College of Pharmacy

Intravenous versus Partial Oral Antibiotic Therapy in the Treatment of Uncomplicated Bloodstream Infection due to *Streptococcus* species

Lynn Broermann[1], PharmD Candidate; Majdi N. Al-Hasan[2,3], MBBS; Sarah Withers[3], PharmD, BCPS, MS; Kristina L. Benbow[1], PharmD Candidate; Taylor Ramsey[1], PharmD; Katelyn Ogren[1], PharmD Candidate; Meghan McTavish[1], PharmD; William Webster[2,3], DO; Hana Winders[3], PharmD, BCIDP

1 University of South Carolina College of Pharmacy; 2 University of South Carolina School of Medicine; 3 Prisma Health, South Carolina, USA

Contact information:
broermal@email.sc.edu
(513)652-6008

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BACKGROUND

- More than 500,000 cases of bloodstream infections (BSI) are reported in the United States annually[1]
- One treatment strategy for BSI involves transitioning from intravenous (IV) therapy to oral agents once a patient is clinically stable[2]
- Switching from IV to oral therapy may decrease cost, infection risk, and length of hospital stay[3,4]

OBJECTIVE

- To examine effectiveness of partial oral antibiotic regimens in uncomplicated BSI due to *Streptococcus* species compared to standard IV only therapy

METHODS

- Adults with uncomplicated BSI due to *Streptococcus* species from April 2016 through June 2020 in 7 hospitals within Prisma Health in South Carolina were evaluated
- Patients who died within 7 days of BSI were excluded to reduce impact of survival bias
- Multivariate Cox proportional hazards regression was used to examine time to treatment failure, defined as a composite of all-cause mortality and BSI recurrence within 90 days

RESULTS

- Overall, 222 patients were included in analysis; 99 received only IV antibiotics and 123 received partial oral therapy **[Figure 1]**
- Median age was 62 years; 116 (52.3%) were men **[Table 1]**
- Beta-hemolytic streptococci (87; 39.2%) were the most common bloodstream isolates **[Figure 2]**
- Median duration of therapy in both groups was 14 days
- In the partial oral group, median duration of IV antibiotics prior to oral transition was 4 days
- Most patients in partial oral group were transitioned to either oral beta-lactams or fluoroquinolones **[Figure 3]**
- Of the IV only group, 46 (46.5%) were discharged on outpatient IV antibiotics
- Treatment failure rates were 12.0% and 4.4% in IV only and partial oral therapy groups, respectively (p=0.04)
- After adjustments in multivariate Cox proportional hazards model, there was no difference in risk of treatment failure between partial oral and IV only groups **[Table 2]**

RESULTS

Figure 1: Patient Flowchart

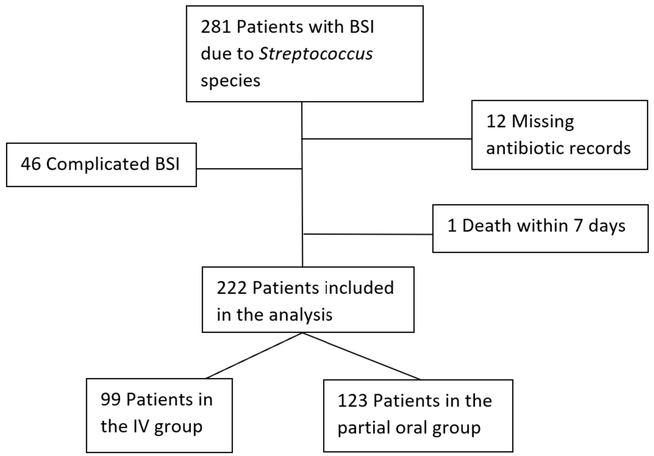


Figure 2: Microbiology

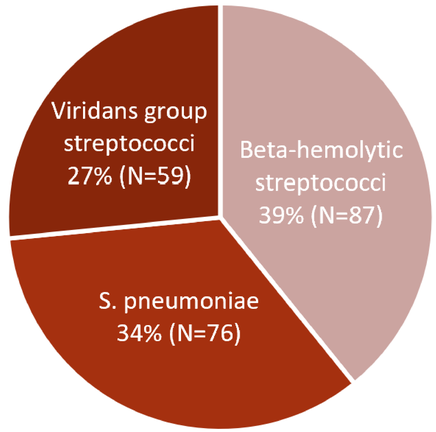


Table 2: Risk Factors for Treatment Failure

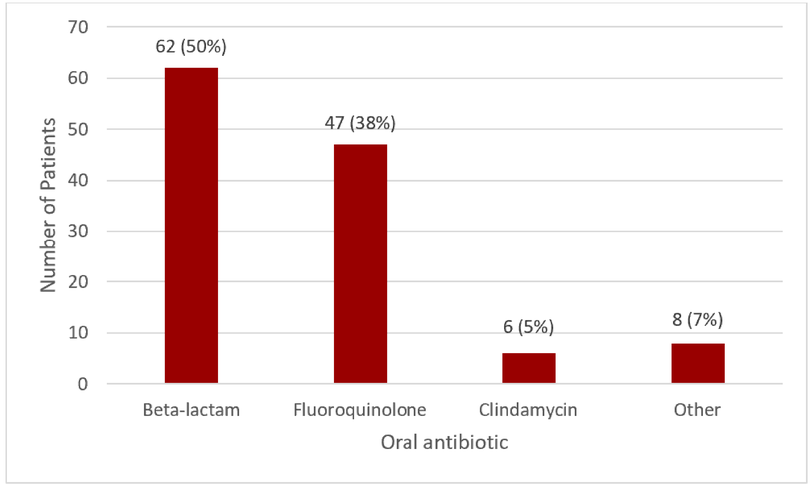
Variable	Hazard ratio	(95% Confidence Interval)	P-value
Age (per decade)	1.55	(1.04 – 2.43)	0.04
Body mass index (per point)	1.01	(0.99 – 1.02)	0.12
Cancer	3.38	(0.82 – 14.0)	0.09
Early clinical failure criteria[α] (per point)	1.62	(1.07 – 2.46)	0.02
IV to oral	0.55	(0.19 – 1.64)	0.28

α Systolic blood pressure <100 mmHg or vasopressor use, heart rate >100 bpm, respiratory rate ≥ 22 bpm or mechanical ventilation, altered mental status, white blood cell count >12,000/mm3

Table 1: Baseline Characteristics

Characteristic	IV group (n = 99)	IV to oral group (n = 123)
Age, median (IQR)	62 (52 - 73)	62 (52 - 71)
Male, No. (%)	47 (47.5)	69 (56.1)
Race, No. (%)		
White	78 (78.8)	91 (74.0)
African American	17 (17.2)	27 (22.0)
Other	4 (4.0)	5 (4.1)
Comorbidity, No. (%)		
Diabetes mellitus	39 (39.4)	46 (37.4)
End-stage renal disease	1 (1.0)	8 (6.5)
Cirrhosis	9 (9.1)	10 (8.1)
Cancer	12 (12.1)	11 (8.9)
Intracerebral hemorrhage	4 (4.0)	6 (4.9)
Source, No. (%)		
Skin	31 (31.3)	37 (30.1)
Respiratory	27 (27.3)	62 (50.4)
Other	30 (30.3)	12 (9.8)
Unknown	11 (11.1)	11 (8.9)

Figure 3: Transition to Oral Antibiotics



CONCLUSIONS

- Transitioning patients from IV to oral antibiotics may be a reasonable strategy for managing uncomplicated BSI due to *Streptococcus* species
- Partial oral therapy does not seem to have a higher treatment failure rate than standard IV only therapy and may spare many patients from outpatient IV antibiotics

REFERENCES

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Disclosure

The authors of this presentation have no disclosures concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation.

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