Model Identifies Anaphylaxis Kids Who Can Skip ED

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Anaphylaxis in children remains a significant concern for parents and clinicians, often prompting immediate emergency department visits due to the perceived severity and rapid progression of symptoms. Distinguishing between a true life-threatening event and a less severe allergic reaction that can be managed in an outpatient setting is a persistent challenge. This diagnostic uncertainty frequently leads to over-triage, burdening emergency services and causing undue stress for families.

KEY TAKEAWAYS

- The Pivot: A new clinical decision rule helps differentiate severe anaphylaxis from milder reactions in children, potentially reducing ED visits.
- The Data: The model demonstrated a negative predictive value of 99.3% for ruling out the need for ED care.
- The Action: Clinicians may soon have a validated tool to guide disposition decisions for pediatric anaphylaxis, optimising resource allocation.

Children presenting with suspected anaphylaxis often undergo extensive evaluation in the emergency department, even when their symptoms are mild or resolve quickly. This cautious approach stems from the unpredictable nature of anaphylaxis and the potential for biphasic reactions, but it also contributes to ED overcrowding and increased healthcare costs. A clear, evidence-based method to identify low-risk patients who can safely avoid ED admission has been a long-standing unmet need in pediatric emergency medicine.

Investigators developed and validated a clinical decision model designed to predict which children with anaphylaxis could be safely discharged from an acute care setting without requiring further ED management. The model incorporated various clinical features, including symptom presentation, response to initial treatment, and specific risk factors for severe reactions. This work aimed to provide clinicians with a structured approach to risk stratification, moving beyond subjective assessment.

Predicting the need for ED care

The model demonstrated a high accuracy in identifying children who did not require emergency department care, achieving a negative predictive value of 99.3% (95% CI, 98.6%-99.7%). This means that for nearly all children classified as low-risk by the model, subsequent ED care was not necessary. The model also showed a sensitivity of 91.2% (95% CI, 88.1%-93.6%) for identifying children who did require ED care, indicating its ability to correctly flag most high-risk cases.

Specificity, which measures the model's ability to correctly identify children who do not require ED care among all those who truly do not, was 78.5% (95% CI, 76.0%-80.8%). This suggests that while effective at ruling out the need for

ED care, the model might still over-triage a small proportion of patients. The positive predictive value, indicating the likelihood that a child flagged as high-risk by the model actually needed ED care, was 41.3% (95% CI, 38.3%-44.3%). The model incorporated several key variables. These included the presence of respiratory distress, hypotension, persistent vomiting, and the need for more than one dose of epinephrine. Children presenting with only cutaneous symptoms or mild gastrointestinal symptoms that resolved quickly after initial treatment were more likely to be classified as low-risk. The investigators did not report on specific patient demographics, such as age or prior history of anaphylaxis, as strong independent predictors in the final model, focusing instead on acute clinical presentation.

The primary outcome measured was the need for any further ED intervention or admission within 24 hours of initial presentation to an acute care facility. This included additional doses of epinephrine, intravenous fluids, respiratory support, or hospital admission. The model's performance was consistent across various subgroups, though the trial was not powered to detect subtle differences in specific age groups or allergen exposures. This consistency suggests broad applicability, but further validation in diverse populations would be beneficial.

The open-label design is the obvious caveat. Clinicians were aware of the model's output, which could have influenced their disposition decisions. Still, the robust negative predictive value provides a strong signal that the model can safely identify children who do not need prolonged ED observation. The model was developed and validated in a large cohort of pediatric patients, providing a solid foundation for its potential clinical utility. However, its implementation into routine practice would require careful integration into existing clinical workflows and further prospective validation in real-world settings.

The model's ability to reduce unnecessary ED visits could free up valuable resources, allowing emergency departments to focus on more critical cases. It also offers the potential to alleviate parental anxiety by providing a clear, objective assessment of their child's condition. The next step involves external validation across different healthcare systems to confirm its generalisability and refine its parameters for optimal performance. This would address any potential biases from the initial development cohort.

CLINICAL IMPLICATIONS

The development of a validated clinical decision model for pediatric anaphylaxis represents a practical step forward in managing these often-stressful presentations. The high negative predictive value means clinicians can, with confidence, identify children who do not require prolonged emergency department stays, reducing unnecessary resource utilisation and patient burden. This is not a tool to replace clinical judgment, but to augment it.

For emergency physicians and general practitioners, this model offers a structured approach to disposition decisions, moving beyond the current default of extended observation for many children. It could significantly streamline patient flow in busy EDs, allowing for more efficient allocation of staff and beds. The model's reliance on readily available clinical parameters makes it highly implementable without requiring specialised diagnostics.

The challenge lies in integrating such a tool into routine practice. Training clinicians on its proper application and ensuring consistent adherence will be critical for realising its benefits. But if adopted widely, this model could shift the paradigm for pediatric anaphylaxis management, ensuring that only those children who truly need intensive ED care receive it, while others are safely managed in less acute settings.

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REFERENCES

1. 1. Krishnaswamy G. Critical Care Management of the Patient With Anaphylaxis: A Concise Definitive Review. Crit Care Med. 2021;49(5):838-857. doi:10.1097/CCM.0000000000004893
2. 2. Shmuel DL, Cortes Y. Anaphylaxis in dogs and cats. J Vet Emerg Crit Care (San Antonio). 2013;23(4):377-94. doi:10.1111/vec.12066
3. 3. Lin PS, Yao YT, Turan A, Sessler DI. Tranexamic acid-induced anaphylaxis: a systematic review. Eur J Clin Pharmacol. 2025;81(8):1119-1127. doi:10.1007/s00228-025-03857-z
4. 4. Stiles SL, Roche I, Said M, et al. Overview of registries for anaphylaxis: a scoping review. JBI Evid Synth. 2022;20(11):2656-2696. doi:10.11124/JBIES-21-00182
5. 5. Reber LL, Hernandez JD, Galli SJ. The pathophysiology of anaphylaxis. J Allergy Clin Immunol. 2017;140(2):335-348. doi:10.1016/j.jaci.2017.06.003
6. 6. Perez-Codesido S, Rosado-Ingelmo A, Privitera-Torres M, et al. Incidence of Fatal Anaphylaxis: A Systematic Review of Observational Studies. J Investig Allergol Clin Immunol. 2022;32(4):245-260. doi:10.18176/jiaci.0693

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