

Streamlining Medical Supply Inventory: A Technological Approach to Cost Reduction



Amy Lomas, MSN, RN-BC  0009-0006-8898-5087

Atrium Health Urgent Care, Charlotte, North Carolina

Background

Inventory management of lab and medical supplies is crucial for patient care, cost control, and operational efficiency. In particular, COVID and flu test kits run nearly \$1000 per box and are in high demand during respiratory season. The Atrium Health Urgent Cares in the Greater Charlotte Market faced inefficiencies in purchasing oversight, leading to budget overruns and misalignment between supply and demand.

Summary

A division-wide weekly inventory management system was created using Microsoft Forms. Each of the 29 locations input their inventory data each week, allowing for a birds-eye view of inventory and a closer view of where sites could borrow from before ordering more. In addition, a report was run through the EMR to show testing trends. This initiative improved the patient experience by increasing efficiency, ensuring availability of test kits, and saved the division over \$1 million.

Method

- The goal of this initiative was to decrease overall supply costs by identifying which sites had surplus inventory and reallocating the expensive test kits to other sites in need.
- A QR code linked to a Microsoft Form was implemented for teammates to input COVID and flu kit counts every Monday.
- The Microsoft Form records the location and number of unopened COVID and flu tests at each Urgent Care. The data exports into a spreadsheet.
- Epic SlicerDicer is used to track the number of COVID and flu patient tests that are ordered, along with the positivity rates. This snapshot helps identify testing trends and trigger standing orders.
- The success of this initiative was measured through financial impact to the division, both as total supply expenses and expenses per visit.



Figure 1. The QR code was posted in every laboratory in the GCM Urgent Cares. This allows teammates to quickly scan the code to input inventory information using their phones, rather than logging into a specific website to input data.

Figure 2. Teammates answer three simple questions: Location, number of COVID test kits, and number of flu test kits.

Results

- This initiative has improved patient care by ensuring that COVID and flu test kits are always available. If an Urgent Care clinic runs out of these lab supplies, they know exactly which sister location has excess inventory from which they can borrow, rather than waiting a few days on a shipment to arrive.
- In the summer of 2024, COVID positivity rates increased earlier than the expected timeframe of the winter respiratory season. By monitoring division-wide trends, the COVID test standing order was re-activated, allowing for greater efficiency and decreased time in clinic for patients.
- From the implementation of this initiative in June 2024, average supply expenses per visit have decreased from \$25.90 to \$20.95, resulting in a cost savings of 19.1%.
- Atrium Health Urgent Care spent \$1 million less on medical supplies compared to the same timeframe in 2024. Total visits remained relatively stable, so the savings are not due to volume changes.

Year	Supply Expenses	Total Visits	Expense Per Visit
July 2024 YTD	\$5,706,500	232,215	\$24.57
July 2025 YTD	\$4,685,602	223,611	\$20.95

Figure 3. Chart of total supply expenses and supply expense per visit, comparing years 2024 (pre-initiative) to 2025 (one year post-initiative). The division-wide total supply expenses dipped over \$1 million.

University	0	4
Cabarrus	4	6
Prosperity Crossing	0	2
Concord Mills	5	5

Figure 4. Example of data imported from Microsoft Form. University and Prosperity Crossing Urgent Cares would reach out to Cabarrus or Concord Mills Urgent Cares to borrow test kits rather than spending money on more kits or rush delivery fees.

Week of:	% Positive Flu:	Est. Flu Kits Stocked:	% Positive COVID:	Est. COVID Stocked:
7-Sep	1.89%	79	25.88%	78
14-Sep	1.27%	102	21.81%	109
21-Sep	3.36%	108	16.43%	91
28-Sep	3.20%	119	13.09%	110
5-Oct	7.51%	109	9.01%	111

Figure 5. Example of the overview showing trends and inventory. Based on total tests ordered, positivity rate, and current inventory, the division is either in “buying season” (highlighted in green) or “sharing season” (red). These metrics were determined by Atrium Health Urgent Care leadership and was inputted into the spreadsheet so teams can quickly see if they should plan to purchase new kits or borrow from a sister site.

Discussion

Impact of Cost Savings

- From a division-wide perspective, monitoring inventory of COVID and flu test kits ensures that sites know where they can borrow from should they run low. This ensures that patients can get the testing they need for an accurate diagnosis, improving health outcomes. Additionally, \$1M+ saved means that financial resources can be allocated to other needs, such as clinic repairs or more current equipment.

Limitations and Opportunities

- The primary limitation of this project is that, while simple, it is a manual process. Though inventory data collection is simple both through a QR code linking to a Microsoft Form, and testing data is easy to obtain using Epic SlicerDicer, this information must be entered manually rather than using an automated reporting software.
- If a certain location does not report their inventory data, it is simply unavailable and thus may skew the division inventory totals.
- Another limitation of this initiative could occur when a provider chooses to make a clinical diagnosis of COVID or flu rather than using point-of-care tests, the patient’s information would not be counted in the test data, potentially skewing the positivity rates.
- This initiative looks only at COVID and flu test kits – not strep, RSV, or any other point-of-care test performed in the clinic; this could be an opportunity for expansion and greater cost savings. Another opportunity for this project could be implementation of barcode scanning for inventory management.

Take-Home Points

Major Initiative Highlights

- This initiative enhances accountability, supports resource optimization, and ensures preparedness for respiratory season.
- Integration of technology in inventory management leads to substantial cost savings and improved operational efficiency.

Ease of Implementation

- This initiative was successful because it is easy for everyone involved, from set-up to inputting inventory data to checking buy or share status.
- The basis for this inventory management system is a Microsoft Form. Since Atrium Health Urgent Care already utilizes the Microsoft suite, it cost nothing to create the form and only took minutes to set up.
- Atrium Health Urgent Care uses Epic. A simple SlicerDicer report was created and saved so testing data could easily be tracked. This data takes minutes each week to input into the spreadsheet.

Positive Impacts to Finances and Patient Care

- The most clear-cut improvement as a result of this initiative is that the division saved over \$1 million over the course of a year. By making it easy for clinics to see which sister sites had high amounts of inventory, the division was able to share amongst itself rather than spend thousands on new test kits.
- By monitoring testing trends, leadership was able to activate standing orders for COVID and flu, decreasing patient time in the clinic.
- By monitoring inventory and testing trends simultaneously, the division was able to predict when COVID and flu cases would peak, and adjust inventory par-levels accordingly. This ensured preparedness for respiratory season by making sure no sites were left with low stock.

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