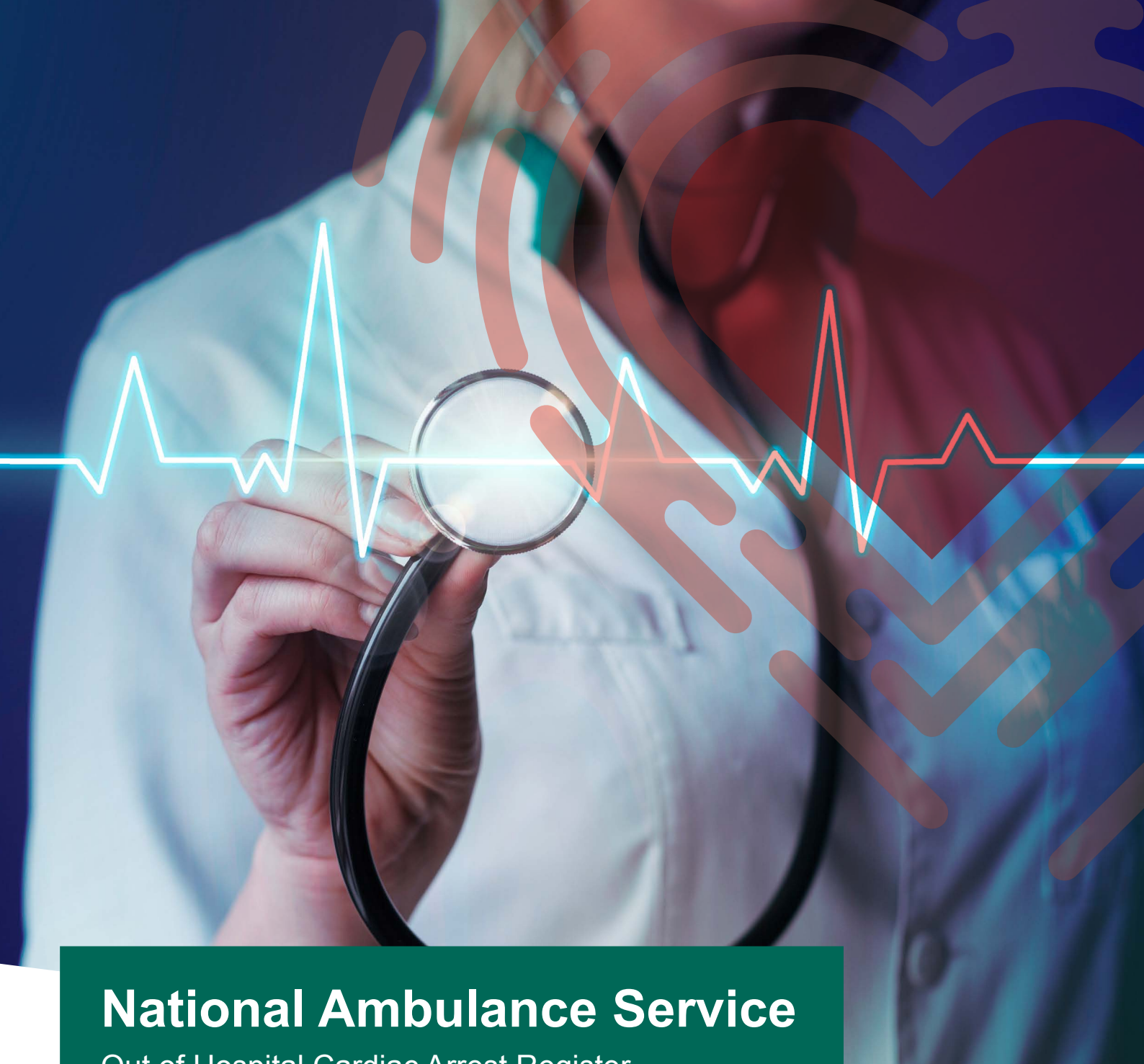




National Ambulance Service

Out of Hospital Cardiac Arrest Register

18th Annual Report 2025

Out-of-Hospital Cardiac Arrest Register

OHCAR Ireland



At the heart of evidence



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Overall Patient and Event Characteristics

- 2,756 out-of-hospital cardiac arrest incidents attended the by Emergency Medical Services (EMS) where resuscitation attempted or had Return of Spontaneous Circulation (ROSC) recorded on OHCAR (54 per 100,000 population in 2025)
 - 71% occurred in an urban area^a
 - 69% Male
 - Median age 68 years (interquartile range 54 – 79)
 - 84% Presumed medical cause
 - 70% Happened in the home
 - **85%** Bystander CPR attempted
 - 54% Bystander witnessed
 - 35% of patients had defibrillation attempted
 - **12%** of patients had defibrillation attempted pre EMS arrival
 - 25% had ROSC pre-hospital arrival
 - 20% had sustained ROSC to Hospital arrival

Survivors - Patient and Event Characteristics

- 266 patients survived
- 9.7% Discharged alive
 - 221 (99%) had good to moderate neurological function on discharge (data available for 223 patients)
 - 22% of survivors collapsed in a public location vs. 6% in a private location.

Utstein Group

- 16% of patients were in the Utstein Group^b
 - 49% ROSC pre-hospital
 - 41% ROSC on arrival at hospital
 - 32% Discharged alive

Community Response

- 36% of all cases had evidence of CFR involvement
 - 12% of cases had CPR initiated by CFRs
 - 18% of cases that were defibrillated, had initial defibrillation by CFRs
 - An extra 15 patients were discharged alive having received their first shock by CFRs compared to 2024 (26% n=44/168 vs. 19%, n=29/156).

^aDefinition of urban is matched with the CSO definition of a settlement i.e. defined as having a minimum of 50 occupied dwellings, with a maximum distance between any dwelling and the building closest to it of 100 metres, and where there is evidence of an urban centre ¹³.

^bThe Utstein subgroup includes patients who are >17 years, with presumed medical aetiology, bystander witnessed event and an initial shockable rhythm.

Abbreviations

Acronym	Term
B-CPR	Bystander Cardiopulmonary Resuscitation
BLS	Basic Life Supporter
CFR	Community First Responder
CPC	Cerebral Performance Category
CPR	Cardiopulmonary Resuscitation
CRI	Call Response Interval
CSO	Central Statistics Office
D-CPR	Dispatch assisted Cardio-Pulmonary Resuscitation
DAFR	Dublin Airport Fire and Rescue
DFB	Dublin Fire Brigade
ED	Emergency Department
EMS	Emergency Medical Services
ePCR	Electronic Patient Care Record
ERC	European Resuscitation Council
EuReCa	European Registry of Cardiac Arrest
GP	General Practitioner
HRB	Health Research Board
HSE	Health Service Executive
IQR	Interquartile Range
NAS	National Ambulance Service
OHCAR	Out-of-Hospital Cardiac Arrest Register
PCR	Patient Care Records
PEA	Pulseless Electrical Activity
PHECC	Pre-Hospital Emergency Care Council
pVT	Pulseless Ventricular Tachycardia
ROSC	Return of Spontaneous Circulation

Survivor's Story: "I Was Lucky They Were There"

Ralph Lynch, 73, Retired

On the evening of 28 September, what began as an ordinary Sunday for Ralph Lynch quickly became a life-threatening emergency. Thanks to the rapid actions of bystanders, trained responders, and the availability of a local defibrillator, Ralph survived an out-of-hospital cardiac arrest—an outcome he knows could have been very different.

Ralph, a former architect who spent years working on building sites, had been enjoying a busy period of community involvement in his local village. From contributing to Tidy Towns initiatives to completing physically demanding projects, he had noticed some shortness of breath in the months leading up to the event but had not realised the seriousness of his symptoms.

"I'd find myself stopping more often to catch my breath," he recalled. "I put it down to smoking. No one to blame but myself and the cigarettes."

That Sunday, Ralph had been celebrating his Grandchild's Birthday with his wife, Son, Daughter in law and two Grandchildren. Later that evening, he walked into a local pub during a community festival. He remembers greeting people—but nothing after that moment.

Within seconds, Ralph had collapsed.

What followed was a textbook example of the "chain of survival" in action. Remarkably, several retained fire and paramedic responders from Dunshaughlin happened to be present in the pub that night, including, a nursing instructor, and members of a Community First Responder (CFR) group—one of which had been established locally by Ralph's own

son, Jonathan, who works for the National Ambulance Service.

Alan Egan & Hugh McCarthy initiated CPR immediately and a nearby Automated External Defibrillator (AED) was retrieved from a local pharmacy and used to deliver two shocks. These early interventions were critical

Approximately 27 minutes after his collapse, Ralph was in the back of the Emergency Ambulance.

"I wouldn't be here without those people," he said. "I was so lucky they were in the bar that night."

Although Ralph has no memory of the resuscitation itself, he later learned that he regained consciousness and was transported by the NAS to hospital, where he received oxygen therapy and ongoing monitoring. He subsequently underwent further cardiac treatment, including the placement of two stents and an implantable defibrillator.

His recovery has been strong. Ralph has returned to many aspects of normal life and is preparing to begin a structured cardiac rehabilitation programme. One of the most significant changes he has made is quitting smoking.

Survivors' Stories

“Since that first week in hospital, I’ve stopped,” he said. “I’m using nicotine patches now.” “I try get out walking as much as I can but, I still get out of breath!”

Reflecting on his experience, Ralph is clear about the importance of community preparedness and early intervention. “Everyone needs to know where the nearest AED is, we have 3 or 4 AED machines around the village and town”.

“If I had been walking home instead, there would have been no one around - I wouldn’t have made it,” he said. “It just shows how

important it is that people are trained and that defibrillators are available.”

His story highlights the life-saving impact of Community First Responder programmes, public access defibrillation, and bystander CPR. In Ralph’s case, the right people, skills, and equipment were in the right place at the right time.

Ralph wanted to thank everyone involved in his care, and also the Cardiac Rehab team – Shane O’Farrell, Kate Corrigan and Anna Menchavez.

“I’m so grateful,” he said. “I can’t put into words how thankful I am.”



Survivor's Story: Cork Paramedic Who Saved Her Partner's Life

Mark O'Keeffe, 48

When off-duty paramedic Helena Kiely woke in the early hours of January 5th 2025, she had no idea she was about to face the most challenging emergency of her career, one that involved the person she loved most – Mark O'Keeffe.

Mark, a fit and healthy 48-year-old and regular gym-goer, had spent the evening with Helena at her Cork home after deciding to visit her unexpectedly following a difficult shift she had worked in the rain. The couple watched television and went to bed as normal.

At 4.44am, Helena woke to find Mark sitting on the edge of the bed gasping for breath. Initially, Helena thought Mark might be suffering from a panic attack, but her paramedic instincts suggested something more serious could be happening.

"Mark never spoke," Helena recalls. "Mark walked towards the ensuite, put his hand on the door handle and slowly collapsed to the ground."

Helena immediately assessed him, checking for a response and finding none. When Helena checked for a pulse, she made the devastating realisation that Mark was in cardiac arrest.

Acting instantly, Helena dialled 999 and sprinted to her car to retrieve the Automated External Defibrillator (AED) she carried as part of her role as an off-duty responder with the National Ambulance Service.

"I went out to the car while ringing 999 to get the defib and then ran back inside and upstairs to him," Helena said.

What happened next was a testament to the

training Helena had received throughout her career. Helena attached the AED pads to Mark's chest. The machine advised a shock, and Helena immediately delivered it before beginning CPR.

"In the ambulance service, we receive significant training and everything is embedded into you with a systematic approach," she said. "I was really grateful that my training kicked in."

Helena delivered multiple shocks from the defibrillator while continuing CPR. She also inserted an airway and delivered rescue breaths using a Bag-Valve Mask (BVM), all while waiting for emergency crews to arrive.

"It was very different because it was Mark, my partner," she said. "But I just went into work mode."

Within eight minutes, members of Carrigaline Community First Responders arrived to assist. Shortly afterwards, National Ambulance Service crews and advanced paramedics reached the scene.

By the time they arrived, Mark had been down for approximately 15 minutes.

"The crews were absolutely amazing," Helena said. "It was just like being at work. Everybody knew exactly what they were doing."

Eventually, a pulse returned and Mark was rushed to Cork University Hospital, where

he spent five days receiving treatment and monitoring before being discharged home on a Friday.

While his survival was remarkable, recovery proved to be a long and difficult journey.

“I woke up the following day in CUH with absolutely no recollection of what had happened,” Mark said.

The life-saving CPR that saved him also left him with a fractured sternum, while the psychological impact of the event presented its own challenges.

Previously active and in the gym several times a week, Mark suddenly found himself struggling with the simplest tasks. “At one point, I couldn’t walk to the front door and back again,” he said. “Walking to the end of the road was difficult.”

For someone accustomed to an active lifestyle, the experience was humbling and frustrating. However, determined to recover, Mark followed every piece of advice from his doctors and rehabilitation team. “The strength and resilience he showed through his recovery was phenomenal,” Helena said. “He just took it all in his stride.”

Today, Mark has made a full recovery. He is back in the gym, cycling, walking and enjoying all the activities he loved before his cardiac arrest.

“There’s nothing I can’t do now,” he said. “I’m so grateful. I don’t take any of the simple things for granted anymore. Family, health, being able to go for a walk or get out on a boat, they’re all things I appreciate so much more.”



The couple remain deeply thankful to everyone involved in Mark’s survival, including Carrigaline Community First Responders, National Ambulance Service crews, Cork University Hospital staff and the emergency call takers who guided Helena during those critical moments.

Helena believes Mark’s survival demonstrates the importance of the chain of survival: early recognition of cardiac arrest, immediate activation of emergency services, early CPR, rapid defibrillation and advanced medical care. Mark and Helena have since set up their own training company which provides training on CPR, defibrillator use, first aid, mindfulness and PTSD support.

“Mark survived because the entire chain of survival worked exactly the way it’s supposed to. Early detection, early CPR, early defibrillation, the first responders and ambulance crews, everybody played a role.”

“We’re so grateful for what happened and for everyone who helped us,” Helena said. “The reality is that most cardiac arrests happen at home. If more people know what to do and are confident enough to act, more lives can be saved.”

For Mark, meeting many of the people who

helped save his life one year later was an emotional experience.

“It’s really humbling to meet all the different people who saw me on the worst day of my life,” he said.

Today, the couple’s message is simple: to ensure more people know what to do in those critical first minutes when a life hangs in the balance, and know your Eircode.

Because as Mark’s story proves, those minutes can mean everything.



Chapter 1

The National Out-of-Hospital Cardiac Arrest Register (OHCAR)

The OHCAR Steering Group and Governance

The Aim of OHCAR

OHCAR reporting to Service Providers

Ireland and the EuReCa Studies



Chapter 1

1.0 The National Out-of-Hospital Cardiac Arrest Register (OHCAR)

The OHCAR project was established in June 2007 in response to a recommendation in the “*Report of the Task Force on Sudden Cardiac Death*”¹. The need for OHCAR was also emphasised in the policy document “*Changing Cardiovascular Health*”² and the “*Emergency Medicine Programme Model of Care*”³. OHCAR is one of nine OHCA registries in Europe with full national coverage.

1.1 The OHCAR Steering Group and Governance

OHCAR is an integral part of the Clinical Directorate of the National Ambulance Service (NAS), Health Service Executive (HSE) and is guided by the OHCAR Steering Group (Appendix 1).

1.2 The Aim of OHCAR

The aim of OHCAR is to support improved outcomes from OHCA in Ireland by:

- Collecting information on the population who suffer OHCA and the arrest circumstances
- Collecting information on the pre-hospital treatment of OHCA patients
- Monitoring the survival to hospital discharge of OHCA patients
- Establishing a sufficiently large patient database to enable identification of the best treatment methods for OHCA and optimum organisation of services
- Providing regular feedback to service providers
- Facilitating research on best practice nationally and internationally using OHCAR data.

1.3 OHCAR reporting to Service Providers

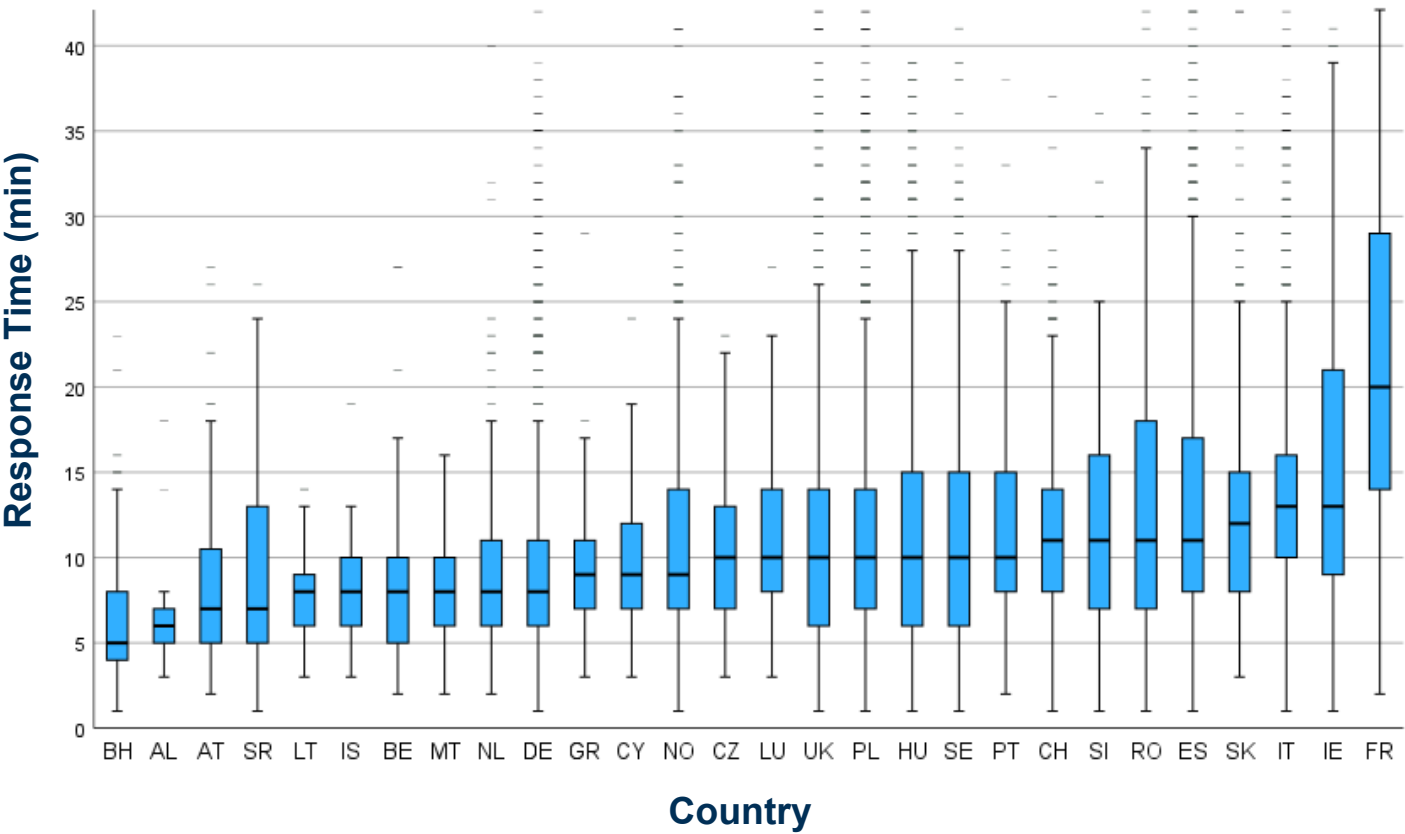
OHCAR is used to provide data for the ‘ROSC at Hospital’ quarterly clinical Key Performance Indicator for NAS, and also to provide detailed regional quarterly reports. These include descriptive data elements and outcome variables at regional level and constitute the data source for reports circulated by NAS to stations. A quarterly report is provided to Dublin Fire Brigade (DFB) with outcome data and descriptive information. OHCAR Annual reporting is undertaken according to the HSE Health Regions (Map 1).

1.4 Ireland and the EuReCa Studies

EuReCa THREE was launched in June 2022⁴. OHCAR has provided National OHCA data for incidents in Ireland to the EuReCa THREE study, which covered the time period from 1st September to November 30th 2022. The EuReCa THREE study focused on EMS response times and did not include community saves pre-EMS arrival. In 2017 Ireland participated in the EuReCa TWO study, which was a three month study from October to December 2017, and was published in 2020⁵. Ireland was one of only four countries that contributed data for the entire country for the study period. In October 2014, Ireland participated in the EuReCa ONE⁶ study – a one-month survey of OHCA

cases in 27 countries across Europe. Ireland was one of only seven countries that contributed data for the entire country for the study period.

Figure 1: EuReCa THREE Response Times (Ireland = 'IE')



Chapter 2

Methods

Inclusion / Exclusion Criteria

Source of OHCAR Data

Data Collection

Aetiology

Data Quality Management

Data Analysis



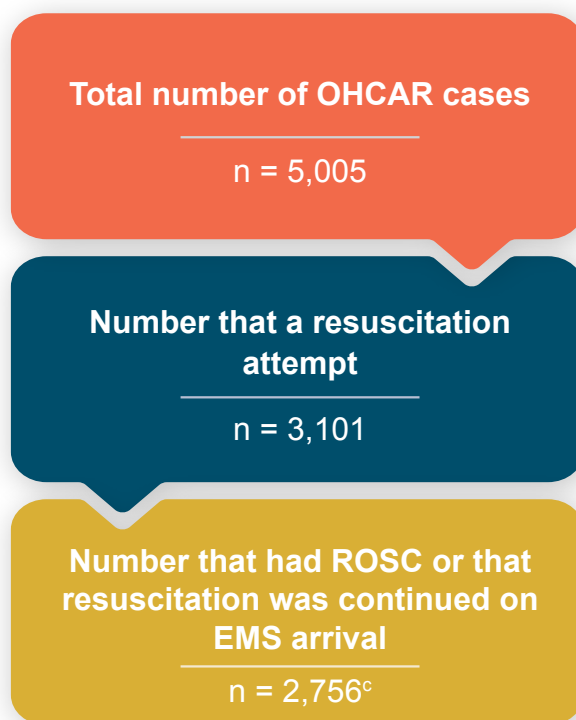
Chapter 2

2.0 Methods

2.1 Inclusion / Exclusion Criteria

OHCAR registers “all patients who suffer a witnessed or un-witnessed out-of-hospital cardiac arrest in Ireland which is confirmed and attended by Emergency Medical Services (EMS) including patients who have achieved Return of Spontaneous Circulation (ROSC) before EMS arrival (Figure 2). A resuscitation attempt is defined as performance of cardiopulmonary resuscitation (CPR) and/ or attempted defibrillation where there is evidence of a cardiac arrest rhythm.

Figure 2: Inclusion criteria



° This figure is the denominator for all other further calculations.

2.2 Source of OHCAR Data

The primary sources of OHCAR data are Patient Care Records (PCRs) and dispatch data from the two statutory ambulance services, the National Ambulance Service (NAS) and the Dublin Fire Brigade (DFB). OHCAR has data sharing agreements with other organisations, but almost all data is provided from statutory services.

2.3 Data Collection

OHCAR collects data in the format of the internationally agreed Utstein dataset ^{7,8}.

National Ambulance Service: NAS uses electronic PCRs (ePCR), and during 2025 OHCAR identified all cases via the ePCR system. Following validation, OHCAR staff upload the data onto the OHCAR database. OHCAR receives NAS dispatch data monthly from the National Emergency Operations Centre (NEOC) and this data is added to each record in the OHCAR database. Data from Community First Responders is gathered electronically and is matched via incident numbers and added to NAS data. Cases are also matched with data from NAS defibrillators.

Dublin Fire Brigade: PCRs are sourced by DFB's EMS Support Unit and data are provided to OHCAR on a quarterly basis in a summarised electronic format. These records are integrated with data from the DFB East Region Command Centre in Townsend Street. Electronic copies of DFB PCRs are also sent to OHCAR to enable case validation.

Hospitals: OHCAR has a data sharing agreement with all hospitals who receive OHCA patients except Our Lady's Children's Hospital, Crumlin. Data collection from hospitals is facilitated by hospital staff, including administrators, resuscitation officers, clinical nurse managers and consultants. Acute hospitals provide information on survival status and Cerebral Performance Category (CPC) score ^{9,10}.

2.4 Aetiology

As per the Utstein definition, where there is no evidence of another cause, e.g. trauma, asphyxiation, drug overdose cases were presumed to be of medical aetiology.

2.5 Data Quality Management

The Utstein guidelines state that, "We recommend that registries use methods to identify whether specific cases have missing data and aim to improve data collection in these groups ⁸". The quality of data variables for each OHCAR case is vital to the usefulness of the register. Responsibility for accurate and comprehensive data recording lies with the emergency practitioners who attend the OHCA scene. OHCAR works with NAS and DFB to enhance data quality by providing quarterly reports which include a summary of the availability of some core data elements. NAS then produces

⁹Cerebral Performance Category (CPC) score is an assessment score developed to assess both traumatic and anoxic cerebral injuries.

and circulates OHCAR summary reports to ambulance stations on a quarterly basis. DFB also provide each practitioner access to their quarterly reports.

The following data quality checks are also undertaken:

- Case duplication searches
- Checking for inconsistent and/or conflicting data values
- Validation of initial data entries and against OHCAR inclusion criteria
- Clinical expertise is provided by the OHCAR Steering Group when required.

2.6 Data Analysis

Data analysis was performed using IBM SPSS version 29. In all cases $p < 0.05$ was used as the level of statistical significance. Where appropriate, relationships between categorical values were expressed in percentages and examined by the Chi square test for significance ¹¹.



Chapter 3

Results for 2025

Incidence

Geographical Distribution of Incidents

Demographics

Community First Responders

Dispatch assisted Cardio-pulmonary
Resuscitation

Presumed Aetiology

Call Response Interval

Transported to Hospital

Event Location

First Monitored Rhythm

Bystander CPR

Mechanical CPR

Defibrillation

Advanced Airway Adjuncts

Cannulation

Cardiac Arrest Medication

ROSC at any stage prehospital

ROSC on Hospital arrival

Discharged alive from Hospital

Neurological function at discharge

OHCA in the under 35 age group

Utstein Comparator Subset

Utstein Comparator Subset Outcomes



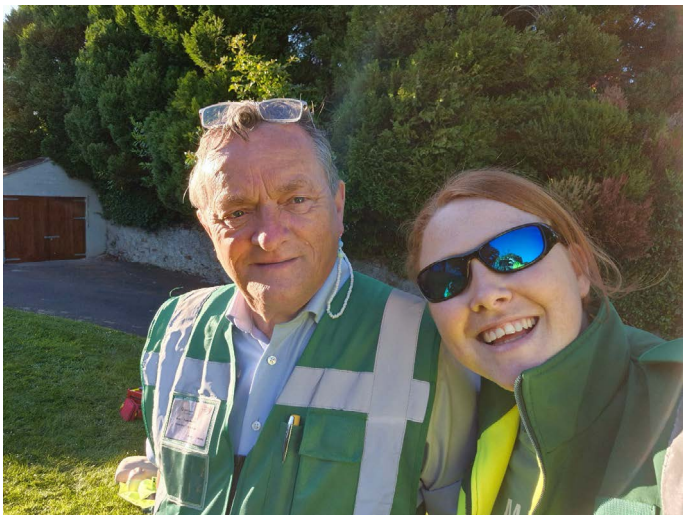
Chapter 3

3.0 Results for 2025

3.1 Incidence

In 2025, a total of **2,756** OHCA were attended where resuscitation was reported to have been attempted by NAS, DFB, DAFR or bystanders, and continued by the EMS or had achieved ROSC pre-EMS arrival. This equates to 54 OHCA resuscitation attempts per 100,000 in 2025 ¹². In Europe, the estimated incidence of OHCA ranges between 53 and 166 per 100,000 per year ⁵.

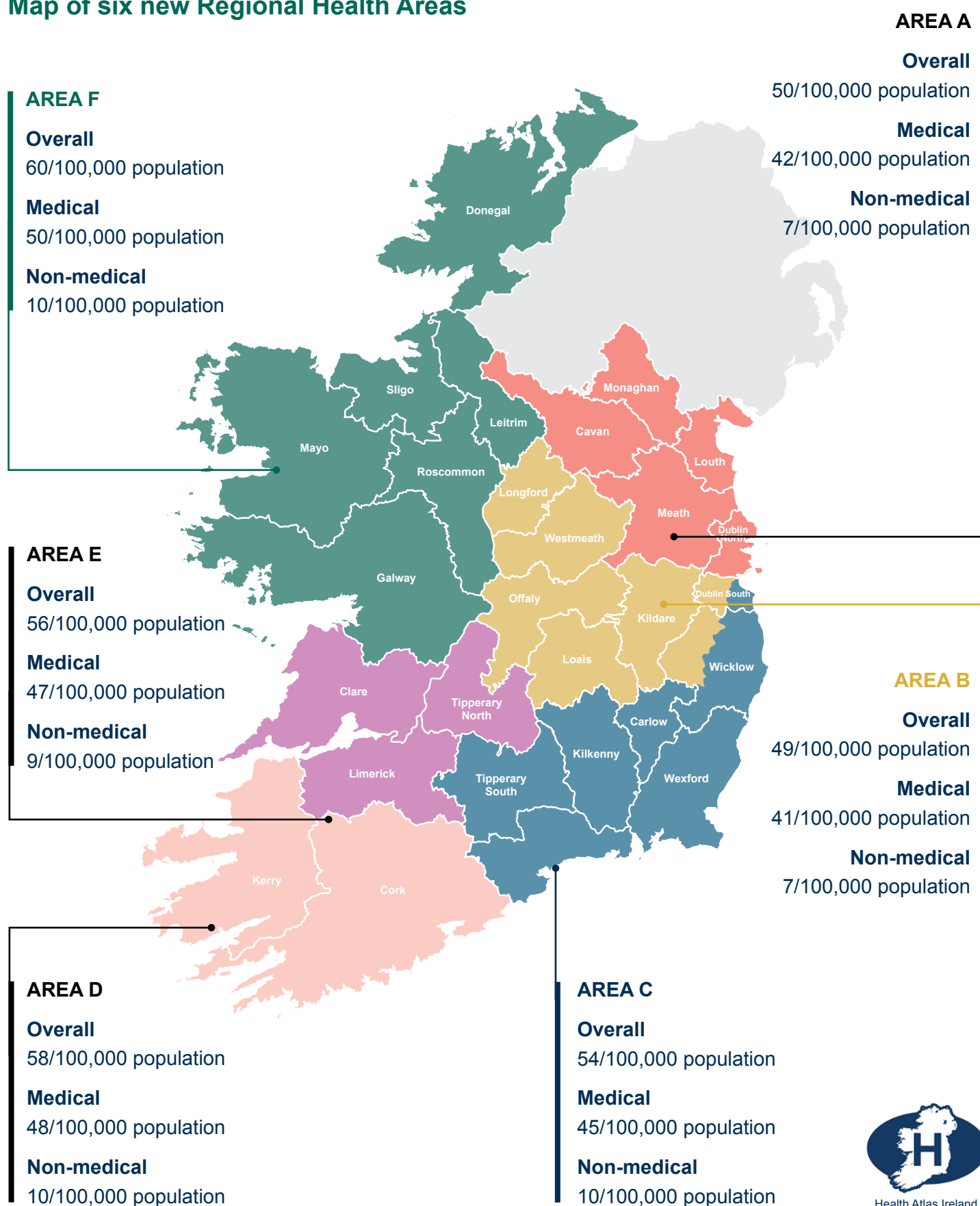
In 2025, the majority of OHCA incidents were presumed to be of medical aetiology (45/100,000 persons) compared to non-medical aetiology (trauma, asphyxia, drug overdose or submersion, 9/100,000 persons). (Map 1^d).



^dPopulation data from Census of Population 2022 ¹³.

Map1: Incidence of OHCA with resuscitation attempts in 2025

Map of six new Regional Health Areas



3.2 Geographical Distribution of Incidents

The geographical coordinates of incident locations were mapped using the HSE application 'Health Atlas' (<https://www.healthatlasireland.ie/>). Map 2 highlights that the majority of cases occurred in the most populated areas. The classification of an urban area matches with the Central Statistics Office (CSO) definition of a settlement i.e. urban settlements are towns with a population of 1,500 or more, while settlements with a population of less than 1,500 are classified as rural ¹².

- 71% of cases occurred in an urban area (n=1,907/2,682); 74 cases could not be geocoded due to insufficient data or the event having occurred during ambulance transport

Map 2: Geographical distribution of OHCAR Incidents with settlement/non-settlement classification

- Rural
- Urban



3.3 Demographics

- 1,912 patients were male (69%)
- Patients ranged in age from less than one to over 100 years old (median age 68 years, interquartile range (IQR) 54 – 79)
- Females were older than males, 71 years (IQR 56 – 81) vs. 68 years (IQR 54 – 79) respectively), ($p < 0.001$)
- Females were more likely to collapse in a private setting (homes or residential institutions) than males ($n=707/841$, 84% v $1,402/1,912$, 73%), ($p < 0.001$).

3.4 Community First Responders

In December 2025, there were 342 Community First Responder (CFR) schemes in 26 counties linked with NAS. The CFR group members are predominantly made up of lay people with an interest in providing life-saving support in their communities, and receive training prior to activation from the NAS National Emergency Operations Centre. CFR schemes operate on a voluntary basis and are trained in basic life support and the use of defibrillators. They are co-ordinated locally by volunteers, work under the auspices of the National Ambulance Service policies, and receive automatic incident notifications from NEOC.

- 36% of all cases had evidence of CFR involvement, either attended, supported by or were first on scene ($n=980/2,756$)
- CPR was initiated by CFR's in 12% of cases ($n=330/2,710$)
- CFR's first applied defibrillators pads in 20% of cases ($n=539/2,756$)
- In those patients who were defibrillated, the first shock was delivered by CFR's in 18% of cases ($n=168/953$)
- An extra 15 patients were discharged alive having received their first shock by CFRs compared to 2024 (26% $n=44/168$ vs. 19%, $n=29/156$), ($p=0.0509$).

3.5 Dispatch assisted Cardiopulmonary Resuscitation

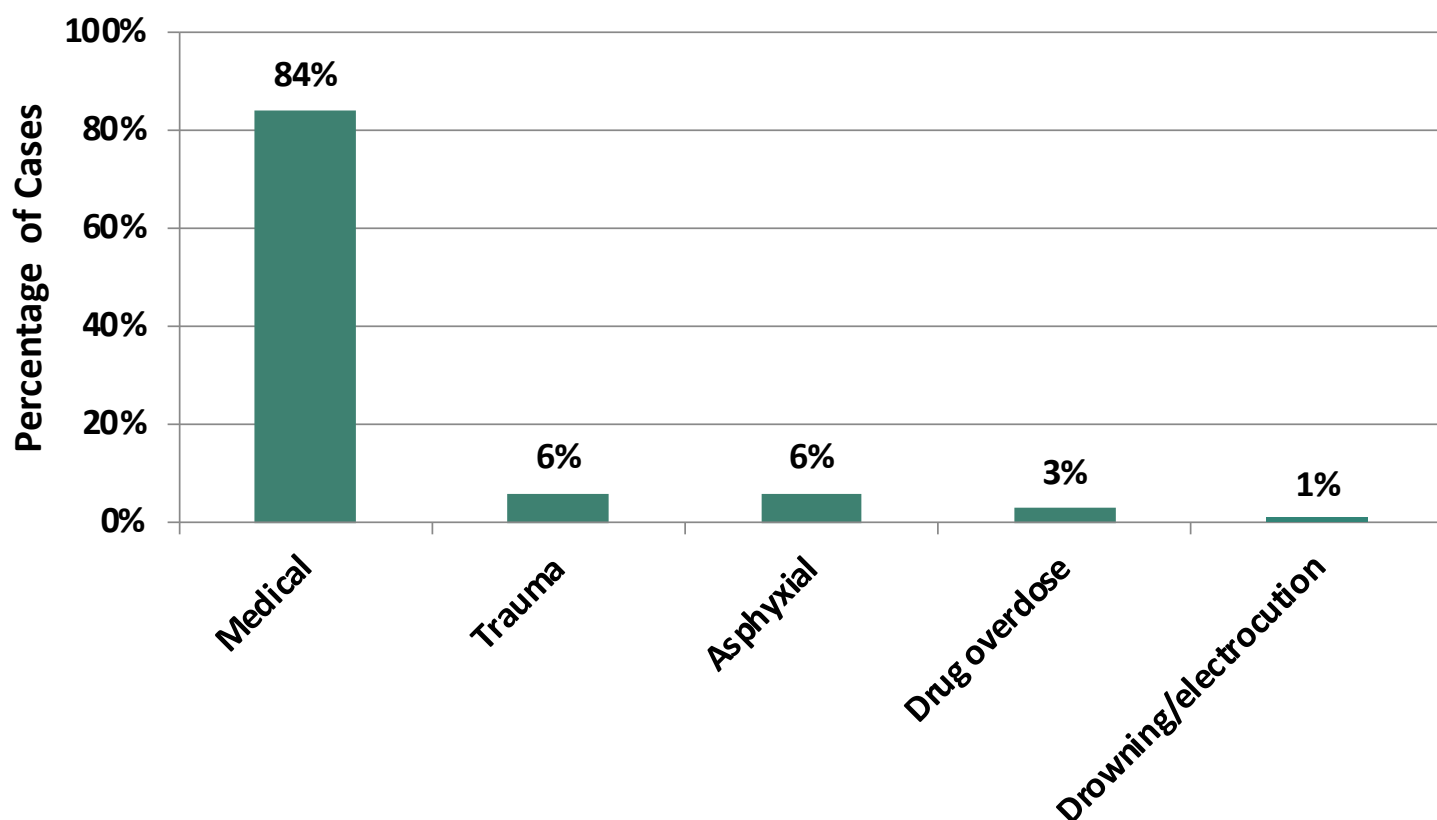
Since 2022, NAS has been recording the metric Dispatch-assisted CPR (D-CPR). When cardiac arrest is confirmed or suspected by the Emergency Call Taker, the caller is given instructions in performing CPR. The time taken to commence is measured in minutes and seconds from when the call is received to when D-CPR is offered by the EMS call taker. Only non-EMS witnessed cases are included here. It is important to note that D-CPR instructions are provided only if the call is categorised as cardiac arrest by the call taker and if the caller has not already commenced CPR.

- Of those NAS cases that were not EMS witnessed that had B-CPR performed, 49% received D-CPR instructions (the other 51% had already commenced CPR). The median time to first instruction was 2 minutes 40 seconds (IQR 1:34 – 5:18) ($n=902/1,840$).

3.6 Presumed Aetiology

- 84% of incidents were presumed to be of medical aetiology (n=2,310/2,756)
- Non-medical aetiologies included (Figure 3):
 - 6% asphyxia (n=167)
 - 6% trauma (n=174)
 - 3% drug overdose (n=76)
 - 1% submersion (n=27)
 - <1% Electrocution (n=<5)
- 82% of male patients had a presumed medical aetiology (n=1,568/1,912) compared to 88% of female patients (n=740/841), (p<0.001).
- Patients with a presumed medical aetiology were significantly older than all other aetiologies (71 years vs. 50 median years respectively), (p<0.001).

Figure 3: Presumed aetiology (n=2,756)



3.7 Call Response Interval

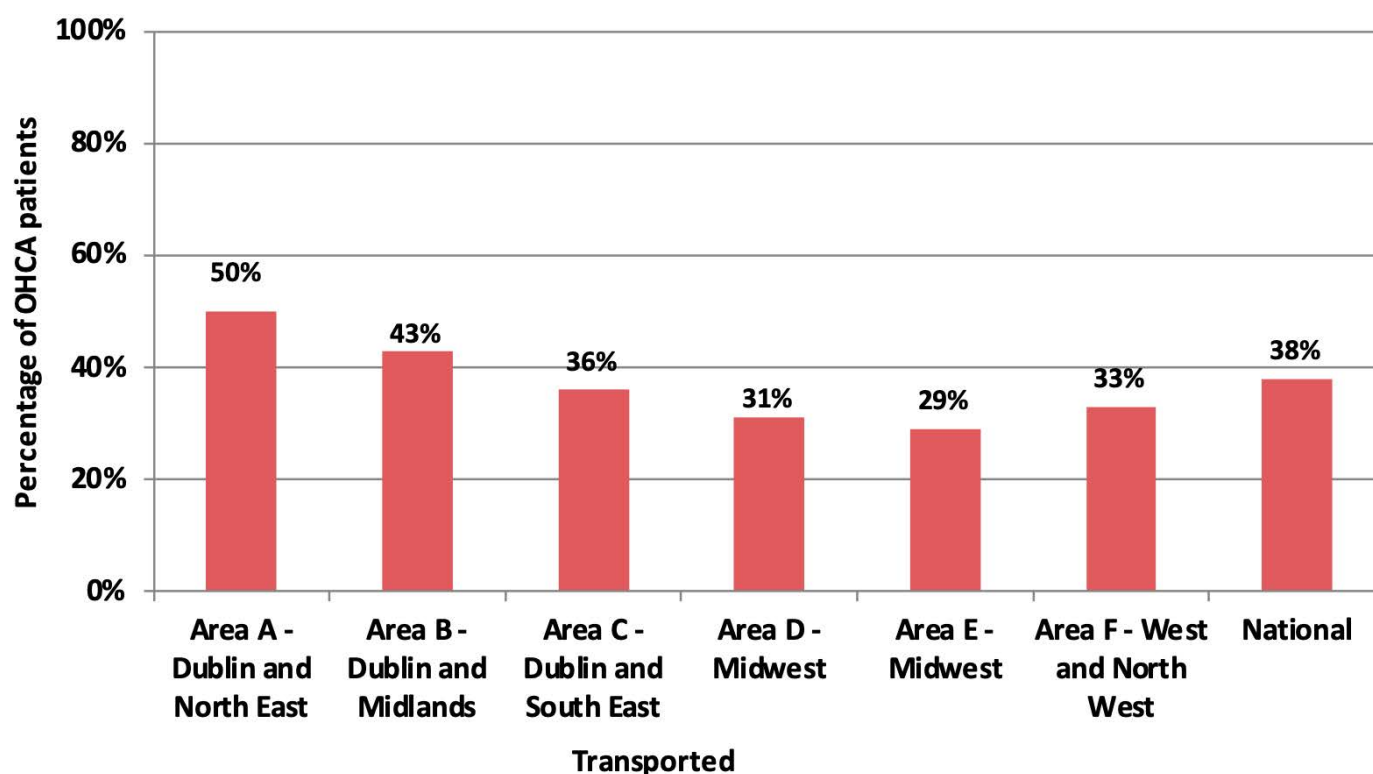
As per the Utstein definition ^{7,8}, the call response interval (CRI) is the interval from the time the emergency call was received at the dispatch centre to arrival of EMS at the scene. Only the CRI for non-EMS witnessed cases are included in this analysis (n=2,468/2,719). As CRI is not normally distributed, the median value for each category is given:

All non EMS witnessed cases	14 minutes (IQR 9 – 22 minutes)
Rural non EMS witnessed cases	19 minutes (IQR 13 – 26 minutes)
Urban non EMS witnessed cases	12 minutes (IQR 9 – 19 minutes)
Utstein comparator group	14 minutes (IQR 9 – 21 minutes)

3.8 Transported to Hospital

- 38% of patients were transported to either an Emergency Department or a cardiac catheterisation laboratory (n=1,058/2,756)
- The percentage of patients who were transported to hospital was 50% in Regional Health Area (RHA) A – Dublin and North compared to 29% in Area E – Midwest, (Figure 4)
- More patients were transported in urban areas compared to rural areas (41% vs. 29%, p<0.001).

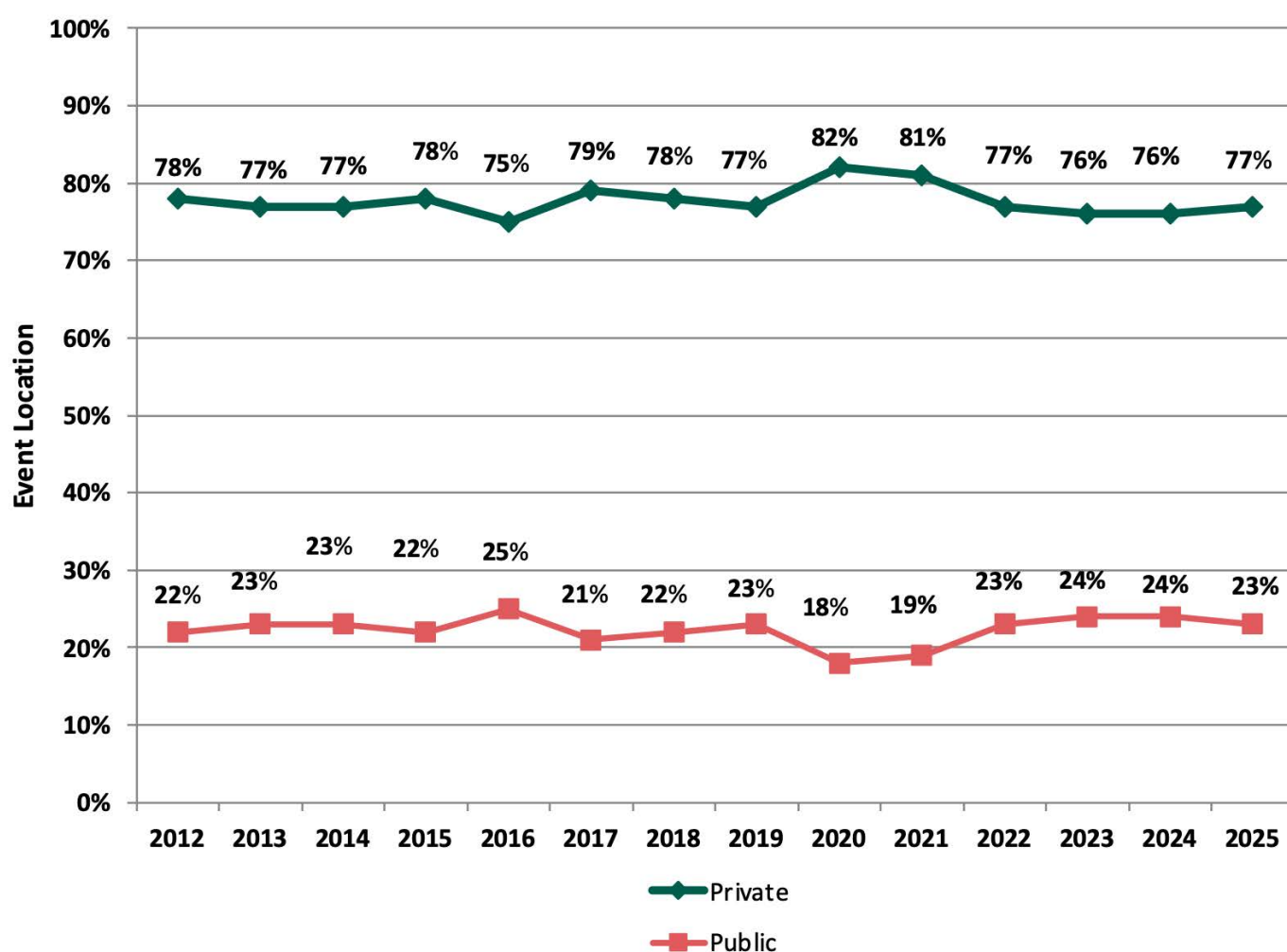
Figure 4: Proportion of patients transported to hospital by RHAs and nationally



3.9 Event Location

- 70% of incidents occurred in the home (n=1,938/2,775)
- 77% of incidents occurred in a private setting (home, farm or residential institution (n=2,110/2,755)
- 23% of cases occurred in a public setting (industrial place, public building, GP surgery, recreational or sports place, street or road, in the ambulance, and other places such as rivers, lakes or piers (n=645/2,755) (Figure 5)
- In urban areas, a similar proportion of patients collapsed in a public place compared to rural areas (22% vs. 23%).

Figure 5: Event Location



3.10 First Monitored Rhythm

- 24% of cases were in a shockable rhythm at time of first rhythm analysis (n=663/2,754) (Figure 7)
- The initial rhythm was asystole in 40% of cases (n=1,112/2,685), (Figure 8).

Figure 7: Initial Rhythm shockable

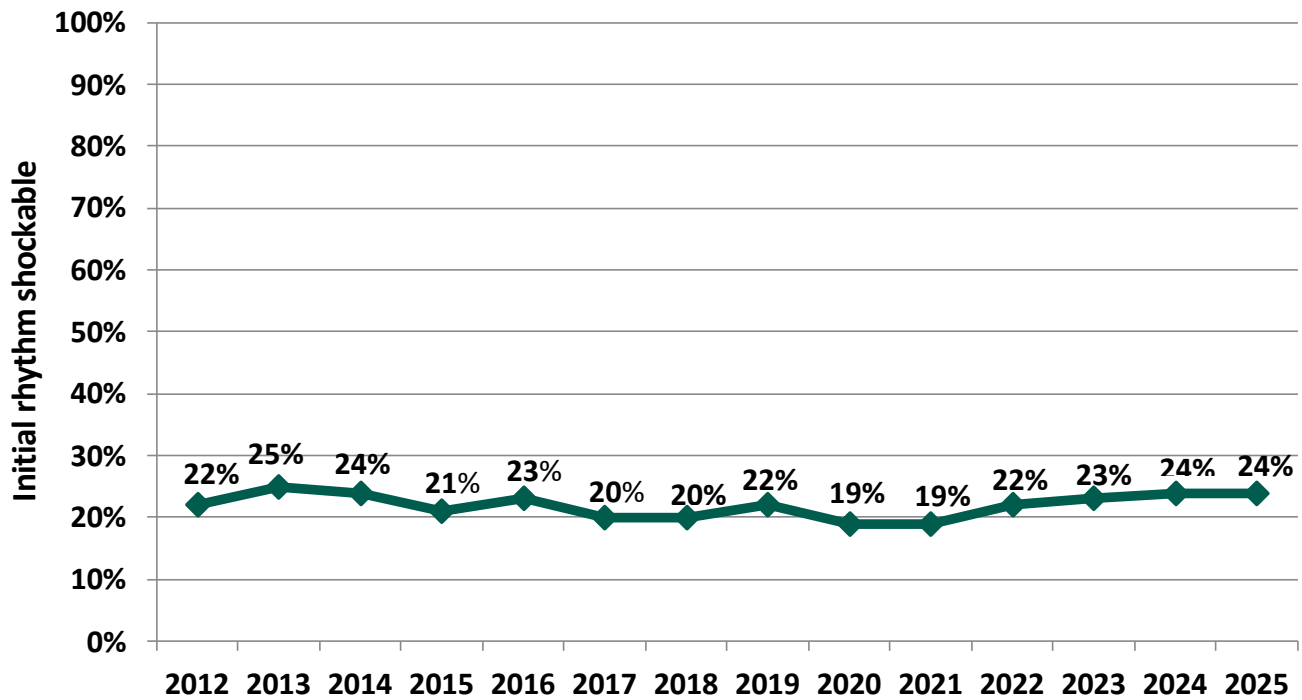
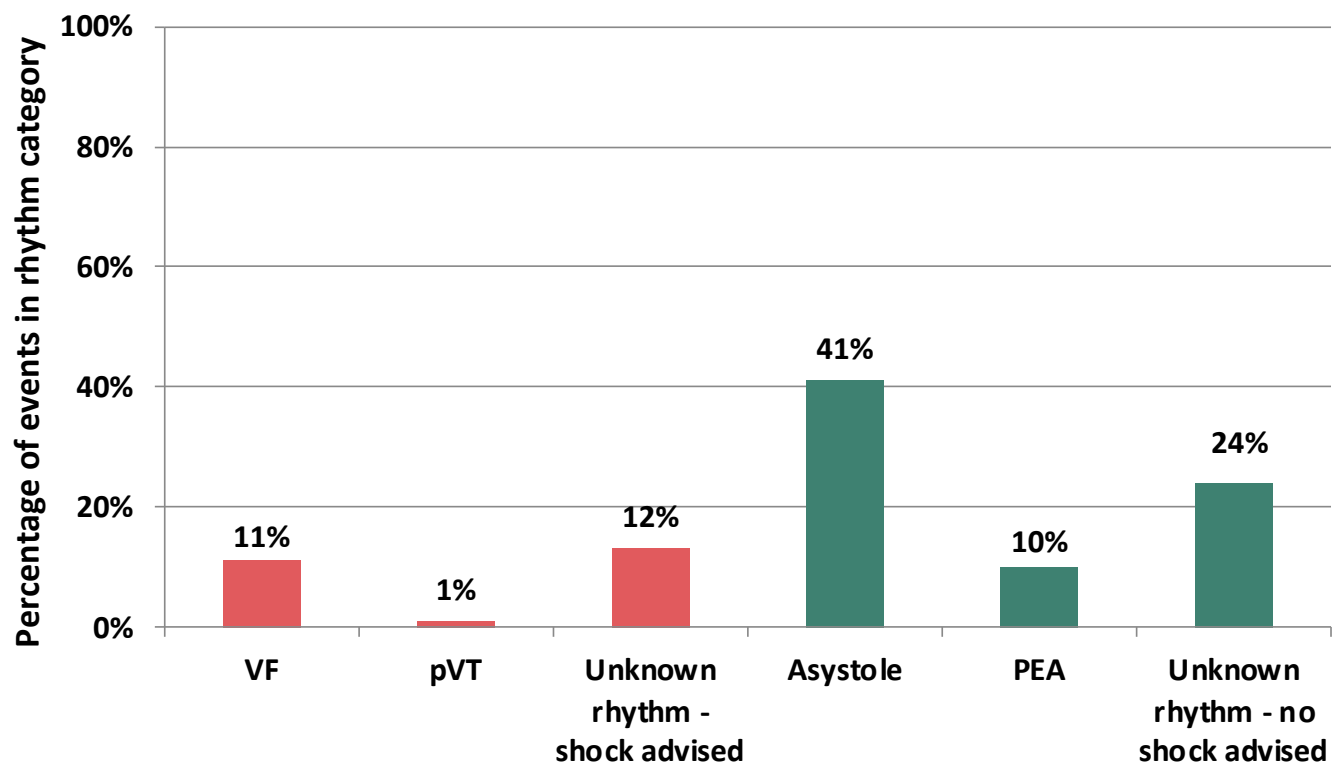


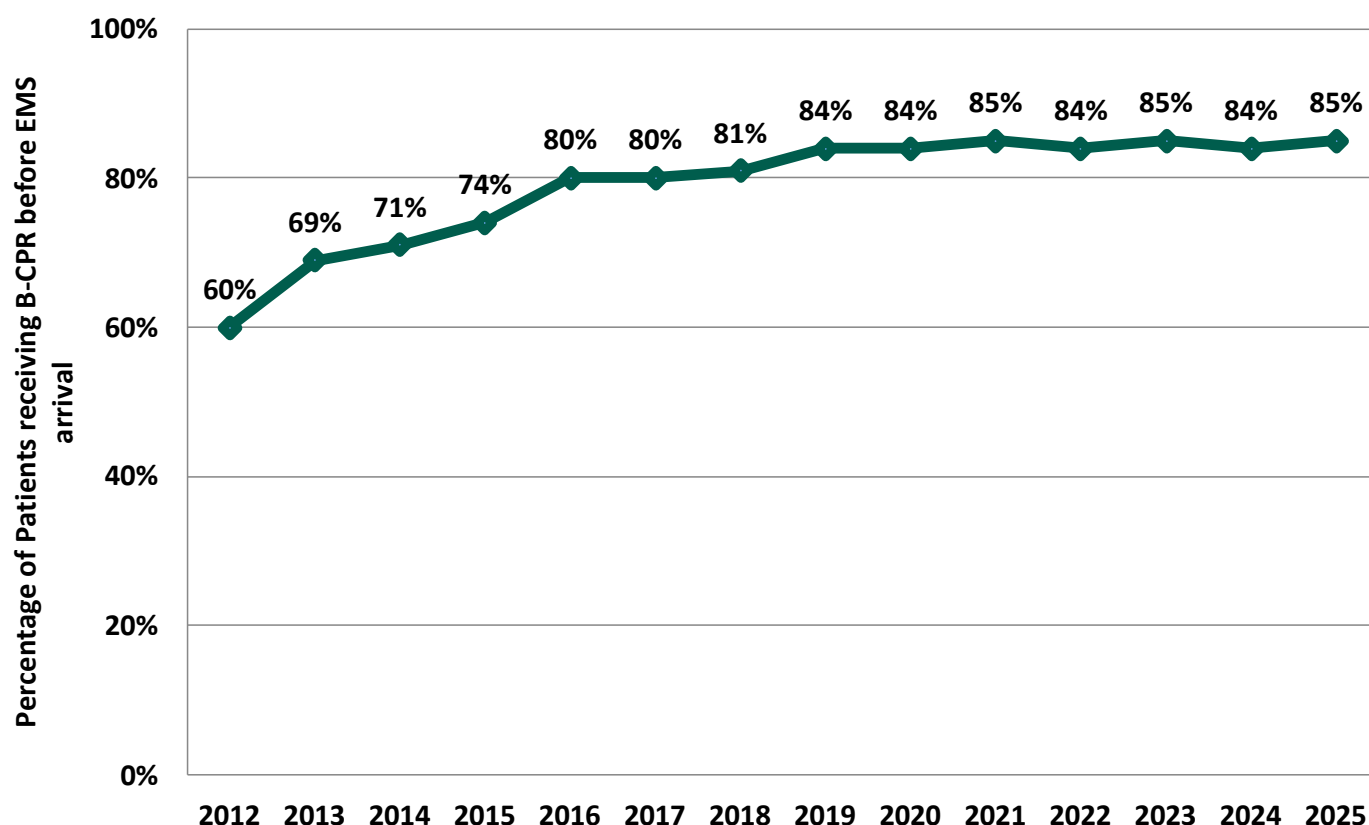
Figure 8: First monitored rhythm (n=2,685)



3.11 Bystander CPR

- Bystander CPR was attempted in 85% of non-EMS witnessed cases (n=2,077/2,441) (Figure 9).

Figure 9: Percentage of patients receiving B-CPR before EMS arrival, years 2012 – 2025



- In the subgroup of patients that had a bystander witnessed collapse (n=1,468) 87% (n=1,277) of patients had bystander CPR (B-CPR) attempted
- A higher proportion of cases in a rural area received B-CPR (n=662/717) compared to an urban area (n=1,388/1,689) (92% vs. 82%; p<0.001)
- A higher proportion of cases in a public location received B-CPR (n=485/542) compared to a private location (n=1,592/1,889), (89% vs. 84%; p<0.002).

3.12 Mechanical CPR

- 49% of cases had Mechanical CPR performed (n=1,295/2,639).

3.13 Defibrillation

- 35% of cases had defibrillation attempted (n=953/2,755)
- 12% of cases had defibrillation attempted pre-EMS arrival (n=336/2,755) (Fig. 10)
- Of the 953 patients who had defibrillation attempted:
 - 429 had the pads applied pre-EMS arrival (45%)
 - 336 had the first shock delivered pre-EMS arrival (35%, Figure 11).

Figure 10: 12% of all cases had defibrillation attempted pre-EMS arrival (n=336/2,755)

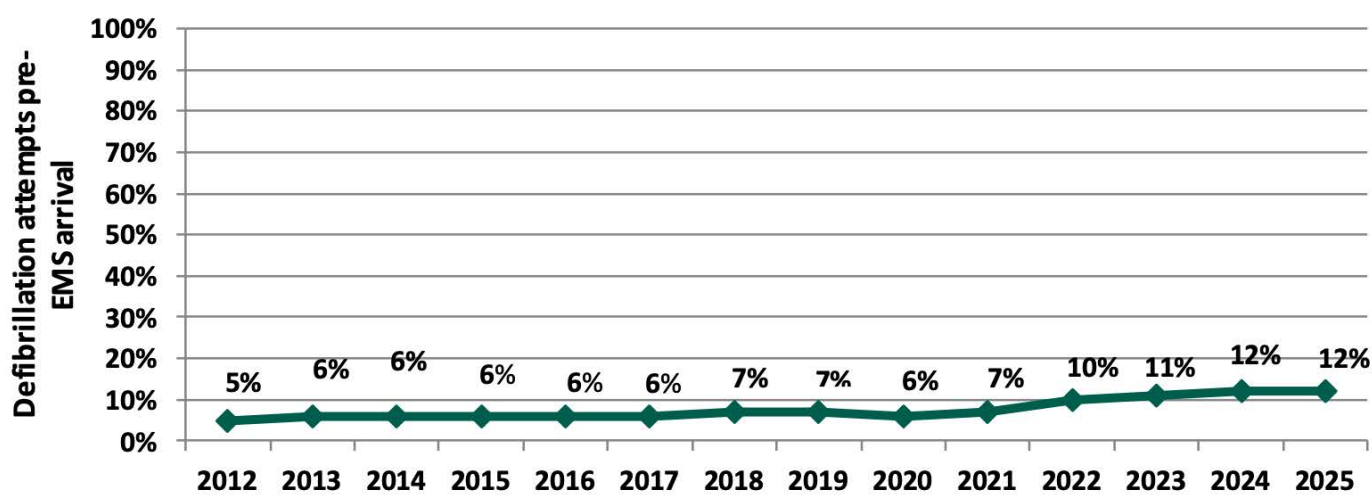
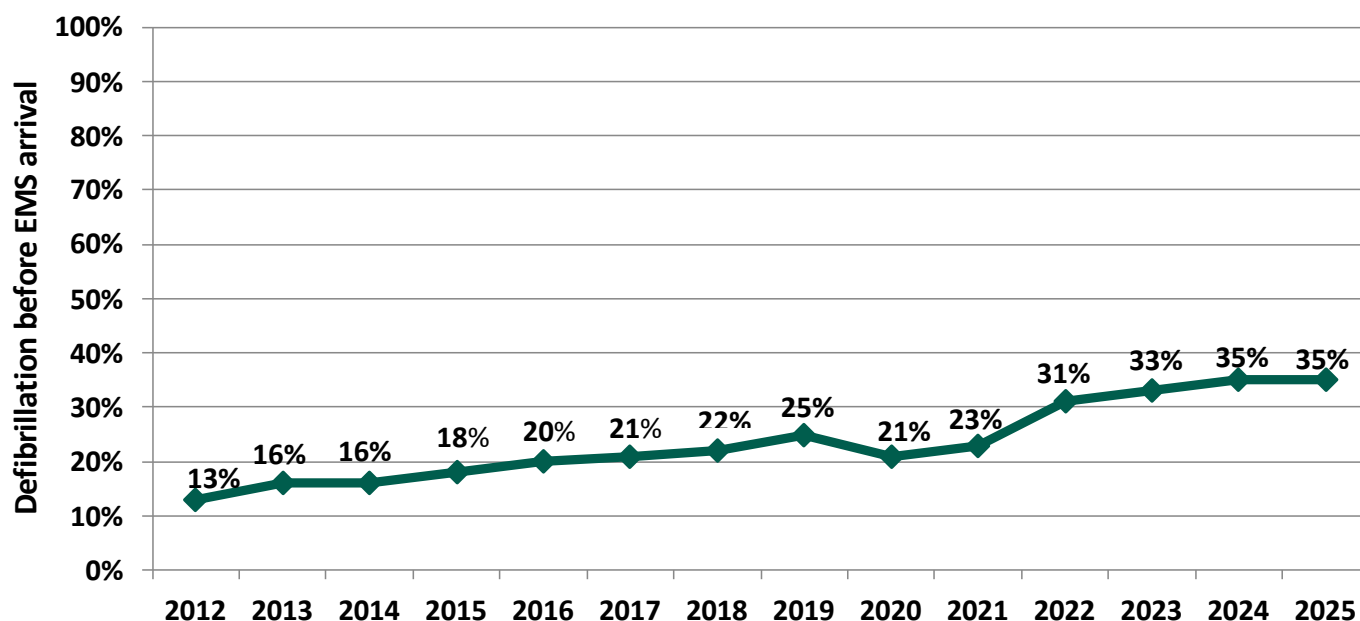


Figure 11: Defibrillation attempted pre-EMS arrival (of those with attempted defibrillation) (n=336/953)



First shock delivered before EMS arrival

In the 336 cases where first shock was delivered before EMS arrival, Off Duty Responders (ODRs) were involved in 18% of cases (n=62/336). The identity of the person who delivered the first shock was as follows:

- Community First Responder (50%, n=168)
- Members of the general public (24%, n=80)
- Local Fire services (9%, n=30)
- Nurses (7%, n=23)
- Doctors (6%, n=22)
- Voluntary Services (1%, n=4)
- Members of An Garda Síochána (3%, n=9)

Conversion to shockable rhythm during resuscitation

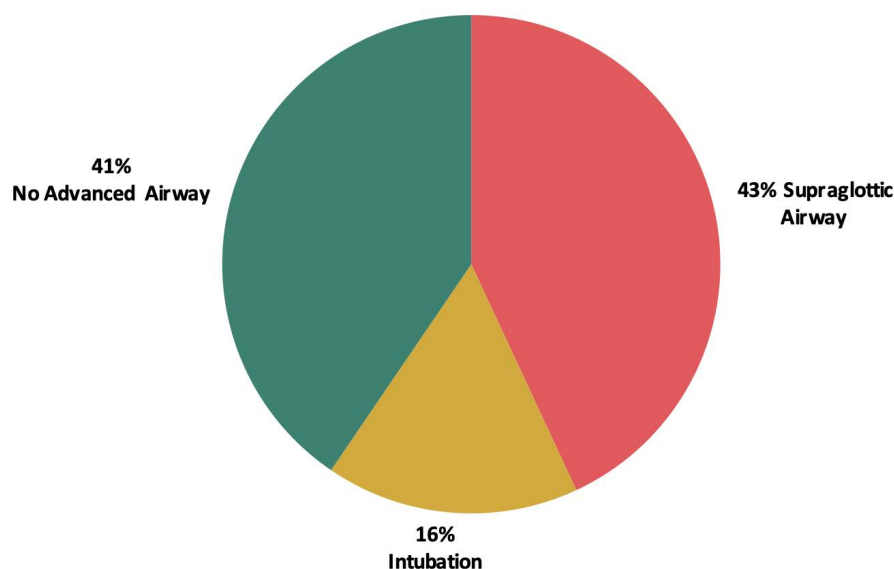
A total of 298 patients converted to a shockable rhythm during resuscitation. Of these:

- 48% were initially in asystole (n=142/298)
- 16% were initially in PEA (n=47/298)
- Initial rhythm type was not specified for the remaining 109 cases.

3.14 Advanced Airway Adjuncts

In 60% of cases, the final airway adjunct used was an advanced airway, i.e. supra-glottic airway device or intubation (n=1,610/2,705), (Figure 12).

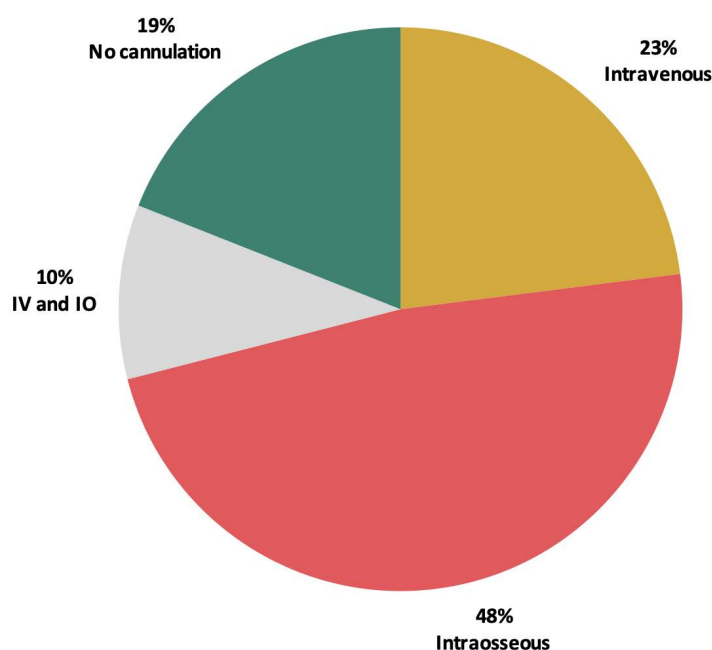
Figure 12: Adjunct airway management (n=2,705)



3.15 Cannulation

- 81% of cases had cannulation performed (n=2,219/2,756)
 - 48% of cases had intraosseous cannulation (n=1,301/2,735)
 - 23% had intravenous only cannulation (n=619/2,735)
 - 10% had a combination of both techniques (n=276/2,735)
 - 19% had no cannulation performed (n=539/2,735) (Figure 13).

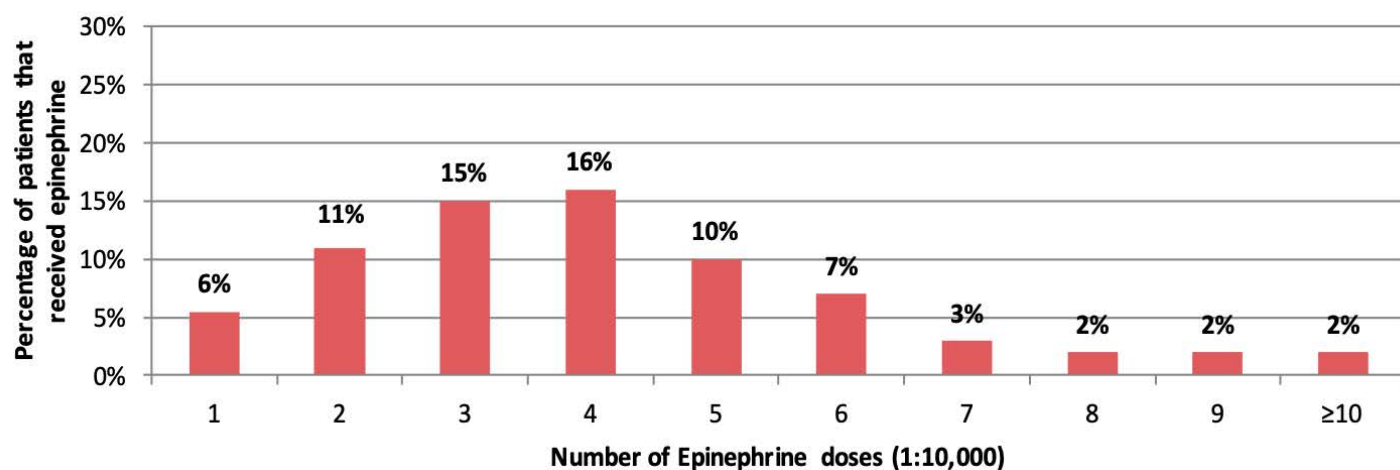
Figure 13: Cannulation (n=2,735)



3.16 Cardiac Arrest Medication

- 72% of cases had epinephrine administered (n=1,996/2,756); the number of doses given ranged from 1 to 25 (Figure 14).

Figure 14: Percentage of Epinephrine doses (1:10,000)



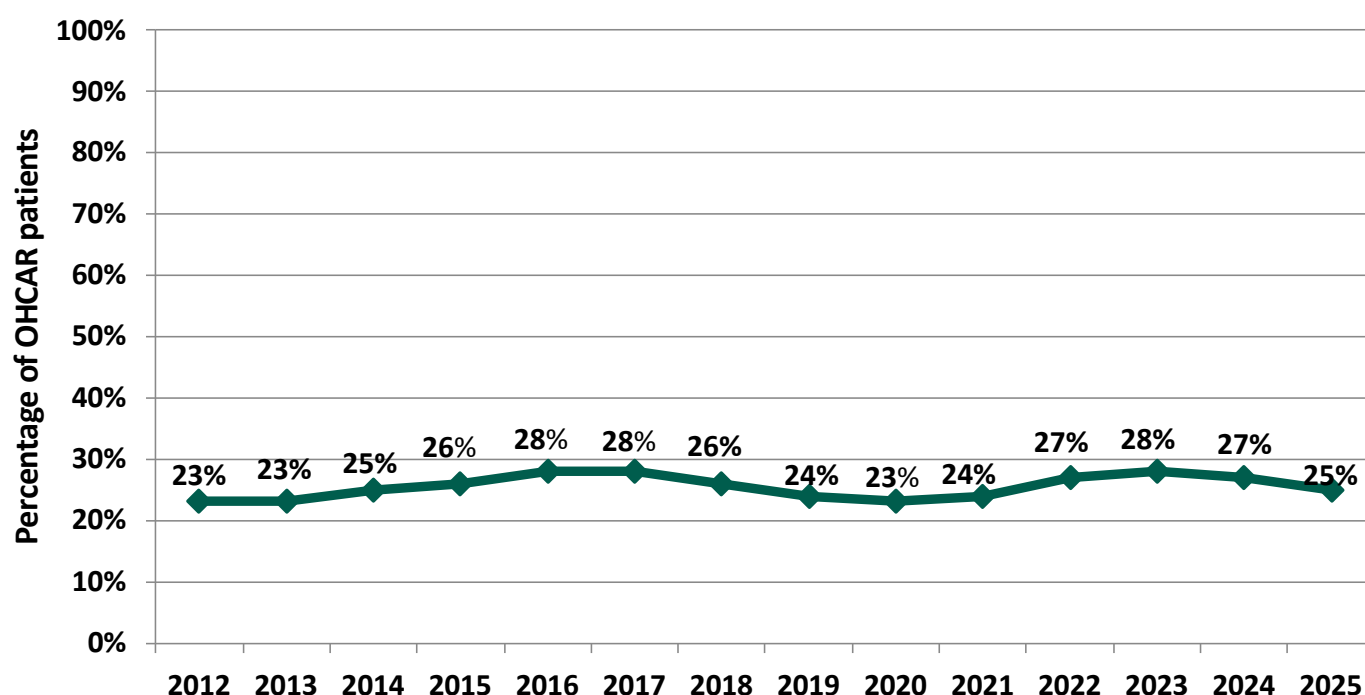
3.17 ROSC at any stage prehospital

ROSC at any stage refers to the successful, temporary or sustained restoration of a pulse at any point regardless of whether the patient goes into cardiac arrest again.

25% of cases had ROSC at any stage (n=695/2,756) (Figure 15)

A higher number of patients achieved ROSC at any stage in urban compared to rural areas (27% vs. 20%) (n=509/1,907 vs. n=158/775), (p<0.001).

Figure 15: ROSC at any stage pre-hospital, all patients. Years 2012 – 2025

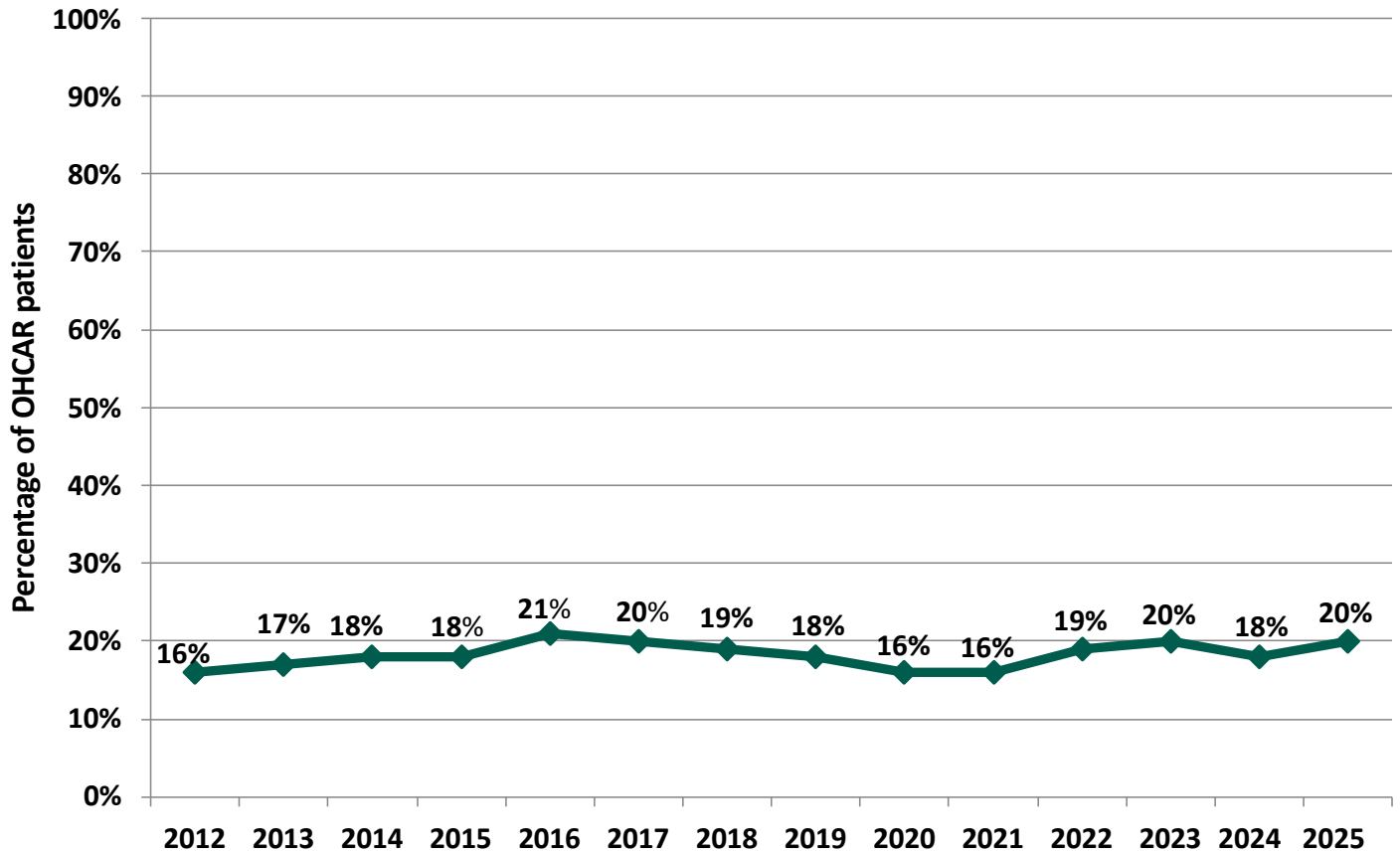


3.18 ROSC at Hospital arrival

ROSC at Hospital arrival refers to the heart beating on its own again, producing a measurable blood pressure and a palpable pulse without the immediate need for ongoing chest compressions.

- 20% of cases had ROSC at Hospital arrival (n=543/2,750) (Figure 16)
- ROSC at Hospital arrival was higher in urban than rural areas (20% vs. 18%), (p<0.003)
- 52% of patients that were transported to Hospital had ROSC at arrival (n=542/1,052).

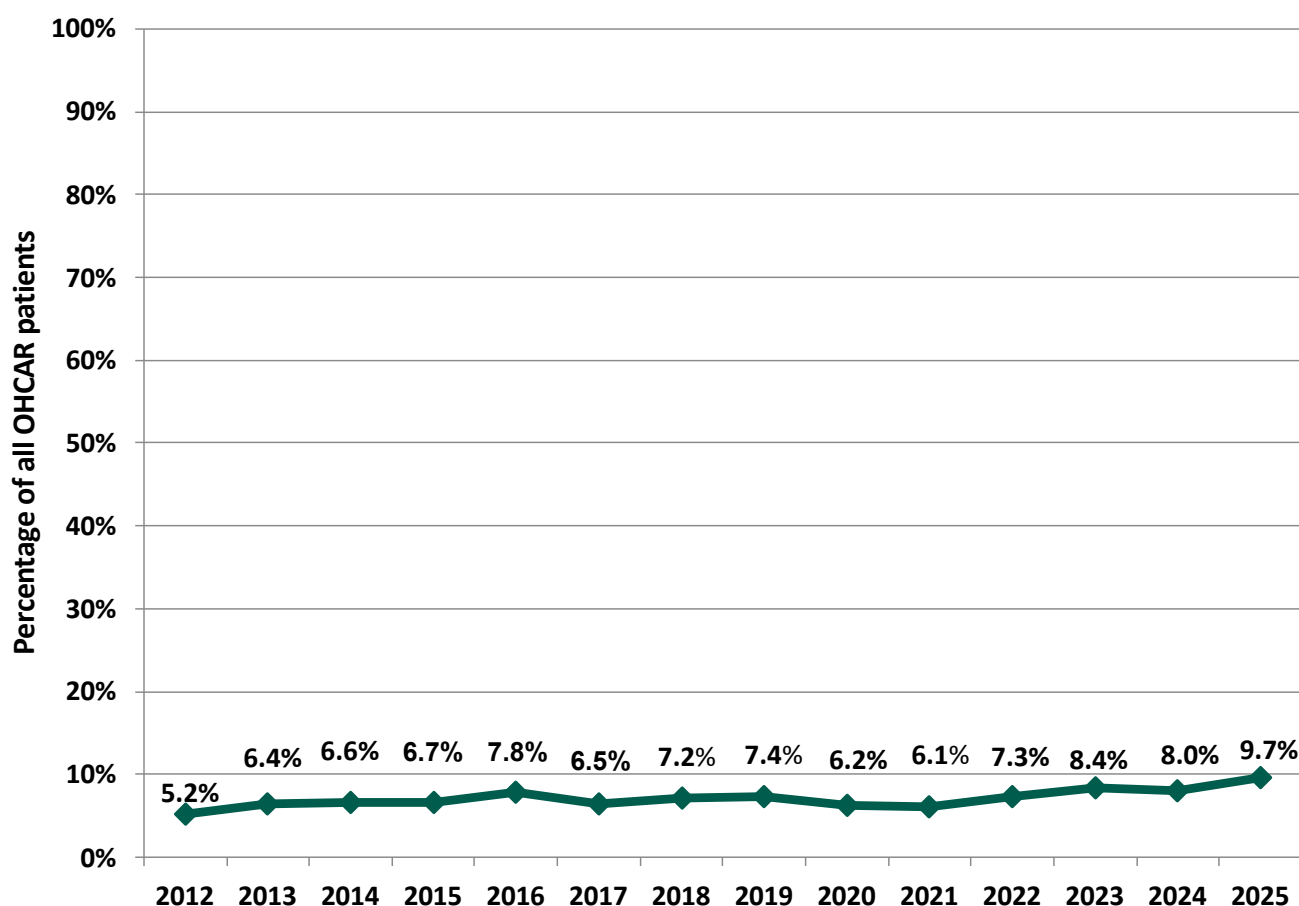
Figure 16: ROSC at Hospital arrival, all patients. Years 2012 – 2025



3.19 Discharged alive from Hospital

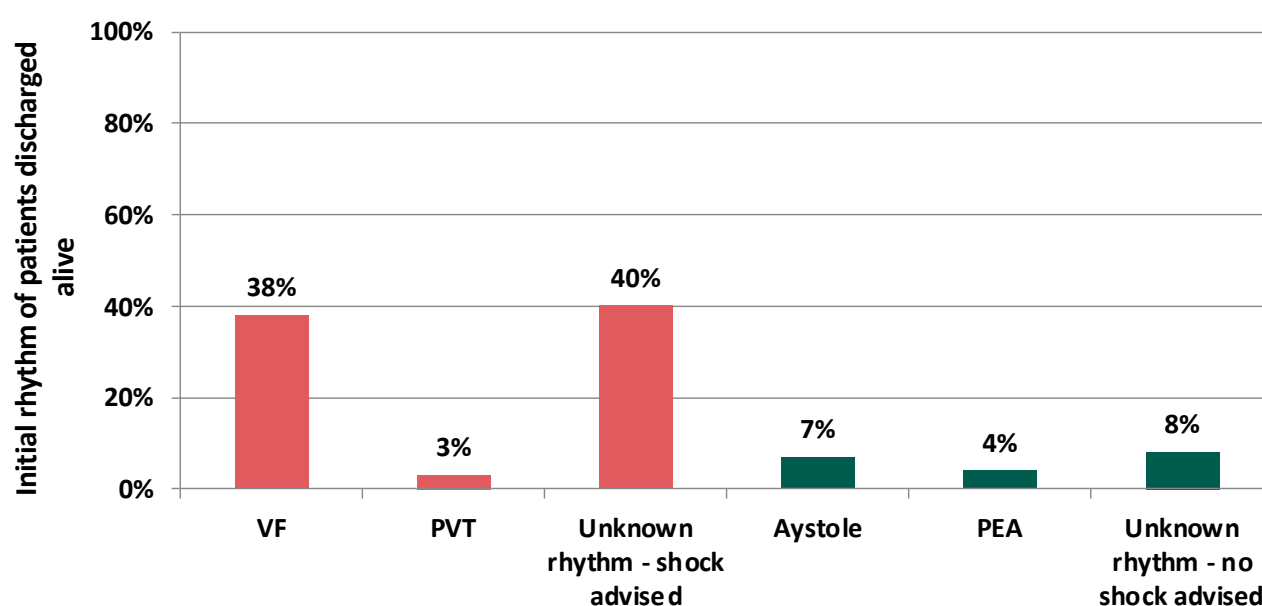
A total of 266 patients were discharged alive from hospital (Figure 17). Overall survival has increased to **9.7%** in 2025 (n=266/2,756) from 8.0% in 2024 (n=232/2,885) (p=0.088). Data on 6 patients who were transported to hospital could not be obtained.

Figure 17: Percentage survival to discharge, all patients. Years 2012 – 2025 (n=2,479/34,475)



- Surviving patients were younger (median age 62 years, IQR 49 – 70) than non-surviving patients (median age 69 years, IQR 54 – 79 years, $p \leq 0.001$)
- The presumed aetiology was medical for 91% of survivors
- Survival in the presumed medical aetiology group was 11% (n=243/2,310) compared with 5% (n=23/446) in the non-medical group ($p=0.002$)
- 22% of patients who collapsed in a public location survived (n=144/645), compared to 6% of patients that collapsed in a private location (n=122/2,110), ($p \leq 0.001$)
- 10% of patients who collapsed in an urban area survived (n=187/1,907), compared to 8% of patients that collapsed in a rural area (n=64/775), ($p \leq 0.364$)
- 74% of survivors had an initial shockable rhythm (n=198/266, Figure 18).

Figure 18: Percentage of survivors categorised by first analysed rhythm



- In the non-EMS witnessed group of survivors (n=210)
 - 91% had a witnessed arrest
 - 91% received bystander CPR
 - 57% (n=120), had defibrillator pads applied prior to EMS arrival
 - 48% (n=101) were shocked before EMS arrival
 - In the EMS-witnessed group, 19% of patients survived (n=47/251)
- In the subgroup of EMS-witnessed patients that were adults, with presumed medical aetiology, with an initial shockable rhythm, 53% of patients survived (n=33/62). A similar number survived in an urban area compared to rural (50%, n=15/15 vs. 53%, n=8/15).

3.20 Neurological function at discharge

The CPC⁹ Score is an instrument developed to assess both traumatic and anoxic cerebral injuries. It is classified as a core Utstein data element for recording of cardiac arrest patients. The CPC score has five categories:

1. Good cerebral performance
2. Moderate disability: conscious, sufficient cerebral function for independent living
3. Severe disability: dependent on others for daily support
4. Coma or vegetative state
5. Brain death.

CPC score data was available for 223 surviving patients (Figure 19):

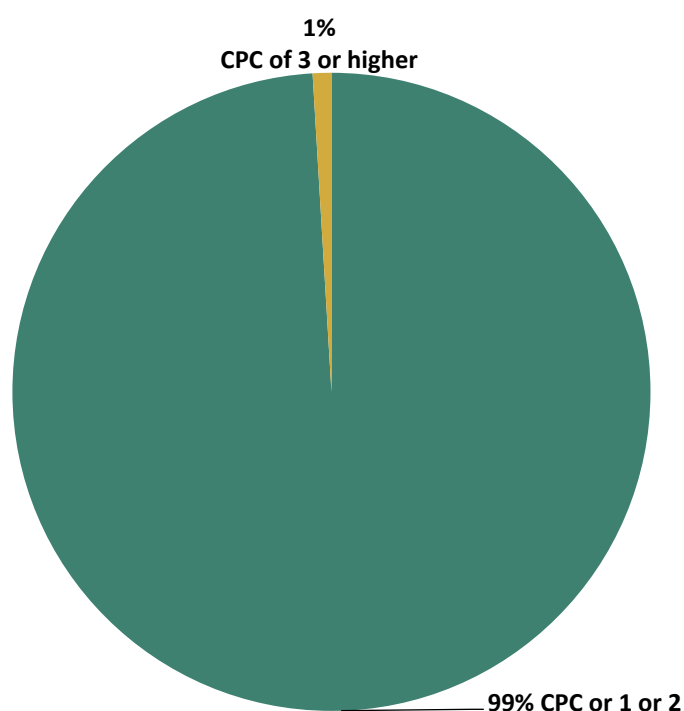
- 99% (n=221) had a score of 1 or 2
- 1% (n=2) had a score of 3 or higher

Data on CPC score was missing for 43 surviving patients. In those patients that had a CPC score available vs. those that did not;

- The median age was 61, (IQR 49 - 70) vs. median age of 64, (IQR 57 – 73), ($p \leq 0.183$)
- The median Hospital length of stay was 12 days vs. 53 days ($p \leq 0.001$)
- 26% were rural vs. 22% rural ($p \leq 0.362$).

There was no difference in CPC availability between genders.

Figure 19: CPC score at discharge



3.21 OHCA in the under 35 age group

- 8% of all cases were recorded as being <35 years of age ($n=213/2,756$)
 - 50% were of a presumed medical aetiology ($n=107/213$)
 - 10% were caused by trauma (road traffic accident, gunshot, stabbing, crush injuries or fall) ($n=22/213$)
 - 15% of cases resulted from a drug overdose ($n=31/213$)
 - 51% of cases were unwitnessed ($n=105/207$)
 - 18% were initially shockable ($n=39/212$)
 - 11% survived to Hospital discharge ($n=23/213$)

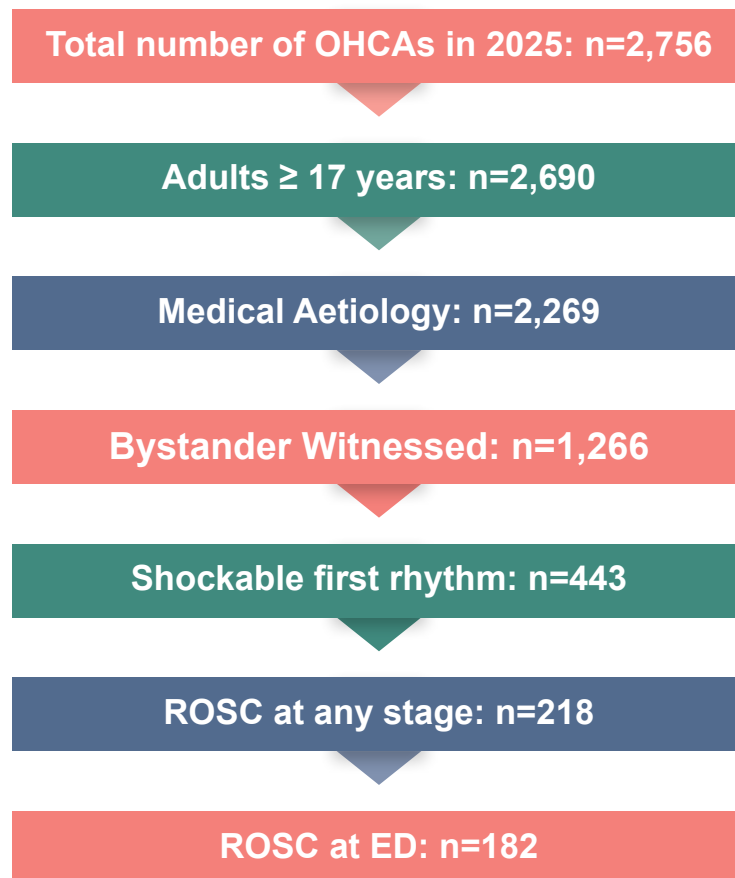
3.22 Utstein Comparator Subset

The Utstein comparator subset includes the following subgroup of patients

- Adult (i.e. older than seventeen years)
- Presumed medical aetiology
- Bystander witnessed arrest
- First monitored rhythm shockable.

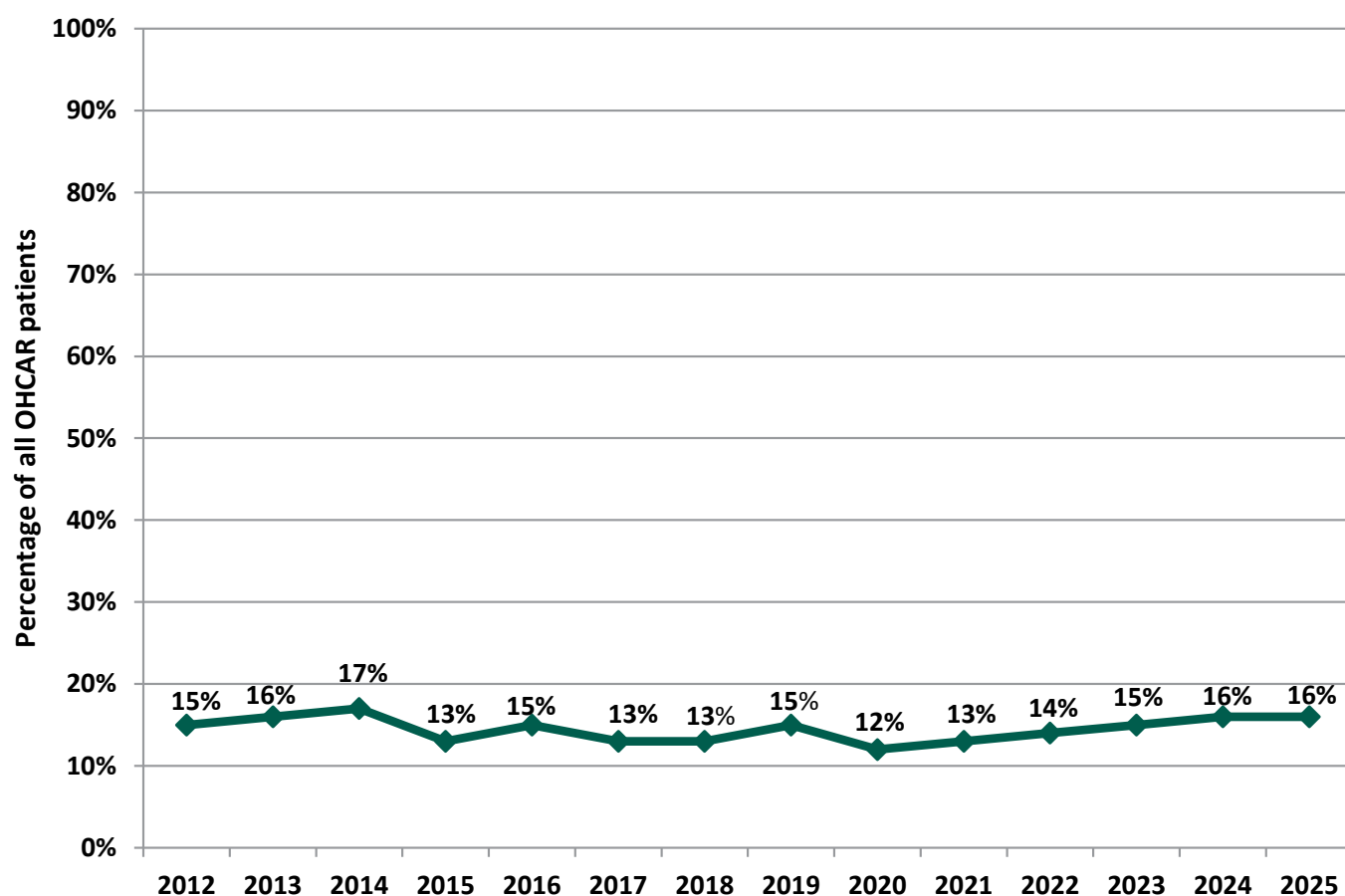
There is wide variation of circumstances around a cardiac arrest and patient characteristics. Using the Utstein comparator subset allows for a more standardised comparison of patient outcomes between systems and time periods (Figure 20).

Figure 20: Flowchart of the 2025 Utstein comparator subset and ROSC outcomes



In 2025, the Utstein comparator subset included 443 patients and accounted for 16% of all OHCA cases (443/2,756, Figure 21).

Figure 21: Utstein comparator subset 2012 – 2025

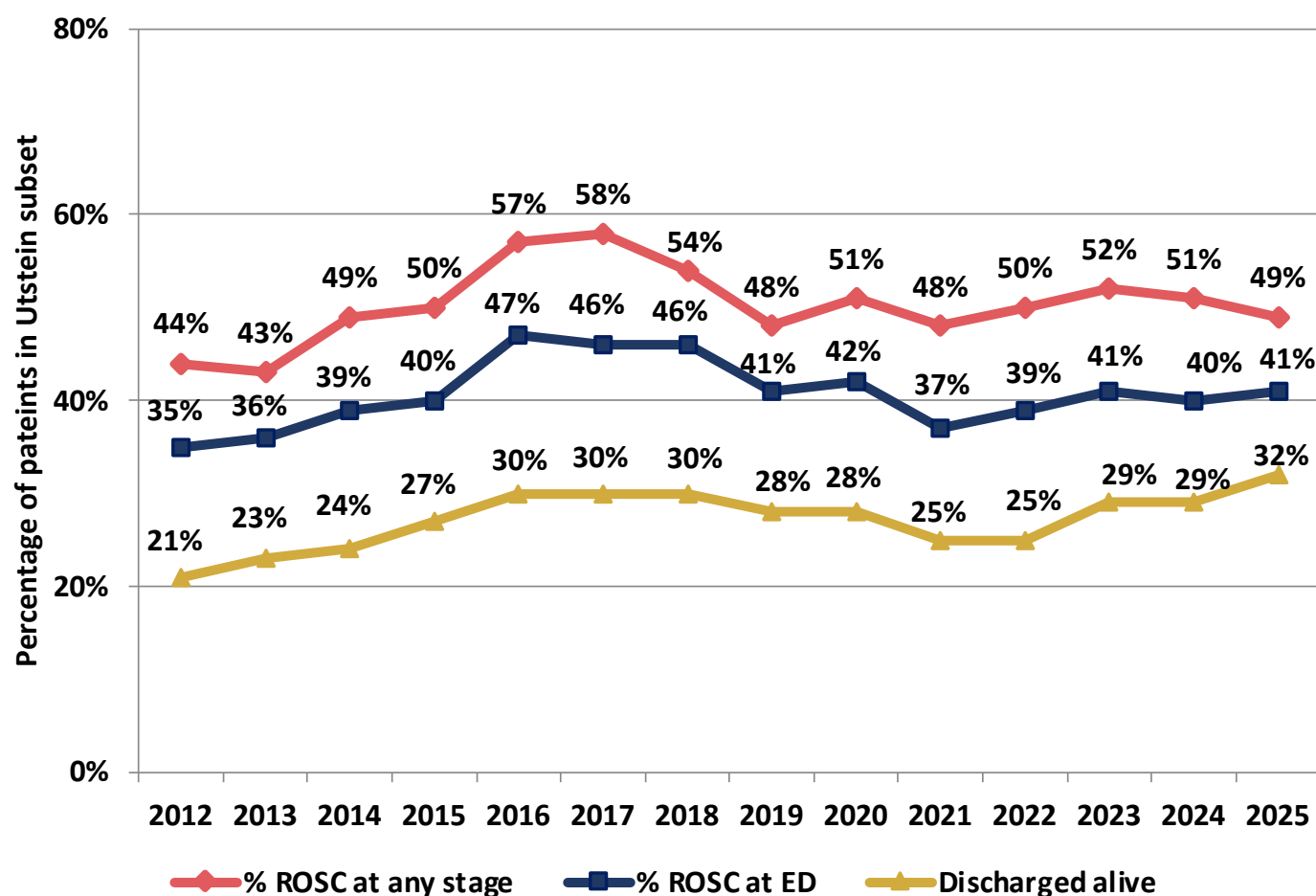


3.23 Utstein Comparator Subset Outcomes

- 49% of patients (n=218/443) achieved ROSC at some stage before hospital arrival
- 41% of patients (n=182/443) had ROSC on hospital arrival
- 32% of patients (n=142/443) were discharged alive from hospital (Figure 22)
- Of the survivors for whom CPC was available, 99% had a CPC score of one or two (n=122/123).

N.B. Data on CPC score was missing for 21 surviving Utstein patients.

Figure 22: Outcomes in the Utstein comparator subset, years 2012 – 2025



Case Characteristics

- Of those patients who collapsed in a public location, 47% survived (n=86/184) compared to 22% in a private location (n=56/259) (p=0.001)
- 93% of cases were recognised as cardiac arrest at the time of ambulance dispatch (n=406/438)
- Bystander CPR was performed on 93% of survivors
- An extra 14 patients survived that had defibrillation attempted before ambulance service arrival compared to 2024 (64%, n=91/142 vs. 58%, n=77/133) (p=0.1463). The estimated median time from 'time of collapse' to 'time of first shock administered' halved since 2024 (2 minutes, n=58/91, IQR 0 – 7, vs. 4 minutes, n=45/77, IQR 1 -10), (p=0.4826).

Chapter 4

Conclusion

Future developments in OHCAR



Chapter 4

4.0 Conclusion

Compared to the 2024 OHCAR Annual Report, Bystander CPR in 2025 has increased slightly from 84% to 85%. Attempted defibrillation before EMS arrival remained at 12% of all patients. In the subgroup of patients who had defibrillation attempted (n=953), defibrillation before EMS arrival, remained at 35%. ROSC before hospital arrival was 25%, ROSC on hospital arrival increased to 20% and the absolute number of patients discharged alive from hospital has increased from 232 in 2024 to 266.

In the Utstein group the ROSC prior to hospital arrival was 49%, ROSC at Hospital arrival was 41% and discharge alive was 32%. In line with previous years, and international data, surviving patients were more likely to be younger, have a presumed medical aetiology, have collapsed in a public, urban location, have a witnessed arrest, present in a shockable rhythm, and received bystander CPR.

4.1 Future developments in OHCAR

OHCAR is working closely with the HSE Data Protection Officer to ensure that data sharing agreements are aligned with the GDPR. OHCAR is collecting data on D-CPR from NAS only, but is working with the DFB to gain national coverage of the metric. OHCAR has completed a pilot study to determine if Quality of Life (QoL) in OHCA survivors can be measured, using the internationally recognised EQ-5D-5L and Short Form 36 questionnaires. OHCAR is aligned with the Irish Heart Foundation in signposting supports to OHCA survivors from which they may benefit.



Chapter 5

Acknowledgements

References

Appendix 1

Appendix 2

Appendix 3



Chapter 5

Acknowledgements

The OHCAR Steering Group wishes to acknowledge the contribution made to the report from the following sources:

- **NAS**
- **DFB**
- **Community First Responders**
- **First Aid Responders**
- **Irish Coast Guard**
- **An Garda Síochána**
- **Order of Malta**
- **St. John Ambulance**
- **Red Cross**
- **Voluntary First responders**
- **Bystanders**
- **Doctors**
- **Nurses**
- **local Fire Services**
- **Civil Defence**
- **The HSE, including Hospital staff, Section 38 Voluntary Hospital staff.**

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Appendix 1

OHCAR Steering Group

The OHCAR Steering Group is responsible for ensuring that the aims of OHCAR are fulfilled and for advising on its organisation and direction. The Steering Group includes representatives from all four supporting organisations, and met four times from March 2025 to March 2026.

The membership in May 2026:

- A/Professor Tomás Barry, PHECC Chair, UCD, Dublin
- Professor Conor Deasy, Professor of Emergency Medicine, University College Cork and Consultant in Emergency Medicine, Cork University Hospital (OHCAR Chair)
- Mr. Joe Fahy, Resuscitation Officer, Portiuncula University Hospital
- Mr. John Fitzgerald, CFR Ireland Chair
- Professor Joseph Galvin, Consultant Cardiologist/Electrophysiologist, Mater University Hospital. Clinical C0-Lead, National Heart Programme
- Mr. David Hennelly, Paramedicine Practice Development Lead for Critical Care, National Ambulance Service, HSE
- Dr Dawn Higgins, Research and Clinical Information Manager, PHECC
- Mr. David Irwin, Paramedicine Practice Development Lead for Cardiac Care and Resuscitation, National Ambulance Service, HSE
- Siobhán Masterson PhD, NAS General Manager for Clinical Strategy & Evaluation
- Dr David Menzies, NAS Deputy Clinical Director & Consultant in Emergency Medicine, St Vincent's University Hospital
- Professor Cathal O'Donnell, NAS Clinical Director
- Mr. Michael O'Reilly, Assistant Chief Fire Officer, Dublin Fire Brigade
- Mr. Martin O'Reilly, District Officer, EMS Support Officer, Dublin Fire Brigade
- Mr. Martin Quinn, OHCAR Manager, National Ambulance Service, HSE.

Appendix 2

Publications using OHCAR data or supported by OHCAR

Baldi, E., Grieco, N.B., Ristagno, G., Hajriz Alihodžić, Canon, V., Alexei Birkun, Cresta, R., Cimpoesu, D., Clarens, C., Ganter, J., Andrej Markota, Mols, P., Nikolaidou, O., Quinn, M., Violetta Raffay, Fernando Rosell Ortiz, Salo, A., Remy Stieglis, Anneli Strömsöe and Tjelmeland, I. (2021). The Automated External Defibrillator: Heterogeneity of Legislation, Mapping and Use across Europe. New Insights from the ENSURE Study. *Journal of Clinical Medicine*, 10(21), pp.5018–5018. [doi:https://doi.org/10.3390/jcm10215018](https://doi.org/10.3390/jcm10215018).

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Appendix 3

OH CAR Utstein Comparator Subset 2025 – Results by Regional Health Area

Figure 1: Number of OH CAR patients in the Utstein group by RHA (n=443)

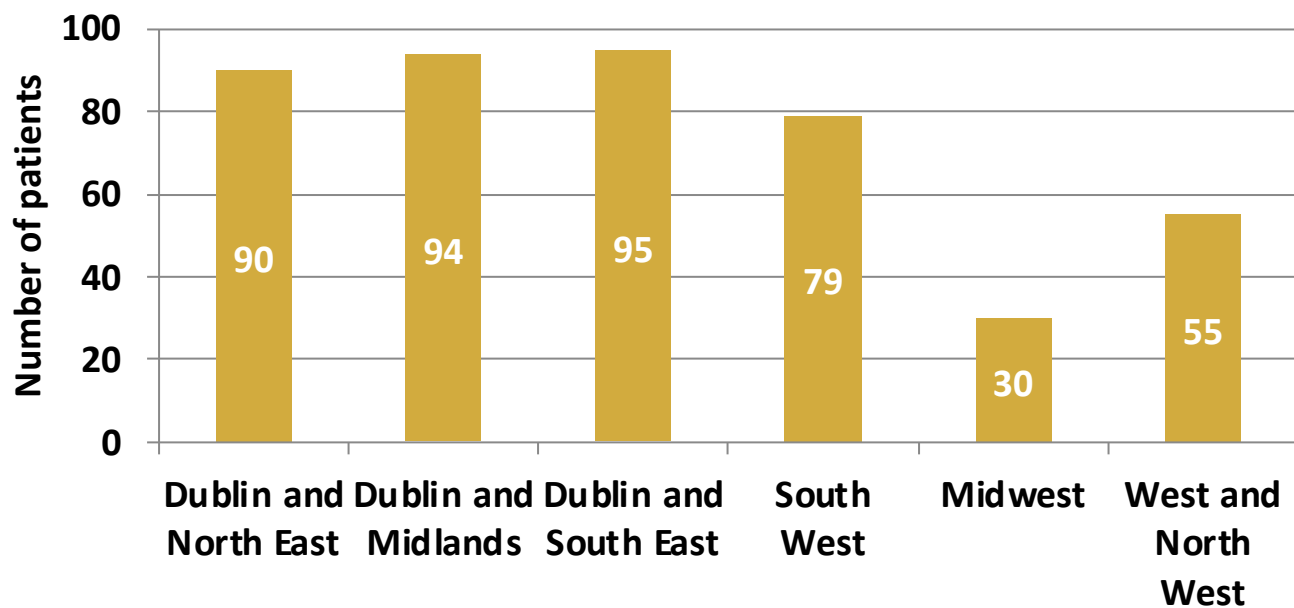


Figure 2: Cardiac arrest recognition at time of ambulance dispatch (Utstein, n=443)

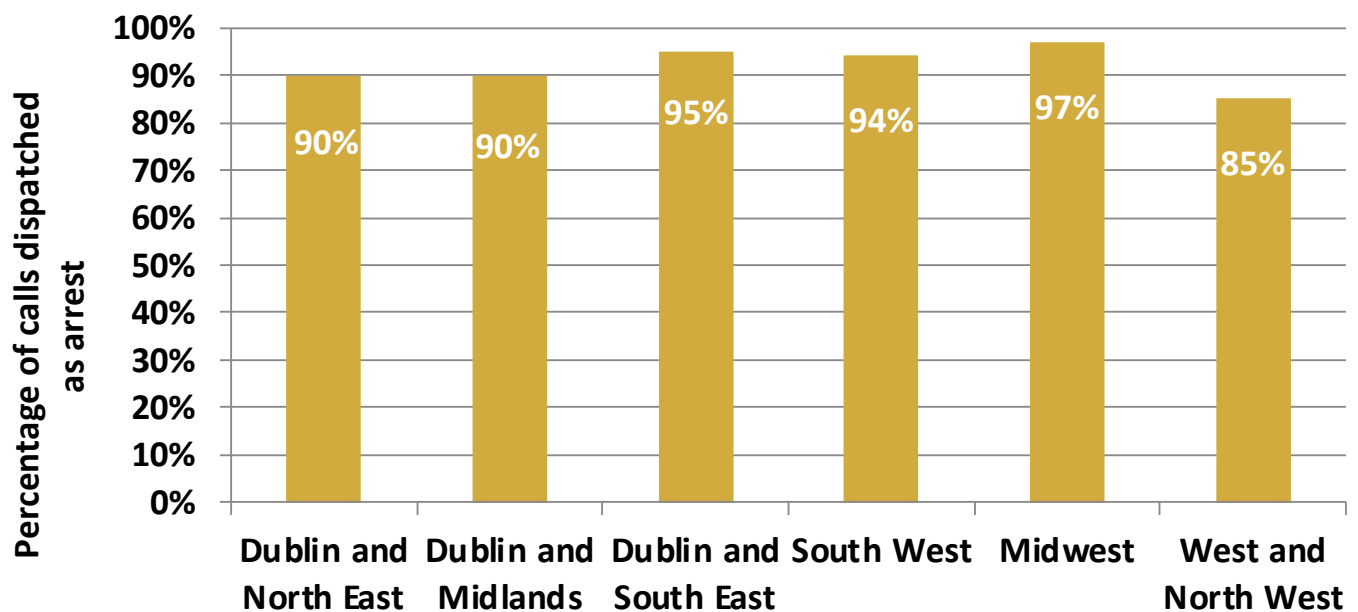


Figure 3: Percentage of Utstein cases with bystander CPR by region





Out-of-Hospital Cardiac Arrest Register

OHCAR Ireland



At the heart of evidence

