

ASSESSMENT OF PHARMACIST BLOOD CULTURE SURVEILLANCE

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PROBLEM

Hospitalized patients with blood stream infections (BSIs) are at increased morbidity and mortality risk despite advances in therapy and overall care.¹

Audit and provider feedback for positive blood cultures by pharmacists has been shown to improve care and outcomes for BSI patients.

- However, previous studies employed pharmacy specialists with infectious diseases (ID) training in a centralized audit and feedback model¹

It is unknown if decentralized, inpatient pharmacists, with support from ID pharmacists as needed, could impact patient care similarly.

BACKGROUND

Beganovic et al. ¹ (Legacy Advocate)	Legacy Aurora
<ul style="list-style-type: none"> • Real-time blood culture surveillance done by Infectious Diseases (ID) pharmacists • Blood culture results & updates paged to ID pharmacists 24 hours, 7 days a week 	<ul style="list-style-type: none"> • Blood culture surveillance done by de-centralized clinical pharmacists • Blood culture results & updates sent in the form of in-basket messages through the electronic health record (HER) • ID pharmacists available as needed in this process

OBJECTIVE

To evaluate antibiotic treatment and outcomes for BSI patients for whom blood culture audit and provider feedback was performed by decentralized, inpatient pharmacists.

METHODS

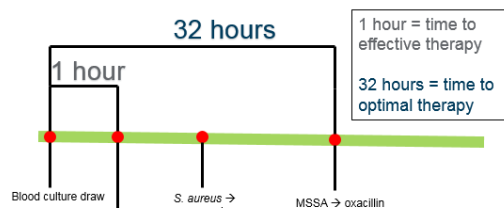
Retrospective review of 100 adult BSI patients in Advocate Aurora Health (Legacy WI) with a positive blood culture from April 1 – June 30, 2019.

Data collected included patient demographics, blood culture draw time, culture results (gram stain, pathogen, antibiotic susceptibilities), time to empiric therapy start and time to antibiotic optimization.

Primary Outcome: Time from blood culture draw to effective empiric antimicrobial therapy.²

Secondary Outcome: Time from blood culture draw to optimal antimicrobial therapy.²

Outcomes collected were compared to previously published studies.¹



RESULTS

Table 1. Patient Demographics

Variable	n=100 (%)
Male gender	52 (52.0)
Age, years (median, IQR)	70 (57,81)
ICU admission	34 (34.0)
ICU length of stay, days (median, IQR)	2 (1,5)
Any antibiotic allergy	27 (27.0)

Figure 1. Bacteremia Source

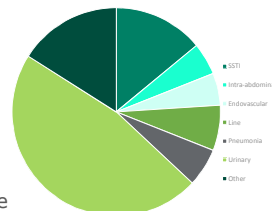
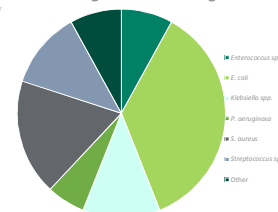


Figure 2. Pathogen

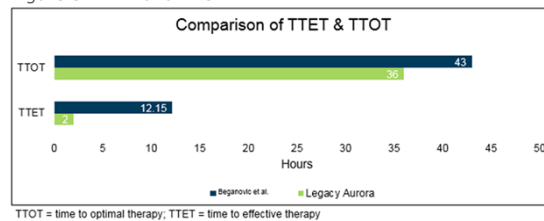


- Gram-negative isolate: 61%
- Multi-drug resistant pathogen: 8%

Table 2. Time to Therapy Outcomes

	n=100 (%)
Effective Empiric Therapy	95 (95.0)
Time to Effective Empiric Therapy, hours (median, IQR)	2 (1,5)
De-escalation to Optimal Definitive Therapy	100 (100.0)
Time to Optimal definitive therapy, hours (median, IQR)	36 (2, 64)
From Previous Literature²	n=252
Time to Effective Therapy (TTET)	12.15 hours
Time to Optimal Therapy (TTOT)	43 hours

Figure 3. TTET and TTOT^{1,2}



CONCLUSIONS

These results are similar to previously published studies of ID pharmacy specialists in a centralized audit and feedback model.

BSI audit and provider feedback by decentralized, inpatient pharmacists, with as needed support from ID pharmacists, may represent an alternative to centralized ID pharmacist model.

Application of these findings to practice will allow for more efficient use of pharmacist time and expand de-centralized, inpatient pharmacy practice.

NEXT STEPS

Compare this data from Legacy Wisconsin to similarly collected Legacy Advocate data during the same time frame with same data points to inform one method of pharmacist blood culture surveillance moving forward.

REFERENCES

1. Beganovic M, Costello M, Wiczorkiewicz S. Effect of Matrix-Assisted Laser Desorption Ionization-Time of Flight Mass Spectrometry (MALDI-TOF MS) Alone versus MALDI-TOF MS Combined with Real-Time Antimicrobial Stewardship Interventions on Time to Optimal Antimicrobial Therapy in Patients with Positive Blood Cultures. *J Clin Microbiol.* 2017; 55(5): 1437-1445.

2. Huang A, Newton D, Kunapuli A, et al. Impact of Rapid Organism Identification via Matrix-Assisted Laser Desorption/Ionization Time-of-Flight Combined With Antimicrobial Stewardship Team Intervention in Adult Patients With Bacteremia and Candidemia. *CID.* 2013;57(9): 1237-45.