

Combining fluid and antimicrobial stewardship: identifying intravenous antibacterial agents contributing to intensive care unit volume status

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BACKGROUND

- Fluid stewardship is a process that promotes proper administration of intravenous (IV) fluids and medications with the goals to reduce fluid overload, improve patient outcomes, and reduce adverse events¹
- Fluid overload in the intensive care unit (ICU) is associated with increased mortality and significant complications, such as pulmonary edema and heart failure²
- Recent data presented at the ACCP Annual Meeting 2019 showed that antibacterials are the top IV medication contributor of total fluid intake based on volume and frequency of administration
- However, there are limited data classifying the IV antibacterials that significantly contribute to fluid status

OBJECTIVES

- Determine the impact of antibacterials on ICU volume intake
- Identify IV antibacterial agents that are the greatest contributors to fluid intake

OUTCOMES

For the first 3 days of ICU admission:

- | | |
|------------------|--|
| Primary | <ul style="list-style-type: none"> Determine the proportion of cumulative intake as antibacterials |
| Secondary | <ul style="list-style-type: none"> Identify the volume of IV antibacterials administered Characterize the frequency of IV antibacterial administration |

STUDY DESIGN

- Design: IRB-approved, retrospective, nested cohort study
- Time Frame: January 2018 through December 2018
- Site: St. Joseph's/Candler Health System (SJCHS) – Savannah, GA

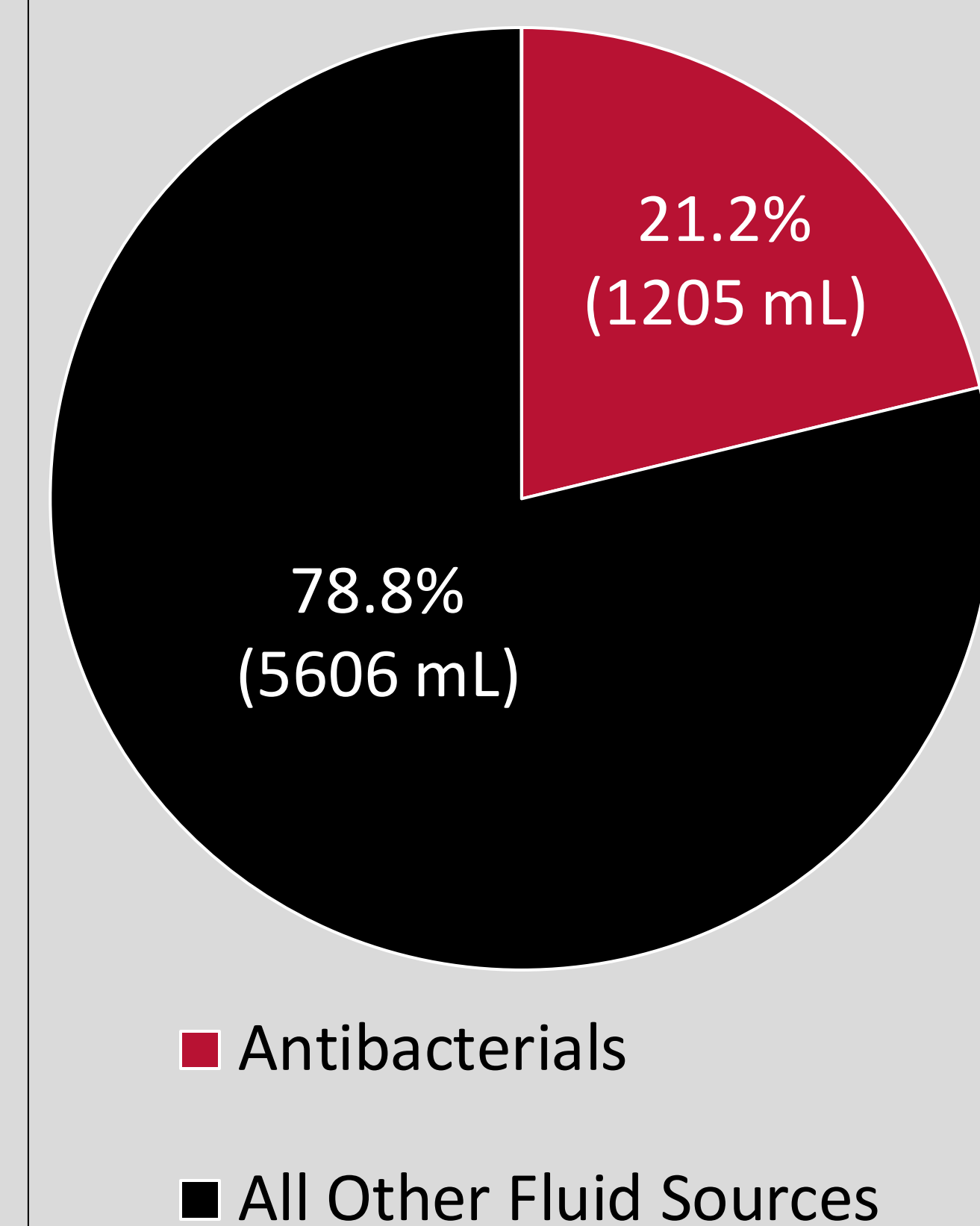
Inclusion Criteria	Exclusion Criteria
<ul style="list-style-type: none"> Adults ≥ 18 years old ICU admission ICU length of stay ≥ 4 days Received an IV antibacterial agent 	<ul style="list-style-type: none"> Pregnant females Receiving total parenteral nutrition End stage renal disease DNR or DNI status at time of admission Transferred from another hospital Specific indication for maintenance IV fluids (i.e. diabetic ketoacidosis)

RESULTS

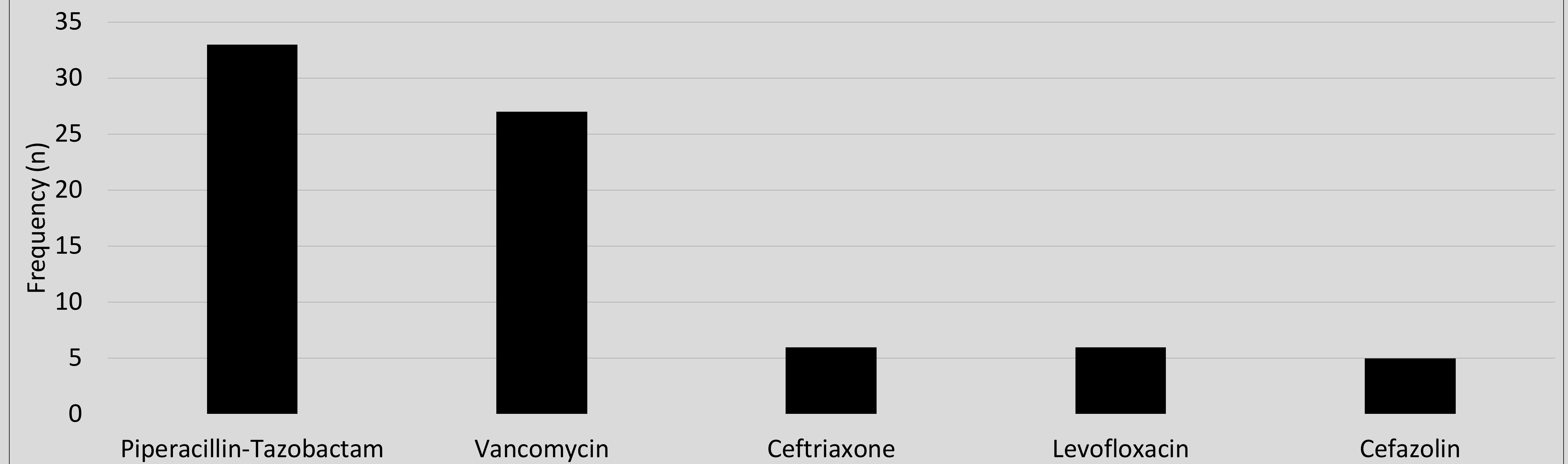
Data from ACCP 2019:



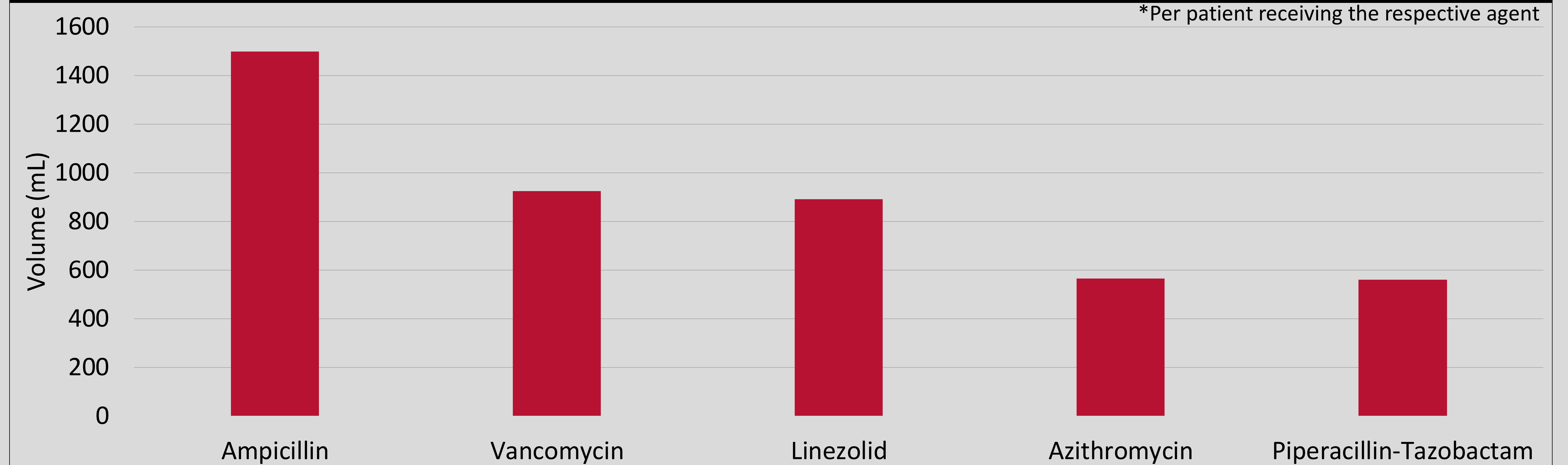
Average Percent of Cumulative Intake of IV Antibacterials Over First 3 ICU Days



Top 5 IV Antibacterial Agents by Administration Frequency Over First 3 ICU Days (n=48)



Top 5 IV Antibacterial Agents by Average Cumulative Administration Volume Over First 3 ICU Days (n=48)



CONCLUSIONS & DISCUSSION

- Vancomycin & piperacillin-tazobactam are the overall top IV antibacterial contributors to ICU fluid intake
- De-escalating from IV route to PO and discontinuing antibacterials when appropriate would promote both fluid and antimicrobial stewardship
- Concentrating infusions would promote fluid stewardship
- Study limitations
 - Data were collected over 3 calendar days, not 72 hours, from ICU admission
 - Reliance on accurate charting
 - All patients were admitted into a medical-surgical ICU
- Future directions
 - Evaluating the impact of fluid stewardship education on prescribing practices
 - Investigating administration frequency and volume of different empiric antibacterial agents (i.e. cefepime) at other sites

REFERENCES

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DISCLOSURES

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