

# Omniceil Medication Optimization in the Emergency Department at Northwest Medical Center

Songhee Jones<sup>1</sup>, Trang Tran<sup>1</sup>, Tu Vuong<sup>1</sup>, Christopher Edwards PharmD, BCPS, FASHP<sup>1</sup>,  
Eric Bergstrom PharmD<sup>2</sup>, Ferena Salek PharmD<sup>2</sup>

University of Arizona R. Ken Coit College of Pharmacy<sup>1</sup>, Northwest Healthcare Medical Center<sup>2</sup>



Pharmacy



THE UNIVERSITY OF ARIZONA  
R. Ken Coit  
College of Pharmacy



## INTRODUCTION

- Northwest Medical Center (NMC) has Omnicell as their Automated dispensing cabinets (ADCs). ADCs are computerized machines that store, track, and dispense medications in real-time.
- Having ADCs at the point of care gives staff access to medications with oversight by pharmacy.
- NMC pharmacy has not assessed the efficiency of proper stock amounts, refill frequency, and stock-out of the ADCs which may affect pharmacy and nursing efficiency, patient care, and waste.<sup>1</sup>
- The 2 ADCs (East and West) in the Emergency Department (ED) were chosen to see if they were optimized for nursing and pharmacy.

## SPECIFIC AIMS

- To identify medications needing stock adjustment from the ADCs.
- To assess the effects of the adjustments in restocks and stock-outs.

## METHODS

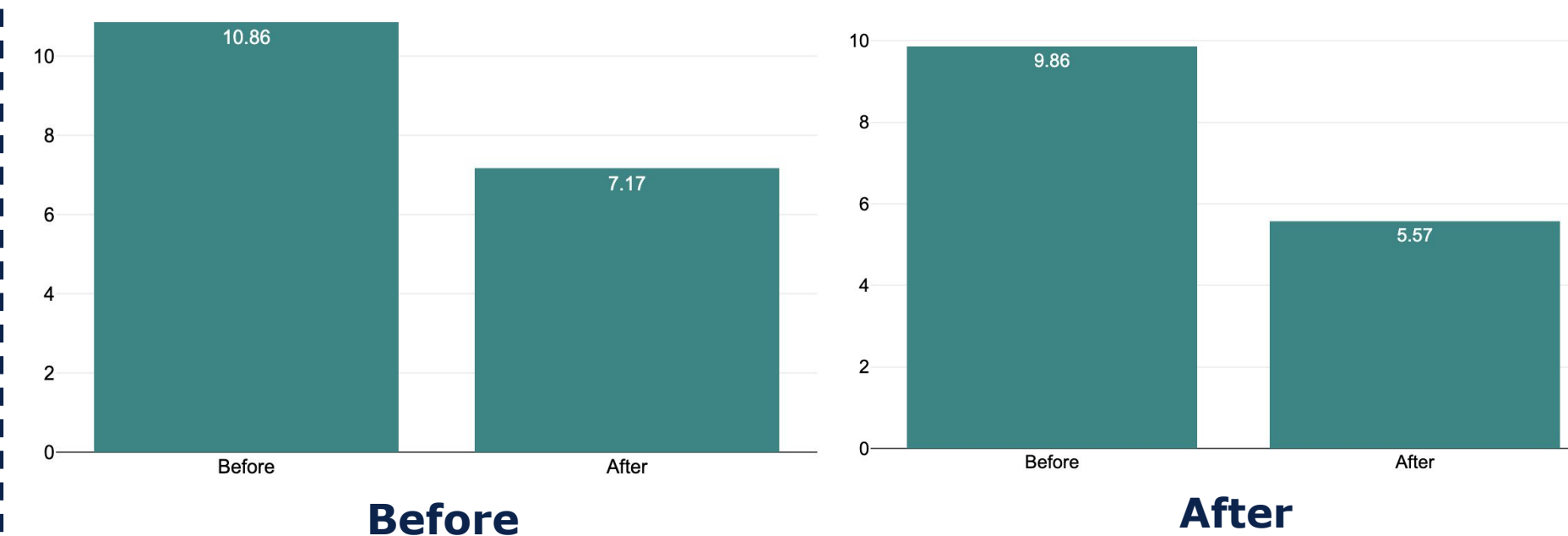
- Generate ADC usage reports for a 60 day timeframe before and after the intervention (baseline and post-intervention).
- The intervention was to adjust the Periodic Automated Replacement (PAR) and Reorder (R/O) amounts in the ADC based on the usage report while recording the number of restocks and stock-outs.
- The most utilized medications would be increased based on space in the ACD to accommodate package sizes and the lowest utilized medications would be decreased or removed.
- The Chi Square Test was used to compare the groups

## RESULTS

- The baseline usage report was generated for 60 days: 10/1/23-11/30/2023.
- The post-intervention usage report was generated for 45 days as there were delays in report assessment, ADC change implementation and time deadlines: 02/05/2024-03/21/2024.
- Due to the differences in timeframes (60 vs. 45 days), the number of restocks and stock-outs are displayed as average per month.
- No medications were removed from either ADC based on the report.
- Graph 1 shows the average medication restocks per month was reduced but the average stock-outs per month did not change.
- The ED West ADC contained 414 medications with adjustments to 29 medications (7% of the total) based on the baseline usage report.
- Table 1 displays 5 medications with significant changes and data for all medications in the last row.
- The ED East ADC contained 489 medications with adjustments to 28 medications (5.7% of the total) based on the baseline usage report.
- Table 2 displays 5 medications with significant changes and data for all medications in the last row.
- There were 75 more medications stocked in the ED East ADC.

## RESULTS cont.

**Graph 1: Average Number of Restocks per Observational Period**  
Restocks: ED West (p=0.011) and ED East (p=0.0002)



**Table 1: ED West Usage Data Before and After Implementation**

Medication	PAR Amount		R/O Amount		Max Use per Day		Average Number of Restocks	
	Before	After	Before	After	Before	After	Before	After
Ceftriaxone 1 g vial	20	50	4	10	13	14	20	7
Cefepime 2 g vial	10	20	3	4	4	6	21	5
Enoxaparin 40 mg syringe	6	16	3	6	4	6	12	8
Levetiracetam 500 mg/5 mL vial	18	39	4	10	12	17	19	5
Piperacillin/Tazobactam 4.5 g vial	6	14	2	6	6	8	27	15
<b>All Medications</b>	<b>600</b>	<b>966</b>	<b>142</b>	<b>266</b>	<b>274</b>	<b>270</b>	<b>315</b>	<b>208</b>

**Table 2: ED East Usage Data Before and After Implementation**

Medication	PAR Amount		R/O Amount		Max Use per Day		Average Number of Restocks	
	Before	After	Before	After	Before	After	Before	After
Ceftriaxone 1 g vial	30	60	6	10	11	8	8	4
Cefepime 2 g vial	10	20	3	8	5	5	7	5
Enoxaparin 40 mg syringe	10	30	2	6	3	5	7	3
Morphine 2 mg/1 mL carpuject	90	90	15	10	35	28	43	23
Piperacillin/Tazobactam 4.5 g vial	6	20	2	8	5	4	16	4
<b>All Medications</b>	<b>715</b>	<b>1130</b>	<b>145</b>	<b>228</b>	<b>268</b>	<b>247</b>	<b>266</b>	<b>156</b>

## DISCUSSION

- Even though the East ADC had more medications stocked, the number of adjustments to each ADC were similar. The extra medications in the East ADC should be evaluated to be consistent with the West ADC.
- Three of the top 5 medication adjustments for each ADC were antibiotics. Other medications in the top 5 would be used in the treatment of seizures, pain and DVT prophylaxis. The increase in availability, facilitates faster administration and good patient care.
- PAR increases were consistent in each ADC (West: 61%, East 58%).
- The restock frequency significantly decreased in both ADCs. The West ADC had a 34% reduction while the East ADC had a 41% reduction. This decreases the time pharmacy spends preparing and delivering medications to these ADCs. It also increases nursing access as they cannot use the ADC when pharmacy is restocking it.
- The average restock reduction per month for both ADCs was 217 medications. If each restock takes 5 minutes of pharmacy time, this intervention saved the pharmacy 1085 minutes or 18.1 hours per month.
- The max use per day increased for all top 5 medications in the West ADC and only 1 in the East ADC. The West ADC is located near the ambulance entrance and could be caused by higher ED activity in February/March 2024.
- Since the average stock-outs for either ADC did not change, the intervention helped pharmacy efficiency more than nursing.

## LIMITATIONS

- ED census, acuity, and order volumes was not measured, so changes could have affected the data.
- Pharmacy staff may restock higher or lower than the PAR amount listed which would last longer or shorter respectively.
- Nurses could go to either ADC to remove and/or return medications based on preference, convenience or availability.
- Large medications (i.e. 1 liter bags/bottles, IV piggybacks, etc.) could not be increased in the ADC as there is limited space.

## CONCLUSIONS

- Adjustments to PAR and R/O amounts in the ED ADCs at NMC led to a significant reduction in the average number of restocks for pharmacy staff. Since stock-outs were not reduced, nursing time and patient care may not have been affected.
- ADCs in other areas could be assessed and adjusted based on utilization reports with further savings to pharmacy, nursing, and/or patient care.

## REFERENCES

- Carvalho MF, Marques JM, Marta CB, Peregrino AAF, Schutz V, Silva RCLD. Effectiveness of the automated drug dispensing system: systematic review and meta-analysis. Rev Bras Enferm. 2020;73(5):e20180942. doi:10.1590/0034-7167-2018-0942
- ASHP Guidelines on the Safe Use of Automated Dispensing Devices. American Journal of Health-System Pharmacy. 2010;67(6):483-490. doi:https://doi.org/10.2146/sp100004