

GPS tracking of bystanders – a solution to reduce the response times and ensuring early defibrillation

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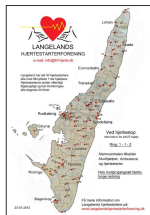
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Background – the Langeland Island

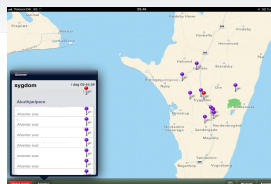
- ~ 13,000 inhabitants.
- Long distances to the two nearest hospitals: (55 km, 90 km).
- Long ambulance response times: (30 % ≥ 15 minutes, 15 % ≥ 20 minutes).
- Bystander CPR provided by 215 trained first responders.
- 95 AED's purchased by the population.
- All AED's available around the clock.
- Lay rescuers response times: (8-10 minutes).



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Action: GPS tracking

Emergency Call
Dispatch Center
iPad



- 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).

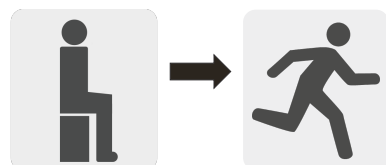
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Key results of the first 21 months: Response times

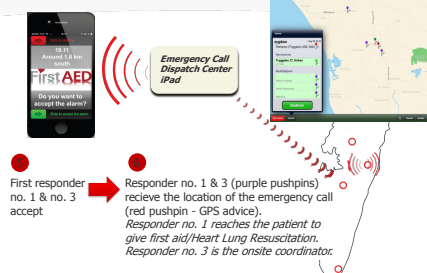
Median Response time – Langeland n = 588	Time seconds
First Person On Site	249 sec. [1-1200 sec.] (4 min. 9 sec.)
AED On Site	358 sec. [1-1813 sec.] (5 min. 58 sec.)
Ambulance/paramedic On Site	714 sec. (11 min. 54 sec.)

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FirstAED activate trained volunteer first responders



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- First responder no. 1 and no. 3 accept
- Responder no. 1 & 3 (purple pushpins) receive 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

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Key results of the first 21 months:

Number of first responders Arrival On Site	
3 first responders	89.1 %
2 first responders	7.1 %
1 first responders	3.1 %
0 first responders	0.7 %
Arrival	
Before ambulances/paramedics/ doctors	95 %

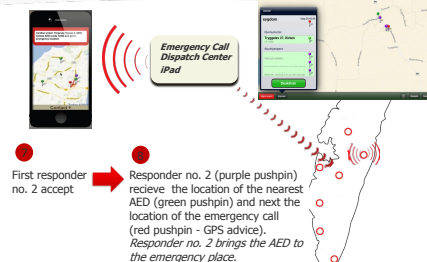
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Methods:

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



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- First responder no. 2 accept
- 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. 2 brings the AED to the emergency place.

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Key results of the first 21 months: FirstAED Emergency Call

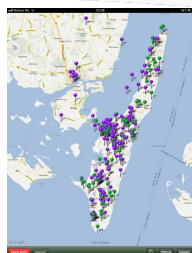
- 6 Cardiac arrests
 - 3 survived, 1 survived more than 30 days.
- 6 Respiratory insufficiency
 - 5 survived more than 30 days, 1 died at the hospital.
- 25 AMI (AED monitoring), all survived more than 30 days.
- 3 Hangings
 - 1 survived more than 30 days, 2 died.
- 2 Divers with decompression sickness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

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Action: Emergency call

Dispatch Center iPad – GPS tracking

- All first responders (n= 215 (purple pushpins)) (GPS-tracking)
- AED's (n= 95 (green pushpins))
- Emergency Call Activate iPad – GPS Tracking



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Key results of the first 21 months: Dispatch categories

Alarm type	Number	Percentage
Disease	484	~ 82,3 %
Traffic accident/ fire	21	~ 3,6 %
Accident	45	~ 7,7 %
Cardiac Arrest	26	~ 4,4 %
Others	12	~ 2,0 %
Total	588	

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Perspectives: FirstAED

- 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).