



FACES Newsletter October 2020

The First Few X cases and contacts (FFX) investigation protocol for coronavirus disease 2019 (COVID-19) for Kisumu County, Kenya

Preliminary Findings 6th July – 21st August 2020

Purpose

The COVID-19 pandemic continues to spread globally. By closely following the early spread of SARS-CoV-2 (the virus that causes COVID-19) in Kisumu County, Kenya, this investigation of the first few cases of COVID-19 and their contacts aims to inform public health strategies to reduce transmission and improve clinical management. The objectives of this interim report are to provide a snapshot of the early COVID-19 case and contact demographic and clinical characteristics, including transmission dynamics and clinic symptoms, comorbidities, and outcomes of COVID-19 cases in Kisumu County. This interim report summarizes findings from data collected 6 July – 21 August 2020.

Procedures

In coordination with the Kisumu County Ministry of Health (MOH), the first few (X = up to 150) (“FFX”) cases of COVID-19 identified in Kisumu and all of their close contacts residing in Kisumu County were eligible to enroll. At baseline and 14-21 days later, all enrolled FFX cases and contacts, who consented to specimen collection, had respiratory and blood samples taken to test for SARS-CoV-2 infection, HIV, malaria, and pregnancy if a reproductive age woman.

Specimens were collected following Kisumu County MOH guidance. At both time points, study participants answered detailed questionnaires regarding clinical symptoms and the timing and extent of exposure to other individuals and public spaces. For hospitalized participants, clinical course, medical management, and diagnostic data were extracted from their medical records.

Collaboration

This FFX investigation in Kisumu County is a collaborative effort between the Kenya Medical Research Institute (KEMRI), University of California San Francisco (UCSF), Kisumu County Ministry of Health (MOH), and the US Centers for Disease Control and Prevention in Kenya (CDC). The study is funded through support from the CDC Foundation.

Demographics

Table 1: Age and gender characteristics

		Age (years)							Total
	Gender	<15 N (%)	15-25 N (%)	26-35 N (%)	36-45 N (%)	46-55 N (%)	56-65 N (%)	>65 N (%)	
Cases	Male	4 (6%)	3 (4%)	24 (35%)	18 (26%)	12 (17%)	6 (9%)	2 (3%)	69 (64%)
	Female	3 (8%)	1 (3%)	18 (47%)	9 (24%)	6 (15%)	1 (3%)	0 (0%)	38 (36%)
								Median	37
								Range	5-82
	Male	26 (29%)	15 (17%)	25 (28%)	16 (18%)	7 (8%)	0 (0%)	0 (0%)	89 (52%)
Contacts	Female	29 (36%)	20 (25%)	17 (21%)	9 (11%)	3 (4%)	2 (2%)	1 (1%)	81 (48%)
								Median	24
								Range	<1-70

Based on investigations carried out from 6 July through 21 August 2020, we enrolled 107 cases and 170 contacts. The median age for cases was 37 years (range 5-82) and for contacts 24 years (range <1-70). Males represented 64% of cases and 52% of contacts.

Fewer contacts were enrolled (1.7 per case) than anticipated (20 per case). Cases were suspected not to have provided complete lists of contacts; some contacts declined to enroll; other contacts lived out of Kisumu County, and were therefore not followed up by FFX staff; and issues around stigma or fear of isolation policies may have played a role in how few

contacts enrolled. Contacts were substantially younger and comprised a higher proportion of females than cases; nearly half of contacts but over a third of cases were female.

Occupation

Table 2: Occupations reported by $\geq 5\%$ of cases or contacts

Occupation	Cases N (%)	Contacts N (%)
Office workers	43 (40%)	45 (26%)
Transport drivers and assistants	18 (17%)	5 (3%)
Truck driver	13 (12%)	0 (0%)
Matatu/boda boda/other driver	5 (5%)	5 (3%)
Health care worker	15 (14%)	14 (8%)
Student	9 (8%)	82 (48%)

Among cases, a substantial proportion were office workers, followed by drivers, health care workers, and students, whereas among contacts, students comprised the highest proportion, followed by office workers, and health care workers. Truck drivers, who commonly drive outside of the county and country, represented 13 (81.3%) of the transport drivers, including the first two cases in Kisumu County and 8 of the 11 initial cases enrolled in FFX. Most of the truck drivers were in transit and had few identifiable contacts within Kisumu County.

Figure 1: Occupation trend among cases over time

Transmission

Table 3: Transmission dynamics

Cases	N=107 N(%)
Cases with contacts named, n (%)	104 (97%)
Primary (index) cases, n (%)	93 (87%)
Secondary cases (contacts that became cases)	14 (13%)
Contact transmission	
Contacts named per case, median (IQR) [range]	2 (1,4) [0,18]
Primary cases who transmitted to contacts	6/93 (6.5%)
Secondary attack rate (contacts who became infected/all contacts)	14/170 (8.2%)

Enrolled contacts - relationships to cases	N=170 N (%)
Family member	105 (62%)
Co-worker	46 (27%)
Friend	11 (7%)
Other	8 (5%)

As shown in Table 3, of the 107 cases enrolled, nearly all reported contacts with a median of 2 per case. Of the 170 total contacts enrolled, nearly two-thirds were family members and about one quarter were co-workers of cases. Transmission dynamics illustrate that 14 (8.2%) of all contacts contracted COVID-19 and became cases, with only 6 (6.5%) primary cases transmitting to the 14 contacts.

Exposure

Table 4: Case activities prior to the enrollment interview

Cases	Past 14 days N (%)	Past 48 hours N (%)
Health facility	35 (33%)	23 (21%)
Motorbike (pikipiki/boda boda)	33 (31%)	20 (19%)
Work place	32 (30%)	23 (21%)
Matatu/bus	26 (24%)	20 (19%)
None	21 (20%)	34 (32%)
Supermarket	21 (20%)	9 (8%)
Outdoor market	20 (19%)	16 (15%)
Other gathering	13 (12%)	9 (8%)
Funeral	3 (3%)	1 (1%)
Church	1 (1%)	2 (2%)
Wedding	1 (1%)	1 (1%)

In the 14 days prior to diagnosis, about one-third used a motorbike (pikipiki, boda boda), went to a health facility, or went to work, and about a quarter reported using a matatu or bus. About 20% reported not going anywhere and about the same number went to a supermarket or outdoor market. Very few attended other social gatherings.

In the 48 hours prior to diagnosis, about 20% used a motorbike or matatu, went to a health facility, or to work; 32% did not go anywhere and fewer went to supermarkets and outdoor markets. The trend of attending very few social gatherings continued.

Symptoms

Cases: Self-reported symptoms at enrollment

Any symptoms	75 (70%)
No symptoms	32 (30%)

Figure 2: Most common symptoms

- “Fever” is based on temperature reading ≥ 38 at enrollment; “Fever, hotness of body” is based on self-report of symptoms between enrollment and 2 weeks prior to date of diagnosis.
- Symptoms reported less than 8% include vomiting, nausea, seizures, altered consciousness, conjunctivitis, rash, nose bleeding, and other neurological signs.
- Symptoms reported in FFX are higher than national reports. This could potentially be due to a wider window of time solicited from cases (up to 14 days before diagnosis) and broader list of symptoms (e.g. loss of smell, loss of appetite, fatigue).

Isolation, hospitalization, comorbidities, and outcomes

Cases: Isolation, hospitalization, death

About half of the cases, 55 (51.4%), isolated in a hospital facility for close monitoring, 11 (10.3%) were hospitalized with medical conditions, and 41 (38.3%) isolated at home. Of the 6 cases that transmitted to 14 contacts who then became cases, 1 isolated at home and the other 5 isolated at the hospital. The initial government policy was to isolate all positive cases at a hospital facility; this was later revised to include home isolation for those who were asymptomatic, had a suitable home environment, and no comorbidities.

Among those hospitalized for medical conditions, only one was admitted to the ICU. He was 27 years old with comorbidities including chronic lung disease and asthma for which he was receiving treatment. He died while receiving supplemental oxygen and mechanical ventilation. He also had hypotension requiring vasopressors, acute respiratory distress syndrome (ARDS), secondary bacterial infection, and pneumonia confirmed by chest X-ray. There was one additional case of ARDS and one other case of secondary bacterial infection among those hospitalized with a medical condition; neither of whom were admitted to the ICU.

Table 5: Cases: Comorbidities

Number (%) with comorbidities, among the total and stratified by hospitalization/isolation status at enrollment

			Hospitalization/isolation status at enrollment				
	Total (N=107)		Hospitalized (N=11)		Home Isolation (N=41)		Hospital I (N=55)
Comorbidity	N	(%)	N	(%)	N	(%)	N
Overweight	23	(22%)	4	(36%)	10	(24%)	9
HIV+	13	(12%)	3	(27%)	4	(10%)	6
Diabetes	8	(8%)	3	(27%)	3	(7%)	2
Asthma	4	(4%)	1	(9%)	0	0	2
Heart disease	2	(2%)	0	0	2	(5%)	0
Chronic lung disease	2	(2%)	1	(9%)	0	0	1
Cancer	1	(1%)	1	(9%)	0	0	0
TB	1	(1%)	0	0	0	0	1
Malaria (test at baseline)	0		0		0		0

Summary

Preliminary results indicate that the initial cases were largely fueled by truck drivers but broadened to office workers, health care workers, and other occupations soon after. Few contacts were identified and among contacts enrolled, the median age (24 years) was substantially younger than the median age of cases (36 years). Although males represented nearly two-thirds of cases, among contacts sex had more equal representation. Nearly two-thirds of contacts were family members and just over a quarter were co-workers of cases. There was a high number of self-reported symptomatic cases, yet few hospitalizations. The most frequent comorbidities among cases were being overweight, followed by HIV and diabetes. There was one death, a 27-year old male with respiratory comorbidities.

Impact Stats for April - June 2020

28,192 people were tested for HIV, including 1,394 children under 15 years of age; of which 860 were identified with HIV, including 22 children under 15 years of age. 90% have been linked to care and initiated on life-saving antiretroviral therapy (ART) with continued follow up for those not yet on ART.

51,939 individuals currently on ART at 61 care and treatment facilities, including 3,369 children under 15 years of age.

96% of individuals on ART are virally suppressed; 97% among adults and 88% among children under 15 years of age.

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