

TriVerity — When Would I Actually Use It

Clinical decision aid and cost basis for SICU / trauma service discussion

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The one-sentence version

TriVerity answers one question that no other 30-minute test answers: **is this patient's inflammation bacterial, viral, or neither** — and it answers it without being fooled by sterile tissue injury, which is exactly where procalcitonin, CRP, and white count fail in trauma patients.

Everything below is about the narrow set of situations where that question is both genuinely uncertain *and* the answer would change what you do.

What it costs — confirmed figures

These are from CMS's own FY2026 IPPS Final Rule [14], which contains the cost data Inflammatrix submitted in its NTAP application. This is a primary regulatory source, not a company estimate.

Line item	Cost
TriVerity cartridge	\$375
PAXgene Blood RNA tube (required, from BD)	\$13
Total cost to hospital, per test	\$388
Maximum Medicare NTAP add-on payment, FY2026	-\$243.75
Best-case net cost, qualifying inpatient case	\$144.25
Procalcitonin, for comparison	~\$20–50

Read the NTAP line carefully — it is a ceiling, not a rebate. Five conditions attach:

1. **Inpatient only.** NTAP runs through IPPS. An ED patient discharged home or placed in observation generates no add-on — you eat the full \$388.
2. **It is the lesser of** 65% of the technology cost *or* 65% of the case costs exceeding the MS-DRG payment. If the case doesn't blow through its DRG, you get less than \$243.75.
3. **It only pays if it's coded.** The case must carry ICD-10-PCS code **XXE5XBB** (measurement of infection and immune response, gene expression testing system, new technology group 11). If coding misses it, the add-on is lost.
4. **Medicare fee-for-service.** Commercial and managed Medicare are separate negotiations.
5. **It sunsets.** CMS set the newness period as commencing **10 January 2025**. NTAP generally runs two to three years from that date, so budget for the add-on disappearing around FY2027–2028, after which the hospital carries the full \$388.

Scaling math for a committee: 100 tests = **\$38,800** gross. Best case, if every one were a qualifying Medicare inpatient case with full add-on, net **\$14,425**. Realistically the blended net sits between those, closer to the top.

The Myrna instrument is a separate line. CMS explicitly ruled that only the cartridge counts toward NTAP, so capital cost, placement, or reagent-rental terms are between your lab and Inflammatrix and are not public.

The FDA label, verbatim

This is the exact cleared indication as reproduced in the Federal Register [14]. It matters because it defines where you are on-label and where you are not:

“...for use in conjunction with clinical assessments and other laboratory findings as an aid to differentiate bacterial infections, viral infections, and non-infectious illness, as well as to determine the likelihood of 7-day need for mechanical ventilation, vasopressors, and/or renal replacement therapy in adult patients with suspected acute infection or suspected sepsis **presenting to the emergency department.**”

Three constraints live in that sentence: **adults**, **emergency department**, and **as an aid in conjunction with clinical assessment** — it is not cleared as a standalone determinant. Any use in your SICU is off-label. That is not automatically wrong, but it must be a deliberate, documented institutional decision, not a drift.

The discipline that makes the whole thing articulable

Before you order it, answer this:

“What will I do if it comes back Very High? What will I do if it comes back Very Low? If those are the same action, I should not order this test.”

That single question does most of the work. In a febrile day-5 trauma patient you have already decided to cover empirically, a Very Low result will not stop you — so the test is a \$388 curiosity. In a patient where you are genuinely on the fence, it can move you. **The test’s value lives entirely in your uncertainty, not in its accuracy.**

When I would use it

Tier 1 — On-label, strongest footing

The undifferentiated ED adult with abnormal vitals where both disposition and antibiotics are genuinely in play. This is the cleared indication and the population of the 1,222-patient pivotal trial [1]. The value case is a patient you might send home, might admit to the floor, might take to the unit — and might or might not start on antibiotics. Two decisions, both live, both moved by the result.

Not the septic-shock patient. That patient gets antibiotics inside an hour regardless, and the test changes nothing.

Tier 2 — Off-label, but the strongest rationale in your unit

The post-injury or post-operative day ≥ 4 patient with new fever or leukocytosis, no source identified, cultures pending 48–72 hours, and biomarkers confounded by injury burden.

This is the best case you have, and here is why each piece matters:

- **Day ≥ 4 is not arbitrary.** In the liver transplant series [3], bacterial scores were elevated in *every* patient immediately post-op and did not normalize until day 4. Before day 4 the result is uninterpretable. From day 4 onward it discriminated, performing best days 6–9, detecting 9 of 10 infections at least one day before clinical diagnosis.
- **This is the test’s design intent** — a diagnostic question asked at the moment of clinical suspicion, not a prediction days in advance [2].
- **Procalcitonin is genuinely compromised here** by mitochondrial DAMP signaling from tissue injury. In that same transplant series [3] PCT spiked on day 1 in every patient and declined regardless of infection — it could not differentiate at all.

- **The differential is broad and largely non-infectious:** DVT and PE, drug fever, transfusion reaction, hematoma resorption, withdrawal, fat embolism, adrenal insufficiency. A Very Low bacterial score does not tell you which of those it is, but it does meaningfully argue against bacterial — and that is the branch point you are stuck on.

Highest yield within this tier: the sterile-inflammation-heavy patients where you already distrust your biomarkers — high-ISS blunt trauma, major hepatobiliary or vascular resection, large burns, severe pancreatitis, rhabdomyolysis.

Tier 3 — Narrow but real

Suspected nosocomial viral infection in a febrile unit patient. The viral score is the single best-performing output in the entire dataset — AUROC 0.91, Very High band likelihood ratio 40.9 [1]. Respiratory season, a known exposure or unit cluster, negative bacterial workup: this is a genuine answer nothing else gives you in 30 minutes, and it drives isolation and antiviral decisions.

The stop decision at 48–72 hours. You started empiric antibiotics on day 5; cultures are negative on day 7; you are deciding whether to complete a course. A Very Low bacterial score (LR 0.08) is real support for stopping [1]. **This is arguably a better use than the start decision** — the stakes are lower, the result is more likely to change behavior, and it is the same decision procalcitonin already has randomized evidence for.

The immunocompromised patient with blunted conventional markers. The pivotal trial found performance held up in immunocompromised patients (bacterial AUROC 0.80 vs 0.83, not significantly different) [1], which is more than can be said for most host-response tests — they are typically validated in cohorts that exclude these patients.

When I would not use it

Situation	Why not	Source
Post-op day 0–3 after major surgery	Scores are elevated in essentially everyone. The result cannot separate the operation from an infection.	3
Prognostication in a patient already in your unit	The severity score predicts “needs ICU-level care within 7 days” — already answered. It scored AUROC 0.65 vs SOFA’s 0.81 in established ICU patients.	4
Septic shock, or anyone you’re committed to treating	Nothing it returns will stop you. Order cultures and give antibiotics.	—
To find the source	It says bacterial or not. It does not say where. VAP vs line vs C. diff vs undrained collection still needs the full workup.	1
To replace cultures	No organism, no sensitivities, no de-escalation target.	—
On a Moderate result, to do anything	LR 1.14, 80% CI 0.94–1.42, crossing 1.0. That result is statistically no information. It happens in 19% of patients.	1
To withhold antibiotics on a “Low” result	The Low band still carries a 48% probability of bacterial infection . Only Very Low is a real rule-out.	1
Pediatrics	Adults only.	14

How to act on each result

All band statistics below are from the pivotal SEPSIS-SHIELD trial [1]. Note that all confidence intervals in that paper are 80%, not the conventional 95%.

Bacterial score

Band	LR	Frequency	What it means	Action
Very High	8.04	24%	93% probability bacterial	Treat. Pursue source aggressively.
High	2.50	18%	81% probability	Supports treating; not decisive alone.
Moderate	1.14	19%	No information	Disregard. Decide on clinical grounds.
Low	0.54	24%	Still 48% probability	Too weak to withhold on. Not a rule-out.
Very Low	0.08	15%	12% probability	Real rule-out. Supports withholding or stopping if the clinical picture permits.

Viral score

Band	LR	What it means	Action
Very High	40.93	93% probability viral	Strong. Isolate, consider antiviral, scrutinize before adding antibacterials.
Very Low	0.09	3% probability	Viral essentially excluded.

Severity score

Setting	How to use it	Source
ED or floor patient	Very High (LR 11.3) supports escalation; Very Low (LR 0.22, one third of patients) supports lower acuity. Adding it to qSOFA raised sensitivity for predicting ICU-level care from 34% to 85%.	1, 6, 7
Patient already in your SICU	Ignore it. The question is already answered and the score underperforms SOFA in this setting.	4

Bottom line on yield: strongly actionable information arrives in roughly **39% of patients** — the Very High and Very Low bacterial bands. In the other 61% you get modest or no information. Budget accordingly: at \$388 a test, you are paying about **\$1,000 per strongly actionable result**.

Talking points

“Why don’t we just use procalcitonin?” For most patients, we should — it’s a tenth the cost and it has randomized trial evidence that acting on it is safe, which TriVerity has none of. The specific gap is the trauma and major-surgery patient, where PCT is elevated by tissue injury itself through mitochondrial danger signals that are evolutionarily bacterial. In those patients PCT tells us about injury magnitude, not infection [2, 3].

“Why not put it in the SICU?” Two of its three outputs are dead on arrival there. The severity score answers a question we’ve already answered, and loses to SOFA in established ICU patients [4]. The bacterial score ties PCT in the only surgical-ICU study — AUROC 0.84 vs 0.85, $P = .79$ — in a study the manufacturer co-authored [2].

“Isn’t it FDA cleared?” For adults in the emergency department, as an aid alongside clinical assessment [14]. Every ICU use is off-label. Clearance also came through the 510(k) pathway (K241676, 10 January 2025) on a single company-run trial [10] — it means the FDA accepted the accuracy data, not that anyone has shown that using it improves outcomes.

“The Nature Medicine paper looked strong.” Three caveats worth stating. Only 59.7% of enrolled patients reached consensus adjudication; forcing the uncertain 40% back in drops bacterial accuracy from 0.83 to 0.76. Every confidence interval in that paper is 80%, not 95%. And the first author is Inflammatrix’s own chief medical officer [1].

“What would make you change your mind?” An interventional trial — randomize patients to test-guided care, measure antibiotic days and outcomes. That study does not exist for this test. Also: independent non-sponsor validation in a surgical ICU population, and prospective validation of serial measurement with defined action thresholds.

“So is there anything you’d say yes to?” Yes — a defined pilot. Post-injury or post-op day ≥ 4 , new fever, no source found, cultures pending, PCT confounded. Measure whether the result changes the antibiotic decision, not just whether it correlates with the eventual culture. That’s an IRB-able observational protocol and it would give us local evidence before anything enters a guideline.

The proposed pilot, in one paragraph

Population: adults, post-injury or post-operative day 4 or later, new fever $\geq 38.3^{\circ}\text{C}$ or new leukocytosis, no anatomic source on initial workup, cultures drawn and pending, procalcitonin ambiguous or confounded by injury burden. **Intervention:** single TriVerity draw at the time of the fever workup, result released to the team. **Primary endpoint:** proportion of cases in which the result changed the antibiotic decision (start, hold, or stop) within 24 hours. **Secondary:** concordance with final adjudicated infection status, antibiotic days, time to source identification, and the fraction of results landing in a Moderate (non-informative) band. **Why this design:** correlation with culture results tells us whether the test is accurate; only the decision endpoint tells us whether it is *useful*, and usefulness is what we lack evidence for.

References

All links below are live. Papers marked [OA] are open access and readable without a subscription — that covers 12 of the 14 sources here.

1. Liesenfeld O, Arora S, Aufderheide TP, Clements CM, et al. Clinical validation of an AI-based blood testing device for diagnosis and prognosis of acute infection and sepsis. *Nature Medicine* 2025;31:4044–4054. [OA] → <https://doi.org/10.1038/s41591-025-03933-y> The pivotal SEPSIS-SHIELD trial. Source of every likelihood ratio and band frequency in this document.
2. Brakenridge SC, Chen U-I, Loftus T, Ungaro R, et al. Evaluation of a Multivalent Transcriptomic Metric for Diagnosing Surgical Sepsis and Estimating Mortality Among Critically Ill Patients. *JAMA Network Open* 2022;5(7):e2221520. [OA] → <https://doi.org/10.1001/jamanetworkopen.2022.21520> The single most relevant paper for a surgical ICU. Source of the procalcitonin tie (0.84 vs 0.85) and the sterile-inflammation finding in trauma patients.
3. Halder A, Liesenfeld O, Whitfield N, Uhle F, et al. A 29-mRNA host-response classifier identifies bacterial infections following liver transplantation — a pilot study. *Langenbeck’s Archives of Surgery* 2024;409:185. [OA] → <https://doi.org/10.1093/las/szad001>

[g/10.1007/s00423-024-03373-1](https://doi.org/10.1007/s00423-024-03373-1) The only serial post-operative monitoring data. Source of the day-4 threshold and the procalcitonin failure post-op.

4. Daenen K, Tong-Minh K, Liesenfeld O, Stoof SCM, et al. A Transcriptomic Severity Classifier IMX-SEV-3b to Predict Mortality in Intensive Care Unit Patients with COVID-19: A Prospective Observational Pilot Study. *Journal of Clinical Medicine* 2023;12:6197. [OA] → <https://doi.org/10.3390/jcm12196197> Source of the finding that the severity score underperforms SOFA (0.65 vs 0.81) in patients already established in an ICU.

5. Brakenridge SC, Starostik P, Ghita G, Midic U, et al. A Transcriptomic Severity Metric That Predicts Clinical Outcomes in Critically Ill Surgical Sepsis Patients. *Critical Care Explorations* 2021;3(10):e0554. [OA] → <https://doi.org/10.1097/CCE.0000000000000554>

6. Kostaki A, Wacker JW, Safarika A, Solomonidi N, et al. A 29-mRNA Host Response Whole-Blood Signature Improves Prediction of 28-Day Mortality and 7-Day Intensive Care Unit Care in Adults Presenting to the Emergency Department with Suspected Acute Infection and/or Sepsis. *Shock* 2022;58(3):224–230. [OA] → <https://doi.org/10.1097/SHK.0000000000001970>

7. Galtung N, Diehl-Wiesenecker E, Lehmann D, Markmann N, et al. Prospective validation of a transcriptomic severity classifier among patients with suspected acute infection and sepsis in the emergency department. *European Journal of Emergency Medicine* 2022;29(5):357–365. [OA] → <https://doi.org/10.1097/MEJ.0000000000000931>

8. Bauer W, Kappert K, Galtung N, Lehmann D, et al. A Novel 29-Messenger RNA Host-Response Assay From Whole Blood Accurately Identifies Bacterial and Viral Infections in Patients Presenting to the Emergency Department With Suspected Infections: A Prospective Observational Study. *Critical Care Medicine* 2021;49(10):1664–1673. [OA] → <https://doi.org/10.1097/CCM.0000000000005119> Note the methodological flaw: procalcitonin was used in the adjudication that defined the reference standard, then compared against the test.

9. Mayhew MB, Buturovic L, Luethy R, Midic U, et al. A generalizable 29-mRNA neural-network classifier for acute bacterial and viral infections. *Nature Communications* 2020;11:1177. [OA] → <https://doi.org/10.1038/s41467-020-14975-w> Original classifier development.

10. Figueiredo-Pereira C, Fleming P, Alganer MN, Bi R, et al. Analytical evaluation of TriVerity, a rapid diagnostic and prognostic host gene expression test performed on the Myrna instrument using RT-LAMP. *Journal of Clinical Microbiology* 2025;63(10):e00352-25. [OA] → <https://doi.org/10.1128/jcm.00352-25> Bench performance and the FDA clearance record (K241676, 10 January 2025).

11. Balch JA, Chen U-I, Liesenfeld O, Starostik P, et al. Defining critical illness using immunological endotypes in patients with and without sepsis: a cohort study. *Critical Care* 2023;27:292. [OA] → <https://doi.org/10.1186/s13054-023-04571-x>

12. SUBSPACE Consortium. A consensus immune dysregulation framework for sepsis and critical illnesses. *Nature Medicine* 2025;31:4084–4096. [OA] → <https://doi.org/10.1038/s41591-025-03956-5> Research framework, not a clinical test. Relevant because the immune dysregulation signature was conserved across trauma and burn patients as well as sepsis.

13. He YD, Wohlford EM, Uhle F, Buturovic L, et al. The Optimization and Biological Significance of a 29-Host-Immune-mRNA Panel for the Diagnosis of Acute Infections and Sepsis. *Journal of Personalized Medicine* 2021;11(8):735. [OA] → <https://doi.org/10.3390/jpm11080735> The gene-by-gene biology of the 29-mRNA panel.

14. Centers for Medicare & Medicaid Services. Medicare Program; Hospital Inpatient Prospective Payment Systems for Acute Care Hospitals (IPPS) ... and Fiscal Year (FY) 2026 Rates. *Federal Register* 2025 Aug 4;90:36824–36826 (doc. 2025-14681). [Public] → <https://www.federalregister.gov/documents/2025/08/04/2025-14681/medicare-program-hospital-inpatient-prospective-payment-systems-for-acute-care-hospitals-ipps-and> Source of all cost figures (\$375 cartridge, \$13 tube, \$243.75 maximum add-on), the ICD-10-PCS code XXE5XBB, and the verbatim FDA indication. Search the document for “TriVerity” — the relevant discussion is at Federal Register pages 36824–36826.

Conflict of interest note for recipients: Inflammatrix employees are authors on references 1 through 13 inclusive. The first author of the pivotal trial (ref 1) is the company’s chief medical officer. There is currently no fully independent clinical validation of this test in the published literature, and no interventional trial has tested whether using it changes patient outcomes.