

ANALYSIS OF AUTOMATED DISPENSING CABINETS (ADCs) EFFECT ON MEDICATION DISTRIBUTION IN 5 HOSPITALS

DD-001

Richard D. Caldwell, MS, RPh¹ and Bobbi Jamriska²

¹Sr. Manager, International Marketing, Omnicell Inc., Mountain View, CA, USA

²Sr. Program Manager, PlusDelta Technologies, Research Triangle Park, NC, USA.

At the time of this study, Ms. Jamriska was Sr. Strategic Program Manager, Omnicell Inc.

INTRODUCTION

The model for USA hospital pharmacy drug distribution has evolved with changes in pharmacy practice. As hospital pharmacies face an ever-changing landscape with new responsibilities and challenges, the need to find more efficient medication distribution methods has become increasingly important.

To evaluate the impact of hospitals that use medications automated dispensing cabinets (ADC's), Omnicell conducted comprehensive time and motion studies at hospitals that use ADCs as part of their medication distribution model.

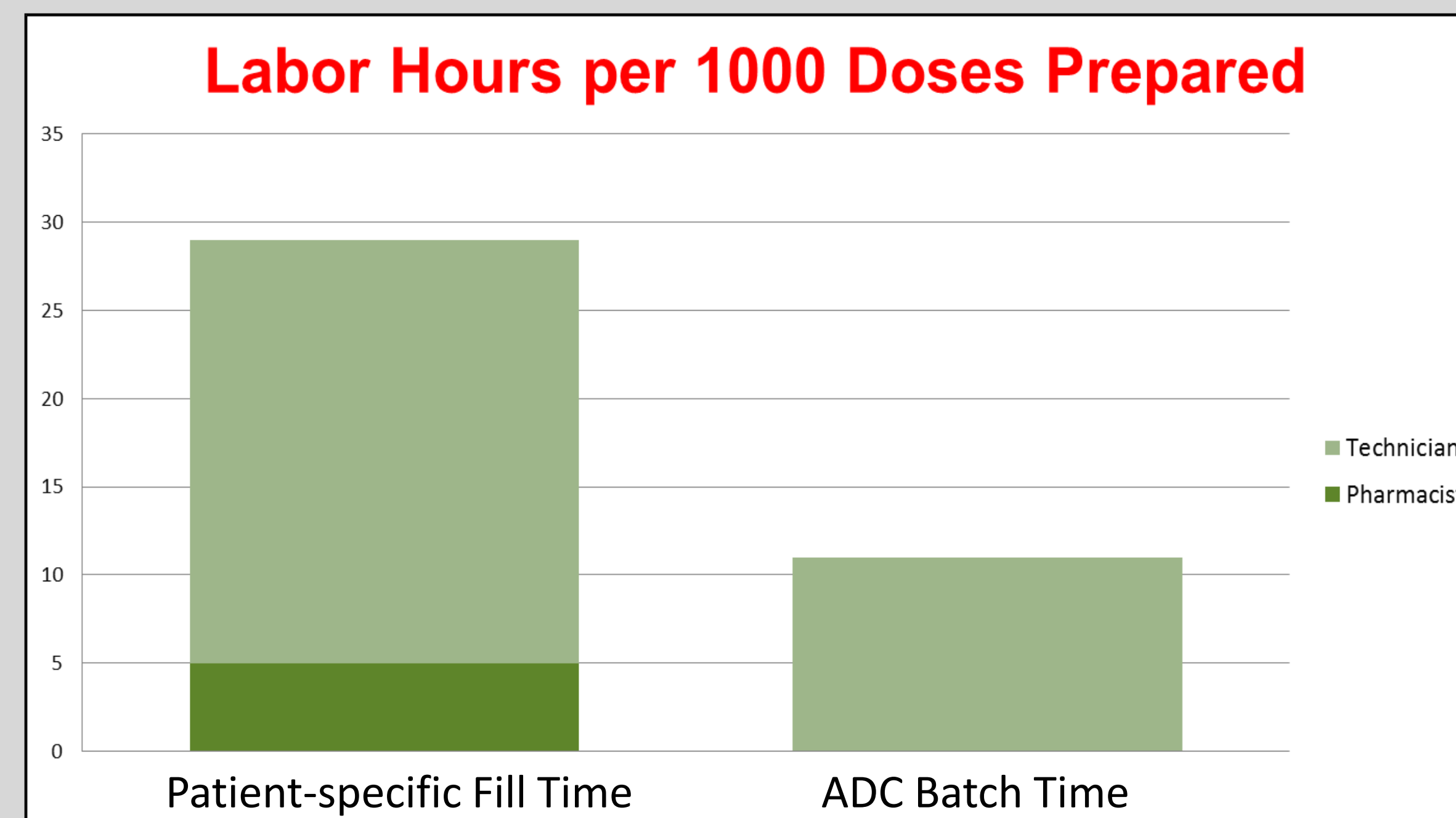
METHODOLOGY

Omnicell conducted a study at five hospitals of varying bed size operating hybrid systems in the United States. In each facility, the study team spent 5 to 6 days observing and recording time and motion for the various pharmacy and nursing processes as part of medication management, including:

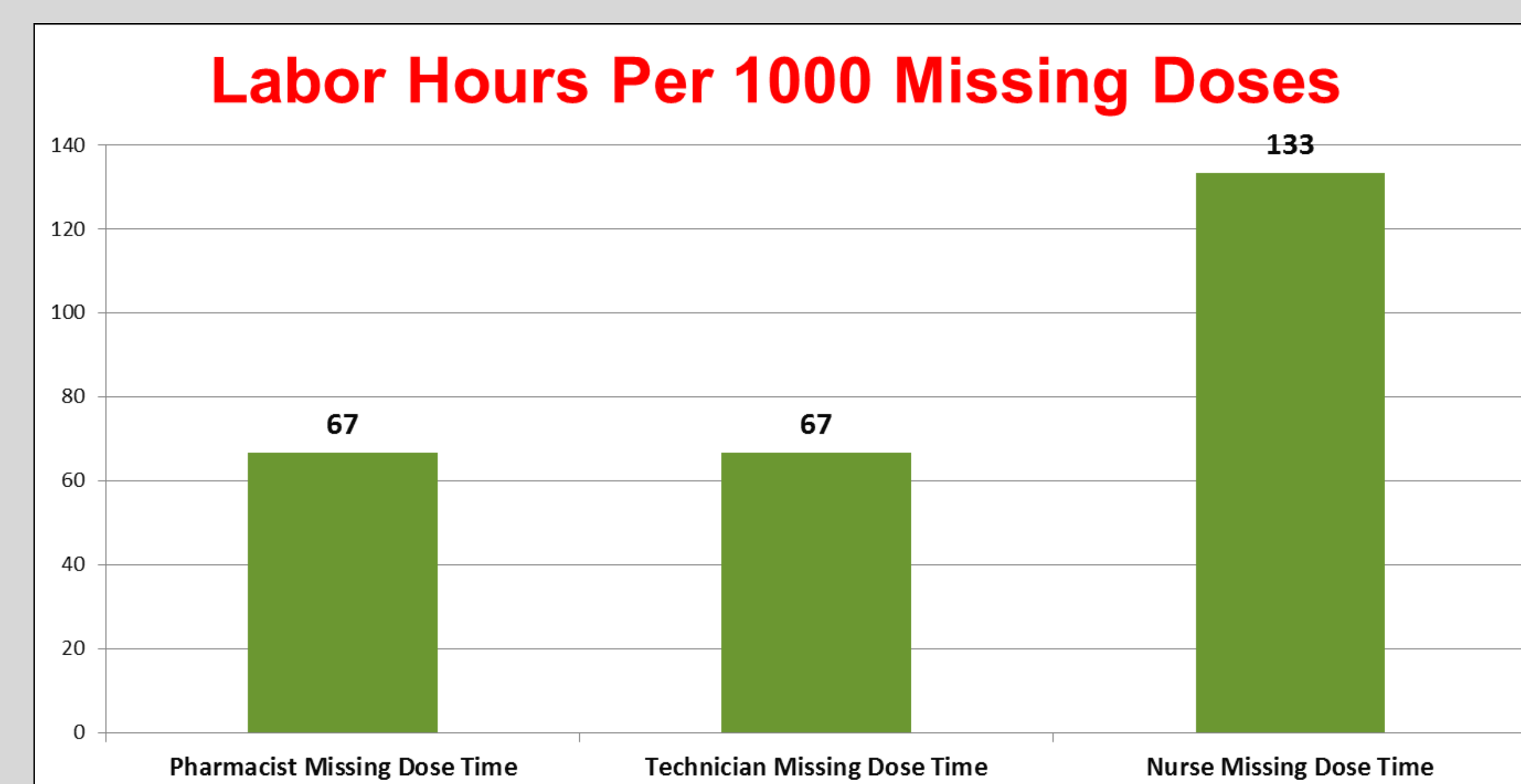
Pharmacy Processes	Nursing Processes
<ul style="list-style-type: none"> • New order processing • Missing/extra dose • Purchasing/receiving • IV batch • Chemo • Narcotics • Credits • ADC batch refill • Patient-specific fill • Delivery 	<ul style="list-style-type: none"> • Medication administration process per patient • Missing dose request and administration process

Time/cost information for each process was generated based on the average times collected during the observation period. The data was then rolled up into an average across the five hospitals and utilized study data, to represent the average expected times and costs associated with each activity. From this analysis, we were able to determine the potential savings that could be realized with ADC implementations.

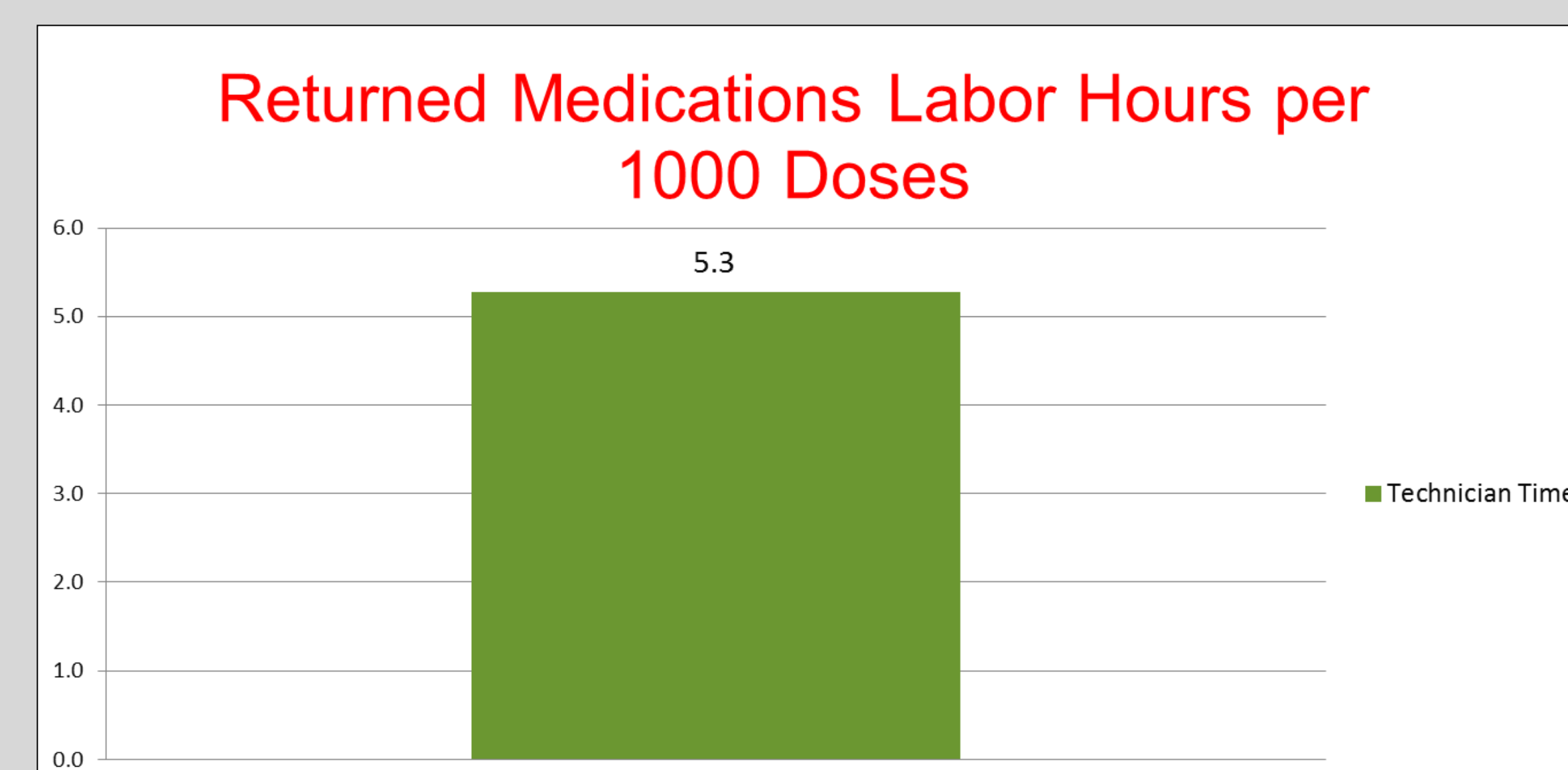
RESULTS



Patient Specific fill per 1000 Doses = 29 hours
ADC per 1000 Doses = 11 hours



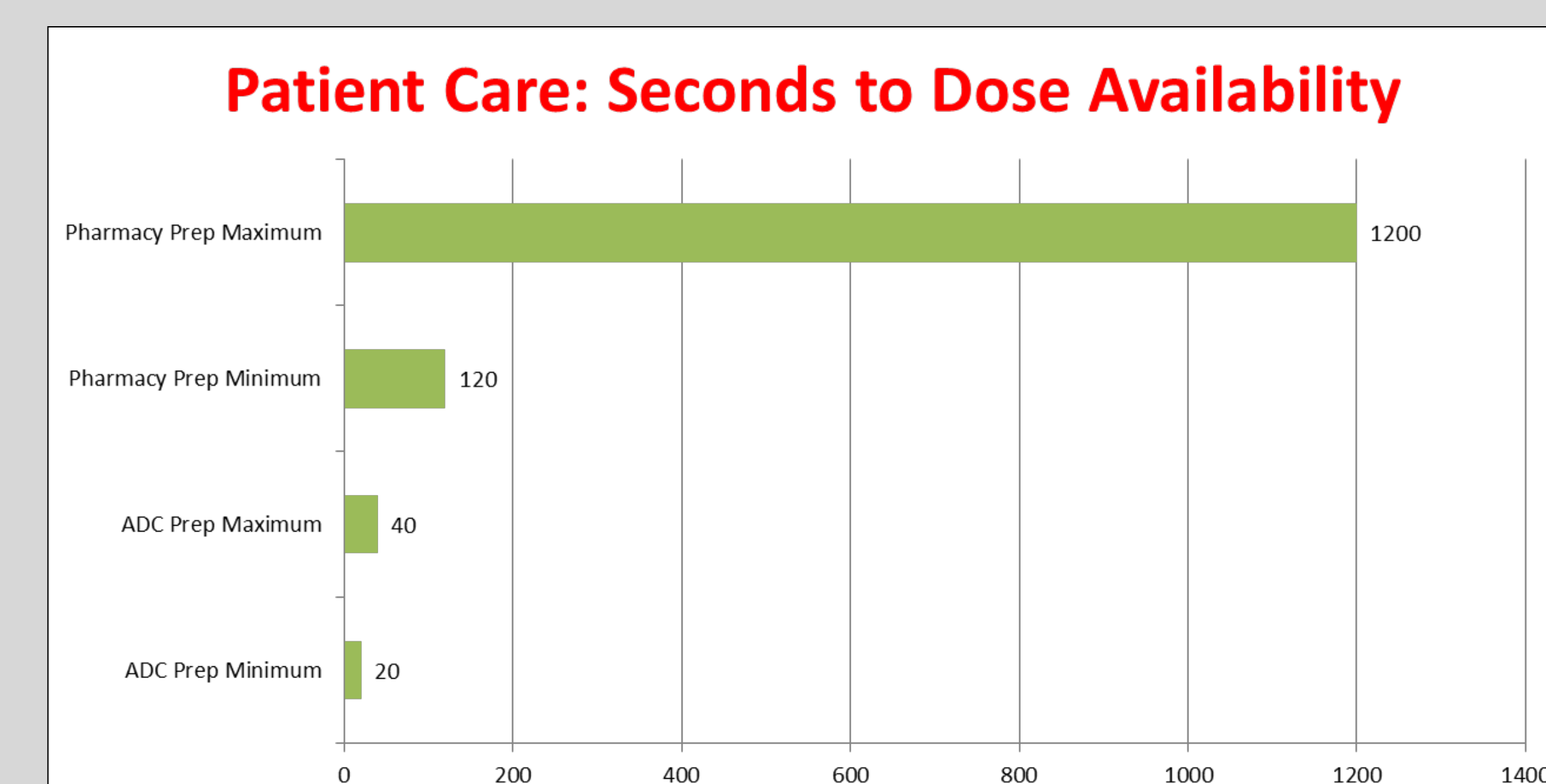
Labor Hours per 1000 Missing Doses = 267



Returns Processing per 1000 Doses = 5.3 hours

Pharmacy-Prepared vs. ADC-Dispensed Doses Time Involvement Over 24 hours		
	Pharmacy Dose	ADC Dose
Pharmacist Time (First dose)	48 seconds	0 seconds
Technician Time (First dose)	63 seconds	0 seconds
Pharmacist Time Patient-specific fill	18 seconds	0 seconds
Technician Time Patient-specific fill	87 seconds	41 seconds
Total Time*	216 seconds	41 seconds

The time spent managing a pharmacy-prepared dose is over 5 times greater than that spent on an ADC dose.



Range
ADC Fill: 20-40 Seconds vs.
Pharmacy Fill: 2-20 Minutes

DISCUSSION

Use of ADC-Based Drug Distribution can Reduce Costs

As the number of doses dispensed via the automated dispensing cabinets increases, the amount of labor for pharmacists, technicians, and nurses decreased, thereby reducing total costs. The ADC-based distribution has shown that with the ADCs, pharmacists and pharmacy technicians save time, first doses reach patients sooner and with less effort from pharmacy staff, and missing doses are reduced, which saves time for nursing and pharmacy.

Savings Scenario

To demonstrate the benefits a hospital can achieve, the study measurements can be used to calculate results based on increasing the number of line items stocked in the ADC by 5%. A model can be used with the following assumptions: 4,000 doses processed/day, 1,000 new orders/day, 70% of doses stocked in the ADC, 179 new orders dispensed traditionally (not via ADC), 75 missing doses / day, and 240 returns/day. Based on a 5% increase in line items / ADC, the hospital can save 35 labor hours a week, which translates to a savings of US \$64,300 in labor annually.

CONCLUSION

There are clear benefits by using ADCs in a hybrid medication distribution model. The change can significantly improve hospital operations, increasing efficiency for both nursing and pharmacy. The time and motion analysis reveals that it takes over 5 times more labor time to distribute a dose from the pharmacy versus the ADC. Also, ADC use provides medication safety and inventory management benefits. The resulting time savings can be leveraged to launch clinical programs that help improve patient outcomes.