Febrile Infants: To TAP or Not to Tap?

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Have you changed your practice in treating febrile infants under 28 days with the release of the latest *JAMA* 2025 article? An author's viewpoint below.

With the release of the recent article, "Prediction of Bacteremia and Bacterial Meningitis Among Febrile Infants aged 28 days or Younger" in *JAMA* in December 2025, one may be questioning their own clinical practice of febrile infants. Many questions have since evolved regarding the appropriate evaluation of these vulnerable patients.

Let's look at how this may have changed our clinical practice.

Background: The AAP 2021 Guidelines

For many who practice clinical pediatric emergency medicine, the mantra has been that infants under 28 days receive a full septic work-up — blood, urine, and lumbar puncture (LP). The AAP released updated risk stratification guidelines in 2021 for well-appearing febrile infants (temperature > 100.4°F):

Age Group	Recommended Management
8–21 days	Highest risk. Full workup: blood, urine, CSF. Hospital admission with antibiotics.
22–28 days	Higher risk. Depends on inflammatory markers. If normal, shared decision-making may allow closer observation.
29–60 days	If urine, blood, and inflammatory markers are low risk, hospital admission may not be necessary. Close outpatient monitoring may be adequate.

> ⚠ **Important: These guidelines apply to *well-appearing* infants only.** They do NOT apply to lethargic, pre-term, or infants with systemic disease or chronic conditions. The AAP also recommends rectal temperature measurement and withholding fever-reducing medication before physician evaluation.

The JAMA 2025 Article: What's New?

The biggest clinical implication from this new article is the question: ***will this infant require an LP?***

LPs are not benign and may cause family distress and procedural pain to the infant. The data from this article may contain the potential to support a clinical practice change — particularly for low-risk infants. The study strongly supports using the PECARN (pediatric emergency care applied research network) prediction rule to assist with risk stratification. Among these recommendations, a normal urinalysis, a normal ANC (Absolute Neutrophil Count) and a normal procalcitonin may allow one to **avoid LP.**

It is also important to note that among the highlights in this article much caution should be advised between the age group of 8 to 21 days. This is a higher risk age group. One may be able to avoid LP and antibiotics, but hospitalization with observation is still the recommended approach for a non-ill-appearing infant with normal inflammatory markers and urinalysis.

PECARN "Low Risk" Criteria

All three criteria must be met for low-risk classification

- ✅ **Urinalysis:** Negative
- ✅ **Absolute Neutrophil Count (ANC):** ≤ 4,000/mm³
- ✅ **Serum Procalcitonin (PCT):** ≤ 0.5 ng/mL

Note: Critically ill, premature, or antibiotic-pretreated infants, and those with comorbidities, were excluded from this study.

Study Design & Results

Study question: Does the updated PECARN prediction rule accurately identify febrile infants ≤28 days at low risk for invasive bacterial infections (IBI) — including bacteremia and bacterial meningitis?

Setting: Pediatric EDs across six countries (Spain, Switzerland, Italy, UK, and Ireland). Data collected 2008–2024.

Metric	Finding
Total infants enrolled	1,537 infants ≤28 days
Invasive bacterial infections	69 (4.5%)
Bacterial meningitis	11 (0.7%)
Met low-risk criteria	632 (41.1%)
Sensitivity	**94.2% (95% CI 85.6%–97.8%)**
Specificity	**41.6% (95% CI 36.7%–46.7%)**
Negative Predictive Value	**99.4% (95% CI 98.1%–99.8%)**
Missed bacterial meningitis in low-risk	**ZERO**

In a *secondary analysis* of 2531 infants from the 2 US-based cohorts from which the role was originally derived and the four validation cohorts, 96 (3.8%) had invasive bacterial infection infections, 22 (0.9%) had bacterial meningitis, and 1079 (42.6%) were classified as low-risk; rule performance was similar. No infants with bacterial meningitis were misclassified in the primary or secondary analyses. (Burstein 2025)

ZERO MISSED CASES OF BACTERIAL MENINGITIS

Among low-risk infants in both primary and secondary analyses. ZERO!

(Nothing in medicine is ZERO. This is exciting!)

Clinical Implications & Takeaways

So, what does this mean? We may need to look at our evaluation of Febrile infants under 28 days with a new approach!

Important caveats regarding missed cases: The rule did miss five cases of bacteremia — all in infants aged 8–21 days. Extreme caution remains essential in this age group.

For the 8–21 day group: Well-appearing infants with normal urinalysis and inflammatory markers may reasonably be admitted for inpatient observation, withholding LP and antibiotic therapy.

🎯 Key Takeaway

For well-appearing febrile infants aged 0–28 days with a **negative urinalysis**, **procalcitonin ≤0.5 ng/mL**, or **ANC ≤4,000/mm³**, the risk of bacterial meningitis was **ZERO** in this study.

This is the first evidence-based approach that could potentially spare febrile infants in the first month of life from lumbar puncture!

References

1. Burstein B, Waterfield T, Umana E, Xie J, Kuppermann N. Prediction of Bacteremia and Bacterial Meningitis Among Febrile Infants Aged 28 Days or Younger. JAMA. Published online December 8, 2025. doi:10.1001/jama.2025.21454
2. PECARN Lin, Michelle. https://pecarn.org › PECARN News and Updates. The End of Routine Lumbar Punctures for the febrile infants 28 days and younger?
3. Searns JB, O'Leary ST. Moving the Field Forward to Safely Do Less With Febrile Neonates. JAMA. Published online December 8, 2025. doi:10.1001/jama.2025.23133
4. Pantell RH, Roberts KB, Adams WG, et al. Evaluation and management of well-appearing febrile infants 8 to 60 days old. Pediatrics. 2021;148(2):e2021052228. PMID 34281996
5. Kuppermann N, Dayan PS, Levine DA, et al. A clinical prediction rule to identify febrile infants 60 days and younger at low risk for serious bacterial infections. JAMA Pediatr. 2019;173(4):342–351. doi:10.1001/jamapediatrics.2018.5501. PMID 30776077