

# Effect of Implementing a Community-Acquired Pneumonia Order Set on the Use of Fluoroquinolones

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## Background

- Implementation of evidence-based community-acquired pneumonia (CAP) order sets decrease in-hospital and 30 day post-admission mortality.
- Fluoroquinolones are currently recommend as first-line treatment options for inpatient CAP, either alone or in combination with a  $\beta$ -lactam.
- Concerns with use:
  - Often inappropriate
  - Concern for development of resistance.
  - Development of drug resistant infections, including *Clostridium difficile* associated diarrhea.
- Charleston Area Medical Center (CAMC) implemented a new CAP order-set that de-emphasizes the use of fluoroquinolones by recommending as a second-line treatment option.

## Objectives

- The primary objective of this study was to determine the effect of a CAP order-set on the frequency of fluoroquinolone prescribing.
- The secondary objectives were to:
  - Determine if change to order set impacted length of stay for inpatients diagnosed with CAP.
  - Determine if history of penicillin allergy impacted therapy.

## Methods

- Retrospective chart-review.
- Compared rates of fluoroquinolone use between patients admitted before and after new CAP order set (see below) implementation.
- Inclusion criteria:
  - Diagnosis of pneumonia (ICD-9 codes 480.0-483.99, 485-487.0) from January 1, 2010 – December 31, 2011.
- Exclusion criteria:
  - Met criteria for health-care associated pneumonia (IDSA guideline definition).
  - Admitted after order set implementation without being treated with order set.

\*\*\* IF YOUR PATIENT MEETS CRITERIA FOR HEALTHCARE-ASSOCIATED PNEUMONIA (see back of page for criteria), PLEASE USE THE HEALTHCARE-ASSOCIATED PNEUMONIA ORDER SET (NO. \_\_\_\_\_)

PLEASE CHOOSE ONE OF THREE CLINICAL SCENARIOS: \*Note that daily dosing regimens are those for individuals with normal renal function. Dosing regimens may need to be adjusted for reduced renal function (see back of page).

1. Non-ICU-CAP (Community Acquired Pneumonia) – choose one option:

PREFERRED: azithromycin (*Zithromax*®) 500 mg IV daily (first dose STAT) and Ceftriaxone (*Rocephin*®) 1 gm IV daily (first dose STAT)  
- or -

ALTERNATIVE: levofloxacin (*Levaquin*®) 750 mg IV daily (first dose STAT)

2. ICU-CAP - choose one of following three antibiotic combinations:

PREFERRED: azithromycin (*Zithromax*®) 500mg IV daily (first dose STAT) and ceftriaxone (*Rocephin*®) 1 gm IV daily (first dose STAT)  
- or -

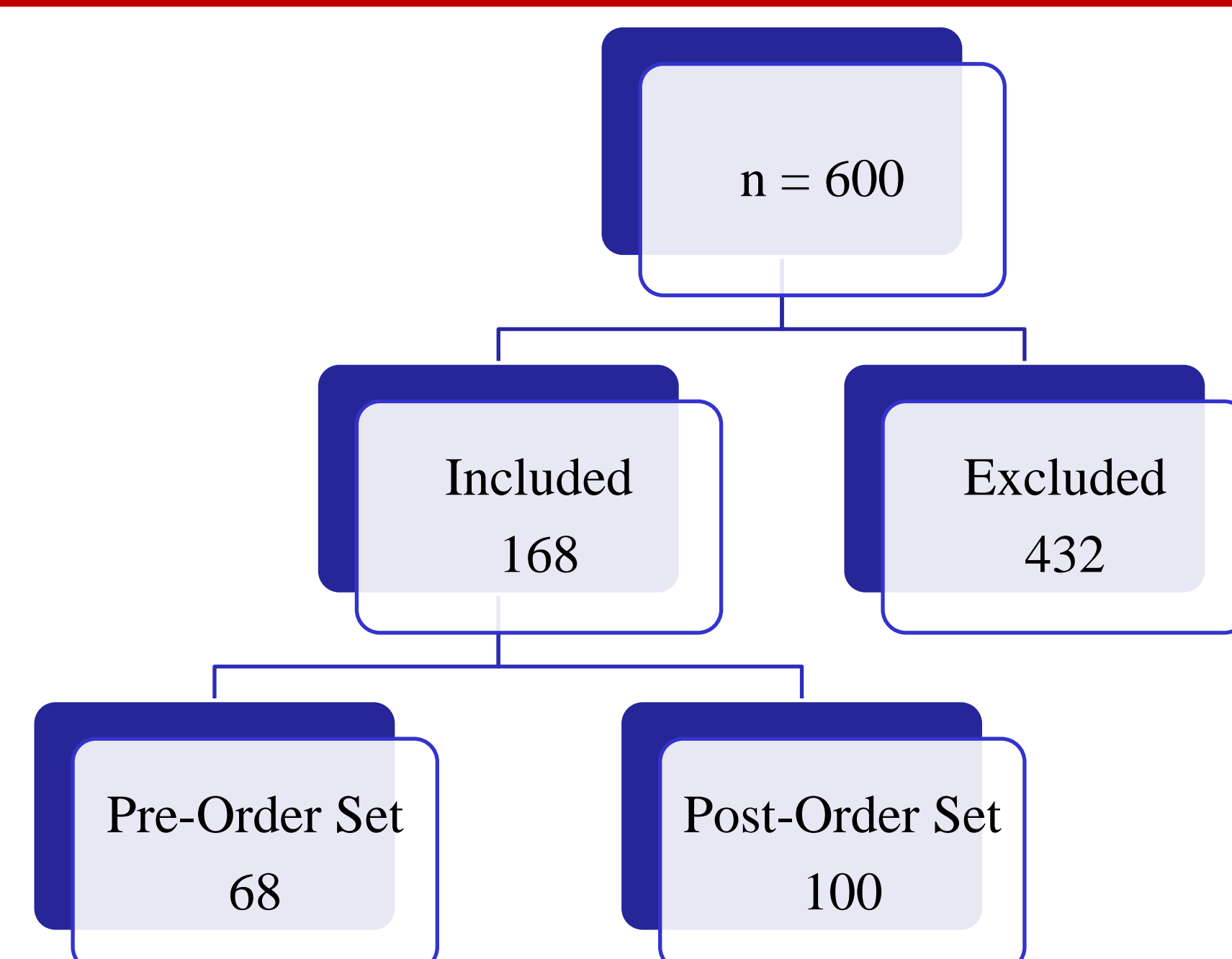
Alternative: levofloxacin (*Levaquin*®) 750 mg IV daily (first dose STAT) and ceftriaxone (*Rocephin*®) 1gm IV daily (first dose STAT)  
- or -

For documented severe B-lactam allergy (anaphylaxis, SOB, swelling, unknown reaction)

levofloxacin (*Levaquin*®) 750 mg IV daily (first dose STAT) and aztreonam (*Azactam*®) 2 gm IV every 8 hours (first dose STAT)

CAMC CAP Order Set

## Results



- There was no difference in baseline characteristics pre- vs. post- order set.
- Mean age: 61.1 ± 15.8 years vs 62.1 ± 18.3 years, P = 0.73.
- Gender: 50% female vs. 45% female, P = 0.63.
- Ethnicity: 98.5% white vs. 96% white post-order set, P = 0.65.

## Results

### Primary Objective

#### Fluoroquinolone Use Comparison

	Pre-Order Set	Post-Order Set	P <
Yes	67.6%	27.0%	0.001
No	32.4%	73.0%	

### Secondary Objectives

#### Length of Stay (LOS)

LOS (days)	Pre-Order Set	Post-Order Set	P =
Mean	4.74	4.47	0.67

#### Penicillin allergy

PCN allergy	Pre-Order Set	Post-Order Set	P
Yes	22.1%	13%	0.18
No	77.9%	87%	

## Conclusion

- When utilized, a simple change to an order set can make a significant difference in prescribing patterns.
- Education to prescribers on the availability of the order set in electronic and paper formats is necessary.
- Future studies investigating changes in resistance rates and *Clostridium difficile* infections at our institution are recommended.