



Sepsis Management in Emergency Care

 **abionic**
Early Sepsis Detection



7
MINUTES



DETECT
SEPSIS



ACTIVATE
BUNDLE



Enabling Sepsis Screening At Triage



SEPSIS IS HARD TO DIAGNOSE

Up to 85% of Sepsis Cases are missed^{1,2}

Patients
WAIT

DELAYED
Decisions

INCREASED
Mortality Risks

Sepsis is Time-Sensitive & requires rapid RULE-IN

Optimizing ED Triage to Detect High-Risk Sepsis Patients



From Sample To Result: As Easy as 1.2.3



Sepsis Requires Immediate Diagnosis and Treatment

Pancreatic Stone Protein (PSP) for the Early Detection of Sepsis

Pancreatic Stone Protein (PSP) has emerged as a proven biomarker for the early detection of sepsis and for predicting patient outcomes³. PSP is a blood protein secreted by pancreatic acinar cells and plays a key role in the body's immune response, particularly in modulating neutrophil activation during sepsis⁴.

An increase in PSP levels in the days preceding the clinical diagnosis of sepsis offers a unique window of opportunity for early intervention (**Figure 1**).

PSP levels can be measured within minutes from a single drop of whole blood on the abioSCOPE[®], enabling real-time monitoring of sepsis onset⁵.

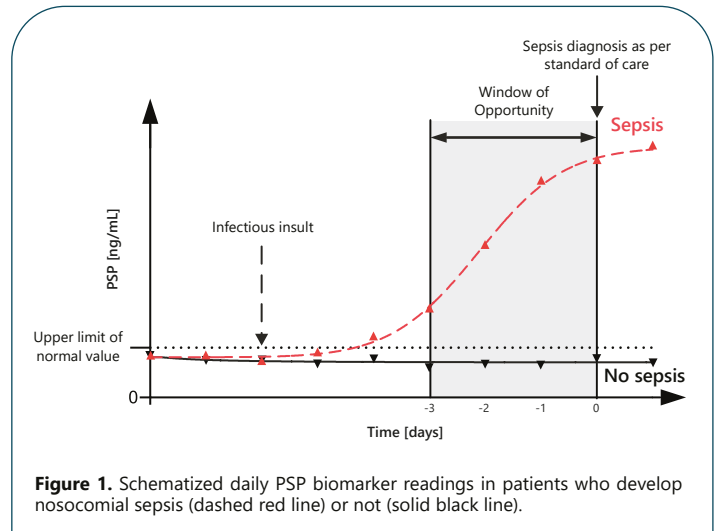


Figure 1. Schematized daily PSP biomarker readings in patients who develop nosocomial sepsis (dashed red line) or not (solid black line).

Clinical Evidence

Predictive Value of PSP for Sepsis in Critical Care

A 2021 prospective multicenter study⁶ enrolling 243 patients demonstrated that PSP increases significantly in the days before sepsis onset, offering a proven early signal for timely clinical intervention (**Figure 2**). The predictive value of PSP has been validated across diverse critically ill populations within the intensive care (ICU) setting^{7,8,9,10}.

In addition to individual studies, a large meta-analysis including more than 600 patients also confirms the high diagnostic performance of PSP for diagnosing infection in the ICU and emergency department (ED), with an AUC of 0.81, outperforming conventional markers such as CRP and PCT¹¹.

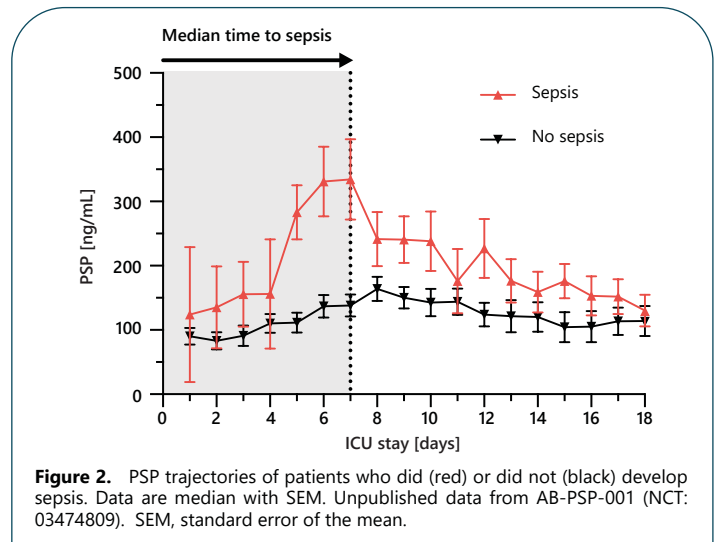


Figure 2. PSP trajectories of patients who did (red) or did not (black) develop sepsis. Data are median with SEM. Unpublished data from AB-PSP-001 (NCT: 03474809). SEM, standard error of the mean.

PSP Levels for Sepsis Risk Assessment

PSP Concentrations	Interpretations	Suggested Measures
> 300 ng/mL	Very High risk of sepsis	Instantly apply sepsis bundle (surviving sepsis campaign guidelines)
Cut-off: 300 ng/ml	Sensitivity: 45% Specificity: 84%	
200 - 300 ng/mL	High risk of sepsis	Apply sepsis bundle (surviving sepsis campaign guidelines)
Cut-off: 200 ng/ml	Sensitivity: 55% Specificity: 77%	
100 - < 200 ng/mL	Moderate risk of sepsis	Decisions based on clinical evaluation
Cut-off: 100 ng/ml	Sensitivity: 83% Specificity: 53%	
< 100 ng/mL	Low risk of sepsis	Reevaluate for possible sepsis if clinically indicated

The absolute values and relative changes of PSP should always be evaluated in the context of the patient's overall clinical picture.

Table 1. PSP level interpretation for Sepsis Risk Assessment based on clinical data from intensive care unit.

Enhance the Detection of Sepsis with PSP in ED

STUDY: Pancreatic Stone Protein in Co-Evaluation with qSOFA and NEWS2 for Early Sepsis Detection at the Emergency Department².
 Authors: Safarika, A. *et al.*

OBJECTIVE: To assess whether measuring Pancreatic Stone Protein (PSP) at ED triage could enhance the performance of qSOFA, NEWS2, and SIRS in identifying patients at risk of sepsis.

STUDY DESIGN

- Multicenter Study (NCT03295825)
- 6 Greek hospitals
- 362 patients with suspected infection

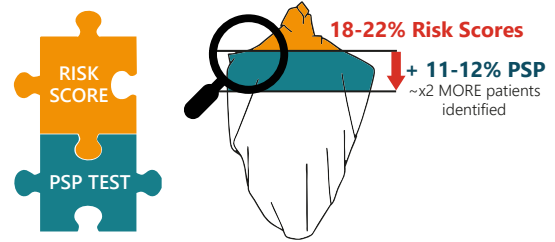
FINDINGS

- Adding PSP to existing risk scores improved diagnostic performance
- Combining PSP with qSOFA significantly improved sensitivity for detecting sepsis
- Enabled identification of nearly twice as many septic patients

CONCLUSION: Combining PSP levels with existing risk scores nearly doubles the rule-in performance, significantly enhancing early sepsis detection in high-risk ED patients.

Parameter	qSOFA ≥ 2	NEWS2 ≥ 7
Sensitivity	18%	22%
Specificity	97%	98%

Table 2. Diagnostic Performance of Positive Clinical Scores



Parameter	qSOFA + PSP	NEWS2 + PSP
Cut-off	qSOFA ≥ 2 or PSP ≥ 300 ng/mL	NEWS2 ≥ 7 or PSP ≥ 300 ng/mL
Sensitivity	30%	33%
Specificity	91%	92%

Table 3. Diagnostic Performance of Combined Clinical Scores and PSP

PSP Predicts Sepsis Severity at ED Presentation

STUDY: Pancreatic stone protein levels accurately predict severity in sepsis of various causes earlier than other biomarkers¹².
 Authors: Kouroupis, D. *et al.*

OBJECTIVE: To evaluate prognostic value of PSP in sepsis compared to conventional biomarkers (WBC, CRP, PCT).

STUDY DESIGN

- Prospective analysis
- 28 septic patients in an Emergency Department
- 59 patients admitted from the Emergency Department
- PSP measured using the abioSCOPE
- WBC, CRP and PCT assessed at admission and 48 hours later.

FINDINGS

- PSP outperformed WBC/CRP/PCT by predicting patient outcomes at admission, whereas others required 48-hour follow-up (**Table 4**)
- PSP levels were higher in Gram-negative sepsis and bacteremia
- Elevated PSP (> 160 ng/ml) predicted mortality ($p = 0.006$) and acute kidney injury ($p = 0.027$)

p-value	PSP	WBC	CRP	PCT
Patient Presentation	0,006	0,928	0,278	0,126
48h after admission	-	0,01	0,01	0,006

p-value $< 0,05$ = statistically significant
 The patient is at higher risk of poor outcome (septic shock, death)

Adapted from Kouroupis, D. et al.¹²

Table 4. Prognostic Value of Biomarkers Measured at Admission and 48h after admission.

CONCLUSION

PSP emerges as a promising early biomarker for sepsis severity, offering speed and specificity advantages over traditional markers.



At Timboon and District Healthcare Service, the introduction of PSP as a reliable biomarker has transformed the way we recognise and respond to sepsis in a rural setting. It gives our clinicians timely and accurate information, ensuring safe, high-quality care with confidence and reassurance for patients and families. Importantly, it means our community can remain closer to home, avoiding unnecessary hospital transfers, while still receiving early, effective treatment for life-threatening conditions like sepsis.

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References

1. Struble, R. D. *et al.* Evaluating Potential Missed Opportunities to Prevent, Treat, or Diagnose Sepsis: A Population-Based Retrospective Study of Insurance Claims. *Crit. Care* (2025).
2. Safarika, A. *et al.* Pancreatic stone protein in co-evaluation with qSOFA and NEWS2 for early sepsis detection at the emergency department. *Shock*, 10.1097/SHK.0000000000002720 (2025).
3. Fidalgo, P. *et al.* Pancreatic Stone Protein: Review of a New Biomarker in Sepsis. *J. Clin. Med.* (2022).
4. Eggimann, P. *et al.* Measurement of Pancreatic Stone Protein in the Identification and Management of Sepsis. *Biomark. Med.* (2019).
5. Putallaz, L. *et al.* Nanofluidics Drives Point-of-care Technology for on the Spot Protein Marker Analysis with Rapid Actionable Results. *Journal of Nanomedicine & Nanotechnology* (2019).
6. Pugin, J. *et al.* Serial measurement of pancreatic stone protein for the early detection of sepsis in intensive care unit patients: a prospective multicentric study. *Crit. Care* (2021)
7. Klein, H. J. *et al.* Pancreatic Stone Protein Predicts Sepsis in Severely Burned Patients Irrespective of Trauma Severity: A Monocentric Observational Study. *Ann. Surg.* (2021).
8. Keel, M. *et al.* Pancreatic stone protein is highly increased during posttraumatic sepsis and activates neutrophil granulocytes*. *Crit. Care Med.* (2009).
9. Klein, H. J. *et al.* Pancreatic Stone Protein Predicts Postoperative Infection in Cardiac Surgery Patients Irrespective of Cardiopulmonary Bypass or Surgical Technique. *PLOS ONE* 10 (2015).
10. Llewelyn, M. J. *et al.* Sepsis biomarkers in unselected patients on admission to intensive or high-dependency care. *Crit. Care Lond. Engl.* (2013).
11. Prazak, J. *et al.* Accuracy of pancreatic stone protein for the diagnosis of infection in hospitalized adults: a systematic review and individual patient level meta-analysis. *Crit Care* (2021).
12. Kouroupis, D. *et al.* Pancreatic stone protein levels accurately predict severity in sepsis of various causes earlier than other biomarkers. *Journal of Microbiological Methods* (2025).



The IVD CAPSULE PSP and the abioSCOPE® devices are compliant with the EU IVD Regulation 2017/746 and have received FDA clearance. Pending FDA 510(k) extension for Emergency Department.

The abioSCOPE® and the IVD CAPSULE are CE marked.

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