Emergency dispatch, FirstAED global positioning of first responders with distinct roles – a solution to reduce the response times and ensuring early defibrillation in the rural area Langeland

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Background – the Langeland Island

- ~13,000 inhabitants.
- Long distances to the two nearest hospitals: (55 km, 90 km).
- Long ambulance response times: (40 % ≥ 15 min., 13 % ≥ 20 min.).
- Bystander CPR provided by 215 trained first responders.
- 95 AED's purchased by the population.
- All AED's available around the clock.
- Lay rescue response times: (9-10 minutes).

Methods:

- An IT-system combining ideas from the AED center and modern information and communication technology (FirstAED app).
- All first responders are provided with a rescue smartphone (iPhone 4S/5).
- FirstAED arranges the three first responders in a team with distinct roles.
- The IT-system activate the AED cabinets (unlock, sound & flash light).

GPS tracking will immediately find the geographically closest responders.

- The 9 closest first responders are alarmed (push message).
- The 3 most optimally located first responders are organized in a team.
- First responder no. 1 and no. 3 hurry to the emergency place (GPS advice).
- First responder no. 2 collects the AED (GPS advice).
- The IT-system activate the AED cabinets (unlock, sound & flash light).

Action: Emergency Call

Emergency Call

- FirstAED Emergency Call

- Dispatch Center iPad – GPS tracking

- All first responders

- [x] 215 (purple pushpins) (GPS-tracking)

- [x] 95 (green pushpins)

- [x] 98 (red pushpins) (GPS-tracking)

- Responder no. 1 & 3 (purple pushpins) receive the location of the emergency call (red pushpin - GPS advice).

- Responder no. 2 brings the AED to the emergency place.

- Responder no. 2 (purple pushpin) receive the location of the nearest AED (green pushpin) and next the location of the emergency call (red pushpin - GPS advice).

- Responder no. 1 reaches the patient to give first aid/Heart Lung Resuscitation.

- Responder no. 3 is the onsite coordinator.

- First responder no. 1 & no. 3 accept

- First responder no. 2 accept

- FirstAED Emergency Call

Key results of the first 21 months: Dispatch categories

<table>
<thead>
<tr>
<th>Alarm type</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disease</td>
<td>504</td>
<td>~82.2 %</td>
</tr>
<tr>
<td>Traffic accident/ fire</td>
<td>21</td>
<td>~3.4 %</td>
</tr>
<tr>
<td>Accident</td>
<td>45</td>
<td>~7.7 %</td>
</tr>
<tr>
<td>Cardiac Arrest</td>
<td>26</td>
<td>~4.1 %</td>
</tr>
<tr>
<td>Others</td>
<td>12</td>
<td>~2.0 %</td>
</tr>
<tr>
<td>Total</td>
<td>588</td>
<td></td>
</tr>
</tbody>
</table>

Key results of the first 21 months: Response times

<table>
<thead>
<tr>
<th></th>
<th>Median Response time – Langeland n = 588</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Person On Site</td>
<td>249 sec. (1-1260 sec.) (4 min. 9 sec.)</td>
</tr>
<tr>
<td>AED On Site</td>
<td>358 sec. (1-1813 sec.) (5 min. 58 sec.)</td>
</tr>
<tr>
<td>Ambulance/paramedic On Site</td>
<td>714 sec. (11 min. 54 sec.)</td>
</tr>
</tbody>
</table>

Key results of the first 21 months:

- 6 Cardiac arrests
- 3 survived, 1 survived more than 30 days.
- 6 Respiratory insufficiency
- 1 survived more than 30 days, 1 died at the hospital.
- 25 AVH (AED monitoring), all survived more than 30 days.
- 3 Hangings
- 1 survived more than 30 days, 2 died.
- 2 Divers with decompression sickness (Complete restituted)
- 1 Subarachnoid haemorrhage (Restituted)
- Positioning of more than 10 traffic accidents

Perspectives:

- The Langeland AED project developed the FirstAED in the hope to get shorter response times.
- The FirstAED GPS app technology entails a significant reduction in first responder median response time from more than 8 minutes before to 4 minutes 9 seconds after.
- FirstAED organizes the first responders in a team with distinct roles in 96.2 % of the emergency call.
- FirstAED activate the AED cabinets (unlock, sound & flash light).