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Reimagining Healthcare in Ribeirão Preto

VARSAN JEYAKKUMAR
DEVANSH BHUTANI
KIAN RAFATI
ISHRAQ ALAM



PROBLEM ANALYSIS

Saúde Ribeirão 360

454 Primary Care Clinics

2 Primary Challenges

Supplies

Supply shortages have been reported across clinics

Vaccines

Equipment

Antibiotics

Staffing

Staffing vacancies have been reported across clinics

Doctors

Nurses

Nursing
Assistants

Community
Health Agents

The Result: **Longer Waits, Worse Care [2]**

Challenges By The Numbers

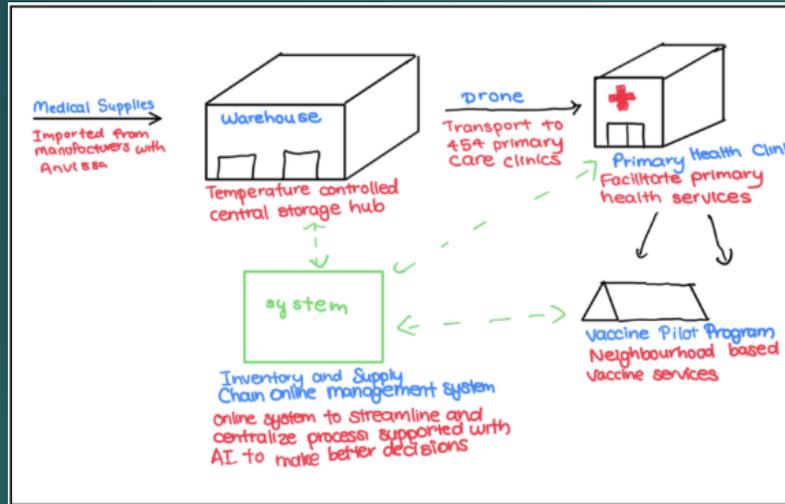


3704%

Missing Data

PROPOSED SOLUTION

Proposed Solution Overview



Central Warehouse

- The central storage facility that provides resources to Saúde Ribeirão 360 clinics
- Imports with assistance from Anvisa

Inventory Optimization

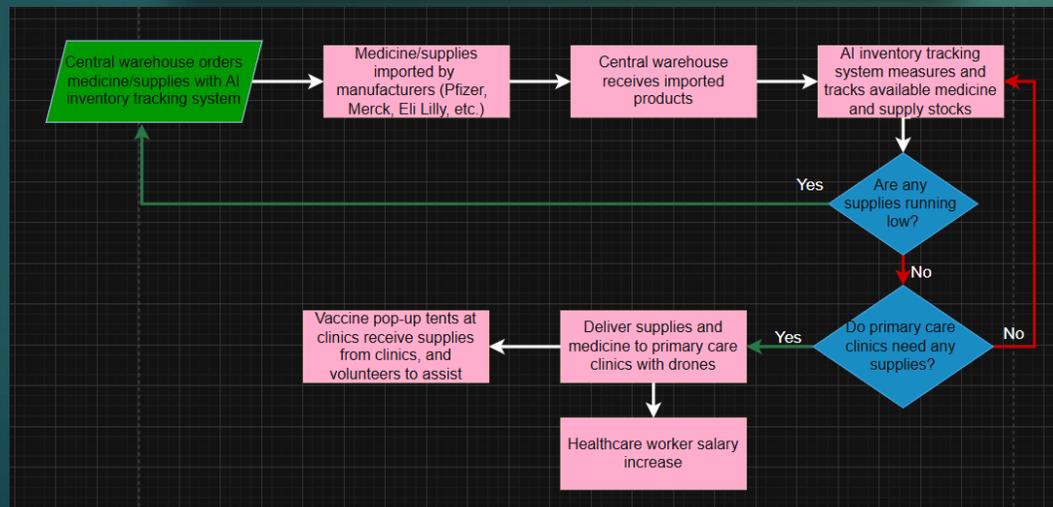
- Tracks current stocked supplies and medications
- Utilizes drone transportation alongside current methods

Primary Health Clinics (PHCs)

- Primary center for medical services, receives supplies from drone service
- Healthcare workers increased salary

Vaccine Pilot Program

- Tent service with assistance from volunteer initiative



Inventory Optimization System

- ▶ This supply chain optimization tool will be used to manage medical supplies.
- ▶ It will model monthly data on patient demands for medications and vaccines. The software will use this data to indicate how much medical supplies is served for a certain clinic.
- ▶ By monitoring on-site supply and expiration dates on a database, delivery timeframes and purchase quantities will be adjusted to minimize waste while meeting demand.
- ▶ Artificial intelligence models will predict demand for essential vaccines using seasonal patterns, outbreak monitoring, and live demand usage rates [6].
- ▶ We have several existing software solutions (e.g. Ninsaúde, Sortly) that demonstrate the viability of this approach in healthcare settings.

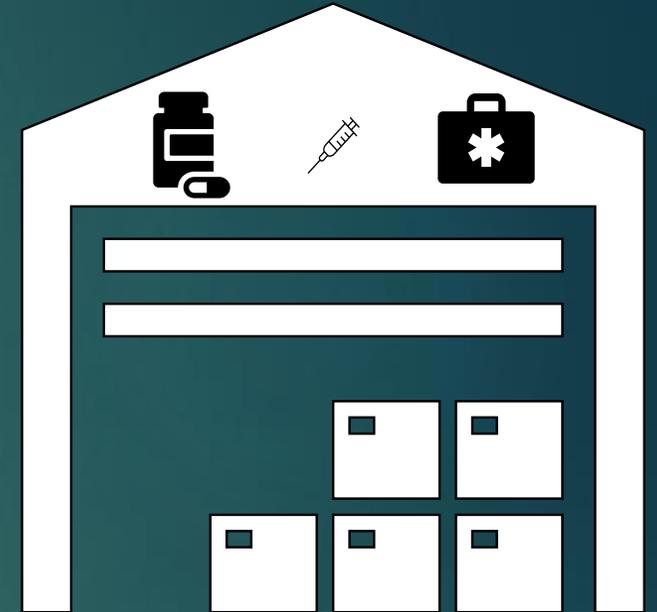


Sortly, a supply tracking software. [4]

Procurement: THE WAREHOUSE

Central warehouse to store medical supplies

- Imports will be coordinated with **Anvisa**, the Brazilian Health Agency responsible for controlling the imports of medication to Brazil
- Imports from global manufacturers will be transported to a **central warehouse** until delivery to Primary Health Clinics is to be facilitated
- Certain medical equipment have certain **storage requirements** (e.g., Temperature for vaccines), which will be facilitated at the warehouse
- Warehouse will be **integrated with the online inventory management system**, such that demands for supplies can be identified and addressed (by ordering the necessary supplies)



Transportation: THE DRONE



EX. Wingcopter 198 Drone [4]

Fast and efficient transportation to address supply at Primary Health Clinics

Benefit: Unlike existing road transportation, drones are operable through more terrain and can easily access more remote places.

Medical drones are being used worldwide with **highly successful outcomes!**

145 km/h max speed

110 km range

6 kg Mass Supply

Procurement

Transportation

Community
Delivery

COMMUNITY DELIVERY: CLINIC STAFF

Even with a good supply of medical supplies, the system will **FAIL** if there are no staff to treat patients with it

Competitive Wages

Competitive wages will enable existing healthcare workers to stay in their jobs and motivate more students to pursue careers in community health care.
E.g. \$1,488 USD/month for CHA workers

Volunteering Program

To support health care efforts, volunteers can be brought from global programs and medical students at universities, alleviating the workload for health care staff at primary care clinics by performing triage and admin tasks.



COMMUNITY DELIVERY: MOBILE TENTS



Info: Mobile vaccine clinic pilot program to bring immunization closer to people's homes

Objective: Reduce Demand at Primary Care Clinics and reduce disease prevalence

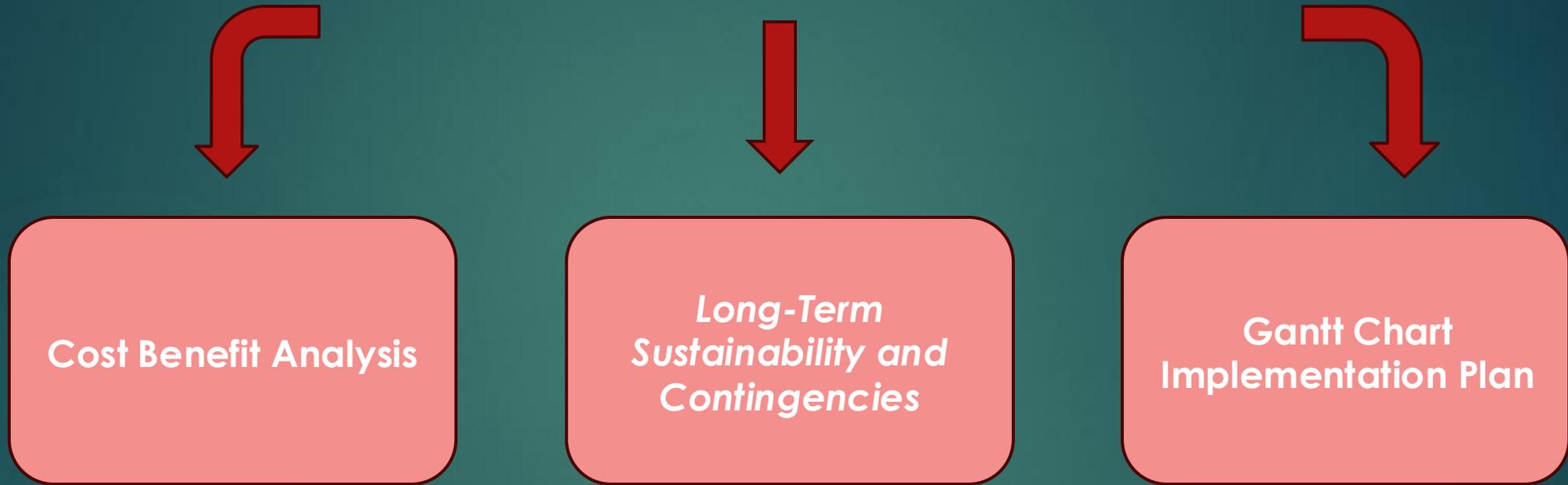
Tents recommended for clinics [5]

PHASE 1: 10% of Clinics (With Highest Patient to Clinic Ratios) will be allocated a tent and a mobile team to deliver certain essential vaccinations [3], such as Tetra Viral, Influenza, and Pneumococcal vaccines. The results on disease prevalence and wait times at primary care clinics will influence whether the program is expanded to more clinics and regions.



IMPLEMENTATION

Implementation Plan



Cost Benefit Analysis

- ▶ Several implementation costs to consider:
 - Increased healthcare worker salary
 - Inventory optimization software in central warehouse
 - Drone landing pads, purchase costs, and operations
 - Mobile tent purchase costs
 - Central warehouse operating and construction costs
- ▶ Tradeoffs with benefits ensures budget allocated effectively

Cost	Benefit
Salary	Improve staff retention
Software	Higher patient satisfaction due to material availability and preventing waste
Drone System	Rapid medical equipment and prescription delivery for shortages
Mobile Tents	Reduces congestion inside the clinic. Provide easier vaccination.
Warehouse	It will store all the medical inventory including vaccinations.



Long-Term Sustainability and Contingencies

Strategy 1

Quarterly Inventory Audits:

- Ensures medical supplies are properly stocked and maintained
- Keeps the Sortly database up to date with recent trends and supplies

Strategy 2

Faculty Training:

- Will teach volunteers how to aid staff at Medical tents and reduce workload
- Aids in smoother processing in Public Health Clinics

Strategy 3

Drone Maintenance:

- Drones will be evaluated every 6 months
- Pathing will be calibrated to account for elevation and terrain
- Weight distributions will be tuned to minimize instability

Gantt Chart Implementation Plan

Gantt Chart															
Task Name	Start Date	End Date	2026												2027
			1	2	3	4	5	6	7	8	9	10	11	12	1
Source Drones	1/10/2026	3/10/2026	█	█											
Deploy Drones	3/10/2026	5/10/2026			█	█	█								
Build Drone Facilities	5/10/2026	6/10/2026				█									
Warehouse Renting	1/10/2026	1/10/2027	█	█	█	█	█	█	█	█	█	█	█	█	█
AI-Model Calibration	1/10/2026	3/10/2026	█	█											
Relief Tent Shipping	1/10/2026	2/10/2026	█												
Relief Tent Assembly/Implementation	2/10/2026	4/10/2026		█	█	█									
CHA Salary Increase	1/10/2026	1/10/2027	█	█	█	█	█	█	█	█	█	█	█	█	█
Volunteering Program	1/10/2026	1/10/2027	█	█	█	█	█	█	█	█	█	█	█	█	█

Plan for Immediate Access

- Develop Fundamental Technologies
- Address immediate shortages and staff overloading
- Allow for scalability with expansion of current technologies



Long-Term Sustainability

- More mobile tents will be assigned to remote population
- Further development of drones will be used to cover a great percentage of the shortages
- All facilities will be maintained through trained professionals

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