

# Treatment of Multidrug-Resistant *Pseudomonas aeruginosa*: Impact of the Ceftolozane/Tazobactam Global Recall in a Large Health System

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## Background

- Antimicrobial shortages are increasing, with few studies examining the consequences<sup>1</sup>
- Identifying equivalent antimicrobial alternatives poses unique therapeutic challenges, especially when treating multidrug-resistant (MDR) organisms<sup>1</sup>
- In December 2020, ceftolozane/tazobactam (C/T) was voluntarily recalled due to failed sterility testing<sup>2</sup>
- Rates of MDR *P. aeruginosa* are rising, further emphasizing the importance of optimal antipseudomonal agents
- Alternatives to CT are limited by increased cost and antimicrobial spectrum

## Objective

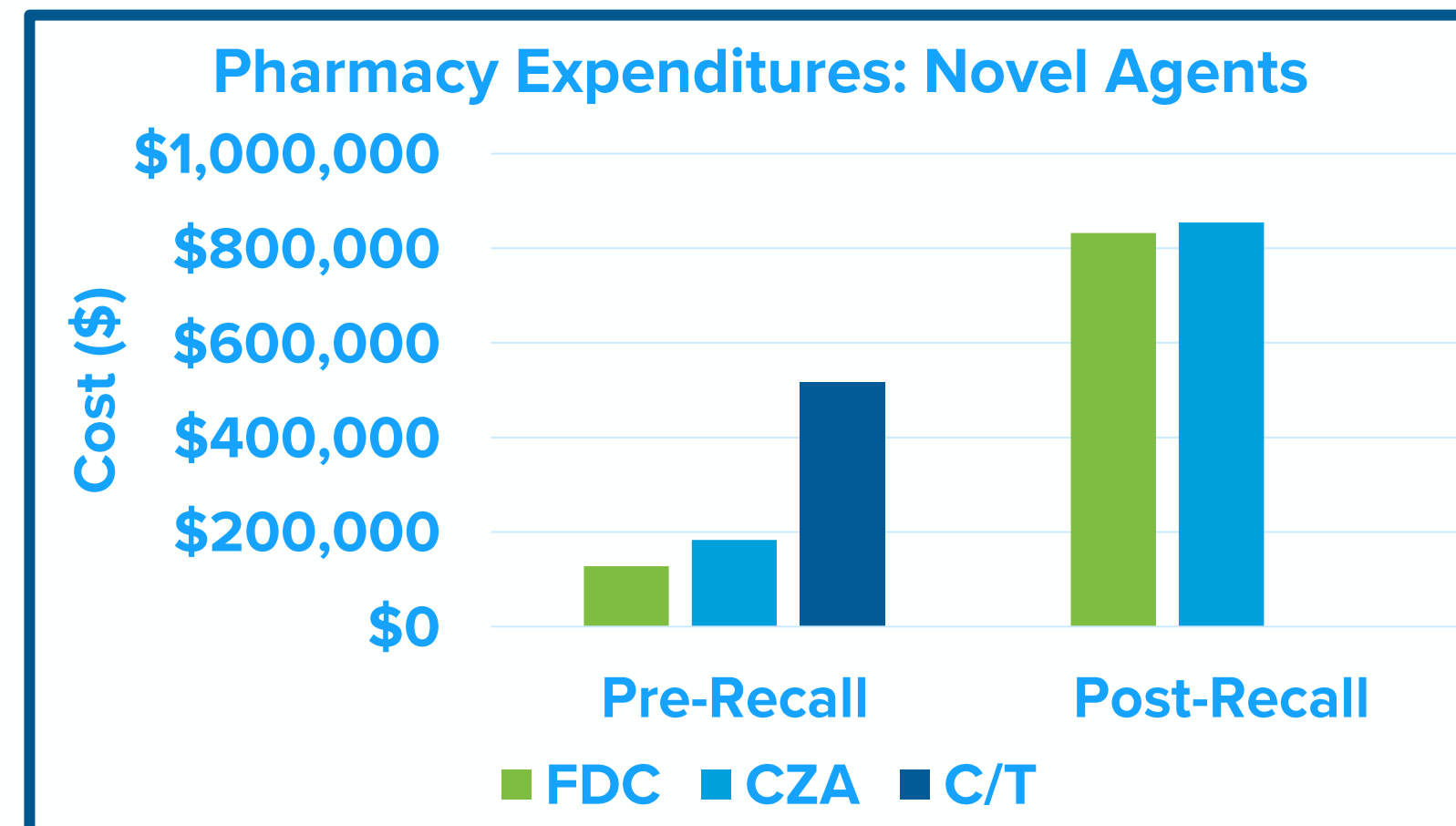
- To evaluate the impact of the C/T recall on cost, clinical outcomes, and use of alternative therapies [ceftazidime-avibactam (CZA) and cefiderocol (FDC)]

## Methods

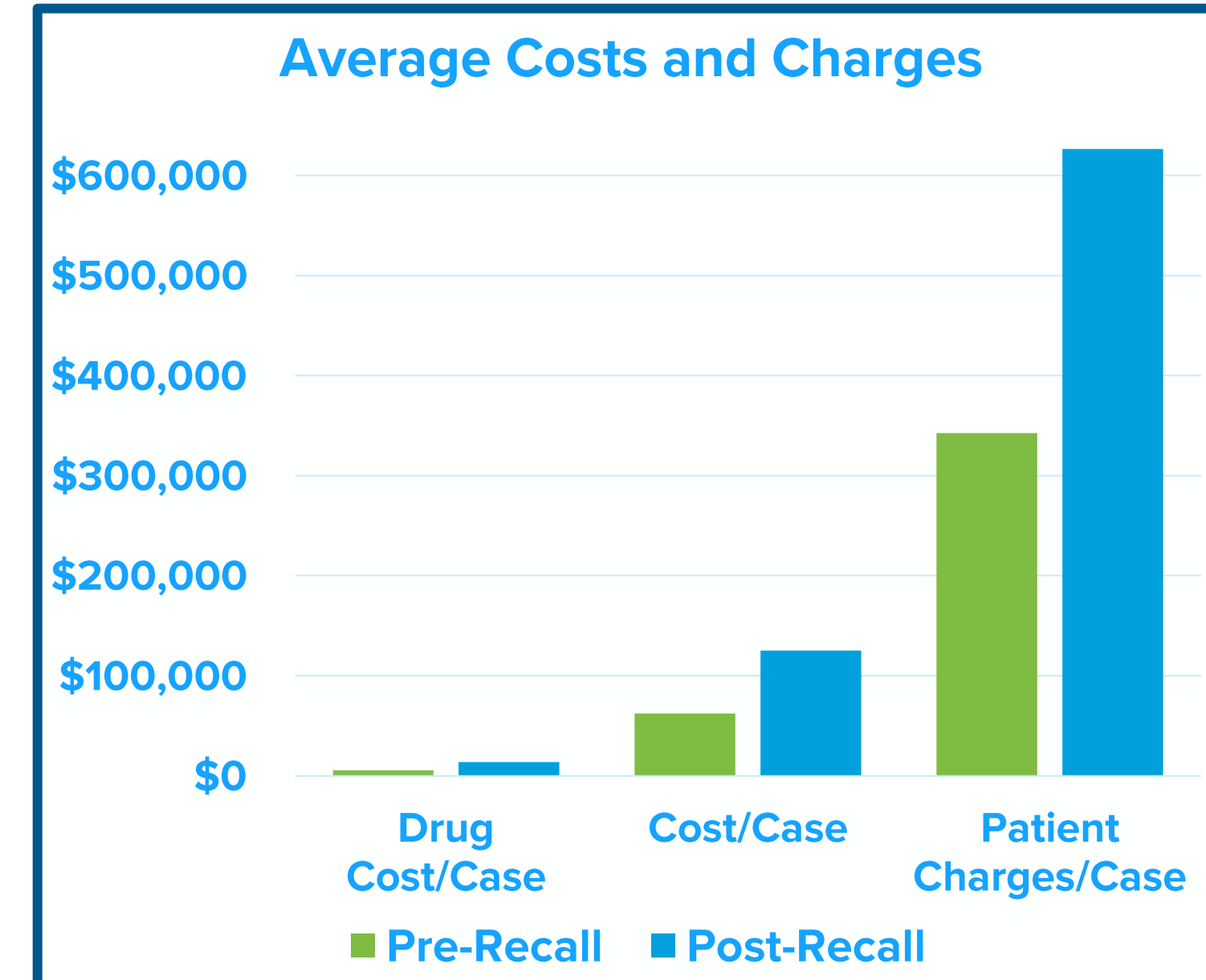
- Multi-center, retrospective pre-post cohort study of adult patients treated for MDR *P. aeruginosa* at AdventHealth Central Florida
  - Pre-recall: January-July 2020
  - Post-recall: January-July 2021
- **Primary outcome:** percentage of patients treated with novel, broad-spectrum agents (C/T, CZA, FDC)
- **Secondary outcomes:** duration of therapy (DOT), inpatient mortality, length of stay (LOS), 30-day readmission rate, pharmacy expenditures, average cost per case

## Results

Baseline Demographics	Pre-Recall (n=100)	Post-Recall (n=103)
Male (%)	62	54
Age (years), median [IQR]	68.5 [55.75-79.25]	63 [50.5-75]
MDRO in last 6 months (%)	27	48
Risk factors for MDR (%)	78	84
CMI, median [IQR]	1.48 [0.85-4.03]	0.68 [0.55-1.34]
Documented COVID-19	2	7
Infection Type		
Skin and skin structure infection	19	12
Complicated urinary tract infection	34	16
Pneumonia	40	57
Other	7	18



Results	Pre-Recall n=100	Post-Recall n=103	p-value
Receipt of novel agent (%)	29	65	<0.001
Duration of antipseudomonal therapy (days), mean (SD)	12 (8.97)	14 (8.03)	0.185
Inpatient mortality, n (%)	5 (5)	12 (11.5)	0.344
Length of stay (days), median [IQR]	11 [7-23]	16 [9-34]	0.0017
30-day readmission, n (%)	33 (33)	28 (27)	0.091



## Results

Antimicrobial(s) Used, n (%)	Pre-Recall (n=100)	Post-Recall (n=103)
C/T Monotherapy	22 (22)	N/A
CZA Monotherapy	2 (2)	10 (9.7)
FDC Monotherapy	1 (1)	54 (52.4)
CZA Combination Therapy	0	1 (1)
FDC Combination Therapy	0	2 (1.9)
Other Combination or Monotherapy	64 (64)	8 (7.8)
Fluoroquinolone Monotherapy	11 (11)	13 (12.6)
Carbapenem Monotherapy	28 (28)	15 (14.6)

## Conclusions

- Recalling C/T significantly impacted DOT, LOS, and cost to both the patient and healthcare system
- Widespread use of broad spectrum, novel agents remains of concern given rise in rates of resistance

## References

1. Beraud G. Antimicrobial drug and vaccine shortages impact far beyond the individual! *Frontiers in Medicine*. 2021;8(593712):1-12. <https://doi.org/10.3389/fmed.2021.593712>
2. FDA. Voluntary recall of batch specific ceftolozane + tazobactam (ZERBAXA). Retrieved on April 15, 2022, from Health Authority notification NBNA Template ([fda.gov.ph](http://fda.gov.ph))

**Disclosures**  
 Authors of this presentation have the following to disclose concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation: All authors have nothing to disclose.

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