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Comparison of Survival Indicators Between Myocardial Infarction Patients and Septic Patients Who Received Veno-Arterial Extracorporeal Membrane Oxygenation Treatment

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BACKGROUND

- A myocardial infarction (MI) occurs when blood flow to the heart is obstructed, resulting in damage to the heart muscle ¹
- Sepsis is characterized by multiple organ system damage or failure caused by the body's inflammatory immune response to an infection ²
- Veno-arterial extracorporeal membrane oxygenation (VA-ECMO) treatment is derived from cardiopulmonary bypass used in surgery to provide long term support of circulatory function in MI and septic patients ³

OBJECTIVE

- This study sought to determine survival indicators for VA-ECMO-treated MI and septic patients at the Lehigh Valley Health Network from 2013-2018

METHODS

Retrospective chart review of all VA-ECMO patients with either MI or Sepsis from 2013-2018 at the Lehigh Valley Health Network

Analysis of 34 MI and 20 septic patients for a correlational study between indicators and survival using descriptive statistics

OUTCOMES

Figure 1: Comparison of average initial lactate levels between septic patients who are deceased and those who are not

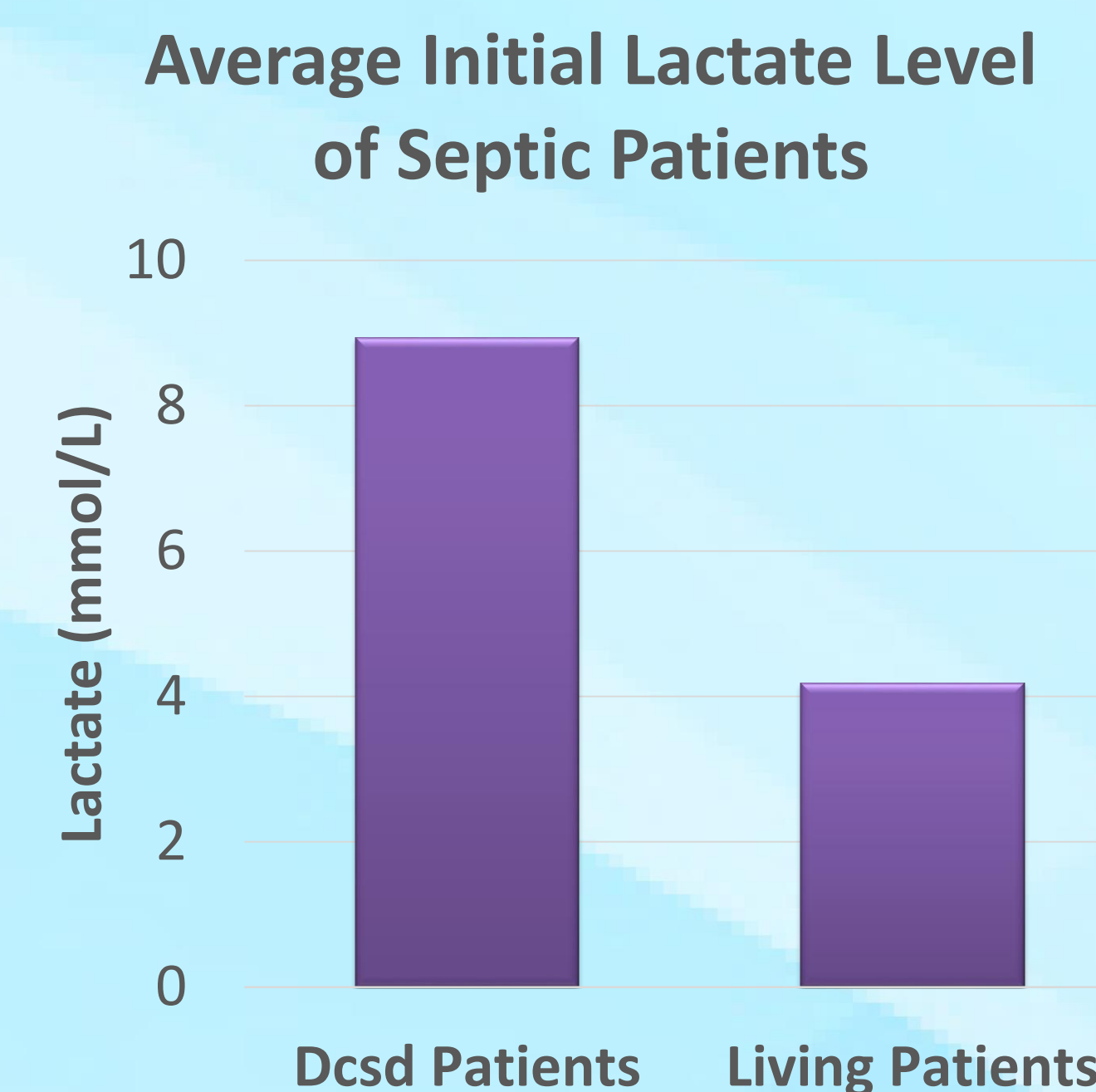


Figure 2: Comparison of average initial PT levels between septic patients who are deceased and those who survived

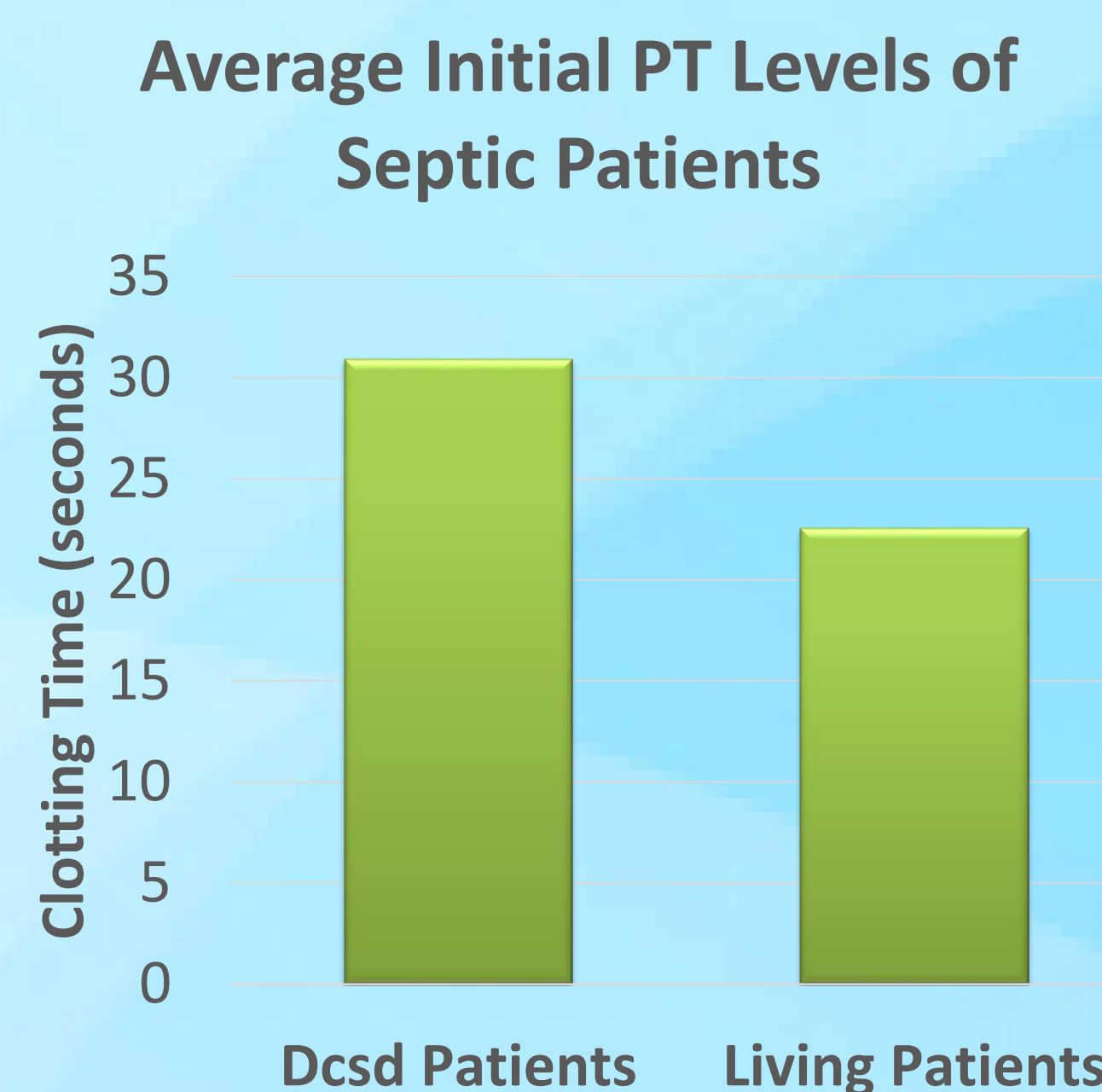
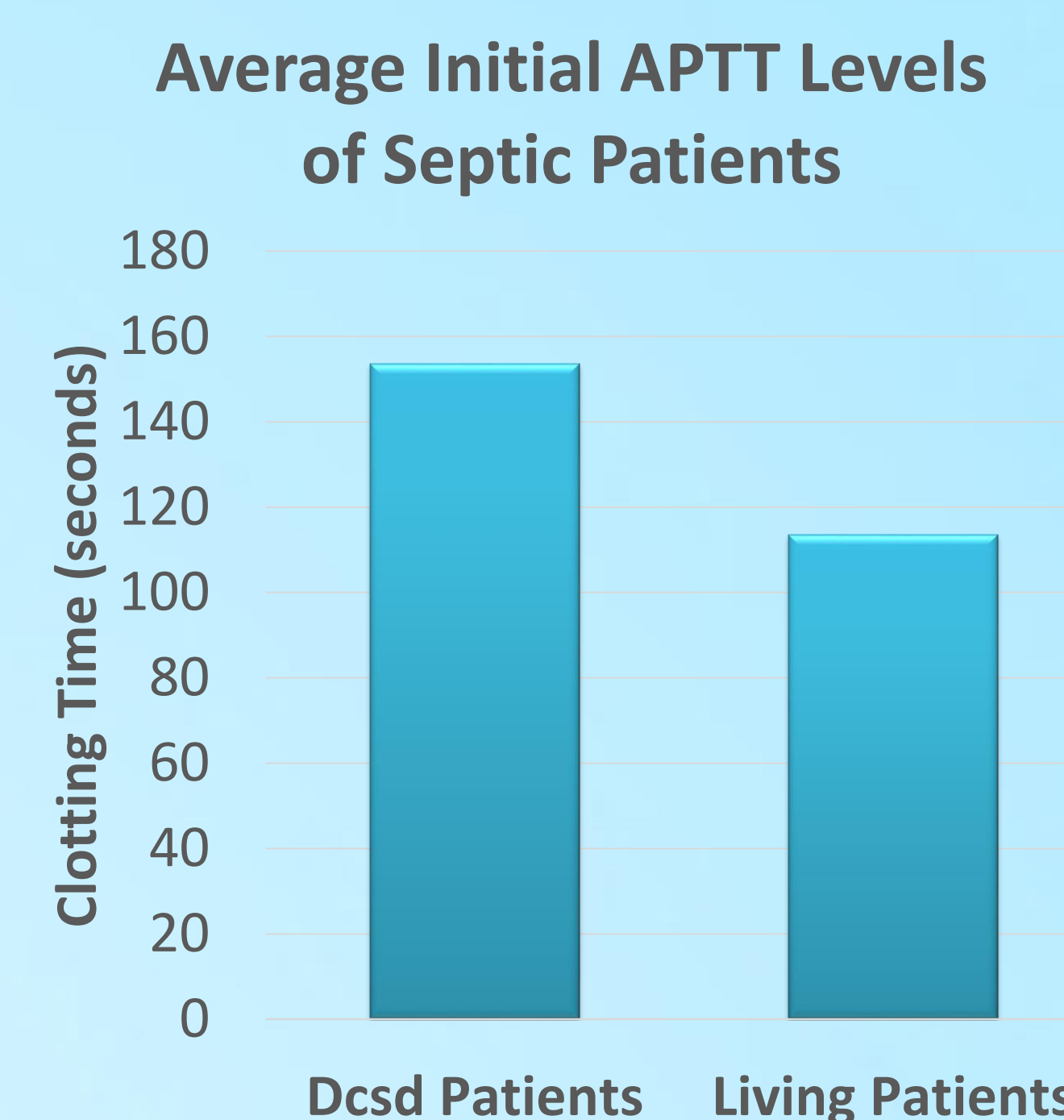


Figure 3: Comparison of average initial APPT levels between septic patients who are deceased and those who survived



Average Initial pH Levels of MI Patients

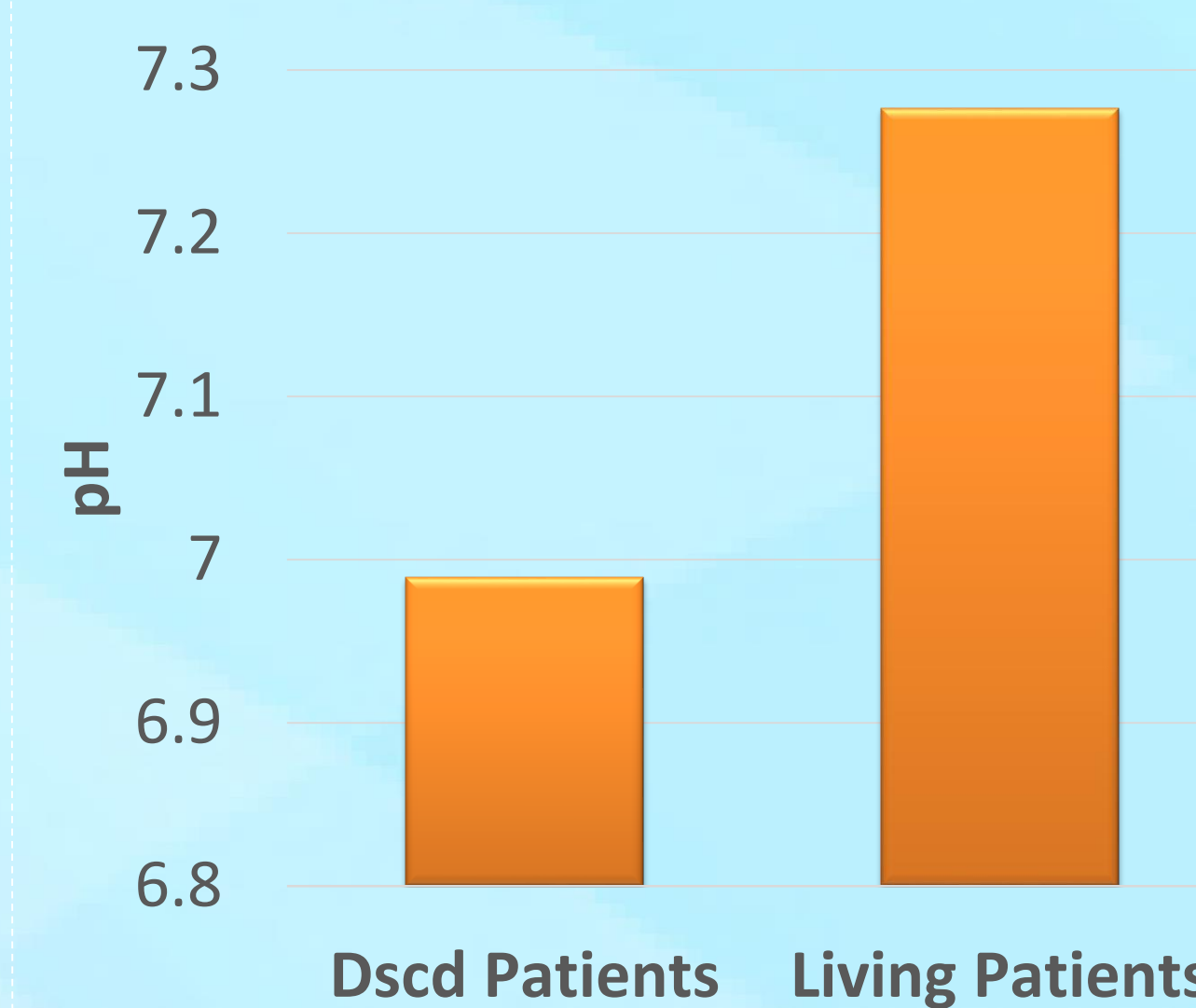


Figure 4: Comparison of average initial pH levels between MI patients who are deceased and those who survived

Average Initial PT Levels of MI Patients

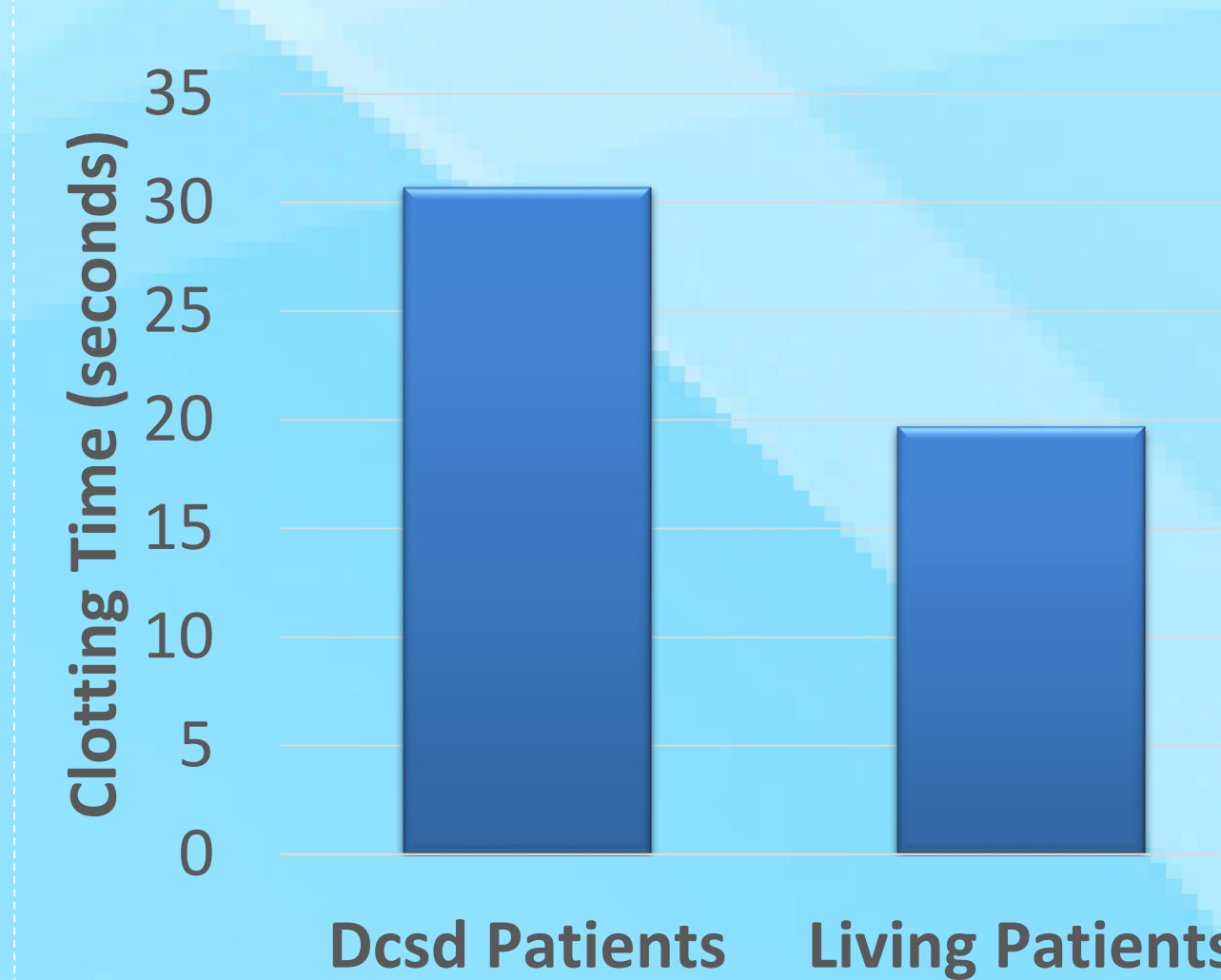


Figure 5: Comparison of average initial PT levels between MI patients who are deceased and those who survived

Mortality Rates of MI Patients Who Underwent VA-ECMO

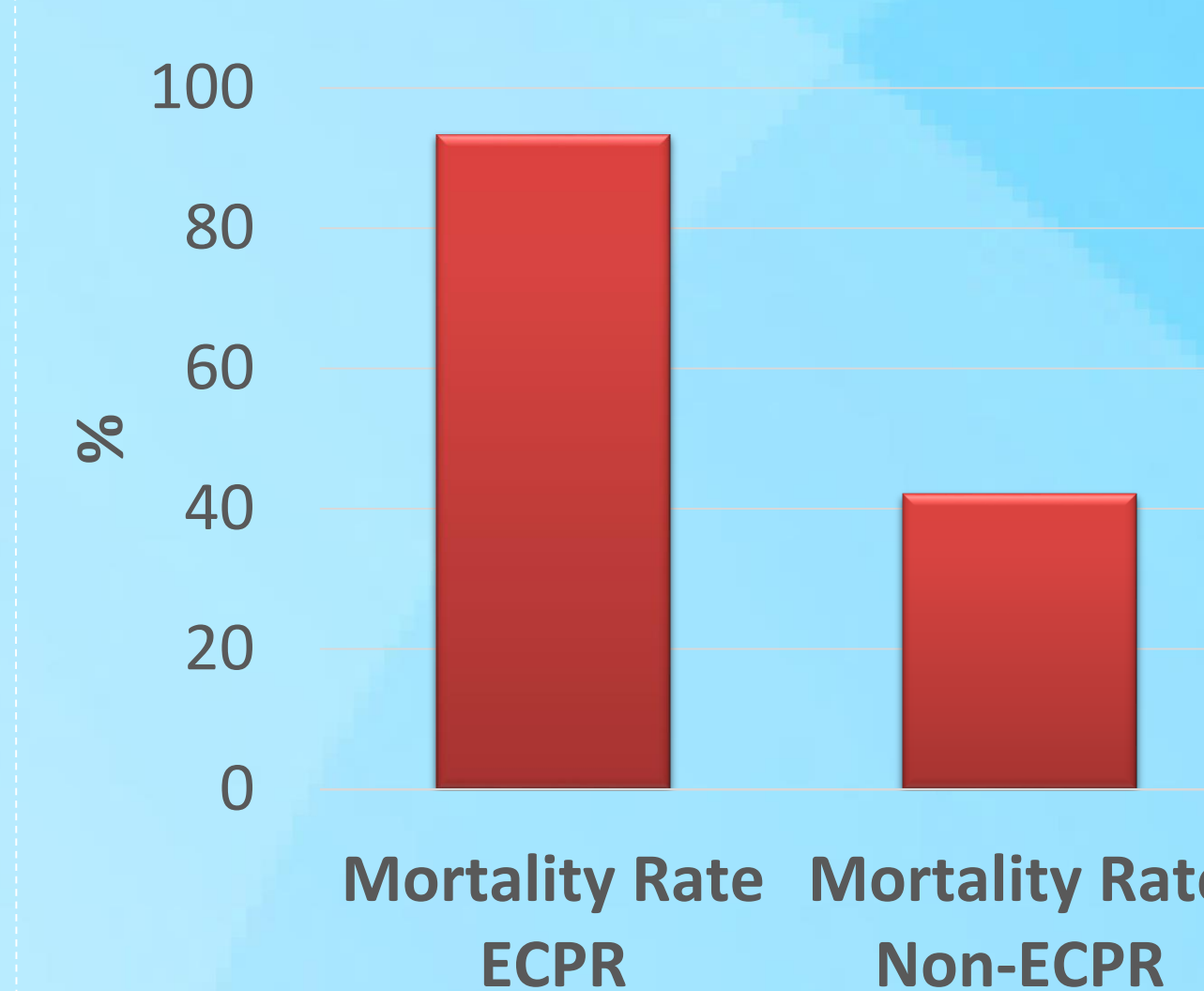


Figure 6: Comparison of mortality rates between MI patients who underwent ECPR and those who did not

RESULTS

- Septic patients who exhibited any of the following demonstrated a higher mortality rate:
 - elevated lactate levels
 - elevated prothrombin time (PT)
 - elevated activated partial thromboplastin time (APTT)
- MI patients who exhibited any of the following demonstrated a higher mortality rate:
 - lower pH levels
 - elevated PT levels
 - administration of extracorporeal cardiopulmonary resuscitation (ECPR)

CONCLUSION

- PT appeared to be a reasonable indicator for determining outcomes in both septic and MI patients
- Lactate levels and APTT served as indicators only in septic patients in this study
- pH levels and the need for resuscitation were indicative of survival only in MI patients in this study
- Future studies could look to investigate how these determined survival indicators compare to survival indicators in larger patient groups

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