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LETTER TO EDITOR

# Clinical Caution in Applying Artificial Intelligence to Diabetic and Hypertensive Emergencies

**Sir/Madam,**

We read with keen interest the review article *"Artificial Intelligence and Early Detection of Diabetic-Hypertensive Emergencies in the Emergency Room"*.[1] The authors should be congratulated for addressing a clinically relevant and timely topic, particularly in the context of the growing dual burden of diabetes and hypertension in India. The narrative successfully highlights the promise of artificial intelligence (AI)–driven tools in augmenting early detection, triage, and risk stratification in emergency settings.

One of the key strengths of the article is its emphasis on early recognition of complex metabolic–vascular emergencies. Real-world emergency medicine literature has repeatedly shown that delayed identification of diabetic and hypertensive complications can result in catastrophic outcomes, including limb-threatening and life-threatening events. Severe presentations such as advanced diabetic foot disease with extreme metabolic derangement exemplify how missed or late detection in chronic diabetics and hypertensive patients can culminate in irreversible morbidity, underscoring the need for earlier and more sensitive detection strategies in the emergency department (ED).[2] However, while the article convincingly outlines the theoretical advantages of AI, a clearer distinction between validated clinical applications and conceptual or experimental AI models would strengthen its translational value. Experience from other domains of AI integration in healthcare—such as stroke rehabilitation—demonstrates that although AI tools can enhance assessment, personalization, and outcome prediction, most benefits have been realized only after careful clinical validation, structured implementation, and sustained human oversight.[3] A similar caution is warranted in emergency care, where algorithmic outputs must be interpreted within the broader clinical context.

Another important consideration is the reliability and interpretability of AI systems, especially those powered by large language models or complex machine-learning architectures. In high-stakes emergency scenarios, such errors could lead to inappropriate triage decisions or delays in definitive care. This reinforces the need for explainable AI frameworks, robust external validation, and clearly defined boundaries between decision support and autonomous decision-making. The article also briefly touches upon ethical and implementation challenges, but this section could be expanded by drawing from broader environmental and systems-level perspectives. Concepts such as exposome analysis emphasize that acute emergencies often arise from cumulative, interacting exposures—metabolic, behavioral, environmental, and socioeconomic—which cannot be fully captured by isolated datasets.[4] AI models trained without accounting for such contextual complexity may underperform when deployed across heterogeneous ED populations, particularly in low- and middle-income settings.

Finally, while the review focuses predominantly on detection, future work could more explicitly address clinical integration pathways—for example, how AI alerts should interface with existing triage scores, escalation protocols, and medico-legal accountability frameworks. Lessons from AI-assisted education and training suggest that a "human-in-the-loop" or *centaur* model, where clinicians retain ultimate decision authority, is currently the safest and most effective approach.[5]

In summary, this article provides a valuable and forward-looking overview of AI in diabetic-hypertensive emergencies. Strengthening the discussion around validation, reliability, contextual data integration, and real-world implementation would further enhance its relevance for emergency physicians and policymakers alike. We commend the authors for initiating this important dialogue and hope it stimulates future prospective, outcome-oriented research in this critical area.

**Yours sincerely,**

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Conflict of Interest – None to declare

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