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OUT-OF-HOSPITAL CARDIAC ARREST 2024

by Deutsches Reanimationsregister – German Resuscitation Registry (GRR)

Deutsches Reanimationsregister

Note:
The German Resuscitation Registry (GRR) is an online database with a constantly growing number of data sets. Due to different evaluation dates, the figures given may differ from those in previously published reports.

The ninth public annual report on out-of-hospital cardiac arrest (OHCA) by the German Resuscitation Registry (GRR) contains the current data, facts and figures on resuscitation provided by the participants in the German Resuscitation Registry in 2024.

This public annual report on out-of-hospital cardiac arrest is addressed to all participants and the public in order to further develop resuscitation care in Germany, fully in line with the Bad Boll Resuscitation and Emergency Dialogues and the overall social responsibility [1–3].

Data records from 198 emergency medical services (EMS), representing a population of approx. 42 million inhabitants, are used as a foundation. Thus, reliable information on the resuscitation incidence in Germany, but also on the care of these patients and the success of treatment can be obtained.

As a limitation, it is to be noted that due to the voluntary participation in the German Resuscitation Registry (GRR) the data analysed represent a sample and may not be fully representative. This brief report is only a partial summary of the recorded data. The presentation is based on the Utstein Report [4], the international standardized reporting format for out-of-hospital cardiac arrest. If simplified of „CPR" is spoken, it is out-of-hospital (EMS) resuscitation procedures for OHCA of various suspected or confirmed causes.

In the following, the overall data from the German Resuscitation Registry (GRR) for the period 01.01.2024 up to and including 31.12.2024 were analyzed. In addition, the data of a reference group of 44 German emergency medical services from the same period were analyzed, which met the following inclusion criteria:

- Incidence of resuscitation >30/100,000 inhabitants and year
- ROSC (Return Of Spontaneous Circulation) <80%
- RACA (ROSC after Cardiac Arrest) score calculable >60%
- Percentage of documented follow-ups of at least 30%

By determining the reference data, the results become more accurate, and statements regarding the discharge rate and the neurological outcomes at discharge are also possible.

1. Fischer M, Wnent J, Gross B, Seewald S, Maurer H, Ramshorn-Zimmer AB et al: Qualitätsmanagement in der gesamten Reanimationsversorgung ist unerlässlich. These 9 der Bad Boller Reaniamtions- und Notfallgespräche 2023. Anästh Intensivmed 2023;64:523–527
2. Gräsner JT, Wnent J, Zwißler B, Beck G, Fischer M: 10. Bad Boller Reanimations- und Notfallgespräche – Zeit für ein Update. Anästh Intesivmed 2023;64:473–475
3. Wnent J, Geldner G, Werner C, Bottiger BW, Fischer M, Scholz J, et al: Bad Boller resuscitation talks: 10 basic ideas for 10,000 lives. Anasthesiol Intensivmed Notfallmed Schmerzther 2014;49(3):208
4. Perkins GD, Jacobs IG, Nadkarni VM, Berg RA, Bhanji F, Biarent D, et al. Cardiac arrest and cardiopulmonary resuscitation outcome reports: update of the Utstein Resuscitation Registry Templates for Out-of-Hospital Cardiac Arrest: a statement for healthcare professionals from a task force of the International Liaison Committee on Resuscitation (American Heart Association, European Resuscitation Council, Australian and New Zealand Council on Resuscitation, Heart and Stroke Foundation of Canada, InterAmerican Heart Foundation, Resuscitation Council of Southern Africa, Resuscitation Council of Asia); and the American Heart Association Emergency Cardiovascular Care Committee and the Council on Cardiopulmonary, Critical Care, Perioperative and Resuscitation. Circulation 2015;132:1286–1300. Epub 11. November 2014.


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NUMBER OF PATIENTS AND EMERGENCY MEDICAL SERVICES

27,009
from 198 emergency medical services

9,925
from 44 emergency medical services

In 2024, the total number of out-of-hospital cardiac arrests documented in the German Resuscitation Registry was 27,009 from 198 emergency medical services.

The chosen reference group for this report meets the above mentioned inclusion criteria and comprises 9,925 patients from 44 EMS.

The reference group is highlighted in the report. This group is supplemented by the overall data. The overall data is indicated as such in this report.

INCIDENCE OF OUT-OF-HOSPITAL CARDIAC ARREST

In 2024, the incidence of CPR was 64.2 CPRs per 100,000 inhabitants per year in the overall data. Extrapolated to Germany's current population of 83.6 million, in 2024 approximately 54,000 patients were resuscitated by the emergency medical services after a sudden cardiac arrest.

At the reference sites, the incidence of death declarations, resuscitations, and performed resuscitation treatments was significantly higher than in the overall group. Therefore, underreporting in the overall data cannot be ruled out.

Death declaration and resuscitation

162.8 | 124.9 overall data
per 100,000 inhabitans per year

CPR by EMS

80.1 | 64.2 overall data
per 100,000 inhabitans per year

AGE OF PATIENTS

The average patient is an approx. 70 year old male. Very young patients - younger than 18 years - were rarely resuscitated. The number of patiens aged over 80 years has increased over time; their proportion is now 32.6% (2014: 27.7%).

69.5 years
mean age

69.4 years
overall data

1.2% | 1.2% overall data
under the age of 18

32.6% | 32.2% overall data
older than 80 years

GENDER DISTRIBUTION

male
64.7%
65.3%
overall data

35.3%
female
34.7%
overall data


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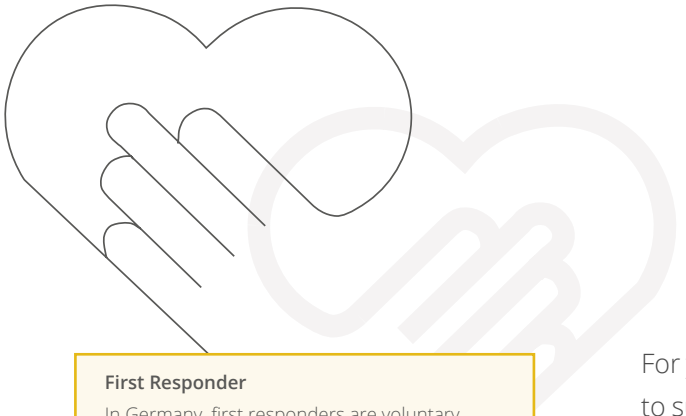


CPR BEFORE EMS ARRIVAL

First Responder
In Germany, first responders are voluntary units that are not part of the regular EMS but are used by the dispatch centres to bridge the interval until the EMS arrives. This includes people who work in BOS (authorities and organisations with security tasks) (e.g. fire brigade). In the future, the data of first responders and activated bystanders will be recorded separately in accordance with the current Utstein report.

Activated Bystander
Activated bystanders are individuals who are alerted, for example, via apps and who bridge the interval until the EMS arrives. These can be trained first responders as well as medical professionals who are off duty and, by definition, not on call.

Bystander
Non-alert persons who happen to be at the scene of an emergency by chance and bridge the time between the incident and the arrival of the EMS, thus shortening the non-ambulance interval.

For years, public campaigns have aimed to draw attention to sudden cardiac death and possible CPR by bystanders. Furthermore, the guidelines on CPR recommend telephone guided CPR by dipatch centers.

The 2024 annual report shows a bystander CPR rate of 55.4% in the reference group. In 7.1% of the cases, first responders carried out CPR before the EMS arrived.

Telephone guided CPR was 40.4% in the reference group. Accordingly, an icrease was recorded.

total

62.5%

60.2%
overall data

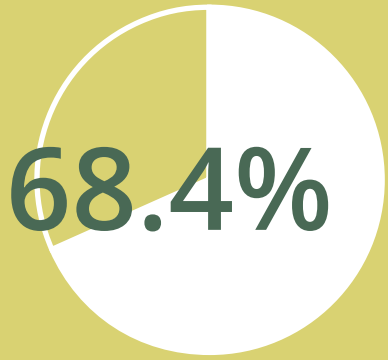
by first responders

7.1% | 8.2%
overall data

by bystanders

55.4% | 52.0%
overall data

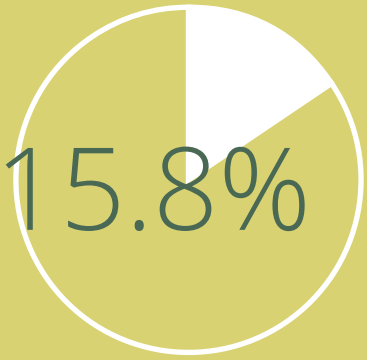
SITES WHERE CARDIAC ARREST OCCURS



68.4%

at home

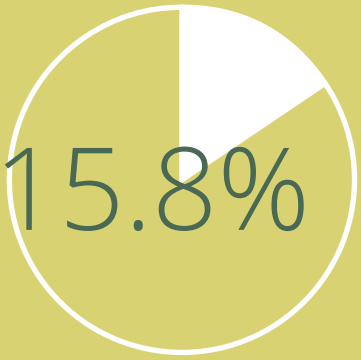
68.9%
overall data



15.8%

in public

15.8%
overall data



15.8%

other sites

15.3%
overall data

WITNESSED CARDIAC ARRESTS

overall observed cardiac arrest

57.9%

56.9%
overall data

by bystanders

43.2%

42.1%
overall data

by first responders

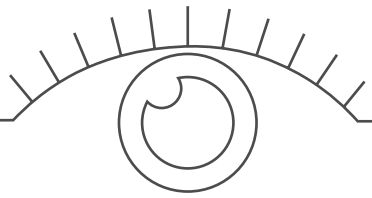
1.2%

1.8%
overall data

by EMS

13.5%

13.0%
overall data

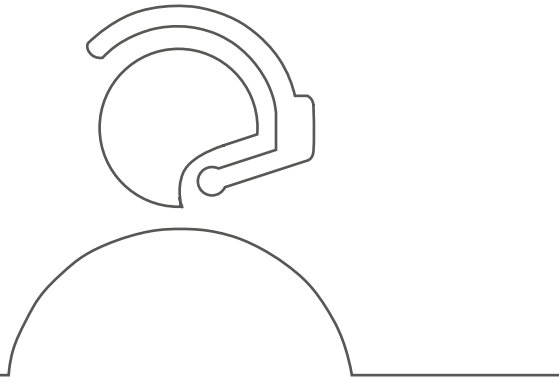


TELEPHONE GUIDED CPR

The vast majority of resuscitations in 2024 also took place in private homes.

40.4%

37.3%
overall data



In recent years, we have seen a steady increase in the number of cases supported by telephone guided CPR. However, there is still considerable potential for growth [5].

TIME BETWEEN ALARM AND ARRIVAL OF THE 1ST VEHICLE

The average time between receiving the alarm and arriving at the scene with the first EMS unit (RTW or NEF) was **6 minutes and 19 seconds**.

06:19 ± 03:21

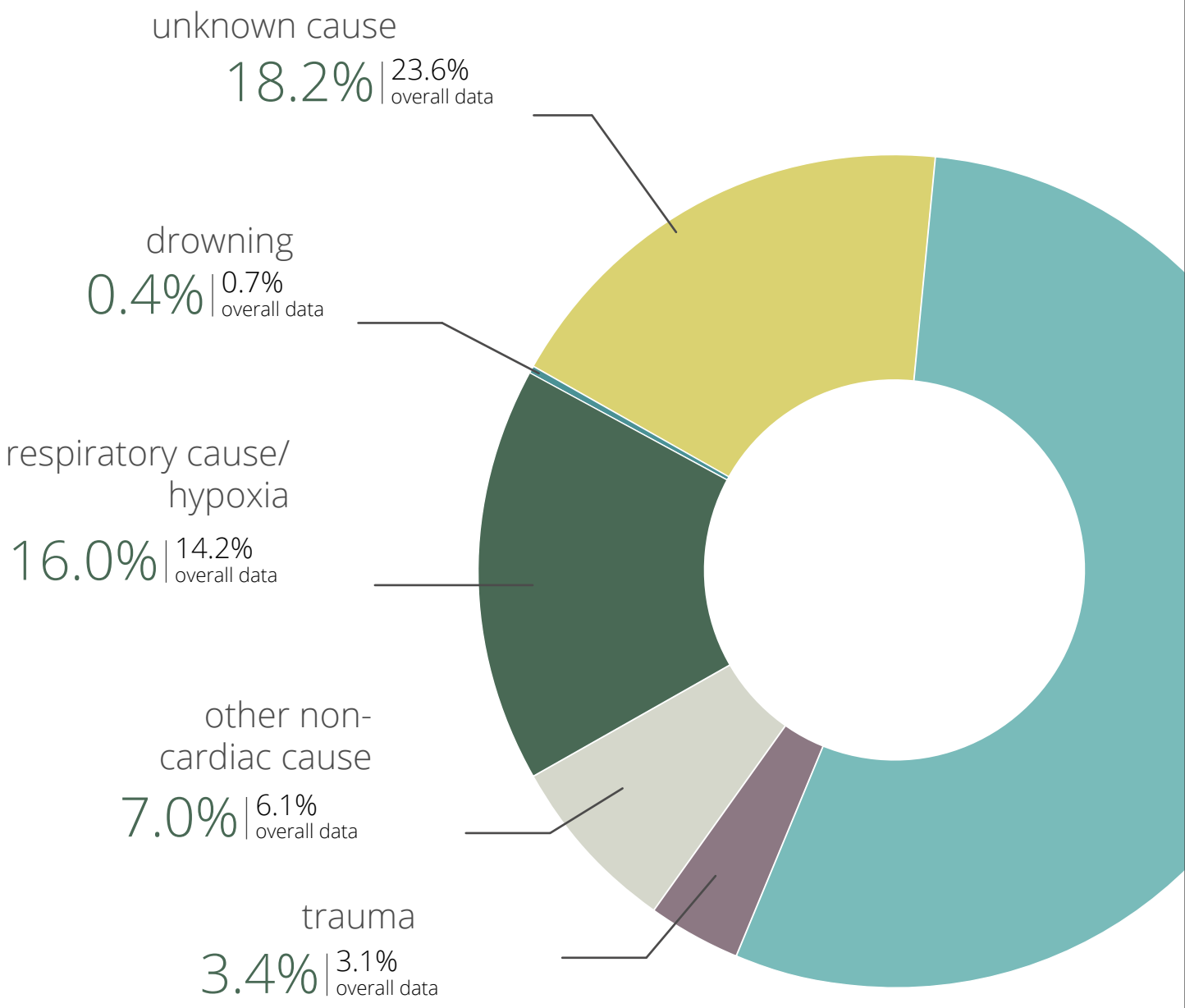
06:47 ± 04:04
overall data

RTW = Rettungswagen, ALS-ambulance
NEF = Notarzteinsatzfahrzeug, Emergency physician's car

5. Gross B, Gistrichovsky M, Baubin M, Wnent J, Bohn A: Die Leitstelle als wichtiges Glied der Überlebenskette. These 7 der Bad Boller Reanimations- und Notfallgespräche 2023. Anästh Intesivmed 2023;64:515–518.

SUSPECTED CAUSE OF CARDIAC ARREST

Information on causes of cardiac arrest is based on the suspected diagnoses of the emergency physicians. Of course, this information may differ from the exact diagnoses.



FIRST RECORDED ECG RHYTHM

shockble (VF/VT)

21.5%

22.5%
overall data

VF = ventricular fibrillation
VT = ventricular tachycardia

non-shockable

78.5%

77.4%
overall data

asystole
56.3% overall data | 55.1%

pulseless electrical acticity
21.1% overall data | 23.4%

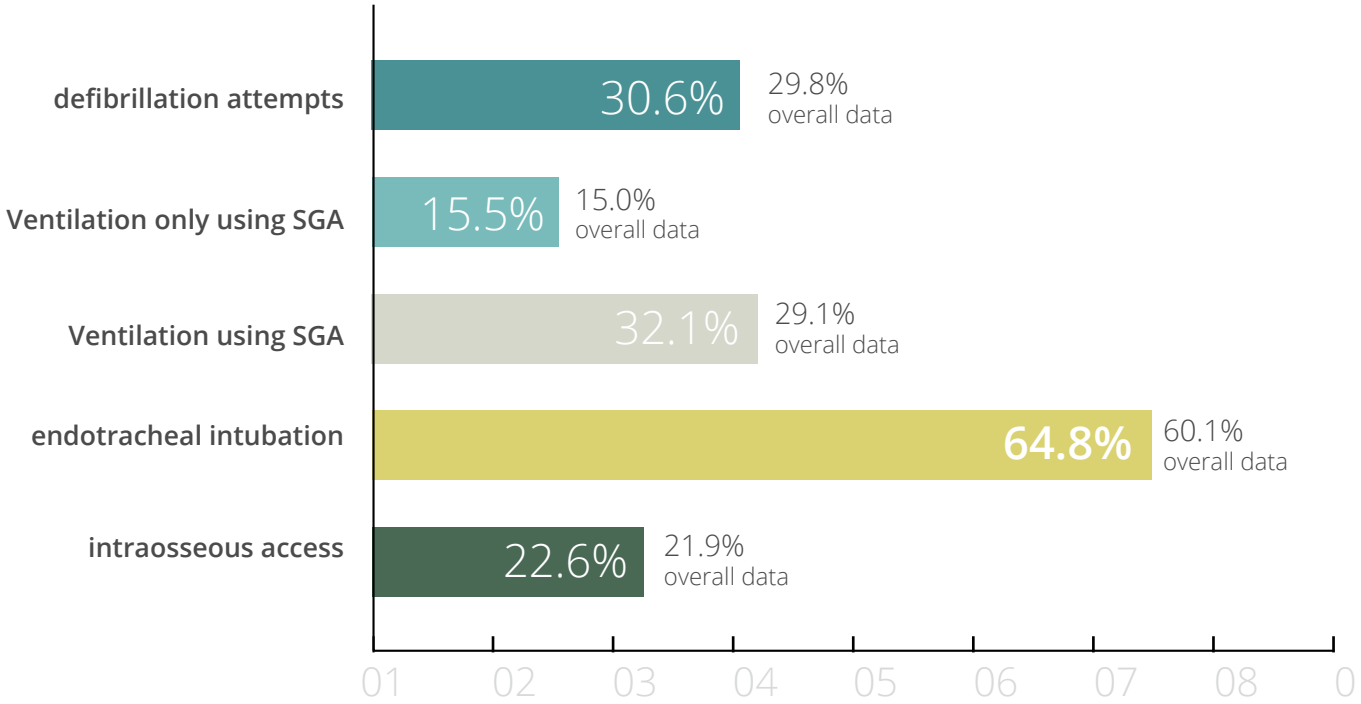
cardiac cause

55.0% | 52.3% overall data

RESUSCITATION PROCEDURES

Compared to 2023, significant changes can be seen in the area of airway management. Endotracheal intubation using a video laryngoscope increased. This is a positive development, as it has been shown in Germany and Austria [6] endotracheal intubation increases the discharge rate compared to using supraglottic airway alone.

The other resuscitation measures remained largely unchanged from the previous year. In particular, the use of intraosseous access remains too high at 22.6%, although the new ERC guidelines published in 2021 clearly indicate that intravenous access should be favoured in resuscitation [7].



SGA = supraglottic airway

USE OF MECHANICAL CHEST COMPRESSION DEVICES

13.5% | 10.6% overall data

OUTCOME OF TREATMENT

In 2024 30.3% (overall data) to 33.6% (reference group) of patients reached the hospital with spontaneous circulation.

Standardised to 100,000 inhabitants per year, around nine patients per 100,000 inhabitants were discharged from hospital alive.

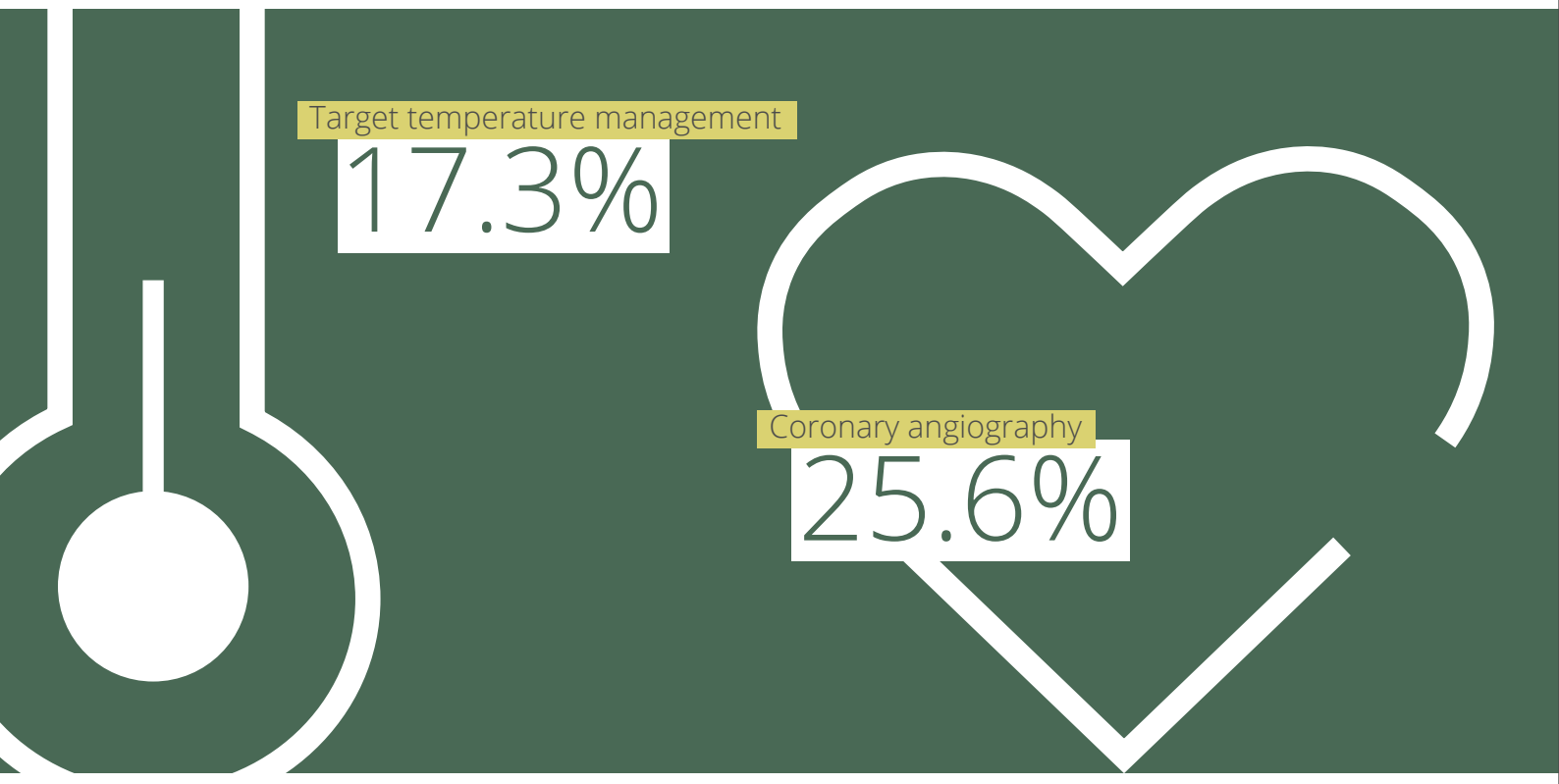
		overall data
ROSC	**42.9%**	40.2%
ROSC on admission to hospital	33.6%	30.3%
24-hour survival	20.6%	
discharged alive from hospital	10.9%	

6. Sulzgruber P, et al: The impact of airway strategy on the patient outcome after out-of-hospital cardiac arrest: A propensity score matched analysis. Eur Heart J Acute Cardiovasc Care, 2017;2048872617731894
7. Soar J, et al: European Resuscitation Council Guidelines 2021: Adult advanced life support. Resuscitation 2021;161:115–151

IN-HOSPITAL TREATMENT

Hospital treatment has a significant impact on survival after successful resuscitation. Current guidelines recommend coronary angiography and intervention in particular, as well as temperature management [8]. The rate of coronary angiography and the level of care in the area of temperature management decreased slightly in 2024 compared to the previous year. Since 2021, the ERC guidelines have recommended temperature management for every initial rhythm and regardless of whether the cardiac arrest occured inside or outside the hospital. It remains to be seen whether the rate of interventions will increase and whether the guidelines published in 2021 will be implemented accordingly.

8. Nolan JP, et al: European Resuscitation Council and European Society of Intensive Care Medicine guidelines 2021: post-resuscitation care. Intensive Care Med 2021;47(4):369–421



SUMMARY

The present annual report „Out-of-hospital cardiac arrest 2024“ by the German Resuscitation Registry (GRR) confirms the overall good quality of CPR care in the participating emergency medical services.

In 2024, the data from the resuscitation registry also documented deviations from guidelines and recommendations. For instance, in terms of response times, the target of 80% for reaching patients within 8 minutes of the emergency call was missed. According to current guidelines, there is still potential for improvement in areas such as telephone CPR, airway management, vascular access, the use of mechanical resuscitation devices, and temperature management.

We want to thank all participating emergency medical services. As of the cut-off date in 2024, data from 27,009 patients were recorded in the registry.

The German Resuscitation Registry was developed as a quality assurance tool for emergency medical services. In addition to monthly and annual reports, the participants also receive access to online analyses in order to continuously benchmark, assess and improve the performance of their service - as required by the current resuscitation guidelines [9]. For example, the ROSC-after-Cardiac-Arrest (RACA) score [10] developed from the register data is available in the online database for this purpose. The annual report of the German Resuscitation Registry on out-of-hospital cardiac arrest in 2024 provides information on the status and trends in resuscitation care in Germany and forms the basis for discussions.

Since cardiac arrest and resuscitation treatment are among the most time-critical and complex clinical conditions in emergency medicine, this result should be an incentive to further improve quality management and the overall quality of care in one‘s own emergency medical services.

The data on which this report is based and further information can be found in *Anästhesiologie und Intensivmedizin* (Anästh Intensivmed 2025;66:V99–V109. DOI: 10.19224/ai2025.V99).

9. Perkins GD, et al: EuropeanResuscitation Council Guidelines 2021: Executive summary. Resuscitation 2021;161:1–60.
10. Gräsner JT, et al: ROSC after cardiac arrest – the RACA score to predict outcome after out-of-hospital cardiac arrest. Eur Heart J 2011;32(13):1649–1656

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