Infectious Disease and Supportive Care Outcomes In Adult Oncology Patients

Sidharth Iyer BS, Jason Bischof MD

The Ohio State University / College of Medicine

Background

- Cancer patients on immune suppressive drugs are at higher risk for systemic and bacterial bloodstream infections (BSIs), associated with significant morbidity and mortality
- Prompt empiric antibiotic therapy is critical for these patients
- Limited guidance exists for managing BSIs in febrile patients with cancer and without neutropenia
- The Esbenshade model was developed to predict BSI risk in febrile, non-neutropenic **pediatric** cancer patients
- This study aimed to validate the Esbenshade model's use in an **adult** population

Methods

Retrospective chart review analyzing management and supportive care in 284 adult oncology patients presenting to the ED (1/1/18 – 7/28/23) with suspected sepsis and obtained a blood culture

Variables Collected: Demographics, Clinical Characteristics, Esbenshade Model Elements (Table 1)

Results

Table 1. Esbenshade Model Variables

	Culture Positive (N=66)	Culture Negative (N=218)	Total Population (N=284)
Age [Median (IQR)]	69 (58-74)	64 (55-71)	63 (55-72)
History of SCT	2	17	19
PICC	2	13	15
Hickman	0	2	2
Hypotension	8	23	31
Chills	34	96	130
URI	14	79	93
Temperature °C [Median (IQR)]	38.9 (38.2-39.3)	38.5 (38.2-39.0)	38.5 (38.2-39.1)
Drug Exposure	0	0	0
ANC [Median (IQR)]	7580 (5350-13570)	6935 (3710-10540)	7130 (4090-11030)

Table 2. Sensitivity Specificity Analysis

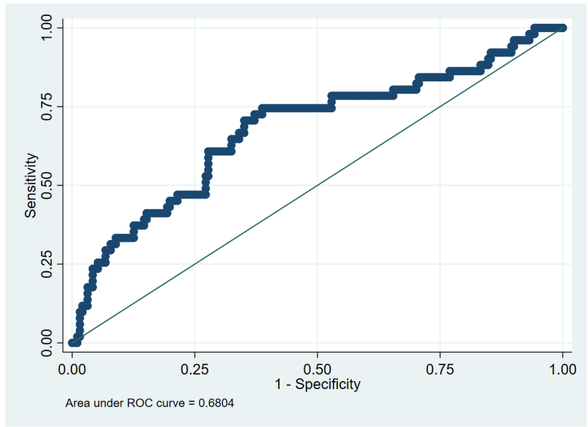

Figure 1. AUC

Conclusions

The Esbenshade model performed **poorly** in predicting BSI risk in adult cancer patients presenting with non-neutropenic fever

Future studies are needed to identify new variables for a clinically useful model in febrile adult patients with cancer and without neutropenia

Acknowledgements

This work was supported in part by The Ohio State University College of Medicine Medical Student Research Scholarship funded by the Samuel J. Roessler Memorial Scholarship.

References

• Esbenshade AJ, Pentima MC, Zhao Z, et al. Development and validation of a prediction model for diagnosing blood stream infections in febrile, non-neutropenic children with cancer. Pediatr Blood Cancer. 2015;62(2):262-268.

• Zhao Z, Patel PA, Slatnick L, et al. Prospective External Validation of the Esbenshade Vanderbilt Models Accurately Predicts Bloodstream Infection Risk in Febrile Non-Neutropenic Children With Cancer. J Clin Oncol. 2024;42(7):832-841.

• PA Harris, R Taylor, R Thielke, J Payne, N Gonzalez, JG. Conde, Research electronic data capture (REDCap) – A metadata-driven methodology and workflow process for providing translational research informatics support, *J Biomed Inform. 2009 Apr;42(2):377-81.*

• PA Harris, R Taylor, BL Minor, V Elliott, M Fernandez, L O'Neal, L McLeod, G Delacqua, F Delacqua, J Kirby, SN Duda, REDCap Consortium, The REDCap consortium: Building an international community of software partners, *J Biomed Inform. 2019 May 9 [doi: 10.1016/j.jbi.2019.103208]*