Letter to the Editor

Corresponding author:
Payam Emami;
Email: emamipayam@sbmu.ac.ir

Artificial Intelligence in Air Medical Transport within Emergency Medical Service (EMS)

Payam Emami 🔟

Department of Emergency Medical Sciences, Faculty of Paramedical Sciences, Kurdistan University of Medical Sciences, Sanandaj, Iran

Dear Editor:

Air medical transport encompasses both fixed-wing aircraft, such as airplanes, and rotor-wing aircraft, including helicopters. They are utilized in situations for transporting patients where ground transportation (ambulances) is less effective. Helicopters, for instance, are frequently employed to transfer severely injured patients requiring urgent trauma care, as time plays a crucial role in enhancing survival outcomes. Moreover, they are utilized for patients in remote or hard-to-reach areas.[1] Effective air medical transport requires seamless coordination and integration with ground-based EMS agencies, dispatch centers, and hospitals. Communication systems, including two-way radios, satellite phones, and electronic medical records, enable efficient collaboration and transfer of critical patient information. Air medical transport has demonstrated its life-saving impact by providing timely access to critical medical care, improving outcomes for patients with severe injuries, acute medical conditions, or time-sensitive emergencies. The speed and efficiency of air transport contribute significantly to reducing morbidity and mortality rates.[2]

AI development is currently experiencing an upsurge that will affect many aspects of emergency medicine services in the near future. Artificial Intelligence, with its ability to analyze vast amounts of data, make informed decisions, and learn from patterns, holds immense potential to transform EMS air medical transport.[3,4] By leveraging AI technologies, various aspects of the transport process, from triage and decision-making to flight operations and patient monitoring, could be enhanced.[5,6] Some individuals perceive AI as having a supplementary function to humans, such as providing support and enhancing decision-making processes. In this scenario, humans like doctors or EMTs assume the responsibility of overseeing and cooperating with AI systems. Research indicates that this collaborative approach yields superior results compared to experts working independently. Moreover, it has been observed that this approach positively impacts patient outcomes, reduces errors, optimizes the health care system, minimizes costs, and delivers a higher return on investment.[3,7]

An AI algorithm could accurately predict critical care needs in the prehospital setting. AI algorithms can rapidly analyze incoming data, such as patient vitals, medical history, and symptom trends, and assist EMS professionals in determining the appropriate level of care required. This can help in prioritizing patients, allocating appropriate resources, and ensuring efficient and effective treatment during Air transport.[3,7,8] AI-powered technologies can continuously analyze patient data during transport, including vital signs, ECG waveforms, Spo2, ETCo2, and other relevant information. This real-time monitoring can alert health care professionals to significant changes in the patient's condition, allowing for timely intervention and optimal care delivery.[9] However, the successful integration of AI into EMS air medical transport requires collaboration among EMS providers, aviation experts, and AI specialists. Safeguarding data privacy, maintaining cybersecurity, and upholding ethical guidelines are crucial factors to carefully consider when implementing AI solutions in a secure and responsible manner.

Competing interest. The authors declare that they have no conflict of interest.

References

1. **Steenhoff TC**, **Siddiqui DI**, **Zohn SF**. EMS Air Medical Transport. StatPearls. StatPearls Publishing; 2022.
2. **Araiza A**, **Duran M**, **Surani S**, **Varon J.** Aeromedical transport of critically ill patients: a literature review. *Cureus.* 2021;**13**(5):e14889. doi: 10.7759/cureus.14889. PMID: 34109078; PMCID: PMC8180199.
3. **Emami P**, **Javanmardi K.** Enhancing emergency response through Artificial Intelligence in emergency medical services dispatching; a letter to editor. *Arch Acad Emerg Med.* 2023;**11**(1):e60–e60.

4. **Marzban A**, **Moafi M**, **Emami P.** Artificial intelligence and Nursing: Dawn of a new era? *Iran J Emerg Med.* 2023;**10**(1):e18–e18.

5. **Stewart J**, **Sprivulis P**, **Dwivedi G.** Artificial intelligence and machine learning in emergency medicine. *Emerg Med Australas.* 2018;**30**(6):870–874.

6. **Chenais G**, **Lagarde E**, **Gil-Jardiné C.** Artificial Intelligence in emergency medicine: viewpoint of current applications and foreseeable opportunities and challenges. *J Med Internet Res.* 2023;**25**:e40031. doi:10.2196/40031

7. **Hosseini MM**, **Hosseini STM**, **Qayumi K**, et al. The aspects of running Artificial Intelligence in emergency care; a scoping review. *Arch Acad Emerg Med.* 2023;**11**(1):e38. doi: 10.22037/aaem.v11i1.1974. PMID: 37215232; PMCID: PMC10197918.

8. **Kang DY**, **Cho KJ**, **Kwon O**, et al. Artificial intelligence algorithm to predict the need for critical care in prehospital emergency medical services. *Scand J Trauma Resusc Emerg Med.* 2020;**28**(1):17. doi:10.1186/s13049-020-0713-4

9. **Mohanty A**, **Mishra S.** A Comprehensive Study of Explainable Artificial Intelligence in Healthcare. *Augmented Intelligence in Healthcare: A Pragmatic and Integrated Analysis.* Springer; 2022:475–502.