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# Fever and Leukocytosis are Poor Predictors of Infection in Patients Receiving Extracorporeal Membrane Oxygenation

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# Disclosures/Disclaimer

- No disclosures
- The views expressed are those of the authors and do not reflect the official views or policy of the Department of Defense or its Components



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# Background

- Patients on ECMO are at high risk of nosocomial infection
  - e.g. bloodstream infections, VAPs, UTIs, surgical site infections
- Infections are difficult to identify due to fixed parameters on ECMO circuit
- Temperature and WBC are often used clinically, but their utility in identifying infections is unclear



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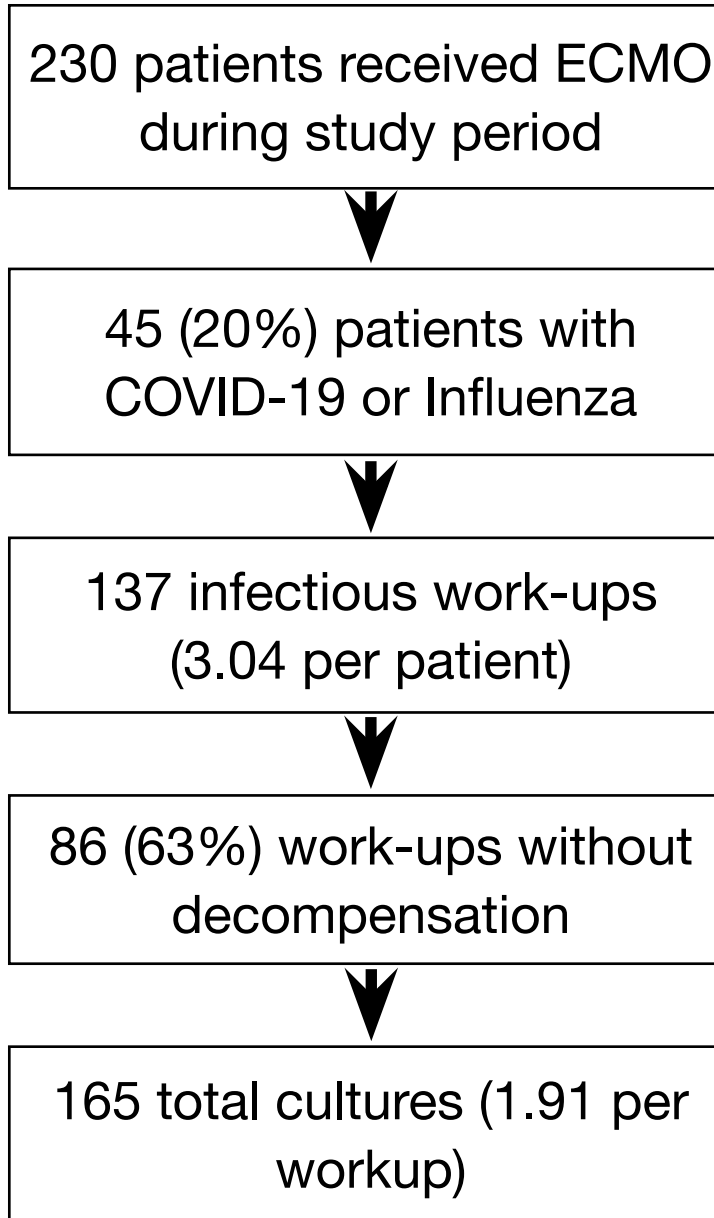
# Methods

- Single center, retrospective study
- Influenza or COVID-19 patients requiring ECMO from December 2014 – December 2020
- Analyzed cultures drawn from patients without clinical decompensation
- Temperature and WBC measured on day of culture collection and 24 hours prior
  - 24-hour data to assess for significant change that may indicate infection
- Statistics: Chi-squared and Mann-Whitney U as appropriate



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# Results



**Figure 1.** Flow chart depicts inclusion criteria with resultant 165 total cultures included in study.



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## Table 1 – Demographics

<b>Age, median (IQR)</b>	44 (36-53)
<b>Male, n (%)</b>	38 (84%)
<b>Hours on ECMO, median (IQR)</b>	360 (183-666)
<b>Diagnosis</b>	
<b>COVID-19, n (%)</b>	25 (56%)
<b>Influenza, n (%)</b>	20 (44%)
<b>True Infection, total</b>	10
<b>Blood Stream Infection, total</b>	6
<b>Respiratory Infection, total</b>	3
<b>Urinary Tract Infection, total</b>	1



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## Table 2 – Low Culture Positivity Rates

	<b>True Positive</b>	<b>Contaminants</b>	<b>Total Cultures</b>	<b>True Positive Rate</b>	<b>Contamination Rate</b>
<b>Blood Cultures</b>	6	3	73	8.2%	4.1%
<b>Respiratory Cultures</b>	3	6	39	7.7%	15.4%
<b>Urine Cultures</b>	1	5	53	1.9%	9.4%
<b>Total</b>	10	14	165	6.1%	8.5%



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# Isolated Organisms

- True positives
  - *P. aeruginosa* (3), *S. epidermidis* (2), *S. aureus* (2), *E. faecalis*, *E. faecium*, *E. coli*
- Contaminants
  - *Candida spp.* (11), *S. epidermidis* (3)





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## Figure 2 - No Difference in Temperature or WBC in Infectious Versus Non-infectious Etiologies

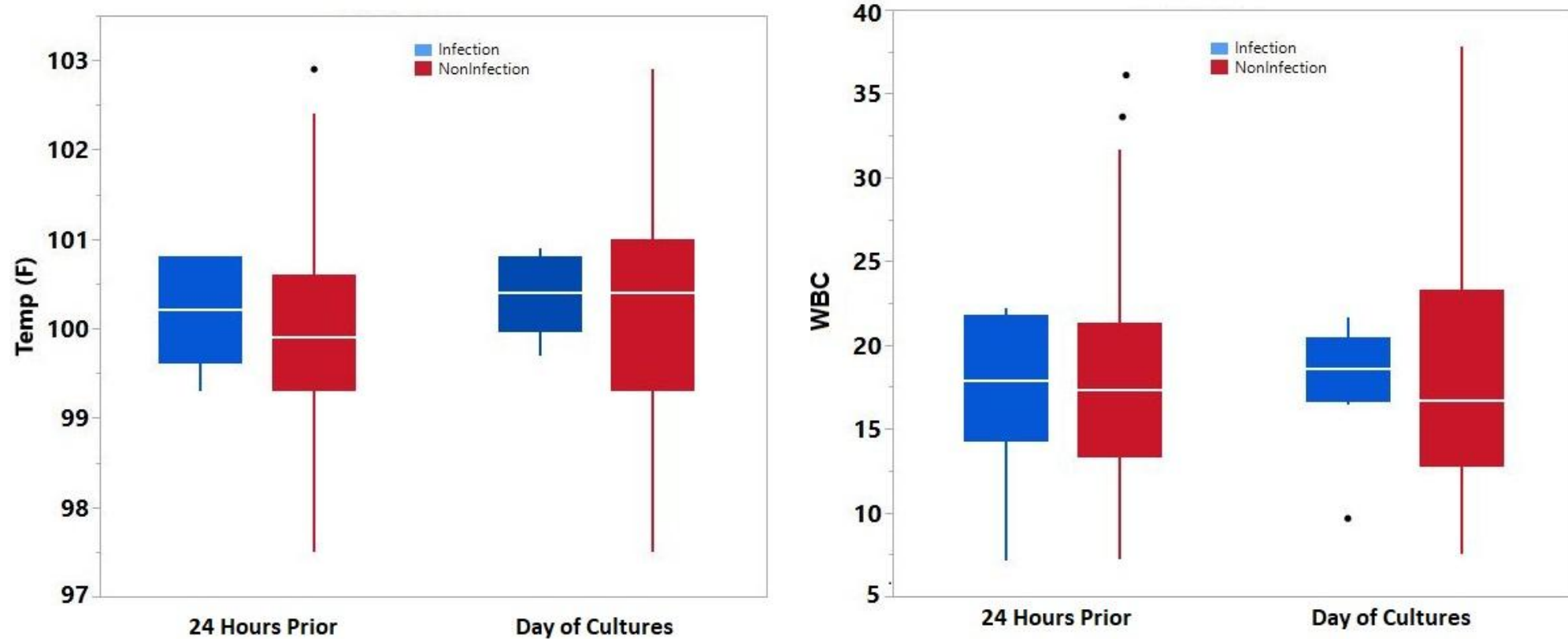


Figure 2. Maximum values recorded on day of culture workup and 24 hours prior.



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## Discussion/Conclusion

- Fever and leukocytosis were commonly seen during ECMO course and were frequent prompts for culture workup
- There was no difference in median temperature and WBC between patients with true infection and patients without infections
- More research is needed to help determine factors associated with infections in patients receiving ECMO



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## Discussion/Conclusion

- Fevers and leukocytosis often prompt empiric antibiotics  concerns for resistance
- Increased laboratory and pathology costs associated with frequent cultures



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Questions?



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