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Letter to the Editor

'Reply to:' Can drones improve survival rates in mountain areas, providing automated external defibrillators?

Reply

We thank Vögele and colleagues for their interest in our work and acknowledge the challenges in trying to improve public access to automated external defibrillators (AED) across difficult terrains and sparse populations. Although the state of Victoria has few mountainous regions, the sparsely populated nature of the Australian landscape creates a very difficult environment for the effective and timely deployment of public access defibrillators (PAD) to out-of-hospital cardiac arrests (OHCA). Indeed, previous work from our region highlights that the odds of survival from OHCA remain lower in regions with ≤ 10 persons/km² despite adjustment for baseline differences in arrest characteristics.¹ We propose that this is, in part, due to the lack of investment in PAD initiatives in rural and remote communities of Victoria.

Our current study² includes 1391 cases of initial shockable arrests occurring in very low population density regions of Victoria (≤ 10 persons/km²). Despite the absence of any sophisticated network of drones, an integrated AED register or crowdsourcing of bystanders using smartphone applications, initial shocks delivered by bystanders increased in these regions from 0.8% (1 of 133 cases) in 2000–02 to 9.9% (24 of 293 cases) in 2015–17 (p for trend < 0.001). The rate of PAD use was particularly high in public locations, increasing from 2.6% in 2000–02 to 25.0% in 2015–17 (p for trend < 0.001). The rate of survival to hospital discharge for cases shocked by bystanders also increased in these regions, from 0% (0 of 1 cases) in 2000–02 to 50.0% (14 of 28 cases) in 2015–17 (p for trend = 0.02). Remarkably, this improvement in survival was observed despite an average emergency medical service response time of 16.0 min in cases initially shocked by bystanders.

Although we do not disagree that a sophisticated network of drones could add value to the deployment of AEDs in these locations, we do acknowledge that 'traditional' methods of PAD deployment have also been very effective at increasing the rate of PAD use and survival from OHCA in remote areas of Victoria. This emphasises the importance of establishing a good foundation for PAD systems, underpinned by the rational distribution of PADs in high incidence areas, improving public knowledge on how to respond, and providing critical advice at the time of the emergency call.³ Although no PAD system is a one-size-fits-all solution, it is clear that additional

investment in improving the existing foundations would almost certainly yield improvements in PAD use and survival from OHCA in our region. These improvements include the integration of AED locations into the emergency dispatch system and the simultaneous crowdsourcing of appropriately-trained bystanders using smartphone applications. These investments are supported by building strong relationships with community, and developing novel strategies to educate the public on the use of bystander CPR and AED (i.e. Heart Safe Communities).⁴

Conflicts of interest

None declared.

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