

AccuVax: Efforts to Reduce Vaccine Waste and Optimize Inventory



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Introduction

Prices of vaccines continue to increase and serve as a major cost for health care systems.¹ The integration of digital information systems coupled with effective supply chains has shown to increase vaccine availability and improve the quality of vaccine records in communities of need.² AccuVax[®] is a state of the art all-in-one vaccine management system intended to guarantee temperature-controlled vaccine storage, monitor inventories efficiently, and minimize waste and loss. While this system can offer significant savings and efficiency, improper usage can lead to inaccurate inventory levels, hindered workflows, and costly waste.

Aims

- Improve HopeHealth's staff's AccuVax[®] knowledge with system interface to $\geq 80\%$
- Reduce HopeHealth's vaccine waste costs by 80% at their central location
- Reduce vaccine formulary surplus inventory by 80% as demonstrated by absolute percent change in inventory

Methods

- Organizational policy development to ensure standardized guidelines for clinical staff interaction with the AccuVax[®]
- Development of a video training program delivered to all clinical staff with supplemental in-person training afterwards. Knowledge change assessed with pre- and post-testing.
- AccuVax vaccine formulary inventory audited from 06/15/22 to 01/15/23 at HopeHealth Medical Plaza
 - From this period, "Average Days on Hand" is a metric to establish and quantify the average amount of vaccine inventory in storage before administration
 - Waste costs for a given year extrapolated from the assumption of expiration of over a year of days on hand
 - Optimized vaccine inventory levels calculated using "Dispense Number" to calculate "Number of Units Used per Day" and set "Target Days on Hand" to be 60 with higher utilized vaccines 90 to minimize staff loading times/shortages. Levels rounded to display unit packaging.

Results

Table 1: Staff AccuVax Knowledge Assessment (Pre-supplemental Training)

Pre-Test	Post-Test
52%	69%

Chart 1: Vaccine Units Before and After Optimization

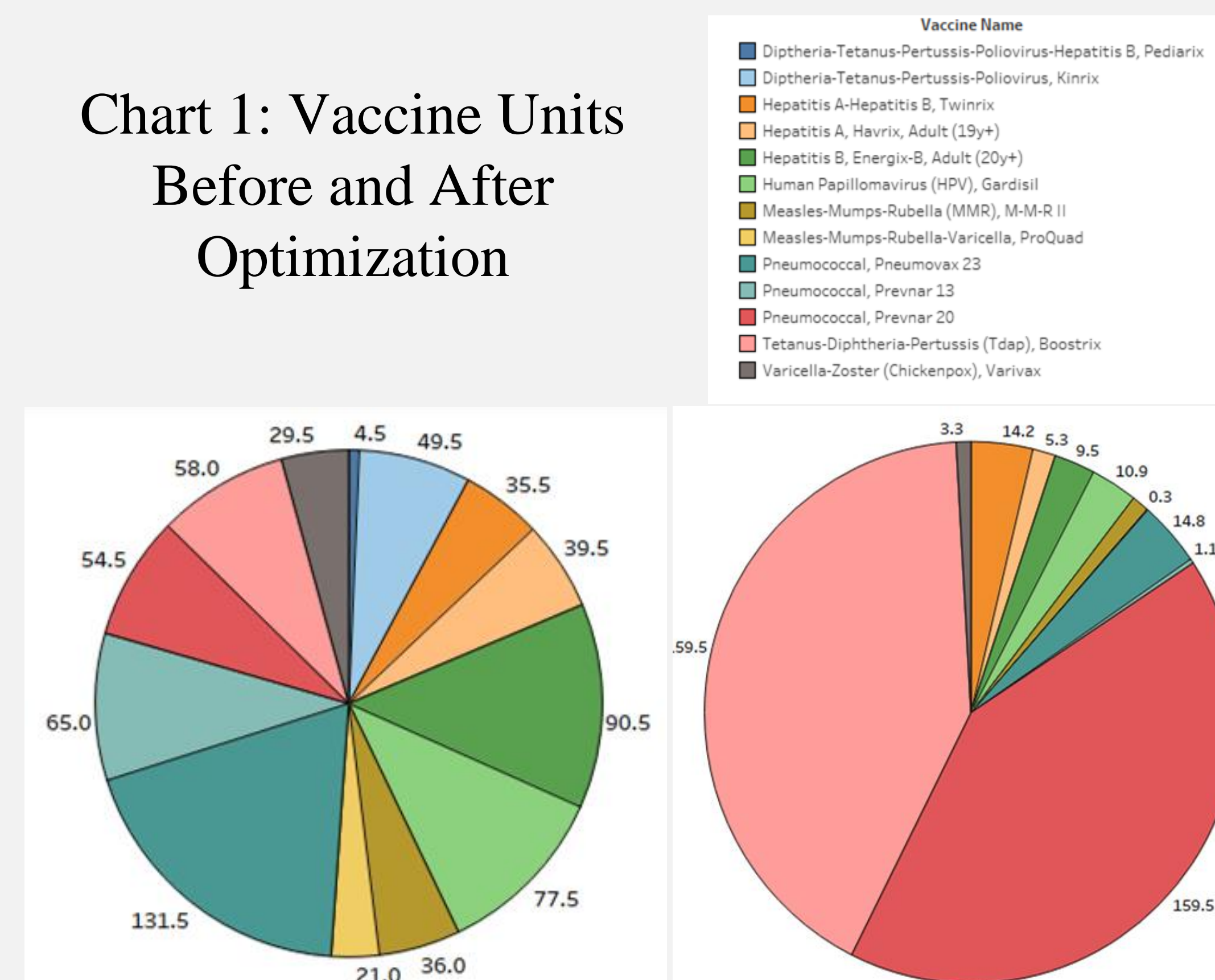


Chart 2: Days On Hand Comparison

Vaccine Name	Current	Target
Diphtheria-Tetanus-Pertussis-Poliovirus-Hepatitis B, Pediarix	5,000	60
Diphtheria-Tetanus-Pertussis-Poliovirus, Kinrix	5,000	60
Hepatitis A-Hepatitis B, Twinrix	150	60
Hepatitis A, Havrix, Adult (19y+)	447	60
Hepatitis B, Energix-B, Adult (20y+)	572	60
Human Papillomavirus (HPV), Gardasil	427	60
Measles-Mumps-Rubella (MMR), M-M-R II	553	60
Measles-Mumps-Rubella-Varicella, ProQuad	4,515	60
Pneumococcal, Pneumovax 23	533	60
Pneumococcal, Prevnar 13	3,494	60
Pneumococcal, Prevnar 20	31	30
Tetanus-Diphtheria-Pertussis (Tdap), Boostrix	33	30
Varicella-Zoster (Chickenpox), Varivax	529	60

Average Absolute Percent Change: 2646%

Chart 3: Optimized AccuVax Refrigerated Spaces

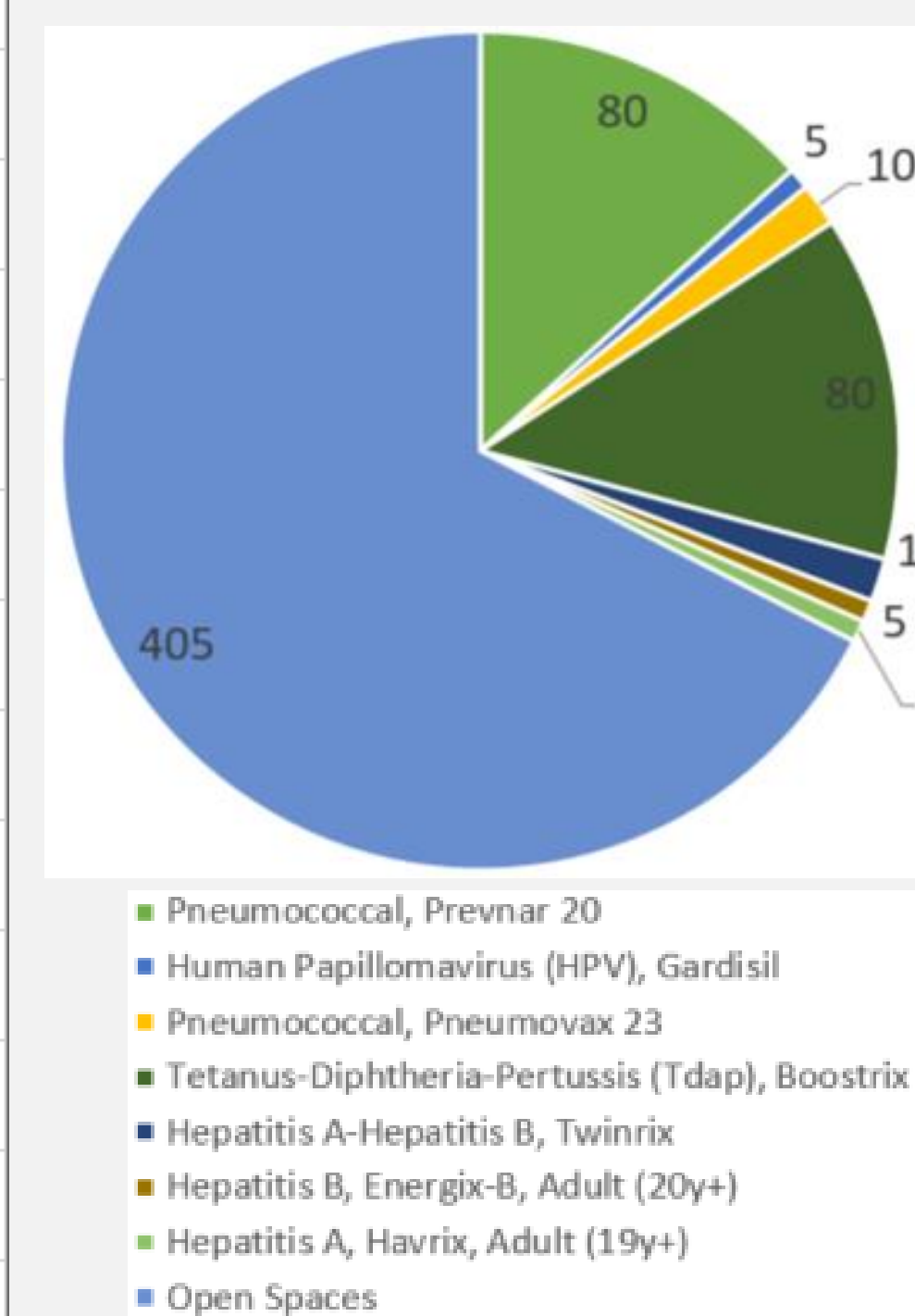


Chart 4: Inventory Overall Cost & Waste- Before and After Optimization

Current: 37% projected waste

New Overall Cost: \$54,992.34, no expected waste



Discussion

As the healthcare industry continues to integrate new digital information systems, adequate staff training is vital to guarantee effective utilization. This project demonstrates that development of a clinical staff training program with supplemental in-person training can minimize errors while increasing staff comfortability with a new system.

Additionally, the project identified major sources of vaccine inventory waste. The study provides recommendations on vaccine quantities best suited for the patient population using "Average Days on Hand" as a key metric. The savings from this study demonstrate the opportunity for health care systems to minimize wasteful spending so that resources can be better utilized for patient care.

The limitations in this project included our projection assumptions such as the seven-month window audited and expiration at a year which might not accurately capture vaccine trends throughout a given year or true shelf life.

Future measures include expanding vaccine inventory optimization to other HopeHealth sites, continuing to provide targeted in-person training for staff, and refining projections after a full calendar year has passed since AccuVax[®]'s implementation.

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