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Title

Improving maternal and child health outcomes in Kuoyo health centre, Kenya

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Summary

To reduce child mortality, a systemic approach addressing infrastructural needs, knowledge/skills acquisition and retention by health care workers, demand creation for good quality health care services, as well as provision of clinical supplies is crucial. Child Health and Mortality Prevention Surveillance (CHAMPS) Kenya has continually supported Kuoyo Health Center to realize a holistic approach to preventing child mortality. From a humble beginning of one staff in a facility that was inadequately equipped to handle basic childhood illnesses like diarrhea and pneumonia, and hence recording high mortality rates, the center now has a staff complement of 18 and serves a population of over 10,000 with better outcomes for both mother and child.

Some of the interventions implemented include trainings on established treatment protocols like the Integrated Management of Newborn and Child health illnesses (IMNCI) protocol alongside providing a pediatric pulse oximeter to assist with implementation of IMCI. The electric water dispensers donated by CHAMPS for oral rehydration therapy (ORT) corners were instrumental in quickly addressing diarrhea cases – there were over 900 illnesses in such cases in 2018 (facility register). A nutritionist intern was also posted by CHAMPS to assist with malnutrition screening.

Some of the lessons learnt include the importance of routine medical training and mentorship to sustain achieved quality improvements. Health champions in each health facility are crucial in implementing and sustaining provision of good quality health care.

Background and Context

The Child Health and Mortality Prevention Surveillance (CHAMPS) is a multi-centre mortality surveillance project, aimed at systematically tracking causes of under-five mortality to direct interventions aimed at reducing morbidity and mortality. In Kenya, CHAMPS is conducted in two contiguous counties in western Kenya i.e. Kisumu and Siaya counties that are also under health and demographic surveillance (HDSS). Kisumu is in an urban informal settlement, while Siaya is predominantly rural.

CHAMPS uses Minimally Invasive Tissue Sampling (MITS) procedure to collect various organ and blood samples from children aged under 5years. The laboratory results, histopathology results, verbal autopsy reports and medical histories (child, and mother if applicable) are discussed by a Determination of cause of Death (DeCoDe) panel of experts who assign the cause of death (CoD). The CoD is reported to the family, the facility or facilities where the case was managed, and the health management teams at sub county and county levels for appropriate public health interventions and hence data to action. The DeCoDe panel in Kenya found about 70% of child deaths were preventable and of preventable deaths, over 30% are due to poor quality of health care services. Consequently, our site chose to advocate for the implementation of Kenya Quality Model for Health (KQMH) in the maternal and child health space, and this has led to several other interventions.

Majority of the population under HDSS in Kisumu and Siaya (about 3,077 in 2016 increasing to about 10,725 in 2023 - using national population census records) is mainly served by Kuoyo Health centre as the only level 2 facility and the Jaramogi Oginga Odinga Teaching and Referral Hospital (JOOTRH) as a referral facility. One nurse, one small building, one chair, one table, and a huge demand for medical services was what defined Kuoyo Health Center in 2016 (Figure 1) situated in the heart of Manyatta B slums in Kisumu.

The pioneer nurse-in-charge of the facility, stepped into the facility on June 2nd, 2016, at the start of its operations which coincided with the launch of CHAMPS mortality surveillance activities in Manyatta – at a time when service gaps were glaring, and mortality among children under the age of five was extremely high. The facility had challenges with managing childhood diseases, specifically pneumonia and diarrhea due to multiple health system failures. In addition, it was difficult to conduct laboratory tests to inform management of patients due to lack of laboratory facilities. Thus CHAMPS collaborated with Kuoyo Health Centre and the local ministry of health to improve quality of healthcare and save lives of newborns and children.

Interventions

The overall aim of our collaborative intervention was to enable the provision of adequate, timely, and good quality health services at Kuoyo health center and ultimately reduce maternal and child mortality through:

01. Strengthening the linkage between the community and the health facility.
02. Health care skills development through training and mentorship.
03. Increasing human resources and laboratory capacity.
04. Improvements in clinical documentation.
05. Establishing of Oral Rehydration Therapy (ORT) corners.
06. Nutrition support
07. Improve supply of essential equipment

Figure 1. Kuoyo Health Center

01 Strengthening the linkage between community and health facility

At the community level, care provision is offered by community health volunteers (CHVs), now known as community health promoters (CHPs). CHPs are unskilled community members whose mandate is to identify and refer the sick to health facilities for professional care within their areas of residence. Establishment of HDSS in the area helped redefine their area of operation. Now each CHP has a defined area of operation and a unique identifier linking the CHP to his/her area of operation. This makes it easier for the health facility to do mother and child follow ups in the community through the CHPs.

As a result of the community work being done by several partner organizations in the catchment area with subsequent referral to Kuoyo health center, it became necessary to ensure well-coordinated follow up for all the patients referred to the facility by the partner organizations. A tickler box/system (Figure 2) was introduced by the pioneer nurse to facilitate care coordination and defaulter tracing to improve retention and quality of care.

Figure 2. Tickler box at Kuoyo health facility

02 Health care skills development through training and mentorship

CHAMPS provided refresher trainings for 10 key staff on Integrated Management of Newborn and Childhood Illnesses (IMNCI) to reduce the prevalence of diarrhea and improve the identification and management of pneumonia cases in Kisumu East Sub County. The facility also received an IMNCI chart booklet for ease of reference to aid in the management of both diseases and specific training on administering amoxicillin in pneumonia cases. The facility came up with an innovative method of using a stamp (Figure 3) to gather comprehensive information from the mother to aid in making a diagnosis. The stamp helps ensure that all the required vital signs for appropriate diagnosis are taken and recorded.

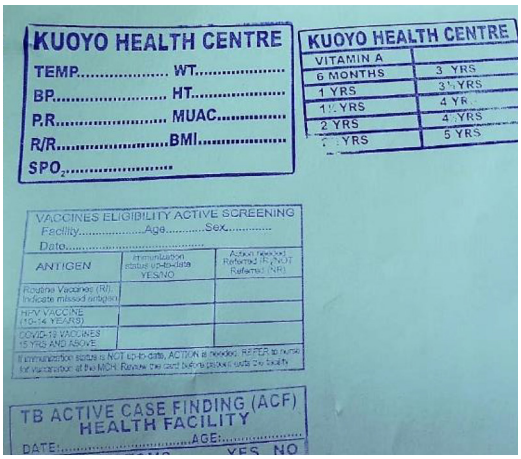

Figure 3. Stamp to ensure comprehensive history and examination for patients.

03 Continuing Medical Education

For sustainability of the quality improvements and knowledge/skill retention, the healthcare workers are involved in weekly continuing medical education (CME). All staff (total 35, only 10 being technical staff of different cadres) are expected to attend these sessions including interns, students and CHPs. This not only ensures that new staff are quickly oriented with the facility quality improvement plan but also encourages teamwork as one cannot achieve quality alone. Where additional skills are required, appropriate recommendations can be made.

04 Clinical documentation

Initially registers were incomplete or blank with mixed classifications of under-five diseases. With mentorship, training and data quality assurance (DQA) reviews, in collaboration with USAID Boresha Jamii, there was improvement in documentation and completeness of records and proper classification of diseases as per IMNCI classification. All trained staff had a mentorship responsibility to pass on the knowledge gained to their colleagues within and outside their facility. There was also emphasis on completing daily tasks in terms of data entry in registers and summary tools for efficiency. Ten HCWs were trained from the sub-County of which two were from Kuoyo.

05 Oral rehydration therapy (ORT) corners

ORT corners are designated spaces where children with diarrhea receive comprehensive management, including rehydration and caregiver counseling on the importance of adequate hydration during diarrheal illnesses. To improve treatment of diarrhea in real time, CHAMPS supported Kuoyo to improve ORT corner activities by providing relevant refresher training on IMNCI and strengthening importance of proper documentation. CHAMPS also provided electric water dispensers (an upgrade from the initial jerry cans that were associated with hand washing from the COVID-19 era, Figure 4), disinfectant containers and calibrated jugs. These appliances are used to ensure appropriate approximation of rehydration salts and that the patient is well hydrated before going home or before referral to the next level of care is initiated.

Figure 4. ORT corner with electric water dispenser to rehydrate diarrheal patients. (Figure also shows color-coded buckets for disinfecting cups and other supplies).

06 Laboratory support

CHAMPS assisted with implementation of a satellite laboratory at Kuoyo by donating an initial supply of basic consumables and lab reagents for antenatal care (ANC) profiles. In addition, CHAMPS lab expertise and personnel assisted with routine diagnostics and training. The facility received an ultrasound scan machine from the county government in 2019 whilst the CHAMPS team assigned a sonographer to the facility. The availability of this technical expertise has served not only CHAMPS participants under pregnancy surveillance but also all pregnant women attending ANC at the facility. As a result, the center has shown marked improvement in reproductive health indicators and is now well equipped to serve the ever-growing population of Kisumu East sub-County.

07 Nutrition Support

To support management of malnourished children, CHAMPS supported the Kuoyo by providing an intern nutritionist for one year (2022-2023). The addition of the intern led to increased screening and referral of malnourished children for proper management. There is coordinated identification, referral and care of malnourished children from the community to the facility by community health promoters (CHPs). The unique identifier provided by the HDSS to these volunteers and the communities they serve has also facilitated a seamless follow up of cases in the community.

Impact of interventions

01

Successes

These interventions have significantly improved health service demand and delivery at Kuoyo Health Center leading to their recognition as the best health facility in Kisumu East Sub County, (Figure 5)

Figure 5. Trophy and certificate presented to Kuoyo Health Center on 14th April 2023.

Additionally these interventions have led to much better health outcomes at Kuoyo. As at the time of the interview with the pioneer nurse (October 16th, 2023), the facility had a complement of 18 staff (seven nurses, two clinicians, two lab technicians, one nutritionist, one pharmacy technician, one volunteer health records officer, one community health assistant and six CHVs) serving a catchment population of over 10,725, which is more than triple its initial catchment population of about 3,077 in 2016 (Kisumu County records/facility records). Of those who receive services from Kuoyo Health Center, 6.7% are children. This is the highest proportion of children served by level 2 facilities. In May 2023, Kuoyo Health Center served 398 pregnant women, of whom 117 were new pregnancies surpassing its initial monthly target of 56 pregnancies and 56 babies. Approximately, 60% of these new pregnancies were first trimester pregnancies (below 13 weeks).

“Now we can identify women with pregnancies below 13 weeks, we can journey with them, this helps us adhere to the antenatal protocol stipulating at least eight antenatal clinic visits”, Emma Ogolla, the pioneer nurse, pointed out during an interview with her on October 16th, 2023. Kuoyo Health Center offers two ultrasound scans for every expectant mother. In 2023, Kuoyo offered ANC services to 4,427 women, more than 15 times the number served in 2018 (Figure 6).

The lab has enabled the facility to intervene in many cases that may have ended up as fatalities including being able to flag women with anemia in good time. “We are now able to build their blood volumes (hemoglobin level) in good time, by use of [iron and folic acid supplements] IFAS. We also have a period of about seven months, for giving them the blood booster supplies, ensuring that they are malaria-free by providing bed nets, malaria [Intermittent preventive treatment] IPT and deworming them”, Emma Ogolla added. The lab has aided comprehensive care and has improved quality, increasing the chances of realizing accurate diagnoses for the patients referred by a pool of more than 100 community health workers.

Being in a slum area, diarrhea was one of the major causes of childhood illness. However, with the help of CHAMPS, Kuoyo has successfully managed the majority of these cases with good outcomes. The rate of diarrhea in the catchment population has declined from 935 in 2018 to 739 in 2020 and 651 in 2023 (Figure 7). There has been marked improvement in clinical diagnosis and documentation of the management of these cases "*We have benefited greatly and enjoyed the support of CHAMPS; we can only say Asante sana CHAMPS*", Emma Ogolla said in her closing remarks.

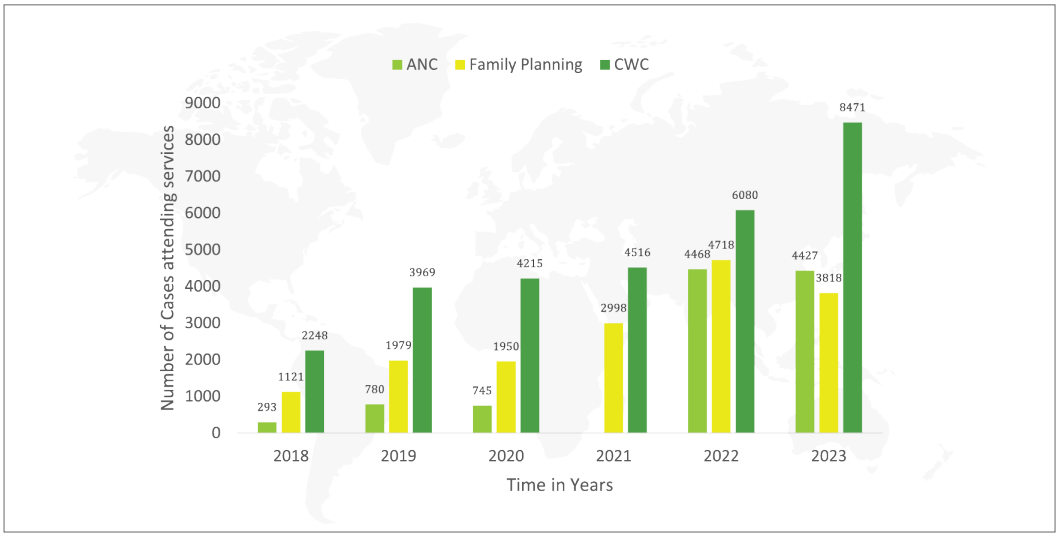

Figure 6. Trends in Antenatal care (ANC), Family planning, and Child welfare clinic services (2018-2023). Data source: facility registers.

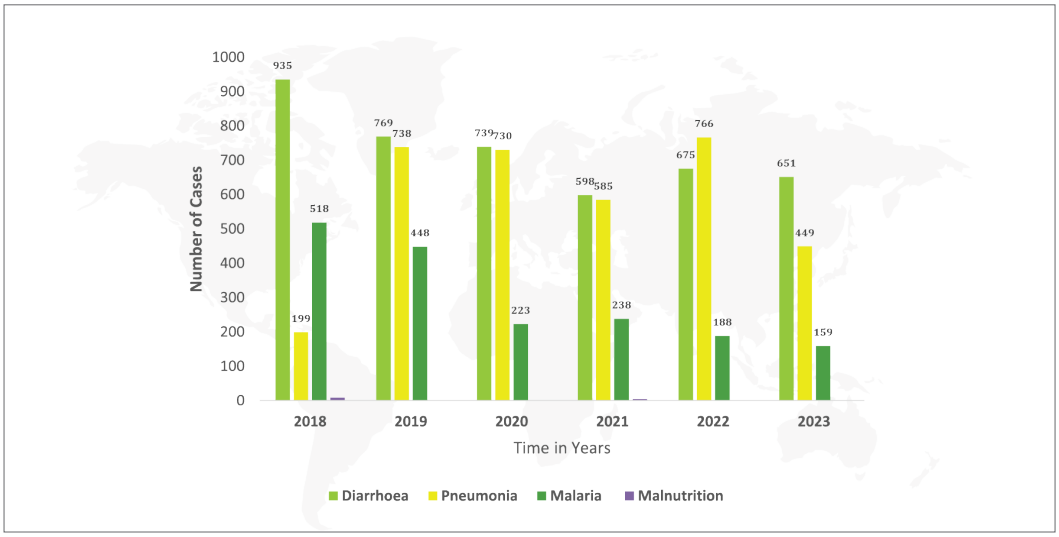

Figure 7. Numbers of cases of common childhood illnesses at Kuoyo Health Center, 2018 – 2023. Data source: facility registers.

Impact of interventions

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Lessons learned

Some of the lessons learnt include:

- Intentional partnerships to address gaps in quality of care: Partners bring different forms of support to the table, which when put together complement the county's efforts towards achieving reduction in mortality. Embrace partnership.
- Use of data to flag action points: Closely tracking the data generated helps inform performance. Monitoring of trends also facilitates the initiation of timely corrective measures to avert bad outcomes.
- Provision of funds for implementation of interventions: Sometimes all facilities need is 'seed' money to implement interventions to alleviate gaps that they are aware of.
- The need to have a champion in the target facility to spearhead quality improvement changes: The facility took a journey of resilience and in collaboration with CHAMPS found solutions to tackle high child mortality.
- The importance of continuing medical education to ensure sustenance of quality improvements realized.
- Use of electric dispensers has improved ownership and utilization of ORT corners in the management of diarrhea. The dispensers are user friendly and assist in minimizing contamination. In addition, the internal temperature controls of the electric dispensers preclude the need to heat the water to the desired temperature.
- One of the greatest challenges was limited funds. The nurse in charge of the facility was very enthusiastic and aware of the gaps in provision of quality care at the facility but funds were limited. As such, interventions had to be streamlined and prioritized based on expected impact. Due to the challenges being experienced with supply of commodities by the government, the nurse-in-charge had to partner with several organizations including CHAMPS.

> *"The DeCoDe panel in Kenya found about 70% of child deaths were preventable and of preventable deaths, over 30% are due to poor quality of health care services"*

Recommendation

Due to the improvements at the Kuoyo Health Center, the facility is usually overwhelmed as patients from surrounding catchment areas attend clinic there because facilities nearest to them are not functioning as well. The main recommendation is for the Ministry of Health to scale-up what CHAMPS has shown to work within the Kuoyo health center to other level 2 facilities outside the CHAMPS catchment area so that the benefits realized in Kisumu County can reverberate through Kenya.

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1. Kenya Medical Research Institute CGHR Kisumu Kenya
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3. Field Epidemiology and Laboratory Training Program, Ministry of Health
4. Liverpool School of Tropical Medicine (LSTM), UK
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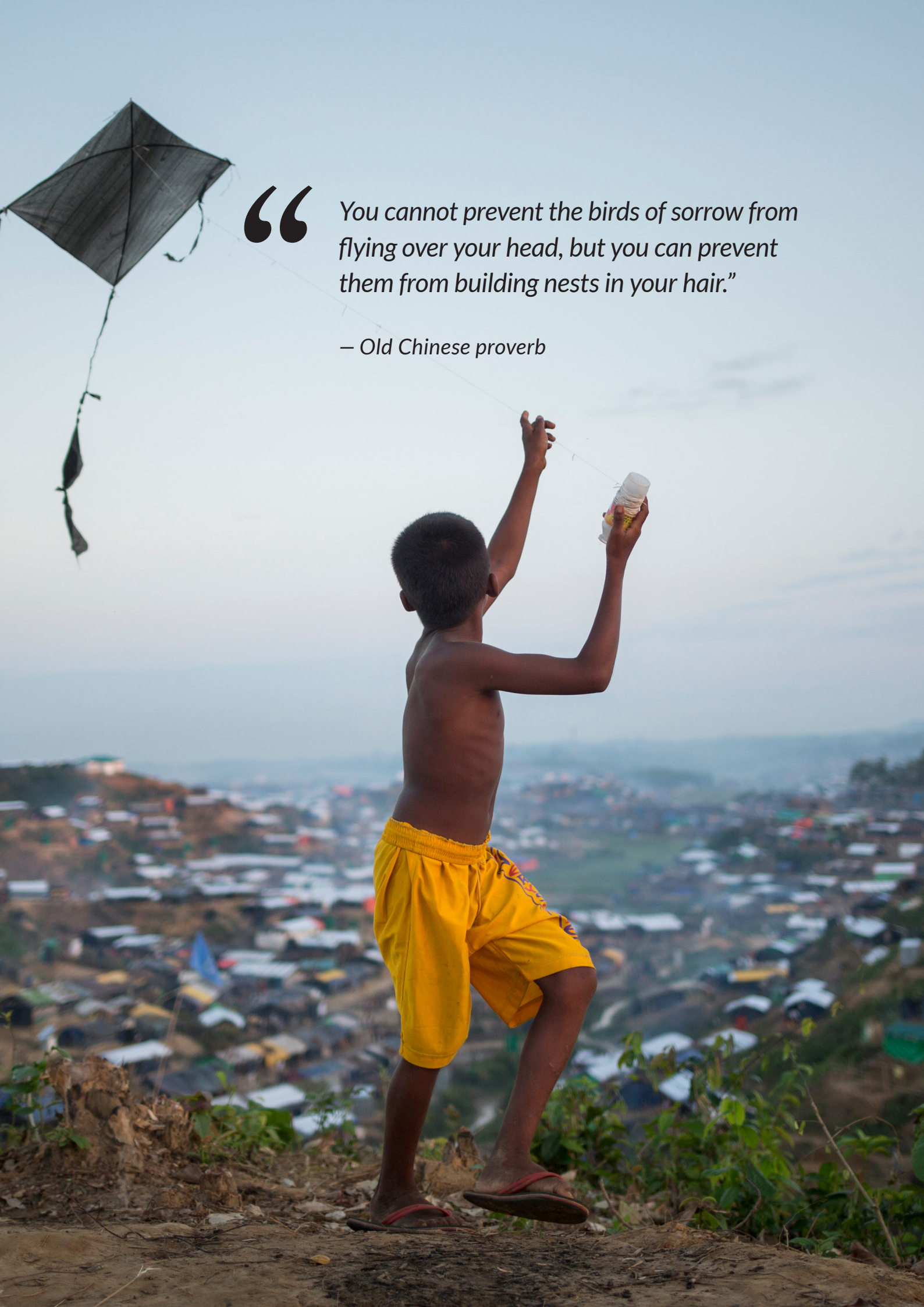
2. Families of the cases enrolled in CHAMPS
3. Karemo and Manyatta HDSS communities
4. Kenya CHAMPS Directors and staff
5. Kisumu and Siaya County Department of Health
6. Henry Jackson Foundation
7. U.S. Centers for Disease Control, Kenya
8. Kenya Medical Research Institute



“You cannot prevent the birds of sorrow from flying over your head, but you can prevent them from building nests in your hair.”

— Old Chinese proverb

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THANK—YOU

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The CHAMPS network uses innovative approaches to generate and share knowledge that improves understanding and prevention of child mortality.

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