

# Dispatcher-assisted AED use: A scoping review

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## Background

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

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%<sup>2</sup>.

Bystanders only attempt defibrillation in less than 6% of OHCA<sup>1</sup> and the benefits of dispatcher-assisted AED (DA-AED) use is not well researched, despite having the potential to increase bystander AED use<sup>4</sup>.

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 reviews<sup>5</sup>.

- 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



## Results

### Rate of AED use

- Rate of AED use with dispatcher assistance (DA) up to 40.9%<sup>6</sup>, 11% (DA) vs 5% (non-DA)<sup>7</sup>
- Rate of AED use and successful shock delivery is higher in DA (76-98.1%) vs non-DA (35-68%)<sup>10, 11, 12, 13</sup>
- AED use before EMS arrival is more common with DA (28.3%) vs (26.3%)<sup>8</sup>

### Time and distance to AED retrieval

- Median time to retrieve and attach AED is 45 and 66 seconds, respectively, with DA<sup>17</sup>
- Distance travelled and time to retrieve AED is reduced in DA vs GPS location app<sup>10</sup>

Time to retrieve AED

Time to shock

Distance travelled when locating AED

Dispatcher assistance improves

Time to rhythm analysis

AED competence

Rates of AED use

### AED competence

- AED competence is higher with voice or video assistance (5.47 and 7.47 respectively) vs no assistance (4.3)<sup>9</sup>
- Video and voice assistance are comparable<sup>15,19</sup>
- Specific language in dispatcher scripts results in better communication<sup>20</sup>

### 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