

COMPARISON OF LACTATE, PROCALCITONIN AND A GENE SIGNATURE ASSAY ALONE OR IN COMBINATION TO DIFFERENTIATE SEPSIS FROM INFECTION NEGATIVE SYSTEMATIC INFLAMMATION IN ICU PATIENTS.



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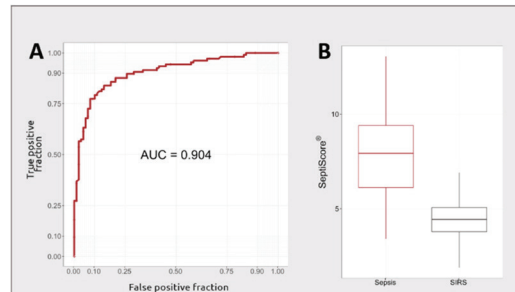


BACKGROUND

- Sepsis is a major global health priority¹
 - 48.9 million annual sepsis cases worldwide
 - 11.0 million annual deaths

- Leading cause of ICU deaths
- Early identification of sepsis is fundamental to impact morbidity and mortality²

Lactate	Procalcitonin (PCT)	Gene Signature Assay (SeptiCyte [®] RAPID)
A product of anaerobic metabolism, elevation reflects poor tissue perfusion ³	PCT becomes elevated during sepsis as well as other causes of inflammation ⁴	Specific to infection in systemic inflammation, not reliant on detectable pathogen presence ⁵
Lactate measurement remains controversial in terms of: <ul style="list-style-type: none"> Optimal timing of measurement Differentiation between sepsis, septic shock and other causes Impact of measured values on treatment and outcomes 	Use of PCT as diagnostic tool or used to initiate antibiotics questionable due to: <ul style="list-style-type: none"> Sensitivity Lack of a precise cut-off value 	<ul style="list-style-type: none"> 1 hour turnaround Reports likelihood of sepsis with high accuracy & reliability Assay value converted to an index between 0-15 (SeptiScore[®]).



OBJECTIVE

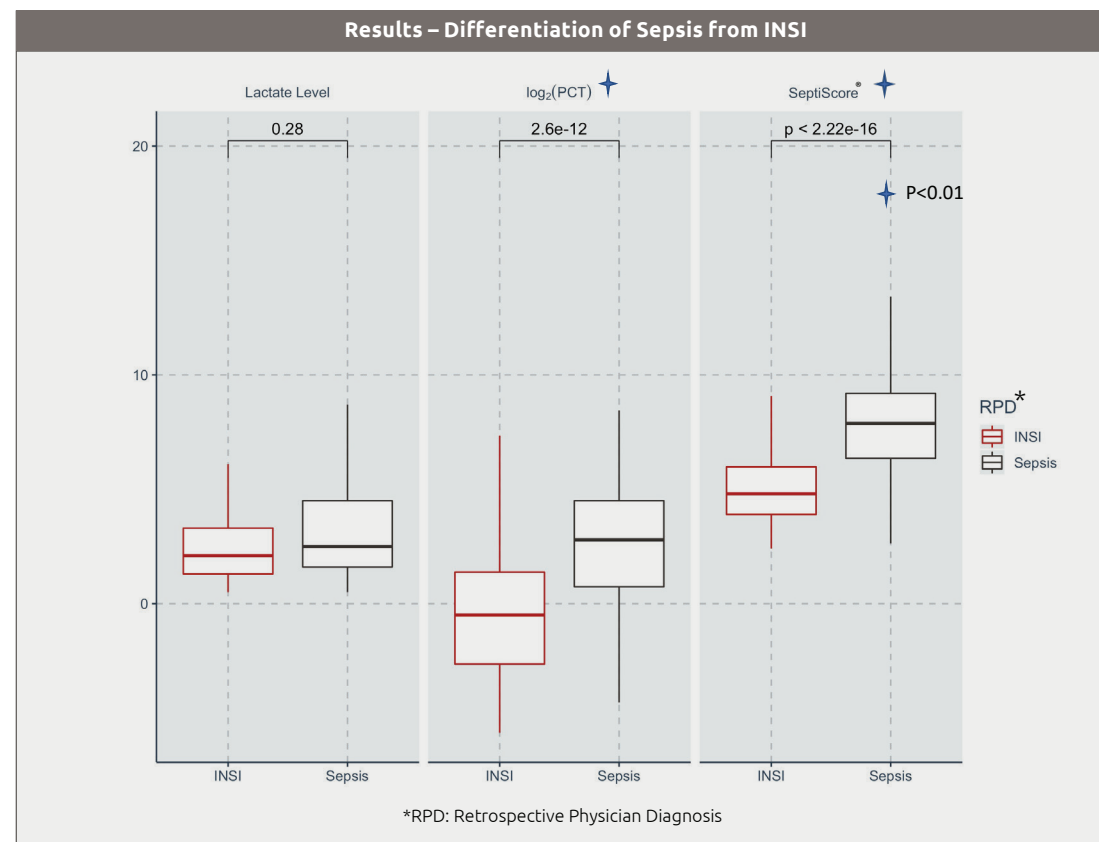
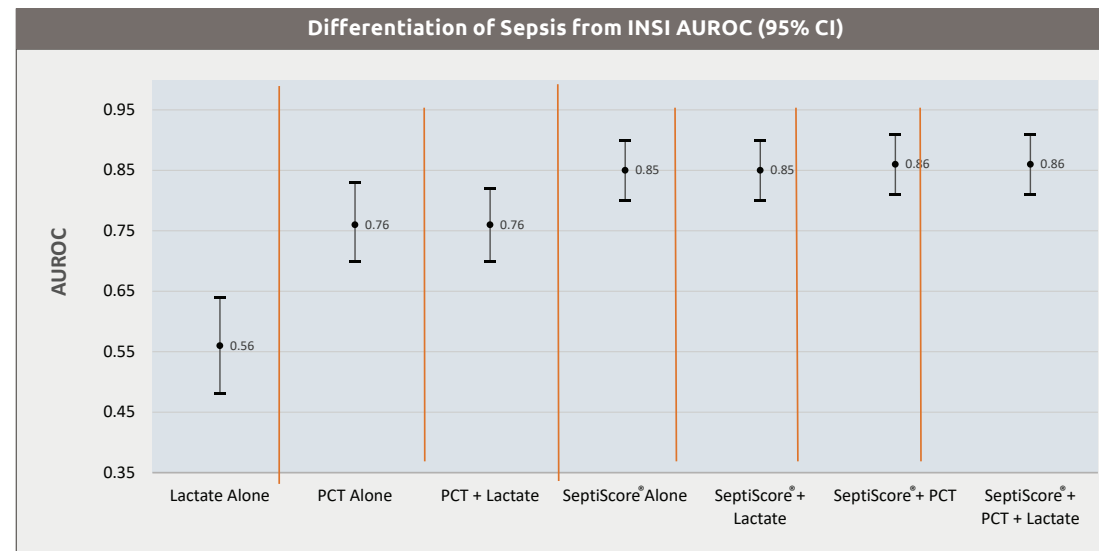
Evaluate the use of Lactate, PCT or SeptiScore[®] either alone or in combination, in differentiating sepsis from infection negative systemic inflammation (INSI).

METHOD

- 447 previously prospectively evaluated adult ICU patients (8 sites)⁵
- 3 Inclusion Criteria:
 - 2 or more signs of:
 - Temperature > 38C or <36C
 - Heart rate > 90 beats/minute
 - Tachypnea > 20 breaths/minute
 - White blood cell count >12,000 cells/mm³ or <4000 cells/mm³ or > 10% immature neutrophils
- Therapeutic antibiotic administration
- Lactate, PCT and SeptiCyte[®] RAPID samples obtained within 24 hours of

- ICU admission
- 3 physician panel retrospectively reviewed and categorized each patient as Sepsis or INSI. To be acceptable, at least 2 physicians had to agree on the same diagnosis.
- Area under the receiver operating curve (AUROC) with 95% confidence intervals via generalized linear models for each parameter alone and all combinations
- AUROC for discrimination between sepsis and infection negative-infectious systemic inflammation via paired t-test.

RESULTS



- 222 patients included (Sepsis 113; INSI 109)
- Patient Demographics

	Age <60/60+ (n)	Gender Female/Male (n)	SOFA Score ≥ 8
Sepsis	49/64	51/62	43 (38.1%)
INSI	58/51	42/67	40 (36.7%)
P Value	0.182	0.39	0.957

- Outcomes

	# Deaths (%)	# MV (%)	Mean ICU LOS (D)
Sepsis	16 (14.2)	58 (51.3)	5.9
INSI	17 (15.6)	77 (70.6)	3.4
P Value	0.933	0.005	0.064

CONCLUSION

- SeptiScore[®], alone or in any combination with lactate or PCT, proved superior in its ability to differentiate sepsis from INSI
- PCT increases with inflammation but provides a less precise differentiator between sepsis and INSI due to overlapping and wide distribution of data
- Lactate is sub-optimal in its ability to differentiate sepsis from INSI
- Future evaluations should address the role of the SeptiScore[®] in the clinical assessment of patients with suspected sepsis to determine the impact on early detection, treatment and outcomes of sepsis.

Acknowledgements

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References

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