

COMMENTARY

Open Access



Invited commentary on “Green HEMS in mountain and remote areas: reduction of carbon footprint through drones?”

E. ter Avest^{1,2*} , M. Kratz³, T. Dill⁴ and M. Palmer⁵

We'd like to thank the authors for their valuable addition to our article “Green HEMS: How to make it happen”. The authors mention in their article the potential role of drones and unmanned aerial vehicles (UAVs) in mountainous areas. They suggest that drones may substitute helicopters for certain tasks and may contribute to a better and earlier triage of patients who may be in need of a HEMS team.

Although we agree on the potential of drones at large, two things require further consideration. First, although it has been demonstrated that drones are able to deliver vital equipment (such as defibrillators) quickly to scene in remote or inaccessible areas, it remains questionable to which extent this will result in a reduction in HEMS deployment rate, as almost all patients who are in need of this equipment will also need urgent subsequent treatment and expedited transport. Second, the merit of drones to assist in triage decisions has yet to be established and will likely be highly dependent on the prevalence of acute pathology / critically ill patients as well as geography. Especially when travel distances are

longer, making the choice to send a drone initially may potentially result in a significant delay in treatment. This risk has to be carefully balanced against the mentioned potential merits.

Finally, the authors mention that in mountainous areas HEMS helicopters are sometimes used for the transport of non-critically ill patients. Although the decision to do so may be impacted by many factors, including availability of ground resources, we agree with the authors that HEMS dispatchers should remain vigilant when it comes to deployment for this purpose: It may not only affect availability of this scarce resource for critically ill patients, but, as the authors rightly point out, also has a significant environmental impact.

Acknowledgements

None.

Authors' contributions

EtA initiated the original project. EtA, TD, MK and MKP drafted the manuscript. All authors read and approved the final version of the manuscript. EtA drafted the comment as submitted here.

Funding

No external funding was received for this study.

Data availability

Not applicable.

Declarations

Ethics approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

Competing interests

None.

*Correspondence:

E. ter Avest

ewoudteravest@aakss.org.uk

¹Air Ambulance Kent, Surrey and Sussex, Redhill, UK

²University Medical Center Groningen, University of Groningen, Groningen, Netherlands

³Emergency Medical Services, Centre for Prehospital Emergency Care, Department of Emergency, Anaesthesia and Pain Medicine, Tampere University, FinnHEMS 30 & 40, Tampere, Finland

⁴Department of Anaesthesiology and Pain Medicine, University Hospital Bern, Inselspital, Bern, Switzerland

⁵Emergency Medical Transfer Retrieval Service- Wales Air Ambulance, Ty Elusen, Ffordd Angel, Llanelli Gate, Dafen, Llanelli, Wales



© The Author(s) 2023. **Open Access** This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>. The Creative Commons Public Domain Dedication waiver (<http://creativecommons.org/publicdomain/zero/1.0/>) applies to the data made available in this article, unless otherwise stated in a credit line to the data.

Received: 9 September 2023 / Accepted: 11 September 2023

Published online: 06 November 2023

Publisher's Note

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.