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I. Introduction

The topic discussed in this research paper is extremely relevant when it comes to the field of nursing and healthcare in general. The article goes over the appropriateness of antibiotic selection for pneumonia in the ED.

- This is important because the overuse of broad-spectrum drugs is creating antibiotic resistance bacteria – a trend which has been on the rise and risks making antibiotics obsolete in the future.
    1. This has become such a problem that there are even reported cases of Gonorrhea that are completely resistant to all known antibiotics.
- Medication-associated adverse events can be directly tied to a higher frequency of broad-spectrum antibiotics being prescribed. These adverse events include an increase in the development of *Clostridium difficile* colitis.

II. Purpose

The purpose of this research article is to guide the selection of appropriate antibiotic therapy for patients presented with pneumonia to reduce instances of resistance. Current protocols for lots of places suggest antibiotics to be given one hour of arrival to the ED.

III. Methods

According to the article, this was a retrospective single-center observational study conducted among patients that presented to New York-Presbyterian Brooklyn Methodist Hospital's ED with pneumonia between January and February of 2018 and 2019. Patients were included if they were 18 or older, had an ED visit with a code reflective of pneumonia, required inpatient admission, had at least one antibiotic ordered from the ED sepsis order set.

- Patients were excluded if they did not receive antibiotics, met criteria for ventilator-associated pneumonia, were incarcerated, had cystic fibrosis, or were treated for additional infections unrelated to pneumonia.
- Patients were separated into high and low risk groups, high risk being if they met the criteria for healthcare-associated pneumonia. If this criterion was not met, then they were considered to have community-acquired pneumonia (CAP) and were classified as low risk.
    1. High risk people got beta-lactam plus a MRSA agent, while the low-risk people got beta-lactam plus macrolide or monotherapy with fluroquinolone.

IV. Results

The post-CDS group was more efficient in the selection of antibiotics than the pre-CDS group.

- Appropriate antibiotic selection was present in 52 of 161 (32.3%) patients in the pre-CDS group and 79 of 119 (66.4%) patients in the post-CDS group.
- The pre-CDS group had unnecessary double coverage of Gram-negative organisms (20.5%), compared to the post-CDS group (2.5%).
- More patients in the pre-CDS group were prescribed broad-spectrum therapy for community-acquired pneumonia (40.4%) than the post-CDS group (23.5%).

V. Conclusion

The post-CDS group was significantly more effective at appropriate antibiotic selection than the pre-CDS group. Clinical decision support tools resulted in a decrease in excessive and unnecessary antibiotic therapy for pneumonia patients. CDS tools can have a monumental effect on efficient and effective antibiotic treatment if implemented in all hospitals.

- This would result in less unnecessary antibiotics being prescribed and increase quality of care.
- This could also help combat the growing crisis of antibiotic resistance among the general population because antibiotic therapy would become more precise.