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CASE STUDY · MARLUC SYNOPSIS

Zipline drone supply in Ghana

IMPLEMENTED 2019 ONWARDS · HEALTH AND LIFE SCIENCES · GHANA · BAND C · PARTLY PROVED

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Zipline delivers vaccines, medicines and blood to Ghanaian health facilities from distribution centres. A quasi-experimental IDinsight evaluation, funded by the Gates Foundation, found fewer days without products and shorter vaccine stockouts, but no significant effect on patient referrals. In late 2025 the government said it was reviewing the take-or-pay contract over value for money, and a survey of health workers found use was uneven. The drones are automated; the sources opened do not describe generative AI.

ABOUT THIS SYNOPSIS

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Facts and figures are as reported by the sources listed below, which may be incomplete, self-reported or out of date. Check the original source before relying on any figure.

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NOTICE WORDING LAST UPDATED 16 NOVEMBER 2026

AT A GLANCE

AI and automation used: Automated drone delivery service; news reports call the drones autonomous, and the evaluation sources do not describe any AI or machine learning.

Implemented: 2019 onwards. Grade: band C, Process change, Partly proved.

Headline result, as reported: An IDinsight evaluation found Zipline cut days without medical products by 5 (from 45) and vaccine stockout duration by 60%, with no significant effect on referrals; in 2025 the government questioned value for money

1 · The case

The facts, as reported by the 4 sources listed at the end. Where a source is silent, the field says "Not reported".

Organisation

Ghana Health Service and Ministry of Health, with Zipline International. Ghana's national drone supply service for health facilities, run by Zipline International under contract to the Government of Ghana. Zipline plans coverage of about 2,000 facilities; six distribution centres operate across the country, per the 2026 survey paper. Canvas block: 4. Operations and process. Also 5. People and skills.

Business challenge

The challenge. IDinsight says Regional Medical Stores supply turnaround in Ghana ranges from 8 to 21 days depending on facility type, so facilities can run short of vaccines and medicines.

How it was addressed. From 2019 Zipline delivered vaccines, medicines and blood from distribution hubs. Facilities order by text, mobile or web app. By IDinsight, products arrive within 45 minutes rather than several days. [1] [2] [3] [4]

Who implemented it

Zipline International (Equipment or robot maker): Operates the distribution centres and drone delivery service under contract to the Government of Ghana..
IDinsight (Consultancy): Ran the independent impact evaluation, funded by the Bill and Melinda Gates Foundation..
In-house (In-house): Ghana Health Service: Government partner whose facilities order through the service..
Contract terms are from the Health Minister's public statements as reported by press.

Technology (SEAM pillar E)

SEAM types: T9 AI in physical systems. Deployment: Not reported. Vendors and products: Zipline International, Zipline drone delivery service.

Where it was built in: Facilities order by text, mobile or web app. Zipline picks and packs the shipment, launches the drone and delivers to the facility; the drone returns to the hub to be recovered, recharged and reloaded. Zipline's hubs are supplied from government stocks (IDinsight).

What changed

Before: facilities relied on Regional Medical Stores with 8 to 21 day turnaround. After: facilities in Zipline zones order on demand. In the evaluation, treated facilities stocked one more product on average and spent fewer days without products, but the evaluation found no significant effect on referrals due to medical stockouts. [1] [2] [3] [4]

What it cost

Not reported by the evaluation. Per the Health Minister (December 2025), the state pays $88,000 per centre per month regardless of delivery volume, and arrears were about GH¢175 million; the 2026 budget allocated GH¢20 million.

What it saved

Days without a product in the past three months fell by 5 against 45 in the control group (11% drop, $p<0.01$). Vaccine stockout duration fell by 3.2 days against 5.3 (60%, $p=0.01$). Cost saving: Not reported. [1] [2] [3] [4]

Governance and control

IDinsight's protocol was approved by the Ghana Health Service Ethics Review Committee and registered with 3ie. The government has questioned value for money and is renegotiating terms, per the Health Minister. Accountable owner, safety regime and vendor assurance: Not reported.

S2 · Accountable owner · Evidenced
The Health Minister publicly discussed the contract on 1 December 2025 and said talks with Zipline were continuing. [3]

A1 · Safe use · Not reported
Not reported.

A2 · Human in the loop · Not reported
Not reported. Facility staff place orders; no review step is described. [1]

A3 · Monitoring and assurance · Evidenced
IDinsight ran a quasi-experimental evaluation approved by the Ghana Health Service Ethics Review Committee and registered with 3ie; a separate 2026 survey of 696 health workers followed. [1] [2]

A4 · Vendor AI · Evidenced
The Minister reviewed contract value, citing a take-or-pay arrangement and the share of flights serving hard-to-reach and emergency needs; the government said it was renegotiating terms. [4] [3]

A5 · Agent controls · Not reported
No agents described.

A6 · Standards and regulation · Not reported
Not reported.

What worked, what did not, what is unproven

WORKED

– Treated facilities stocked one more product on average than the control mean of 10.24 (p=0.05).

– Days without a product fell by 5 against 45 in the control group, and vaccine stockout duration fell 60%.

– Facilities in Zipline zones were 26 and 42 percentage points less likely to lack severe malaria treatment and anti-snake serum when treating a patient, from 41% and 73% in the control group.

– Health workers in treated facilities had a 28% higher satisfaction score for medicine availability; 92% of facility heads surveyed found Zipline somewhat or very convenient.

DID NOT

– There was no significant effect on referrals to other facilities caused by medical stockouts (p=0.864), and not enough evidence that the share of vaccine stockout days fell.

– The reduction in patients turned away for vaccine stockouts (15% against 25%) had p=0.08, so it is suggestive only.

– The 2026 survey found use uneven across facilities and respondents citing high operational costs and technical limitations; it concluded drones are complementary tools rather than substitutes for wider reforms.

– In December 2025 the Health Minister said only 16% of flights served hard-to-reach areas (12%) or emergencies (4%), and three centres were partly suspended over arrears.

UNPROVEN

– Effects on patient health outcomes: the evaluation measured stockouts and referrals, not mortality.

– Whether results from an early sample with many peri-urban facilities hold across Zipline's current footprint; IDinsight says the sample may differ.

– Whether the service is good value: the Minister's figures and the evaluation address different questions, and the outcome of the contract review is not reported in the sources opened.

2018 Take-or-pay contract signed, per the Health Minister [4]

2019 Zipline partners with the Government of Ghana to launch drone delivery; plan covers about 2,000 health facilities [1]

Oct 2019 IDinsight baseline data collection begins at health facilities [1]

Jun 2021 IDinsight endline phone surveys begin, in two rounds to October 2021 [1]

Apr 2022 IDinsight publishes its evaluation brief [1]

Nov 2025 Three centres (Sefwi Wiawso, Krachi, Anum) partly suspended over delayed payments [4]

Dec 2025 Health Minister says no decision yet on cancelling the contract and talks continue [3]

Feb 2026 Dialogues in Health publishes a survey of 696 healthcare professionals on Zipline services [2]

2 · Grade and SEAM assessment

MarLuc's opinion, made on the evidence above. How cases are graded: marluc.co.uk/case-studies/how-we-rate

Level of change and impact

Claimed: Not applicable. Grade: C, Process change. Proof: Partly proved. Level of change: Process change.

Process change (Level 2, band C). Ordering and supply to facilities was redesigned and a matched-comparison evaluation shows fewer days without products, with mixed effects on patient referrals and an open dispute on cost.

The SEAM view and lessons learnt

The evaluation is a useful model: a matched comparison with results reported as significant and not significant. The finding that use was uneven fits the wider survey: a technology that works still depends on staff using it and on a contract the funder can sustain. For a larger organisation the points are to measure the user-level outcome as well as the delivery speed, and to agree volume and payment terms that match the intended use.

1. Test the service against a matched comparison group and report the null results.
2. Train and brief the people who must order, so use matches the capacity.
3. Set contract terms that match the mandate, such as volume and emergency share.

Evidence

Score 2 of 4. Partly independent: IDinsight's quasi-experimental brief (Gates Foundation funded; Zipline-supplied images and next steps) plus a 2026 peer-reviewed survey. Limits: the full report was not opened, outcomes are facility stockouts and not patient health, and the sample was early.

Evaluation method. Quasi-experimental matching design with 107 treatment and 112 control facilities, baseline and endline surveys, p-values adjusted for multiple hypothesis testing (IDinsight).

3 · Original sources

Read these in full. To challenge a fact or a grade, use the contact form at marluc.co.uk or the link on https://marluc.co.uk/case-studies/ghana-zipline-drone-health-supply

[1] IDinsight: Measuring Zipline's Impact on Health Access, Availability, and Supply Chain in Ghana (brief, April 2022)
https://files.givewell.org/files/DWDA%202009/Zipline/IDinsight_Zipline_impact_assessment.pdf

[2] Dialogues in Health (2026) via PMC: Drones in healthcare logistics: Insights from healthcare professionals' perspective on Zipline delivery services in Ghana
https://pmc.ncbi.nlm.nih.gov/articles/PMC12914684/

[3] MyJoyOnline: Zipline deal: Cancellation not yet decided - Minister of Health
https://www.myjoyonline.com/zipline-deal-cancellation-not-yet-decided-minister-of-health/

[4] NewsGhana: Health Minister Questions Value of Zipline Drone Contract
https://newsghana.com.gh/health-minister-questions-value-of-zipline-drone-contract/

Ghana Health Service and Ministry of Health, with Zipline International website: https://ghs.gov.gh

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