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EFFECTS OF COMMUNITY MALARIA CASE MANAGEMENT TO THE OVERALL MALARIA INCIDENCE IN BUSIA COUNTY, KENYA, 2022
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ABSTRACT

Objectives: **The objective of the present study was to determine whether Case Management of Malaria (CCMm) by Community Health Volunteers (CHVs) affect the trends of malaria incidence in Busia Kenya, 2018-2023. Specifically, the study aimed at determining the proportion and trends per year for those tested and treated for malaria in health facilities and Community Units and to correlate the trends with annual malaria incidence, out-patient malaria cases, weather patterns, climate change and commodity availability at the community level.**

Methods: **The research involved a retrospective cross-sectional study encompassing for Busia County as the study site involved analysis of routinely collected malaria program data which was abstracted online from the Kenya Health Information Systems.**

Results: **The proportion of Suspected Malaria Cases being tested in the community by the Community Health Volunteers compared to those tested at Health facilities increased from 11% in 2019 to 45% in 2022. The rate of malaria infections per month has remained almost constant, with peak infections occurring in May every year,**

except May 2020. Over time, the contribution of CCMm in overall malaria case management and incidence has increased, with more Malaria cases being treated at the Community as from mid-2022. The incidence of Malaria has remained high over the years.

***Conclusion*: Community Case Management of Malaria improves access to Malaria treatment services but does not in itself reduce the Annual Malaria Incidence in Busia County.**

INTRODUCTION

Malaria is a vector-borne disease caused by five species of Genus *Plasmodium*; *P.falciparum, P.knowlesi, P.malariae, P.ovale* and *P.vivax*. The most dangerous of these species is *Plasmodium falciparum*. All the human malaria parasites are spread by the infected female *Anopheles* mosquito through its bites.(1) Globally, between 124 and 283 million people are infected with malaria each year mainly in Africa, Asia and South America. Malaria continues to be one of the leading causes of morbidity and mortality in the World. In 2020, there were an estimated 241 million cases of malaria worldwide. The estimated number of malaria deaths stood at 627,000 in 2020. The WHO African Region carries a disproportionately high share of the global malaria burden. In 2020, the region was home to 95% of malaria cases and 96% of malaria deaths with an estimated 8–13 million cases and 103 deaths per 100,000 each year (2). In 2015, the World Health Assembly endorsed the Global Technical Strategy for Malaria (2016 - 2030) and effectively proposed that all countries, including those with high malaria burden, accelerate efforts towards malaria elimination (3).

In Kenya, the number of reported Malaria infections, including presumed and confirmed cases, declined from 10.9 million in 2018 to nearly 6.9 million in 2020. Malaria is a huge burden on the health-care system; In the Malaria Lake Endemic Counties (Bungoma, Busia, Kakamega, Vihiga, Migori, Kisumu, Homa-Bay and Siaya Counties)(4) , Malaria accounts for 25–40% of outpatient visits to health facilities, accounts for approximately 80% of all the patients managed by Community Health Volunteers (CHVs) and is responsible for nearly half of inpatient pediatric deaths as reported on the Kenya Health Information System(KHIS). Some of the Government and Donor supported Malaria interventions include, mass and routine distribution of Long-Lasting insecticide bed nets (LLINs), indoor residual spraying (IRS) with insecticide, larval source management using Biolarvicides, effective case management with artemisinin-based combination therapy (ACT) both at the health facilities and at the community by CHVs. Other interventions include: Intermittent Preventive Therapy in Pregnancy (IPTp), Social Behaviour Change, surveillance, monitoring, evaluation and operational research and epidemic preparedness and response. However, despite scale-up of these interventions, the burden of malaria in Kenya still remains high and may even be increasing in some areas, like Busia County (4). This according to the Kenya malaria strategy underscores the necessity to expand and sustain interventions.(5)

As per the Kenya Malaria Strategy 2019–2023, objective two, case management aims at ensuring that 100 percent testing of all suspected malaria cases and 100 percent treatment of all confirmed malaria cases presenting to a health provider. Community Case management of Malaria (CCMm) policy documents preparation in Kenya dates back to the year 2006, where it was envisioned that Community Health Promoters could treat community members at home to reduce the long queues at the hospitals, where, in most cases there were very few healthcare workers against so many patients with various ailments including malaria. CCMm would also increase access to malaria treatment and reduce cases of severe malaria and malaria deaths (5).

Clinically, malaria is classified into uncomplicated and severe malaria depending on the signs and symptoms of the malaria cases. Uncomplicated malaria case can be treated at the community level by the CHVs or at the health facility as an outpatient. Severe malaria cases should be managed as inpatient in admitting facilities; lower facilities without admitting facilities are expected to give pre-referral treatment then refer to the nearest admitting facility. CHVs are expected to refer severe malaria patients immediately using the MOH 100 - community referral form and where possible, accompany the patient to the nearest link facility(6).

In Busia County, similar to other counties, control efforts remain inadequate, and malaria persists as a huge burden. For instance, the malaria prevalence increased from 27% in 2010 to 39% in 2020 (4). Annual Malaria Incidence (AMI) is one of the indicators monitored regularly to track Malaria burden, progress, and coverage of malaria interventions including CCMm to inform scale up and targeted implementation. Thus, detailed characterization of the risks for malaria among populations living in areas where the disease is endemic is an important priority (5).

On a monthly basis, the Community Health Extension Workers (CHEWs) pick the Malaria commodities from the Community Unit (CU) link facility and distributes to the respective CHVs as per their average monthly consumption in the Community Health Units (CHU) using S11. If the CHVs depletes the provided commodities, they are expected to replenish the stocks from the link facility. At the end of every month the report of consumption and balances of the commodities are captured on MOH 748 – Community Units Malaria Commodities Summary Form. The CHVs are trained to store the commodities in the recommended places so as to ensure their potency and safety. Commodities remaining with the CHVs at the end of the month (physical count) are used as opening stock for the next month(7).

The main objective of this study is to show whether CCMm by Community Health Volunteers (CHVs) affect the trends of malaria incidence in Busia Kenya, 2018-2023. Specifically, how the suspected malaria cases managed by healthcare workers and CHVs in Busia Kenya, January 2018 to July 2023 to determine the proportion and trends per year for those tested in health facilities and community units, determine the proportion and trends per Month for Confirmed Malaria Cases in Health Facilities and Community Units, determine the proportion and trends per year for Confirmed Malaria cases treated in the Health Facilities and Community Units and to correlate the trends with

Annual Malaria Incidence, Out-Patient malaria cases, Weather Patterns, Climate change, number of CHVs and Commodity availability at the Community.

METHODS

Study Design: The current retrospective cross-sectional study was conducted using routinely collected Malaria Program data.

Study setting:

General setting: Busia County is one of the 47 counties in Kenya, located in the former Western Province and covers an area of 1394.5 square kilometres. The County has a population of 913,531 with male: female ratio of 1:1 (48% male and 52% female) and estimated number of households 194,368 with an average family size of 4.7 (8). Busia borders the Republic of Uganda to the West, Kakamega County to the East, Bungoma County to the North and Lake Victoria and Siaya County to the South. The County has seven Sub Counties namely: Bunyala, Butula, Matayos, Nambale, Samia, Teso North and Teso South. It is fairly hot (21-23°C) and moist (760 to over 1,750 mm precipitation annually) throughout the year. There is a strong precipitation gradient with the northern areas receiving the most precipitation (> 1750 mm), and the southern areas closer to Lake Victoria receiving (760-1,250 mm of precipitation). Rain falls throughout the year and the month with the highest amount of rainfall being recorded in April, with an average rainfall of 8.5 inches. The months with the least amount of rainfall are December and January. All these weather conditions are very favourable for breeding of malaria mosquitoes hence the high transmission of malaria in the area (9).

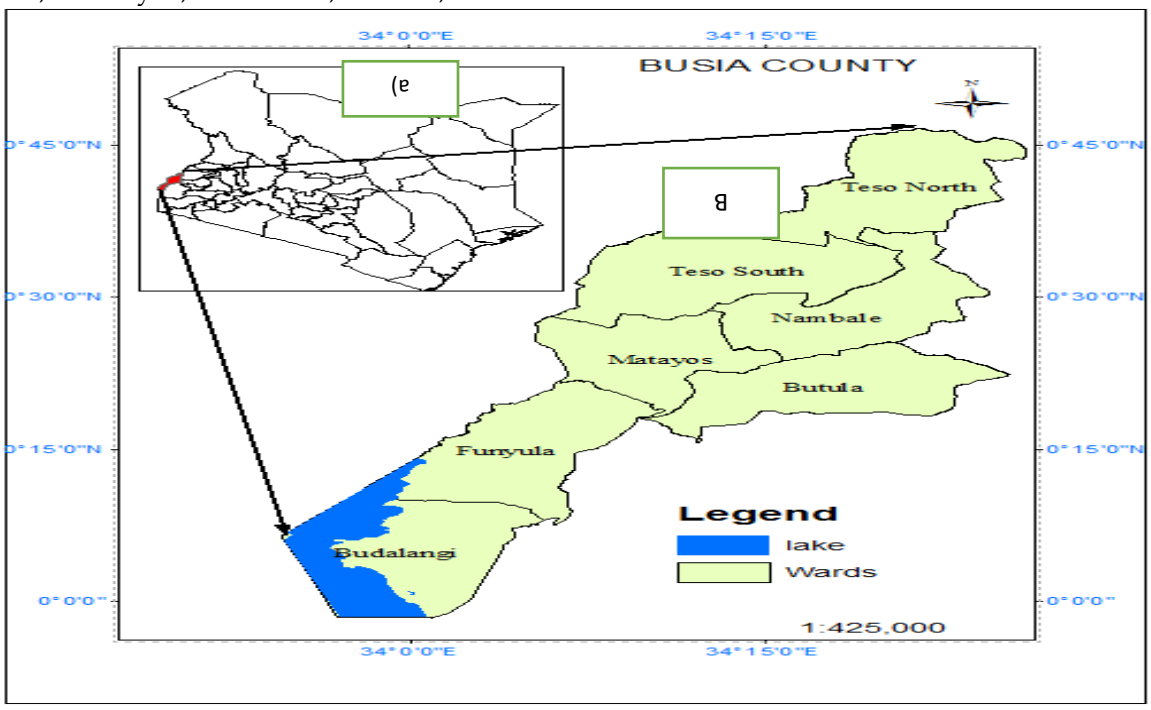

Figure 1: Map of Kenya showing location of Busia County

(Source; Consolidated Annual Work Plan 2022/2023)

Specific context: CCMm was first piloted in Kenya in Busia County in 2012 and eventually rolled out in the Country the same Year (7). CHVs are trained after every 3 years to refresh their knowledge on malaria and to replace those who have left due to natural attrition. In 2016, only 29% of the CUs (53 out 184) were doing CCMm, in 2017, an additional 52 CUs were trained bringing the total to 52% (105 out of 199), additional 80 CUs were trained on CCMm and todate 79% (185 out of 232) CUs are doing CCMm (9).

CHVs who do CCMm undergo a mandatory 3 days training as per the National Malaria Control Programme (NMCP) approved curriculum. After the classroom training, they undergo a 2 - 4 weeks' mandatory internship at the nearest link facility under strict supervision of the healthcare workers to gain competency; thereafter they are issued with Government of Kenya (GOK) Malaria commodities to start CCMm under the strict supervision of the Community Health Extension Workers (CHEWs)/Community Health Assistants (CHAs). All patients managed by the CHVs are entered onto the MOH 648 – Community Units Malaria Commodities Daily Activity Register. The CHVs stick to the guidance on 3 Ts (Test, treat and track) for all the eligible patients, who include all community members aged 2 months and above. The CHVs are not allowed to test and treat pregnant women, all children below 2 months, all severe malaria cases; instead, they are supposed to refer these cases to the nearest link health facility. The CHVs are also expected to refer cases when they don't have malaria commodities, two invalid malaria Rapid Diagnostic Tests (mRDT), all mRDT negative cases. At the end of the month, the Community CHEWs/CHA plus all the CHVs meet and compile end month report onto MOH 748 – Community Units Malaria Commodities Monthly Summary and submit to the facility CHEW for verification and rubber stamping then handed over to the Sub County Health Records and Information Officer (SCHRIO) for uploading onto KHIS by 15th of next month. From the KHIS (publicly accessible), the data can be downloaded, analyzed and used for decision making. On the other hand, health facilities capture all suspected, tested on Daily Activity Register, the under and over Five Years Out Patient Registers, MOH 204A and B respectively, summarized at the end of the month onto Under and over five Out Patient Summery, MOH 705A and B respectively. Confirmed malaria cases treated at the Community are captured on the Community Units Daily Activity Register, MOH 648 and summarized on Community Units Malaria Commodities Monthly Summary, MOH 743 then similarly uploaded onto KHIS by the SCHRIO (annex 2) (7).

For this study, the quantities of malaria commodities dispensed will be compared with the physical count to give an estimate of CUs well stocked at a particular month

Annual Malaria incidence calculations

Community	=	*Total Number of Confirmed malaria (CCMm*) x 1,000* / *Total Population*
Health Facilities	=	*Total Number of Confirmed malaria (HFs) x 1,000* / *Total Population*
All (CCMm + Health Facilities)	=	*Total Number of Confirmed malaria (CCMm plus HFs) x 1,000* / *Total Population*

**CCMm – Community Case Management of Malaria*

Study Population: All Suspected Malaria Cases from February 2018 to January 2023

Data Variables: Data variables include all suspected malaria cases, tested, confirmed, and treated at the community and health facility, and malaria commodities at the end of each month. These data elements are routinely captured in the various daily activity registers and summarized at the end of the month as aggregated data; the DARs respectively are MOH 204A, 204B, MOH 240 MOH 748. The study's primary outcome is effects of Community Case Management of Malaria on the Annual Malaria Incidence.

Indicator 1: The proportion of suspected malaria cases that received a parasitological test at the community level. The numerator is the total number tested at Community per month and the denominator is the total

Data collection: Data was downloaded from the respective data sets MOH 705A (Under 5 Years out Patient summary) & MOH 705B (Over 5 Years Out Patient summary), MOH 748 (Community Units Monthly Malaria Commodities Summary) from the KHIS.

Data analysis: Downloaded data was entered into Microsoft Excel software and analyzed using EPI Info. Descriptive statistics was used to summarize the data and to display testing, treatment and annual malaria incidence trends for community and health facility case management of malaria from number Suspected at Community per month.

Indicator 2: The proportion of malaria cases treated using first-line antimalarial (ALs) at the community. The numerator is the total number treated at Community per month and the denominator is the total number Confirmed at Community per month.

Indicator 3: Proportion of CHUs doing CCMM. The numerator is the number of CHUs doing CCMM over the Years and the denominator is the Total No. of CUs in Busia County.

Indicator 4: Proportion of confirmed malaria cases treated at the community. The numerator is the total number tested at the community per month and the denominator is the total number tested at the community plus health facilities.

February 2018 to January 2023. The outputs from the statistical analysis were presented as frequencies and proportions.

Ethical considerations: Ethical clearance was obtained from the Maseno University Scientific and Ethics Review Committee (Approval number MUSERC/01234/23). Permission and support letters were obtained from the National Malaria Control Programme and The County Director of Health, Department of Health and Sanitation, Busia County.

RESULTS

Proportion of suspected malaria cases being tested at the community by CHVs compared to those tested at health facilities increased from 11% in 2019 to 45% in 2022. The number of CHUs doing CCMm increased from 105 in 2017 (52% of all CHUs) to 185 in 2021 (79%), in 2022, additional 30 CUs were created, thus the total number of CHUs increased from 202 in 2019 to 232 in 2022 (13% increase), Table 1.

Table 1

Comparison of Suspected malaria cases who received a parasitological test at Health facilities and Community Units

	[#]	*Health Facilities (%)*	*Community Units (%)*
Suspected Malaria	2019 (n= 1079794)	974278 (89)	105516 (11)
	2020 (n=852544)	787647 (91)	64897 (8)
	2021 (n=1068462)	913351 (83)	155111 (17)
	2022 (n=1188914)	819022 (55)	369892 (45)
Tested for Malaria	2019	No data	No data
	2020 (n=172270)	134588 (72)	37682 (28)
	2021 (n=981426)	870469 (87)	110957 (13)
	2022 (n=1162766)	804147 (55)	358619 (45)
Number of CHUs conducting CCMm	2019 (n=202)	-	105 (52)
	2020 (n=202)	-	105 (52)
	2021 (n=222)	-	185 (83)
	2022 (n=232)	-	185 (79)
Number of CHUs conducting CCMm versus number of Health Facilities	2019	134	105
	2020	143	105
	2021	147	185
	2022	147	185
[#]Numbers in this column is sum of HFs and CHUs data (denominator) HFs = Health facilities, CHUs** = Community Health Units, CCMm*** = community case management*			

Source: KHIS, downloaded 29th August, 2023 1319Hours

From January 2018 to July 2023, the rate of malaria infections per month have remained almost constant, with peak infections occurring every May each year, except May 2020. Overtime the contribution of CCMm in overall malaria case management and incidence has increased with more Malaria cases being treated at the Community as from mid-2022. The incidence of Malaria has remained high over the years, Figure 1.

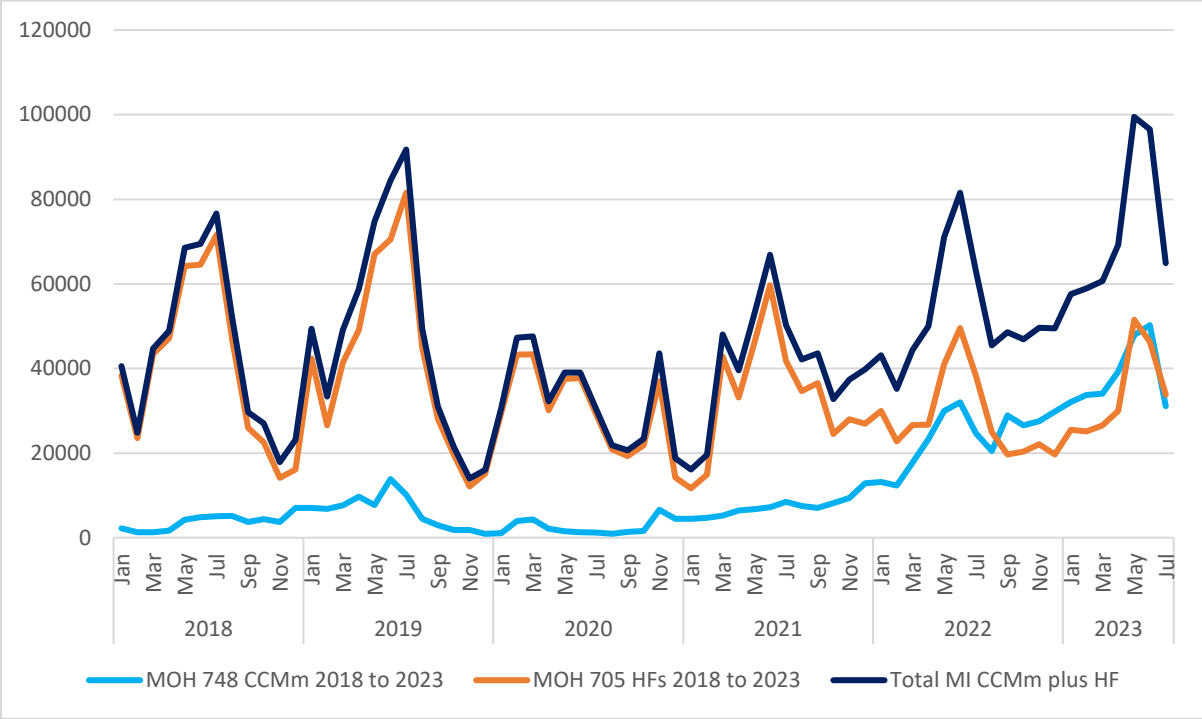

Fig 1: Comparison of trends of number of Confirmed malaria cases (malaria incidence) at Health Facilities and Community, Busia county, Jan 2018 to July 2023 (Source: KHIS, 28th August, 2023, 1348Hrs)

Note: MOH 748-Community Units Malaria Commodities Form, MOH 705-Over and Under Fives Outpatient summary report form, CCMm-Community Case Management of Malaria, HFs-Health Facilities, Total MI-Total Malaria Incidence (Sum of Confirmed Malaria Cases from the Community plus Health facilities)

Proportion of malaria cases confirmed at the community increased from 13% in 2019 and by 2022, a half of the cases were being confirmed at the community. Similarly, the number of malaria cases treated with ALs at community increased from 13% in 2019 to 50% in 2022, Table 2.

Table 2

Comparison of Confirmed Malaria cases treated with ACTs at the Community and Health facilities

Data element	Year #	Health Facilities (%)	Community Units (%)
Confirmed Malaria	2019 (n=573510)	498,431 (87)	75,079 (13)
	2020 (n=394407)	363954 (92)	30453 (8)
	2021 (n=489123)	400794 (82)	88329 (18)
	2022 (n=628599)	341886 (54)	286713 (46)
Treated with ACTs (ALs), weight band data aggregated	2019 (n=592928)	513136 (87)	79792 (13)
	2020 (n=337200)	306711 (91)	30489 (9)
	2021 (n=413893)	325943 (79)	87950 (21)
	2022 (n=559090)	279164 (50)	279926 (50)

 # Numbers in this column is sum of cases at the Health Facilities and Community Units (denominator)

AL 24s blister pack was the most dispensed at both the community and health facilities. Proportion of CHVs doing CCMm out of all the CHVs in the County increased from 52% in 2019 to 79% in 2022. Overall, the increase in number of CHVs doing CCMm showed increase in number of Malaria patients treated at the Community. Averagely, each CHP dispensed one dose of each AL weight band per month. Average number of patients treated per CHP per month increased from 6 patients in 2019 to 13 patients in 2022., Table 3.

Table 3

Comparison of Artemether - Lumefantrine doses dispensed at the Community and Health facilities

Data element/Year and Percentage	**2019 (%)**	**2020 (%)**	**2021 (%)**	**2022 (%)**
Proportion of CHVs conducting CCMm	1,050 (52) (n=2020)	1,050(52) (n=2020)	1,850 (83) (n=2220)	1,850 (79) (n=2320)
Total No. of Patients treated at community	79,792	30,489	87,950	279,926
Average No. of Patients treated per CHP per Month	6	2	4	13
Total AL 6s doses dispensed	19,467	9,235	10,825	37,319
Average AL 6s doses dispensed per CHP/Month	1.5	0.7	0.5	1.7
Total AL 12s doses dispensed	12,986	5,618	7,735	42,701
Average AL 12s doses dispensed per CHP/Month	1	0.4	0.3	1.9
Total AL 18s doses dispensed	12,544	3,296	3,544	29,714
Average AL 18s doses dispensed per CHP/Month	1	0.3	0.2	1.3
Total AL 24s doses dispensed	24,214	11,418	48,490	141,933
Average AL 24s doses dispensed per CHP/Month	1.9	0.9	2.2	6.4

The number of patients treated per age category all increased from 2019 to 2022. The greatest increase was noted in the children aged 3 years and below. By 2022, for age categories, less than 3 years, 3 to <8 years and 8 to <12 years, more cases were being treated at the community than the health facilities. By 2022, age category, ≥12 years, more patients were being treated at the health facilities than the community, Figure 2.

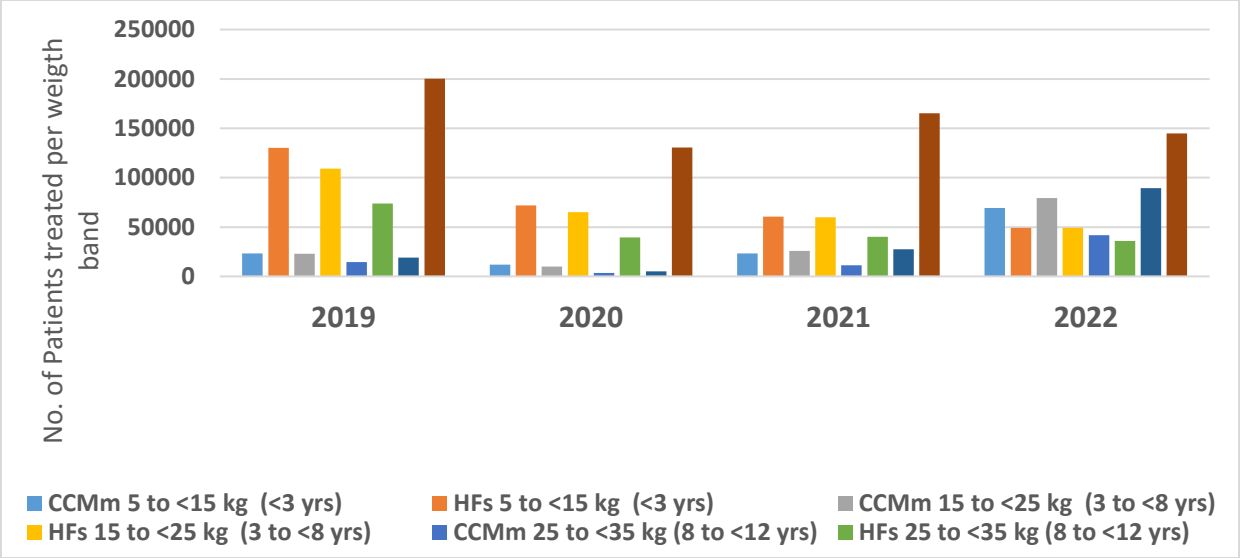

Fig 2: Comparison of Malaria Cases treated at the Community and Health facilities

The Total Annual Malaria Incidence in Busia remained unchanged from 650 cases/1,000 populations in 2019 to 643 cases/1,000 population in 2022, but there was a notable decline of annual malaria incidence was noted in 2020. Using health facility data and community units data separately, the annual malaria incidence in the health facilities is gradually dropping from 565 cases/1,000 populations in 2019 to 350 cases/1,000 populations in 2022, while annual malaria incidence in the community units is increasing steadily from 85 cases/1,000 population in 2019 to 293 cases/1,000 population in 2022, Figure 4.

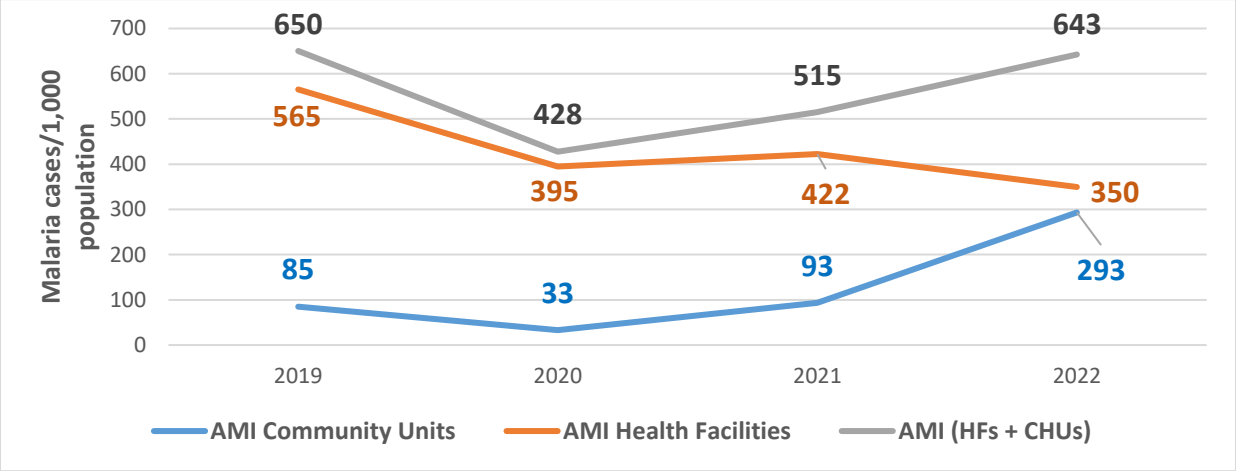

Fig 4: Comparison of Malaria trends/AMI for Community and Health facilities

There is noted exponential increase in malaria infections immediately after the heavy rains, peak Malaria interventions noted May and June. Throughout the year, there is rainfall in Busia, the highest amounts in April and the lowest in January. The ambient temperatures are near constant between 21°C and 24°C, Figure 5a and 5b.

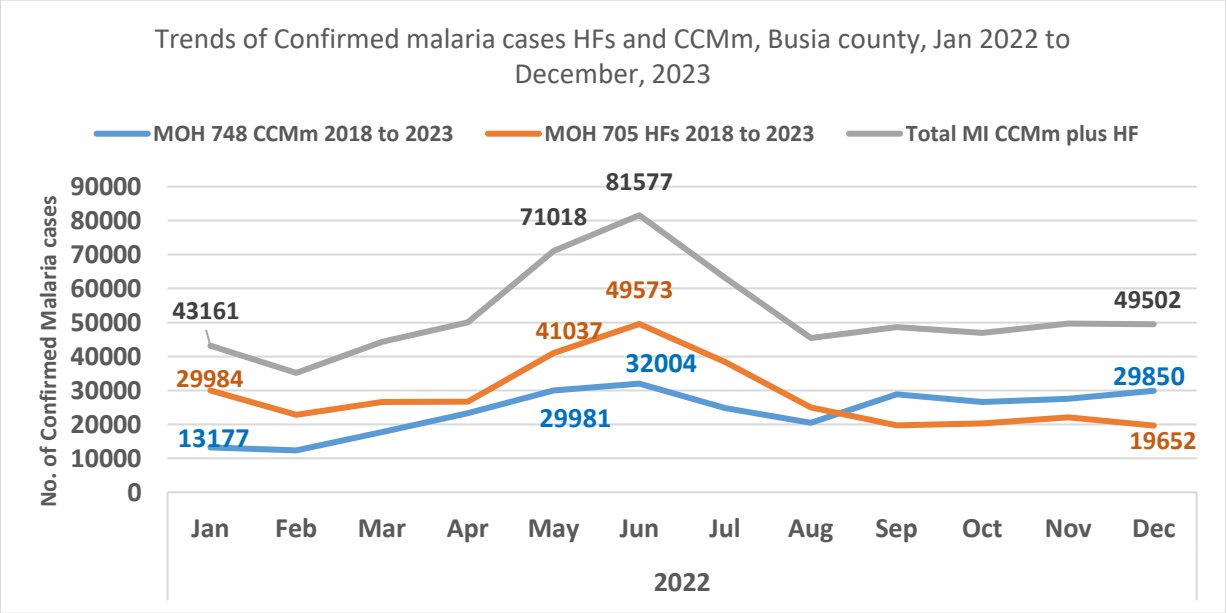

Fig 5a: Malaria Infections, January to December 2022

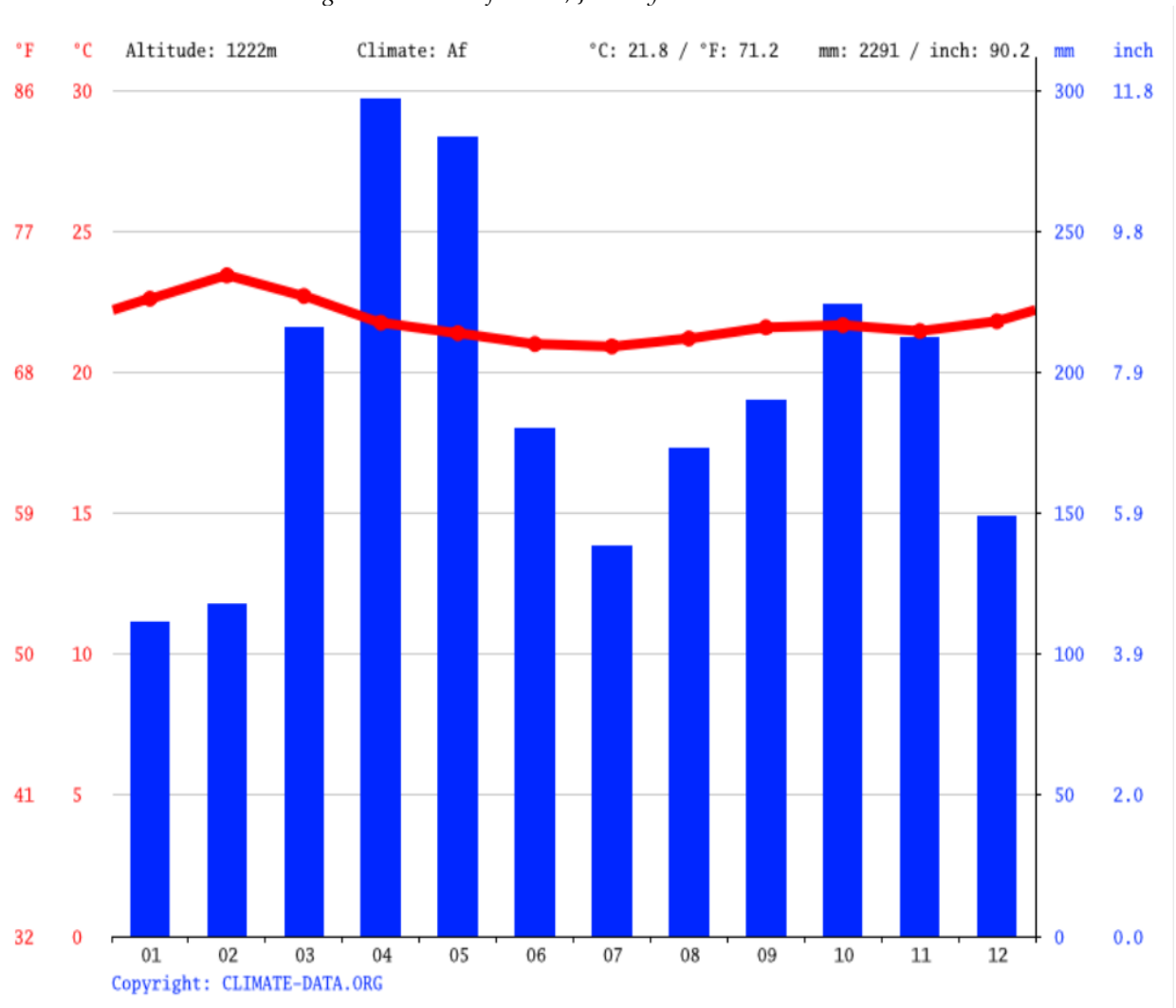

Fig 5b: Weather pattern (rainfall and temperature) for Busia County for 1 full year, 2022
(Ref: Climate in Busia County https://en.climate-data.org/africa/kenya/busia/busia-11168/)

Fig 3a&b: Comparison between Malaria Infections/Incidence and weather pattern in Busia County, January to December 2022

DISCUSSION

The aim of this study was to describe the trends in malaria incidence and explore how this varied at the community and health facilities in Busia Kenya, 2018-2023. Overall, there is an increase in the incidence of malaria overtime. However, decline was observed in year 2020 which have been linked to COVID-19 pandemic (10). There has been an increase in the coverage of CCMm with increase in CHUs up to 79% coverage although this value could be higher given recent increase/creation of new CHUs. Workload is manageable with approximately 23,483 Malaria Patients per

month.(9) Opportunity to expand roles of CHVs to enhance coverage with wider services. Increase in CCMm in the community compared to facility, hence playing a critical role towards access to quality services.

Given, this huge contribution to service delivery failure to integrate CCMm data in routine malaria data may lead to a gross under-reporting. Increased testing and treatment for younger age groups suggesting acceptance and confidence in the CHVs. Observed seasonality in the months of April, May, June and July, coinciding with the rainy season, this is very important in targeting interventions. Good adherence to test and treat guidelines. Weather patterns, especially rainfall and temperature affect the Malaria transmission pattern. CCMm improves access to malaria services and most Malaria cases are treated at their households. One of the major objectives of the guidelines, CCMm was meant to decongest the workload and reduce the long queues at the Facilities, the above results show that by early 2023, a half of the Confirmed Malaria cases were being treated by CHVs at the Community. (7)

Malaria cases at the community have greatly increased overtime, especially children under five years the numbers have increased 4 times, followed by children between 3 and 8 eight years, increase of 70%, then children 8 to 12 years increase of 45%, the number of patients over 12 years have greatly increased also, but more are still treated at the facilities. (10)

In spite of the fact that a great number of cases are being treated at the community, CHVs are provided with inadequate commodities from the link facilities, that is, less that one dose per commodity per CHV per month; this means that most CHVs don't have the stated commodity within that month or the commodities provided do not last them the whole month.

Early diagnosis and prompt treatment of Uncomplicated malaria prevents the disease from progressing to severe malaria reducing admissions and deaths from the deadly malaria disease.

With time, the community develops trust in the CHVs that they can adequately treat malaria, hence one of the reasons why the number treated in the community are so high. Overall, the cost of seeking for treatment by the community members are greatly reduced

The CHVs also take time to educate the community about malaria hence increasing the knowledge of the community members on malaria. Preventive Health Care (PHC) puts lots of emphasis on community based interventions and CCMm is one of the interventions (11).

Busia has made progress in scaling up CCM with up to 80% coverage; this has translated to increased community case management of malaria with high proportions being managed in the community from mid-2022. These findings illustrate that CHVs play a vital role in improving access, coverage and quality (this is linked to adherence to guidelines of test and treat) (7).

While previous AMI reflected/tracked HF incidence, the immense contribution of CCM should be integrated into computing AMI as counties scale up CCMm. Limitations of this study is depending on the data from KHIS. Also, there is the possibility of using lower weight bands for higher age groups e.g. 2 packets of AL6s in instead of one packet of 12 blister pack.

CONCLUSION

Community Case Management of Malaria improves access to Malaria treatment services but does not in itself reduce the Annual Malaria Incidence in Busia County. Malaria incidence is greatly affected by the weather pattern, especially rainfall and temperature. From the findings of this study, it would be recommended that Link Facilities of the Community Units to increase supply of Malaria Commodities to the CHVs so that they have adequate commodities at all times, the National Malaria Control Programme, to enhance all the Malaria control interventions so that jointly the interventions can reduce the malaria Incidence and to continue with regular monitoring and evaluation to assess the high impact interventions per sub county. Coverage of CCMm spans all age groups, and hence, the potential value for integrated Community Case Management (iCCM) and involvement of CHVs in broader health care interventions in HIV/AIDS, Tuberculosis/Leprosy, Reproductive health services, child welfare services, nutrition services, water and sanitation services.

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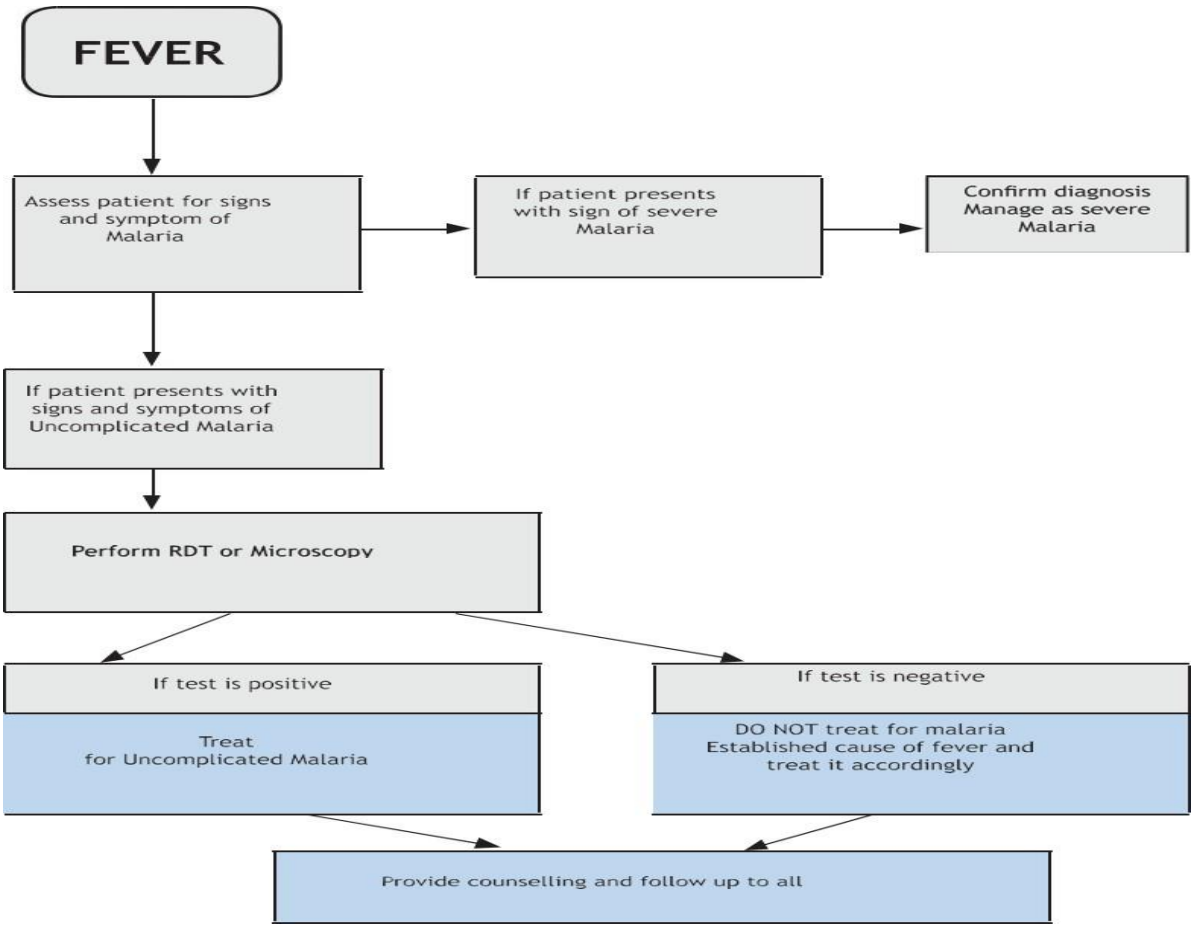
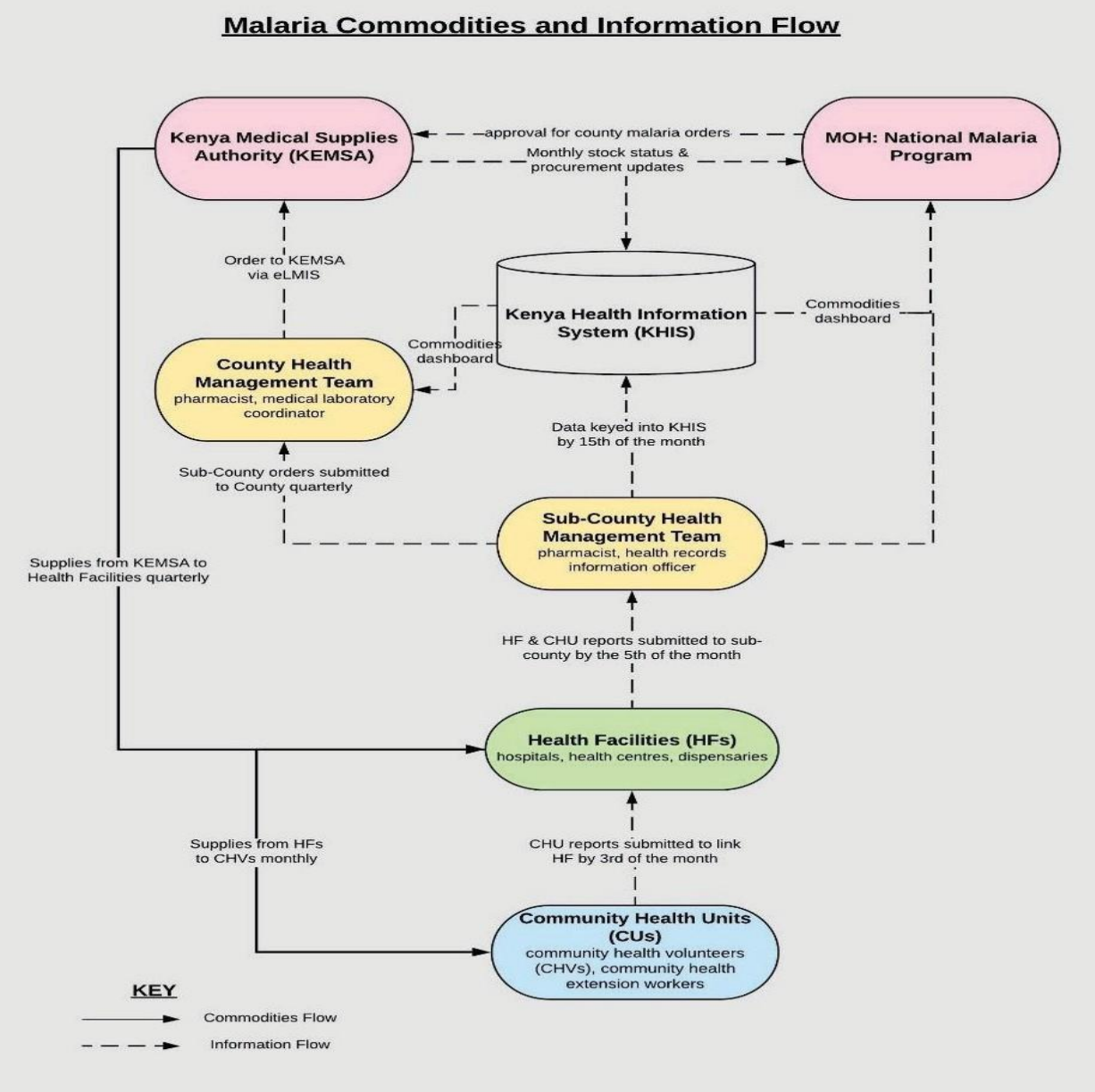
Annexes 1: Algorithm for management for fever cases



Annex 2: Malaria Commodities and Information Flow



Annex 3: Table Comparing of Annual Malaria Incidence at the Community and Health facilities

Table 4

Comparison of Annual Malaria Incidence at the Community and Health facilities

Variables	**Source/Year and Percentage**	**2019**	**2020**	**2021**	**2022**
Population	Total Population per Year	881878	922352	949104	978032
Annual Malaria Incidence	Community Units (Cases/1,000 Population)	85	33	93	293
	Health Facilities (Cases/1,000 Population)	565	395	422	350
	Totals (Cases/1,000 Population)	650	428	515	643

Annex 4: Quantities of Artemether - Lumefantrine doses dispensed

Table 5

Quantities of Artemether - Lumefantrine doses dispensed per Month by the CHVs, Stock on Hand and Months of Stock at the end of each Month

Month/Data element	AL 6s Total Quantity dispensed.	AL 6s Physical Count/SOH	MOS AL 6s	AL 12s Total Quantity dispensed.	AL 12s Physical Count/SOH	MOS AL 12s	AL 18s Total Quantity dispensed.	AL 18s Physical Count/SOH	MOS AL 18s	AL 24s Total Quantity dispensed.	AL 24s Physical Count/SOH	MOS AL 18s	mRDTs Total Quantity dispensed.	mRDTs Physical Count	MOS mRDTs
January 2022	1048	759	0.7	1447	659	0.5	907	390	0.4	7982	4777	0.6	17380	12599	0.7
February 2022	1350	1256	0.9	1328	1149	0.9	951	1139	1.2	6364	4667	0.7	16267	17036	1.0
March 2022	2058	2133	1.0	2691	2094	0.8	1918	1647	0.9	9268	7005	0.8	22659	20387	0.9
April 2022	3849	2598	0.7	3950	2388	0.6	3071	2121	0.7	12812	7547	0.6	29032	21892	0.8
May 2022	4337	3968	0.9	5589	3176	0.6	5386	2612	0.5	13342	9669	0.7	36194	27011	0.7
June 2022	4806	2830	0.6	5689	2431	0.4	3766	1923	0.5	21671	9155	0.4	39813	25966	0.7
July 2022	2917	2192	0.8	2665	1796	0.7	2233	1523	0.7	13936	7974	0.6	30708	27152	0.9
August 2022	2199	2803	1.3	2164	3237	1.5	1515	2507	1.7	10517	9134	0.9	25730	26605	1.0
September 2022	3084	3217	1.0	4484	3088	0.7	2256	2381	1.1	11317	8088	0.7	32645	26106	0.8
October 2022	3135	2741	0.9	3776	2677	0.7	2440	2190	0.9	10464	8885	0.8	31630	22229	0.7
November 2022	4089	3604	0.9	4251	3604	0.8	2531	2869	1.1	12779	12630	1.0	34835	22139	0.6
December 2022	4448	3609	0.8	4671	3504	0.8	2744	2854	1.0	11483	9326	0.8	34824	21140	0.6
Average	3110	2642	0.9	3558	2483	0.7	2476	2012	0.9	11828	8238	0.7	29310	22522	0.8