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Kisumu pioneers drug delivery using drones to enhance timely universal health access

County:	Kisumu		
Sector/s:	Health	Sub-sector/Theme:	Health
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Target Audience:	County governments, County departments of health, health sector partners,		
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Introduction (*Context and Challenge*):

Kisumu County has a coverage of about 2,085 km² with a population of approximately 1.2 million. It has 153 health facilities spread across all its seven sub-counties.

As a policy, the distance between health facilities in Kisumu County is approximately 5 km. However, there are still some health facilities situated 15–20 km apart, especially in hard-to-reach remote areas.

Current Challenges:

Currently, the Kenya Medical Supplies Agency (KEMSA¹) does last-mile supply of commodities.

¹ KEMSA is a state agency whose mandate is to procure, warehouse, and distribute medical commodities to public health facilities in the country's 47 counties.



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There is however an erratic supply of commodities by KEMSA, that affects the distribution of the available medical supplies to the health facilities. Most health facilities are therefore pushed into asking for more than they need (buffer stock), to cushion themselves from being out-of-stock.

In levels IV and V, the County is able to source them from other suppliers such as Mission for Essential Drugs and Supplies (MEDS) and stocking them at the sub-county stores from where the health facilities collect per schedule. This usually means staff from the health facilities have to leave work and travel to the sub-county store. For small health facilities like dispensaries or health centres which have 1–2 staff, this affects service delivery since in such cases, the officer has to close the facility and go for the supplies.

For vulnerable patients with chronic illnesses and pregnant women who require monthly prenatal care checkups and emergency services during preventable life-threatening emergencies, these supply disruptions and costs affect their health outcomes as not all can afford the time to access nearby public or private facilities they may have been referred to, or money to buy the needed drugs. In some cases, health facilities that lack some of the supplies are forced to refer patients to buy from private suppliers.

Another challenge in the health sector is the unavailability of blood. Currently, blood is stored at the Regional Blood Transfusion Centre in Kisumu, and most recently, at County Hospitals within the seven sub-counties. Health facilities in need of blood must physically send someone to collect this blood from the centre/County hospitals, and in most cases, take more than they need. The excess blood product stocks often result in the wasting of the blood component.

Another challenge facing Kisumu County's Livestock Department that needs fixing is that livestock farmers physically transport animals to Chemelil, a town in Muhoroni Sub-County, 40 km East of Kisumu County, for artificial insemination (AI) services, which is a logistical nightmare and they may be time-barred by the time they reach Chemelil.



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Additionally, Kisumu County noted a high incidence of snake and dog bites. The anti-venom and anti-rabies vaccines are stored centrally, making distribution unpredictable.

The County Government was desperate to find innovative ways to mitigate the inventory management challenges occasioned by delivery delays by KEMSA and time wastage in picking essential and on-high-demand human medical supplies, resulting in delayed access to life-saving interventions. It also needed to lessen the burden of accessing AI services for livestock farmers and to centrally stock anti-venom and anti-rabies vaccines.

In 2022, the lockdown during the COVID-19 pandemic aggravated the medical supplies challenges and there was an urgent need to find a solution to transport the COVID-19 vaccines and other routine vaccines and essential medicines to health facilities in need.

A visit to Rwanda in 2022 by Governors from the Lake Region Economic Bloc (LREB), including the Governor of Kisumu County, H.E. Anyang Nyong'o, where they witnessed the successful drone delivery of medical products, convinced them to want to introduce it in their regional bloc to save lives amid the rising mortality cases. GAVI² had offered to support the free distribution of COVID-19 vaccines as it had done in Rwanda where it partnered with Zipline, an instant logistics distribution system specializing in drone delivery, to deliver animal and human health.

How the County pioneered the practice (*Solution Path*):

- LREB signed an MoU with Zipline to distribute COVID-19 vaccines at a negotiated rate at the height of the pandemic in 2021. Zipline faced delays in starting operations because of challenges in getting the necessary licensing from the Kenya Airports Authority and the Department of Defence.
- When the pandemic subsided, Kisumu County still considered drone delivery. The County separately signed an MoU with Zipline to stock and distribute blood,

² GAVI, officially Gavi, the Vaccine Alliance is a public-private global health partnership with the goal of increasing access to immunization in poor countries.



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routine vaccines, anti-rabies, anti-venom, and emergency drugs (adrenaline, hydrocortisone, etc.).

- Preparations started in early 2022 with a target to start drone deliveries before elections in anticipation of emergencies during elections.
- The County Government of Kisumu on Monday, January 30, 2023, launched a test flight — the first-ever drone delivery of medical supplies in Kenya. The inaugural delivery took five minutes to deliver vaccines to Migere Dispensary, Masogo Nyang'oma Ward. A total of 81 drone deliveries happened that day.
- The County anticipates to officially launch operation in early April 2023 pending approval of flight paths for all public facilities listed by Kisumu County.
- Health facilities have been trained and sensitized on how to place orders to Zipline. This is done through a toll-free number. They have also been sensitized on which commodities and products qualify for emergency deliveries.
- The Sub-County pharmacists provide a second layer of filtering for approval of certain commodities beyond a certain order quantity.

Key implementers and collaborators and their roles

- LREB played the role of advocacy for the initiative.
- The Kisumu County Government has been providing funding for commodities and drone flights.
- The County Health Management Team (CHMT) is overseeing implementation of the project by the Drone Project Implementation Committee.

Resource implications

- The County Government through the Department of Health has committed to the payment of flights to Zipline.

Sustainability

- The County Government is committed to sustainably implementing the drone delivery practice and will continue to prioritise resource allocation for it.



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- The County Government is committed to reducing maternal and neonatal mortality rates to levels achieved by Rwanda (60–70%) by enhancing access to essential medicines through drone delivery to the health facilities.

Progress of the test flights:

- The project is still in the *proof-of-concept stage* and there are no measurable results yet. Zipline has a good monitoring and evaluation platform that is able to give monthly summaries.
The County health reporting tools (MOH tools) are in place to monitor trends, e.g. mortality.
- However, since the launch of test flights one month ago, it is clear that:
 - health facilities that require vaccines and other essential medical supplies can now receive them within a few minutes of requesting them. This has greatly improved health delivery at the community level for more patients. Since the test flights, there has been an average of 40 drone deliveries per day.
 - there is excitement among patients about accessing health services in this sophisticated manner.
- The Kisumu Dairy Multiplication Centre in the Livestock Department will use the drone delivery service to transport semen, which will help the County's livestock farmers avoid the costly logistical nightmare of physically transporting animals to Chemelil for the AI service.
- The anti-venom and anti-rabies vaccines are centrally stocked at the Zipline warehouse and distribution should be efficient.

Key activities undertaken that ultimately led to a successful pilot

- Community engagement with the communities living around the Zipline nest (warehouse).
- Budgeting for the payment of flights by the County.
- Stakeholder engagement beyond the Health Department.
- Political goodwill.

Lessons learnt:



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What worked well during the test phase

- Political goodwill by the County leadership.
- A good partnership with Zipline. Zipline is very efficient and moves fast, so the County had to be proactive.
- Establishment of a Drone Project Implementation Committee. In Kisumu, the committee is headed by the Lead Programme Implementer, who is the liaison between Zipline and the Kisumu County Government. Other members include the Director of Medical Services, the Head of Medical Lab (for blood products), the Head of Health Products and Technologies, and the Head of the Immunization Programme.

What did not work and why

- Missed timelines for the construction of the warehouse by Zipline due to license delays.
- The procurement processes leading to the distribution award letter being issued to Zipline were delayed.
- Having one layer of authorization (by the health facility in-charge) allowing staff to order drone deliveries, which was meant to quicken the drone service to enhance saving lives was sometimes misused by some health facilities, perhaps out of excitement. An added layer of authorization (by the Sub-County Pharmacist) to check such abuse had to be put in place.

Conclusion and Recommendations

- Political goodwill is key to the success of the project.
- There is a need to appoint a resourceful project implementation team.
- It is important to make all the necessary preparations before starting the project, including an annual budgetary allocation.
- There is a need to streamline the procurement process.

Further reading:

1. [Timothy Amukele](#), "Using drones to deliver blood products in Rwanda,"



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2. Facebook page of the Kisumu County Department of Medical Services, Public Health & Sanitation
<https://www.facebook.com/profile.php?id=100063981851831&mibextid=LQQJ4d>
3. Twitter account of the Kisumu County Department of Medical Services, Public Health & Sanitation <https://twitter.com/KisumuOf>

Photo Gallery



The first Zipline nest in Kenya



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Maarifa Centre
Sharing Kenya's Devolution Solutions



Zipline drones and delivery boxes



A Zipline drone being launched into the air in Kisumu County A Zipline drone dropping a delivery at a health facility in Kisumu