children have access to immunization as measured by Penta1 coverage was found to be good in the slums. Only one child each in the Nyalenda B and Obunga slums was found to be never vaccinated. In all slums, however, many children were found to be partially vaccinated, meaning they dropped out and did not complete their immunization series. On the other hand, in Nyalenda B and Shauri Moyo slums, almost two-thirds of children were found to be fully vaccinated.

Figure 1: Number of children 12–23 months old fully, partially, and never vaccinated in slum areas



Data source: survey of 600 households in slum areas of Kisumu City, Kenya

Reasons Given by Mothers for Not Being Able to Fully Vaccinate Their Children

The reasons given by mothers of partially immunized children for not being able to complete vaccination for their children can be divided into five categories: attitude of health workers, quality of service, competing priorities, lack of information/misconception, and lack of motivation.

Attitude of Health Workers

Problems that mothers cited included losing their child's vaccination card (mother and child booklet) and not returning to the facility for fear of reprimand from the nurses; unfriendly nurses who harassed the caregivers when they asked questions; and nurses who sometimes vaccinated slowly in the morning, especially close to lunchtime, and did not run vaccination sessions in the afternoon.

> *I missed the date to return to the facility for just 1 day due to a genuine cause, and I feared the nurse will shout on me. So I preferred not to go to the facility due to fear of abusing language of the nurse. Also, I thought she could be rough in giving injection to my child as she is annoyed with me.*
>
> – Mother of a partially immunized child

Quality of Service

Problems that mothers cited included trainee nurses being left alone to vaccinate children, lack of information provided on possible side effects (namely, swelling and pain at the injection site and high fever, causing the mother to spend a sleepless night due to the child's crying), being charged at the facility for vaccination and cards (mother and child booklet), long wait times, unavailability of vaccines at the facility, distance to the health facility, lack of transportation, and difficulty getting to the facility on foot on rainy days.

Competing Priorities

Problems that mothers cited included their work outside the home during the day, days off not being permitted at the workplace, being too busy at home with important household work, and attending a funeral service.

Lack of Information/Misconceptions

Problems that mothers cited included nurses not informing them of the date for subsequent visits, not wanting to take the child for vaccination when he/she was sick, forgetting the return date, and concerns that vaccines contain contraceptives that will lead to infertility of the child.

Lack of Motivation

Problems cited by mothers included being too tired to take the child for vaccination, too many visits being required for vaccination, religious beliefs against vaccination, and fear of HIV testing when visiting the health facility for vaccinations.

> *A nurse injected my child while talking with another nurse and the vaccine splashed out. The nurse repeated the injection. I felt so bad that I thought I should not return for the subsequent doses, but I went back, as I know the importance of immunization.*
>
> – Mother of a fully immunized child

Enabling Factors for the Mothers of Fully Immunized Children

The factors that enabled the mothers of fully immunized children to complete vaccination schedules included being well-informed about the benefits of immunization, understanding that immunized children are protected from diseases, having seen on television the suffering of children who were not immunized (e.g., paralysis from polio), and a conviction that responsible parents understand that immunization is a child's right.

Suggestions Given for Improving Routine Immunization Services

Suggestions given by mothers of partially immunized children for improving RI services included writing the date of next visit in the mother and child booklet, informing the mothers of the date verbally, providing health education for the waiting mothers on the importance and doses of vaccines, ensuring that qualified health providers give vaccination, ensuring the availability of adequately skilled staff at the health facility, not leaving trainees (student nurses) alone to immunize children, conducting community meetings to build awareness about vaccination, ensuring staff have a friendly attitude toward clients, ensuring the availability of all required vaccines at the facility, and starting vaccination sessions early in the day so mothers do not need to wait a long time.

> *No mother forgets the return date if she is informed about it and it is written in the mother and child booklet, unless she ignores the information that was given.*
>
> – Mother of a partially immunized child

Suggestions given by mothers of fully immunized children for improving RI included reducing waiting time for mothers by increasing the number of rooms and providers for immunization in hospitals, ensuring that nurses avoid having personal conversations with colleagues during vaccinations, ensuring that nurses do not give preference to their friends' children during vaccination, training nurses to be friendly and not harass clients, and requiring nurses to wear their uniform while on duty.

Best Ways to Remind Mothers/Caregivers about the Due Date of Vaccinations

Suggestions given by mothers of partially immunized children about the best way to remind mothers/caregivers about vaccination due dates included taking the cellphone number of the mother/caregiver (and husband) and calling them to remind them of return dates, writing return dates in the mother and child booklet, advising the mother to check the return dates in the mother and child booklet periodically, and giving the defaulters list to CHVs so they can remind the parents to go to health facility for vaccinations.

Suggestions given by mothers of fully immunized children about the best way to remind mothers/caregivers about vaccination due dates included clearly writing the return date in the mother and child booklet, informing mothers about the return date after vaccination, conducting mobilization meetings at the community level to raise awareness about vaccines and doses, ensuring all vaccines are provided on a daily

basis to avoid missed opportunities, and using local media (such as radio) to inform people in the local language about how many times they need to visit a health facility to complete their children's vaccination schedules.

CHVs' suggestions about the best way to remind mothers/caregivers about vaccination due dates included having CHVs inform mothers/caregivers about due dates by going door to door in the community, providing health education in the health facility, involving spouses (fathers) in the return dates, and providing the health facilities with cellphones and airtime to call immunization defaulters.

Roles Community Health Volunteers Can Play in Routine Immunization

The CHVs mentioned that they could register and refer newborn children to health facilities for vaccination, track defaulters at the household level, talk to parents who do not believe in immunization, and conduct community sensitization meetings during supplemental immunization activities, such as the measles rubella campaign.

Community Health Volunteer Knowledge about Vaccine-Preventable Diseases and Immunization Schedules

CHVs' knowledge about vaccine-preventable diseases was limited to polio, measles, tetanus, whooping cough, and yellow fever. CHVs knew the vaccination schedule of the traditional vaccines but lacked up-to-date knowledge about new vaccines added to the schedule. For example, none of the CHV participants were aware of the pneumococcal conjugate vaccine, rotavirus, or inactivated polio vaccines.

Community Health Volunteers' Perception of Barriers for the Urban Poor in Accessing Immunization Services for Their Children

The barriers to immunizing the urban poor perceived by CHVs included parents' lack of knowledge, lack of transportation/fare, misconceptions about vaccination (such as the belief that if a sick child is immunized, it will worsen the sickness), fear of side effects, long queues at the health facility, lack of information about when to return to the facility, competing priorities, and domestic disputes leading to the separation of parents from their children.

Training Received by Community Health Volunteers

CHVs received only 1 hour of training in EPI as part of their training on community strategy. The contents of the EPI training included vaccine-preventable diseases, immunization schedules, community mobilization and sensitization on benefits of immunization, and identification of newborn children and pregnant women for referral to health facilities.

CHVs were not given any handouts, job aids, or reference materials on EPI during the training. CHVs received training almost 5 years ago. They did not receive any mentorship on EPI. However, they got some guidance from their supervisor (community health extension worker) during monthly meetings. CHVs requested more detailed training on immunization; job aids; and information, education, and communication materials to better understand and perform their jobs.

Conclusion and Recommendations

Access to RI was found to be good in urban poor areas of Kisumu City. Only two children were found to be never vaccinated with any antigen. However, utilization of services presented a problem. Many children in urban poor areas dropped out and did not complete the full series of immunization. Multiple factors contributed to mothers/caregivers not being able to fully vaccinate their children, including the attitude of health workers, unsatisfactory service quality, competing priorities, lack of information, misconceptions, and lack of motivation. There were missed opportunities for vaccination, as some vaccines (namely, BCG and measles) were not offered daily in some facilities. Health workers were found to be overburdened due to numerous vacancies, with many positions vacant and inadequate training provided. Kisumu East Subcounty did not adapt the Reaching Every District strategy due to lack of resources; none of the health facilities developed microplans or conducted outreach services for equitable access of services for the urban poor population.

Kisumu City should consider the following for strengthening RI services in urban poor areas:

- Health facilities in Kisumu East Subcounty should adapt Reaching Every District strategy. They should develop a microplan and leverage resources for extending immunization for the urban poor through outreach services to ensure equity in immunization coverage.
- Build the capacity of health workers, including CHVs, to improve the quality of RI services, adjusting their attitude toward clients through peer-to-peer mentorship and creating a health worker support system through social media.
- Build the capacity of nurses to use data for action; for example, to track defaulters and encourage mothers to complete vaccination.
- Guide health facilities to offer all vaccines daily and ensure the availability of all vaccines to avoid missed opportunities. This may require enlisting the support of supervisors so that health workers do not fear reprisals from their supervisors if waste rates for vaccines rise.
- Develop an immunization tracking system at each facility by informing mothers/caregivers of their dates of return, writing the return date in the mother and child booklet, recording cellphone numbers of mothers/caregivers in the permanent register and updating the permanent register after each vaccination, informing/tracking the defaulters by calling their cellphones or through CHVs, and writing the outcome of defaulter tracking in the register.
- Improve immunization data quality by estimating targets based on population, entering all children in the permanent register, updating the register after each vaccination, and keeping a separate record book for visitors.

Appendixes (Assessment Tools)

Appendix 1: In-Depth Interview Form

Name of city/health facility: _____

Position of key informant: _____

Type and ownership of health facility: _____ /_____

Date of interview: _____ /_____ /_____

Demographic Information

How many wards in this city/served by this health facility: _____

How many slums in this city/catchment area of the facility: _____

Total slum population in the city/catchment area of the facility: _____

Name and Location of Slums in the City/Catchment Area of the Facility

Name of slums	Location	Population

Health Facilities in the City (Note: for city health manager only)

Type of facility	Ownership	# provide routine immunization service
Dispensary		
Health Center		
Hospital		

Human Resources for Expanded Programme on Immunization in the City/Health Facility

Name of the position	# available	# vacant	# trained in Expanded Programme on Immunization

Expanded Programme on Immunization Plan and Strategy

- Do you have an Expanded Programme on Immunization (EPI) microplan for the city/catchment area?
- Is the microplan up to date (see the microplan)?
- Does the microplan have EPI service information (fixed and outreach)?
- Does the microplan have EPI targets (annual/monthly)?
- Does the microplan have targets by each immunization site?
- Does the microplan have names of health workers by site?
- Does the microplan have slum-specific EPI target/service info?
- Do you have a specific plan or strategy to reach children living in the slums?

Cold Chain in the City/Facility

Do you have a cold chain system in your city/health facility? If yes, what cold chain equipment do you have?

Name of equipment	# available	# functioning
Freezer		
Refrigerator		
Cold box		
Vaccine carrier		

- Are the vaccines arranged in the fridge as per EPI guideline?
- Is temperature-monitoring device available in the fridge?
- Can the health worker interpret the recording of the temperature-monitoring device?

Availability of Vaccines in the City Store/Health Facility Store

Vaccines	Available	Stock-out (in last year)
BCG		
Penta		
Polio		
IPV		
PCV		
Rota		
MCV		
TT/ Td		

Availability of EPI Logistics

Items	Available	Stock-out in last year
BCG syringe		
0.5 ml syringe		
Mixing syringe		
Sharp container		
EPI card		
Tally sheet		
EPI Register		
Report form		

Availability of Financial Resources for EPI

	Available	Amount
Fund for outreach		
Fund for vaccine transportation		
Fund for printing materials		
Fund for purchasing syringes		
Fund for supervision		
Fund for monitoring		
Fund for cold chain maintenance		
Fund for spare parts		

Supervision System

- How frequently do you supervise/are you being supervised?
- Frequency of supervision visit?
- Do you use the supervision checklist?
- How do you give/get feedback on supervision?
- How do you use the supervision feedback?

Monitoring System

- What is your annual and monthly target for children?
- How many planned outreach session were actually conducted last year?
- Do you disaggregate EPI data by slum/nonslum areas?
- How do you use data for programmatic action?
- How do you track the defaulters?
- Do you have a coverage-monitoring chart?
- Is your monitoring chart up to date (see the chart)?

Community Linkage

- How do you link with community for demand generation?
- Do you have any specific strategy to reach slum population?
- Do you use cell phone to communicate with parents/caregivers?
- Any other way you communicate with the mother/caregivers?

Civil Society Involvement

- How do you involve civil society (CS) in health care service?
- Does the CS support routine immunization program? How?
- Name the CS involved in routine immunization in your city/catchment area.

Coordination among Stakeholders

- Do you have a coordination committee in your city/facility?
- Are all stakeholders represented on the coordination committee?
- Are there members in the committee from the slums?
- How often does the coordination committee meet?
- Do you have minutes of the coordination meeting?

Challenges

- What challenges do you face in providing EPI services for children of people living in slums?

Appendix 2: Focus Group Discussion Guide

1. Welcome and make introductions.

Thank the participants for agreeing to participate. Introduce yourself and the notetaker. Ask participants to introduce themselves. Tell the participants that we are very interested to hear your valuable opinion on how the subcounty health department can improve the routine immunization program for the children and women of this community.

2. Get the consent of the participants. Follow the process below:

- Thank the participants again for agreeing to participate. Explain that the purpose of this discussion is to learn things that the subcounty can use to improve access to and utilization of routine immunization services for this community.
- Explain that we will take note of your thoughts, opinions, and ideas, but the information you provide will be kept completely confidential. We will not associate your name with anything you say in the focus group. We will also request you to respect each other's confidentiality.
- Participants may refuse to answer any question or withdraw from the discussion at any time.
- If participants agree and give consent, we will go ahead with the discussion.

3. Explain the process of focus group discussion.

Ask the group if anyone has participated in a focus group before. Explain the focus group discussion process:

- Focus group will last about 1 hour.
- Feel free to move around.
- Help yourself to refreshments.
- We learn from you (positive and negative).
- We are not trying to achieve consensus—we're gathering information.

Ground rules:

- Everyone should participate.
- Stay with the group, and please don't have side conversations.
- Turn off cellphones if possible.

4. Begin Discussion

Ask question in order. Make sure to give participants time to think before answering the question, and don't move too quickly. Ask all participants to contribute. Do not give any lead, but use the probes to make sure that all issues are addressed. Move on when you feel you are starting to hear repetitive information.

Appendix 3: Focus Group Discussion with Mothers of Partially Immunized Children

Questions

1. Children need to be taken to the dispensary or the hospital a few times to complete the vaccination, but sometimes all required vaccine doses are not taken for the children. Could you please explain the reasons why people are not able to take all required vaccines for their children?
2. You visited the health facilities one or more times to take vaccines for your child. Explain if the health facility could do anything better to help fully vaccinate your child.
3. What could be the best way to remind people about the due vaccine date to bring the children to the health facility for vaccination?
4. Is there anything else you would like to share that was a barrier for you to be able to take all vaccines for your child?

Summarize some of the key points from the discussion. Ask participants if they would like to add anything more. Thank the participants for taking the time for this fruitful discussion.

Appendix 4: Focus Group Discussion with Mothers of Fully Immunized Children

Questions:

1. Congratulations! You took all vaccines required for your child. Could you please explain what made it possible for you to be able to take all required vaccines for their children?
2. You visited the health facilities a few times to take vaccines for your child. Explain if the health facility could do anything better in providing immunization service.
3. In your opinion, what is the best way to remind people about the due date to bring the children to the health facility to complete vaccination for their children?
4. Is there anything else you would like to suggest to help improve immunization services so that people will be able to take all vaccines for their children?

Summarize some of the key points from the discussion. Ask participants if they would like to add anything more. **Thank the participants for taking the time for this fruitful discussion.**

Appendix 5: Focus Group Discussion with Community Health Volunteers

Questions:

1. What is your role in routine immunization service for children and women of your community?
2. Can you please tell the name of vaccine-preventable diseases?
3. Can you please tell how many times and at what age the children should be taken to health facilities to complete vaccination?
4. What do you think are the barriers for urban poor people to take vaccines for their children?
5. Have you received any training on EPI? What was the content of the training?
6. Have you received any materials and job aids in the training? If yes, please describe what materials you received.
7. Do you think you need more training? If yes, what topics do you want to learn?

Summarize some of the key points from the discussion. Ask participants if they would like to add anything more. **Thank the participants for taking the time for this fruitful discussion.**