Drone integration with emergency medical services (EMS): scoping the opportunities in the UK and UAE

Hamid Reza Khademi Mansour[1*], Malika Mostafavi[1], Ali Malik[1], Harun Arain[1], Sukruth Pradeep Kundur[1]

1. Faculty of Life Sciences and Medicine, King's College London, London, UK

Correspondence to: Hamid Reza Khademi Mansour

*Faculty of Life Sciences and Medicine, King's College London, London, UK.

Email: hamidrezakhademi.03@gmail.com

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Introduction:
Drones are revolutionizing emergency healthcare by offering faster response times - cutting them by over 50% - which can significantly improve survival rates and outcomes. They represent an eco-friendly, cost-effective alternative to traditional response methods. Current applications include AED delivery for out-of-hospital cardiac arrest, real-time patient monitoring, and transportation of organs and medications. Despite these benefits, widespread adoption is hindered by regulatory, technical, and social challenges, including airspace restrictions, battery limitations, safety, bystander reactions, privacy concerns, and logistical issues. The UK and UAE were selected for their established drone infrastructure, progressive regulation, and contrasting healthcare systems and geographies.

Objectives:
This scoping review assesses the benefits, challenges, and current landscape of drone integration in the UK and UAE emergency medical services (EMS). It seeks to inform global policymakers and stakeholders and represents explicitly the first study focused on these two countries.

Methods:
Following PRISMA-ScR guidelines, a systematic search of PubMed, Embase, and ProQuest was conducted for peer-reviewed studies published between January 2000 and November 2023 related to drones in EMS. The search focused on response times, cost-effectiveness, and survival rates. Civil Aviation Authority guidelines from both countries were included. A narrative synthesis was conducted using Namugenyi et al.'s 8-point SWOT analysis, incorporating perspectives from businesses, governments, and the public.

Results:
Fifteen eligible studies were identified. SWOT analysis revealed internal strengths such as rapid response and cost-effectiveness, with weaknesses like limited payload and security risks. Opportunities included improved access in remote areas and aeromedical transport, while threats involved evolving regulations and public skepticism.

Discussion:
The potential for NHS integration exists in the UK but is complicated by dense airspace and crime risks. The UAE fosters innovation but faces climate and regulatory hurdles. Strategic implementation requires public education, regular policy updates, and tailored regulations to enable safe innovation.

Conclusion:
Drones hold immense promise for EMS, but realizing their complete potential demands overcoming technical, regulatory, and public trust barriers. Ongoing innovation, stakeholder engagement, and adaptive governance will be critical for successful integration.