Dispatcher-assisted AED use: A scoping review

Lucas Snow, James Whiting, Dr Christopher Smith Warwick Medical School



Lucas.Snow@warwick.ac.uk

James.Whiting@warwick.ac.uk

C.Smith.12@warwick.ac.uk

Background

Each year ambulance services in England attempt to resuscitate over 30,000 patients suffering out-of-hospital cardiac arrest (OHCA)1.

Early defibrillation is a key step in the chain of survival and, when a shock is delivered within 3-5 minutes of collapse, patient survival rates can exceed 50%².

Bystanders only attempt defibrillation in less than 6% of OHCA¹ and the benefits of dispatcher-assisted AED (DA-AED) use is not well researched, despite having the potential to increase bystander AED use⁴.

The aim of this scoping review is to map the available literature and investigate the evidence for DA-AED.

Methodology

This scoping review was conducted in line with the PRISMA extension for scoping reviews⁵.

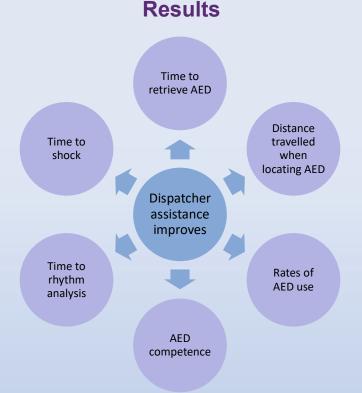
- Articles were identified from Medline, Embase and Cochrane database searches, professional contacts, and bibliography / related article searches
- Title and abstract and full-text screening were conducted independently, in a blind manner, and studies investigating DA-AED and a range of outcomes including survival to hospital discharge and survival with good neurological outcome were included
- Data was extracted and a risk of bias analysis conducted on each study

Rate of AED use

- Rate of AED use with dispatcher assistance (DA) up to 40.9%⁶, 11% (DA) vs 5% (non-DA)⁷
- Rate of AED use and successful shock delivery is higher in DA (76-98.1%) vs non-DA (35-68%)¹⁰, 11.12.13
- AED use before EMS arrival is more common with DA (28.3%) vs (26.3%)⁸

Time and distance to AED retrieval

- Median time to retrieve and attach AED is 45 and 66 seconds, respectively, with DA¹⁷
- Distance travelled and time to retrieve AED is reduced in DA vs GPS location app¹⁰



AED competence

Chain of survival

- AED competence is higher with voice or video assistance (5.47 and 7.47 respectively) vs no assistance (4.3)⁹
- Video and voice assistance are comparable^{15,19}
- Specific language in dispatcher scripts results in better communication²⁰

Time to shock

- 9 studies reported time to shock,
 5 of which showed shorter time with DA vs non-DA<sup>9, 10, 11, 12, 13, 14, 15, 16, 19
 </sup>
- Voice DA and video DA are comparable

Conclusions

- Dispatchers have a key role in influencing whether AEDs are retrieved and used by bystanders before ambulance arrival
- Dispatchers are also important in instructing bystanders to apply and use AEDs correctly to improve the likelihood of a successful shock being delivered prior to ambulance arrival
- •There is currently not enough research to draw upon to make strong conclusions
- Future research is required to address whether DA-AED specifically influences clinical outcomes, such as survival to hospital discharge and with good neurological outcome, in real-world studies