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Out-of-hospital CPR in Germany: Data and Facts 2018
no conflicts of interest
- 249 emergency control centres (Tel. 112)
- 12 Mio emergency calls per year
- 1,100 mobile intensive care units
- 81 bases of rescue helicopter
- 2.3 Mio of emergency deployments are carried out with the assistance of an emergency doctor (46% medical emergencies)
- The average time to attend medical emergencies is 8.4 minutes
  75% < 10 min., 20% < 15 min., 5% > 15 min.

Source: BAST/DVR 2013
Ca. 75,000 cases of sudden out-of-hospital cardiac arrest (OOHCA) in Germany each year (German Resuscitation Registry)

2-10% survival rate without lay CPR (Gräsner JT et al / Böttiger BW et al)

De Maio VJ. (2003)
Lay bystanders CPR increases survival rates at least 2- to 4-fold.

Lay CPR is much better and more effective than any other therapeutic intervention following OOHCA.

If we could achieve lay CPR rates of 60-80% all over the world, this could immediately result in 200,000 to 300,000 additional survivors after OOHCA per year (for Germany it would be 10,000)

(Böttiger BW)
Reference data of 5467 out-of-hospital CPRs in Germany 2016

- Average age 68.6 years

- Place of OOHCA:
  - residence 3985 (72.9%)
  - public 901 (16.5%)
  - other 556 (10.2%)

- Cardiac arrest observed: 3061 (56.0%)
  - Lay CPR before arrival of emergency services 40.8% (2010: 14%, 2013: 28%)
Outcome
(ROSC: return of spontaneous circulation)

Ever ROSC: n=2476 (45.3%)
ROSC at admission: n=2056 (37.6%)
24 hours survive: n=1264 (23.1%)
Alive discharge: n=656 (12.0%)
German resuscitation registry (GRR)

It was founded 2007 – Currently 167 emergency control centres are participating, representing about 30 Mil. inhabitants of Germany.

Until June 2017 more than 110,000 data of out-of-Hospital and in-Hospital CPRs were recorded.
County Soest

Population 305,000
1 emergency control centre
11 mobile intensive care units
Average time to FMS 7.2 min.
County Soest statistics 2017

306 out-of-hospital cardiac arrests (OOHCA) on file

- 211 (68.9%) deceased
- 95 (31.1%) admission with ROSC

120 dispatcher-assisted telephone CPR

- 67 (55.8%) deceased
- 53 (44.2%) admission with ROSC
Historical milestones and activities in Germany with reference to OOHCA:

2009: during the annual congress of the European Resuscitation Council in Cologne 400 school children were trained in resuscitation.

2010: Anaesthesiologists from the University of Rostock started the education of school children and teachers in resuscitation all over the German Federal State Mecklenburg-Vorpommern.
Historical milestones and activities in Germany with reference to OOHCA:

2012: The German Resuscitation Council published its curricula for school children education in CPR both English and German

2013: The week of resuscitation („Woche der Wiederbelebung“) was launched by the German Anaesthesiologist together with the German Resuscitation Council and with support of the German Health Minister.
Historical milestones and activities in Germany with reference to OOHCA:

2013: Guinness world record of the Department of Anaesthesiology and Intensiv Care Medicine in Münster: 11,840 school children were trained together in CPR at the Schlossplatz in Münster.
Historical milestones and activities in Germany with reference to OOHCA:

Since 2013: Annual Campaign on the 16th of October (European Restart a Heart Day) with participant celebrities
2014: Upon an initiative of the German Anaesthesiologist together with German Resuscitation Council, the school committee of the school ministers of all 16 federal states recommended training teachers in CPR to enable them to train school children – for 2 hours per year, starting at the age of 12 years.

The European Patient Safety Foundation, the European Resuscitation Council, the International Liaison Committee on Resuscitation and the World Federation of Societies of Anaesthesiologists supported the „KIDS SAVE LIVES“ statement.
Historical milestones and activities in Germany with reference to OOHCA:

2016: Under the patronage of the German Health Minister, a National Initiative was founded (NAWIB: Nationales Aktionsbündnis Wiederbelebung) with the goal to educate school children and other lay people in CPR and to increase the lay CPR rates in Germany to more than 50% by 2020.

The NAWIB is supported by many organisations and it was initiated during an event with hundred school children before the Brandenburger Tor in Berlin.
Public Access Defibrillation / AEDs and Out-Of-Hospital Cardiac Arrest

PADs increased the survival rate with favorable neurologic outcome significantly more compared with CPR alone.

(Ring et al / Kitamura et al)

In Germany AEDs are also placed in public areas where large numbers of people gather (airports, sport facilities, railway stations etc.)
In each of the 100 subway stations in Munich there is at least one AED placed. Within the past 10 years 16 people were successfully defibrillated.

At the airport of Frankfurt were 12 People defibrillated successfully in the same time.

www.sueddeutsche.de
“Smart” technology is being developed to improve accessibility of AEDs.

- mydefibri App / homepage (www.mydefibri.de)

- Interactive internet maps
Mobile rescuer (first responder)

Currently 7 emergency control centers are participating, representing about 2.5 Mil. inhabitants of Germany.
Mobile rescuer (first responder)

How it works…
Mobile rescuer (first responder)

How it works…

Notfall! → Notruf → 112

3 - 5 Minuten

Ø 9 Minuten
Mobile rescuer (first responder)

How it works...
Mobile rescuer (first responder)

Distance (m)

Time (min)

number of rescuers since 2013

> 3,700 mobile rescuers (2017)
> 3,000 deployments
< 4:35 minutes until arrival
Recent studies from Denmark, USA and Australia indicate significant better survival, when OOHCA-patients are transported to cardiac arrest centres

(H. Søholm et al / D. Stub et al / Z. Nehme et al)
Cardiac-Arrest-Centres

Quality indicators and structural requirements for cardiac arrest centres – German resuscitation council (GRC):

1. General ICU, including mechanical ventilation, hemodynamic and renal support and Targeted Temperature Management (TTM)

2. 24/7 PCI and mechanical cardiac support
   - in more than 60% of OOHCA the underlying course is coronary heart disease
   - in Germany there are 944 catheter-labs in 491 centres with 24/7 service (DGK 2015)
Cardiac-Arrest-Centres

Quality indicators and structural requirements for cardiac arrest centres – German resuscitation council (GRC):

3. 24/7 radiology service (x-ray, CT), echocardiography / TEE and sonography

4. Multimodal neuro-prognostication service

5. Standardised post-resuscitation protocol
Conclusions

✓ In almost all cases of OOHCA, even in good developed countries, emergency services come too late

✓ The most important measure to improve survival from OOHCA with good neurological function is the immediate start of CPR by lay bystanders

✓ In the last years many initiatives are founded in Germany with the goal to increase lay CPR rates

✓ The most effective ways to increase lay CPR rates are:
  - continuous media activities
  - dispatcher-assisted „telephone-CPR“
  - CPR education in adults and schoolchildren
  - first-responder systems
Danke!