

How Well Does A Prehospital Sepsis Assessment Tool Correlate With Elevated Serum Lactate Levels: Is a Paramedic’s Assessment Enough?

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Introduction

- After airway management, the prehospital treatment of the septic patient is limited to IV fluids and transport. If reliable early sepsis identification can be accomplished, prior to ED arrival, a reduction in time to antibiotic administration may be realized.
- Point of care lactate monitoring can assist with sepsis identification though it has limited prehospital availability.
- It is unknown how well a Paramedic’s clinical assessment, alone, correlates with an elevated serum lactate level and an admitting diagnosis of sepsis.

Study Objective

We sought to evaluate the correlation of a Paramedic Sepsis Alert to the hospital admitting diagnosis of sepsis when Paramedics use a Prehospital Sepsis Evaluation and Treatment tool that does not include a serum lactate level. If sepsis can be identified reliably by Paramedics then prehospital antibiotics may be possible and the potential exists to decrease morbidity and mortality significantly.

Background

Greenville County EMS (GCEMS) is the primary 911 Paramedic responding and transport service for the Greenville, South Carolina metropolitan area encompassing 795 square miles with a 2010 census of 451,225 people and a mean transport time of 16 minutes. GCEMS is a 3rd service county-based program with NREMT certified providers.

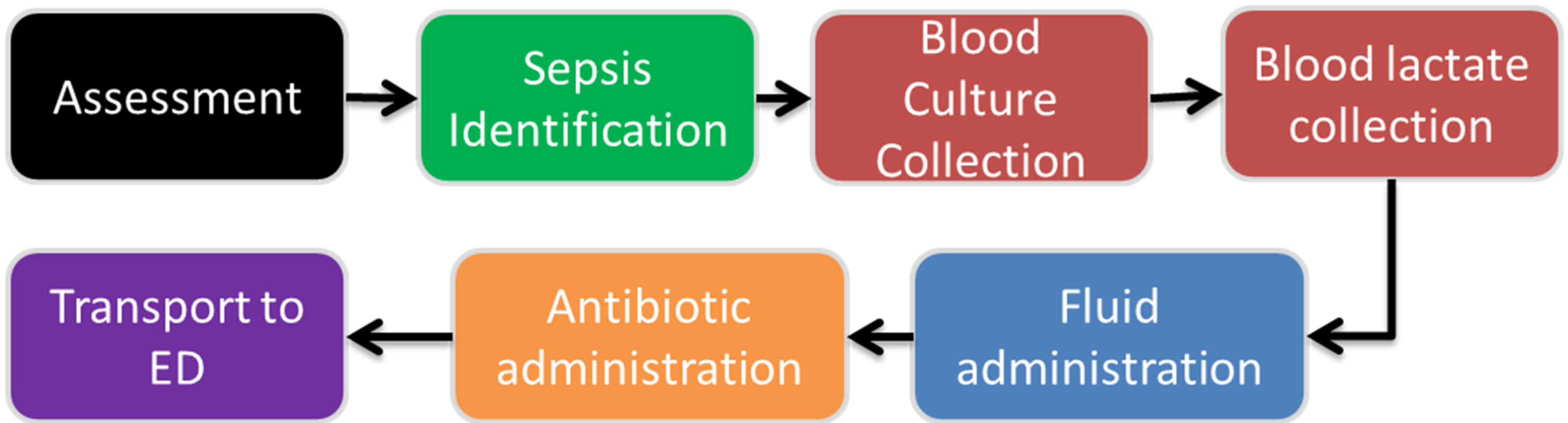
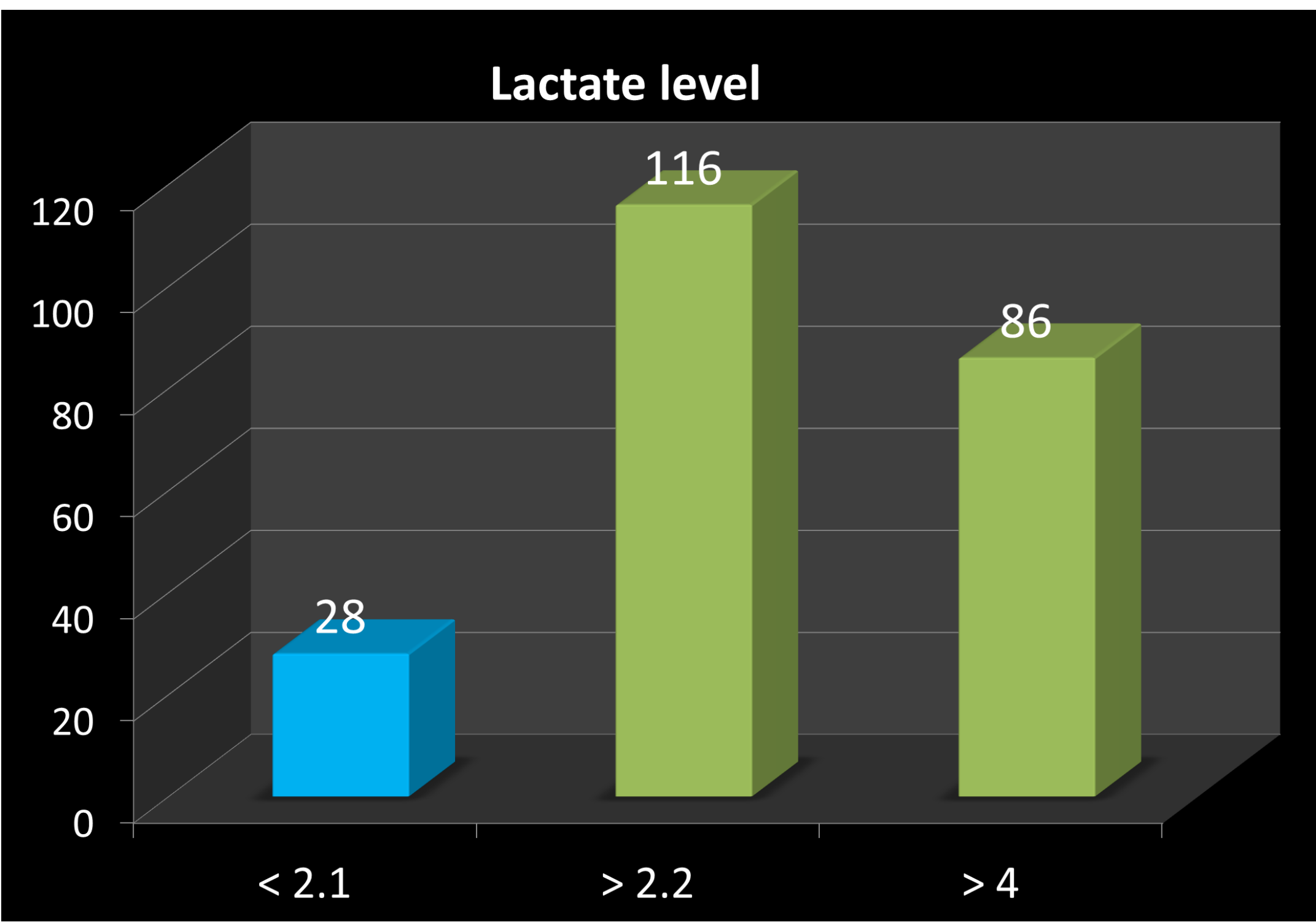
Acknowledgments

This study would not have been possible with out the support of the Greenville Health System Critical Care, ED, Pharmacy and Laboratory faculty and staff and the dedicated Greenville County EMS System providers .

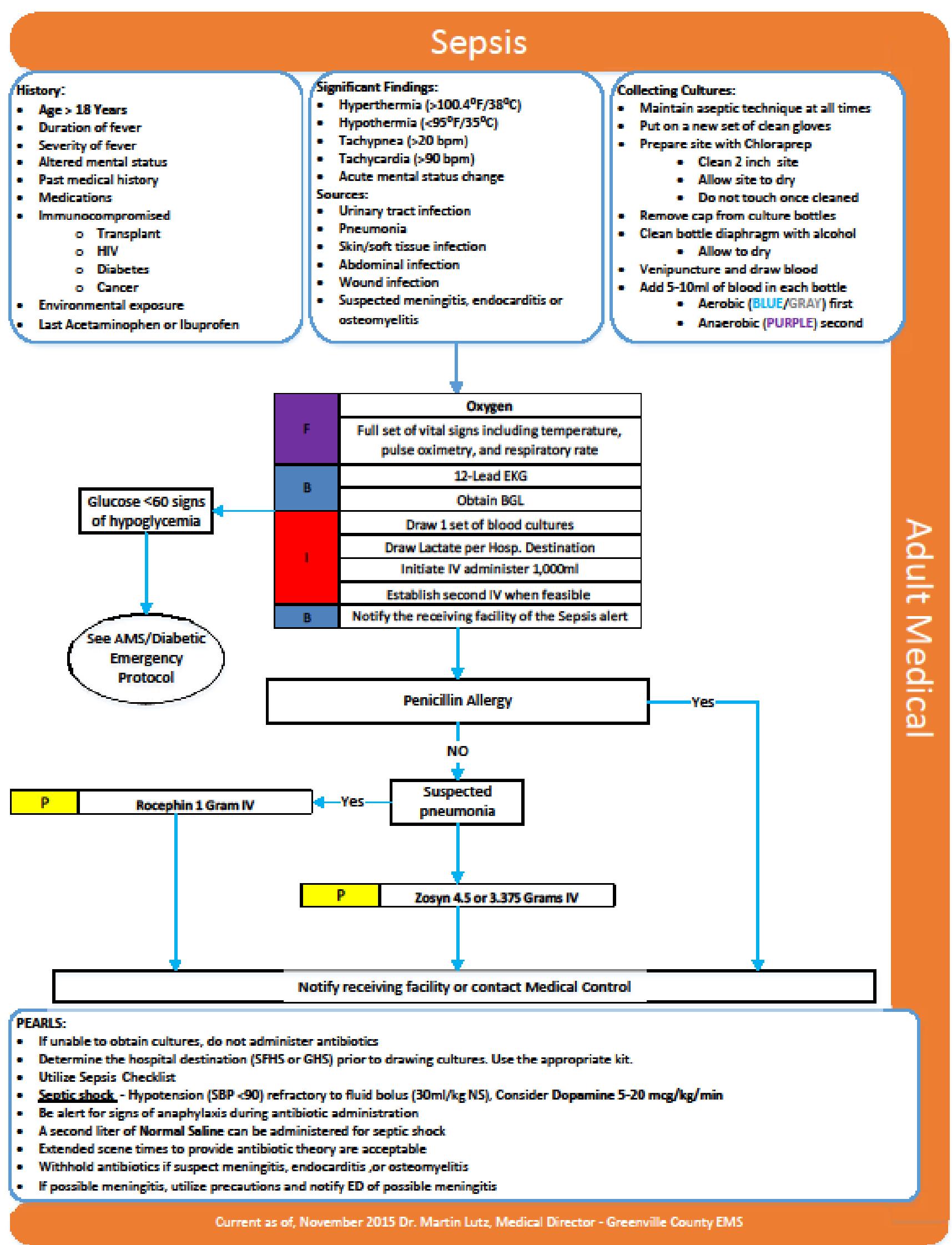
Method

- 170 Paramedics received 12 hours of training on the Sepsis Alert protocol including:
 - Sepsis identification and treatment.
 - Aseptic technique for venous blood collection of blood cultures and lactate levels.
 - IV Antibiotic administration.
- Retrospective case review of all Paramedic Sepsis Alerts between 8 January 2015 and 30 April 2015.
- Blood collected in the field was sent to the receiving hospital laboratory for serum lactate level determination and processing of the initial set of blood cultures.
- Patient demographic and laboratory information was gathered for descriptive analysis with Greenville Health System IRB approval.
- This analysis is part of a larger “Sepsis Alert” prehospital protocol that calls for Paramedic administered antibiotics.

ED Diagnosis	n=144	
Sepsis	91	63%
Severe Sepsis	18	13%
Septic Shock	25	17%
Viral	4	3%
COPD	2	1%
Sinusitis	1	1%
Renal Failure	1	1%
Seizure	1	1%
Anxiety	1	1%



Primary Infection		
Source	n=144	
Pulmonary	58	40%
GU	39	27%
Unknown	25	17%
Skin	10	7%
GI	6	4%
Other	6	4%



Assessment tool

Sepsis alert protocol and treatment tool was created using criteria retrieved from Surviving Sepsis 2012 Guidelines

Results

144 Sepsis alerts called:

- Patient demographics included 53% male, mean age 68
- The admitting diagnosis of Sepsis was 93%.
- The lactate level was greater than 4.0 in 60% of patients and greater than 2.2 in 80%.
- Primary source of infection included 40% pulmonary, 27% GU, 17% unknown, 7% skin, 4% GI, and 4% other.

Limitations

- A single EMS system was used in this study. It is unknown if these findings can be replicated elsewhere.
- Missed activations of the Sepsis Alert were not examined.
- Outcome comparison used was admitting diagnosis.

Conclusion

When a Paramedic calls a Sepsis Alert, their clinical assessment matches an ED sepsis diagnosis 93% of the time without knowing the lactate level. Appropriate early antibiotic administration in the prehospital setting may be possible using a Prehospital Sepsis Assessment Tool.

