



Assessing the Operational Efficiency of a Vial Filling Robot in an Outpatient or a Community Pharmacy

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BACKGROUND

- Burnout among retail and outpatient pharmacy workers has been on the rise, driven by increasing prescription volumes, staffing shortages, and nonclinical activities such as manual medication vial-filling.¹⁻³
- Pharmacy automation, such as vial-filling robots, has been shown to enhance operational efficiency while reducing the time needed for manual tasks.⁴
- With improved operational efficiency and reduction of manual tasks, pharmacy personnel would have the potential to reallocate some of their time toward revenue generating activity.

OBJECTIVE

- This analysis aimed to evaluate the operational and financial impact of implementing a vial-filling robot on labor and prescription volume in outpatient and community pharmacies.

METHODS

- An economic model was created to assess the labor impact of implementing a vial-filling robot on staff labor time.
- The model was applied to three different scenarios:
 - A pharmacy filling on average 1,500 prescriptions per week
 - A pharmacy filling on average 3,500 prescriptions per week
 - A pharmacy filling on average 6,000 prescriptions per week
- It was assumed that 30% of prescription volume would be filled using the robot.

- 90% of fills would be completed by technicians.
- Peer-reviewed literature and time study data were used to estimate the average labor time for manual and automated fills.
 - The time to manually fill a prescription was estimated at 158 sec.⁴
 - The labor time to fill a prescription with the vial filling robot was estimated to be 12 seconds
- The 12 seconds reflect staff retrieving the medication from the robot and bringing it to verification.
- Labor cost impacts were calculated using U.S. Bureau of Labor Statistics data.⁵
- A second outcome assessed was the increased number of prescriptions able to be filled weekly if 25% of time savings went towards additional prescription dispensings and current staff hours remained the same.

FIGURE 1: Flowchart Describing the Steps to Fill a Prescription

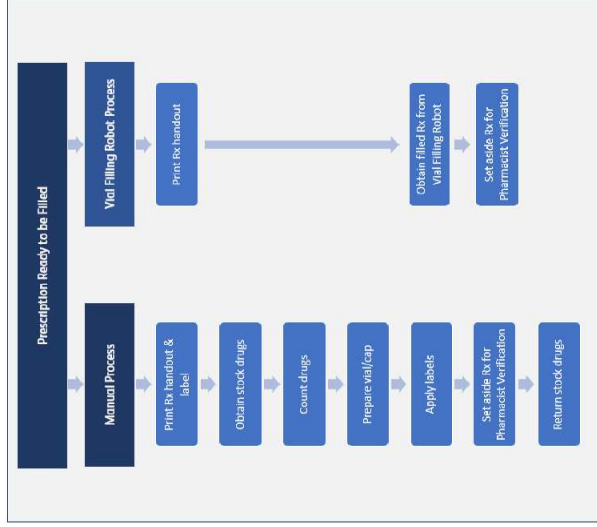


TABLE 1: Incremental Impact of Vial Filling Robot on Pharmacy Staff Labor Hours

	1,500 Rx/Week Pharmacy	3,500 Rx/Week Pharmacy	6,000 Rx/Week Pharmacy
Weekly Hours that can be Reallocated to Non-Dispensing Activities	17	39	68
Technicians			
Pharmacists	2	4	8
Annual Hours that can be Reallocated to Non-Dispensing Activities	878	2,048	3,510
Technicians	98	228	390
Pharmacists			
Annual Salary that can be Reallocated to Non-Dispensing Activities	\$20,397	\$47,592	\$81,586
Technicians			
Pharmacists	\$7,652	\$17,854	\$30,607

RESULTS

FIGURE 2: Comparison of Labor Hours per Week for Prescription Filling Between Manual and Automated Processes

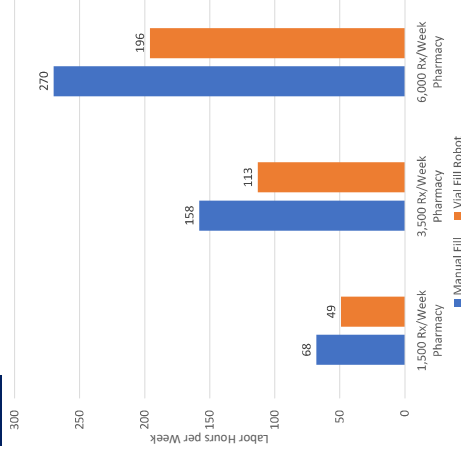


TABLE 2: Number of Prescriptions Filled Weekly with Vial Filling Robot if 30% of Total Prescription Volume is Filled with Vial Filling Robot

1,500 Rx/Week Pharmacy	3,500 Rx/Week Pharmacy	6,000 Rx/Week Pharmacy
Number of Prescriptions Filled Weekly with Vial Filling Robot if 30% of Total Volume is Automated	450	1,800

TABLE 3: Potential Incremental Increase in Weekly Dispensed Prescriptions if 25% of Time Savings From Automated Dispensing Went Towards Additional Prescription Dispensings

Dispensing Went Towards Additional Prescription Dispensing	1,500 Rx/Week Pharmacy	3,500 Rx/Week Pharmacy	6,000 Rx/Week Pharmacy
Potential Increase in Weekly Dispensed Prescriptions	495	1,155	1,979

DISCUSSION

- The implementation of vial-filling robots substantially reduces labor pressure on pharmacy staff.
- Potential revenue generating activities of clinically focused tasks can consider vaccination administration, diagnostics, medication therapy management, and medication adherence enhancing programs, patient and/or prescriber outreach, compounding, and many more.
- An important consideration when interpreting these results is that this analysis did not consider the cost of implementation for the vial filling robot.
- A limitation of this analysis is that it did not incorporate the amount of time needed to replenish the vial filling robot due to lack of available data.

CONCLUSION

- The implementation of vial-filling robots substantially reduces labor pressure on pharmacy staff, and allows reallocation of time to higher-value, and potentially more clinically focused tasks.
- This automation technology has the potential to improve operational efficiency across varying community and outpatient settings.
- Vial filling robots help support care delivery and pharmacy sustainability.

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