

# Trend in Blood Culture Results in Washington DC During and Prior to Pandemic COVID-19

Contact information:  
AJ Klein, DO  
DC VAMC  
50 Irving St, NW  
Washington DC 20422  
Adam.klein@va.gov

A. J. Klein<sup>1,2</sup> A. P. Liappis<sup>1,2</sup>

<sup>1</sup>Section Infectious Diseases, Washington DC Veterans Affairs Medical Center, Washington, DC

<sup>2</sup>Department of Medicine, The George Washington University Medical Center, Washington, DC

## Background

The rate of bacterial and/or fungal infections among COVID-19 cases is reportedly low<sup>1,2</sup>. Retrospective studies have shown that most positive blood cultures in these populations are due to hospital acquired complications such as line infections which is similar for other populations with critical illness or prolonged hospital stays or due to skin contamination<sup>2,3</sup>. Antimicrobial Stewardship Programs (ASPs) provide continuous surveillance of blood cultures to secure appropriate choice and duration of therapy. Comparing to historic data, we characterize our ASP experience in bacteremic surveillance during the COVID-19 pandemic.

## Methods

Consecutive blood cultures at the Washington DC VA Medical Center were captured in an ASP-driven decision support software system (TheraDoc, Premier/DSS Inc) between January 1<sup>st</sup> 2018-May 31<sup>st</sup> 2020. In the setting of an established ASP, the organism positive cultures were reviewed over the first five months (January-May) of each of the three years collected. Results of cultures were characterized as either pathogenic gram positive (MSSA/MRSA/Enterococci/PSSP/PRSP/Strep sp.), pathogenic aerobic and anaerobic gram-negative organisms and a skin contaminant-category (GPRs/skin flora/CoNS).

The views expressed in this presentation reflect those of the authors, and not necessarily those of the Department of Veterans Affairs. No disclosures.



## Results

Over 3 years, 528 patients had 1464 positive cultures from among 8727 admissions, 83638 inpatient days. The proportion of pathogenic gram positive (GP) bacteria and pathogenic gram negative (GN) bacteria were not statistically significantly different; 38% (2018) vs 37% (2019) vs 39% (2020) and 33% vs 31% vs 27% respectively. There was a slight trend in the increase of pathogenic GP, 9.6 vs 9.5 vs 11.7 per 1000 inpatient days and skin contaminant category with 12.0 vs 11.0 vs 14.1 per 1000 patient days. We noted a dramatic shift in culture surveillance report during the peak COVID-infection rates (March-April), notable for several weeks of few to no culture positive results. When broken down by month, variability was noted (data not shown). COVID-19 infected patients represented 9.0% (7/78) of positive blood culture results in January-May 2020, only 5.1% (4/78) were treated as non-contaminants and were related to indwelling catheters or urosepsis.

	Jan-May 2018	Jan-May 2019	Jan-May 2020
Gram Positive Blood Cultures (%)	38%	37%	39%
Gram Negative Blood Cultures (%)	33%	31%	27%
Gram Positive Blood Cultures per 1000 Inpatient Days	9.6	9.5	11.7
Skin Contaminants per 1000 Inpatients Days	12.0	11.0	14.1

## Conclusion

Overall and adjusted rates of the blood cultures obtained during the pandemic months in 2020 were comparable to the comparative years. Surveillance revealed short term changes in patterns which may have reflected the pandemic induced changes to admissions. COVID-19 infected patients rarely experienced line and hospital acquired bacteremia/fungemia, and most were during the recovery period. An increase in proportion of blood cultures representing skin contaminants were seen during the pandemic as also reported by Sepulveda et al and Hughes et al which may be speculated due to overordering or difficulties in the setting of PPE.

## References

1. Timothy M Rawson, Luke S P Moore, Nina Zhu, Nishanth Ranganathan, Keira Skolimowska, Mark Gilchrist, Giovanni Satta, Graham Cooke, Alison Holmes, Bacterial and Fungal Coinfection in Individuals With Coronavirus: A Rapid Review To Support COVID-19 Antimicrobial Prescribing, Clinical Infectious Diseases, ciaa530, <https://doi.org/10.1093/cid/ciaa530>
2. Hughes S, Troise O, Donaldson H, Mughal N, Moore LSP. Bacterial and fungal coinfection among hospitalized patients with COVID-19: a retrospective cohort study in a UK secondary-care setting. Clin Microbiol Infect. 2020;26(10):1395-1399. doi:10.1016/j.cmi.2020.06.025
3. Sepulveda J, Westblade LF, Whittier S, et al. Bacteremia and Blood Culture Utilization during COVID-19 Surge in New York City. J Clin Microbiol. 2020;58(8):e00875-20. Published 2020 Jul 23. doi:10.1128/JCM.00875-20