



# A Service Evaluation Calculating the Length of Resuscitation before Return of Spontaneous Circulation (ROSC) or Termination of Resuscitation (TOR) based on existing TOR guidance in South West England

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## Background

Every year in South West England 3,500 people receive a resuscitation attempt following an out-of-hospital cardiac arrest (OHCA).

Paramedics utilise a Termination of Resuscitation (TOR) guidelines to help identify patients who no longer benefit from further resuscitation, this guidance supports clinicians to provide patients with a dignified death whilst enabling other resources to be deployed to patients where an opportunity to save life or relieve suffering exists.

Previously, TOR was supported for patients who remained in a continuously asystolic rhythm for 20 mins. However, little was known about the impact this TOR guidance had on the total resuscitation attempt duration delivered to patients in cardiac arrest.

This service evaluation intended to calculate the total resuscitation durations delivered to patients before achieving either return of spontaneous circulation (ROSC) or TOR.

## Abbreviations

- OHCA** Out of Hospital Cardiac Arrest
- PEA** Pulseless Electrical Activity
- RD** Resuscitation Duration
- ROSC** Return of Spontaneous Circulation
- ST30** Survival to 30 Days
- TOR** Termination of Resuscitation
- VF** Ventricular Fibrillation
- VT** Ventricular Tachycardia

## Contact

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## Method

This retrospective registry-based evaluation reviewed adult OHCA cases in South West England between 1st April 2016 – 31st March 2022. OHCA witnessed by ambulance personnel were excluded along with cases containing missing time, demographic, or outcome data.

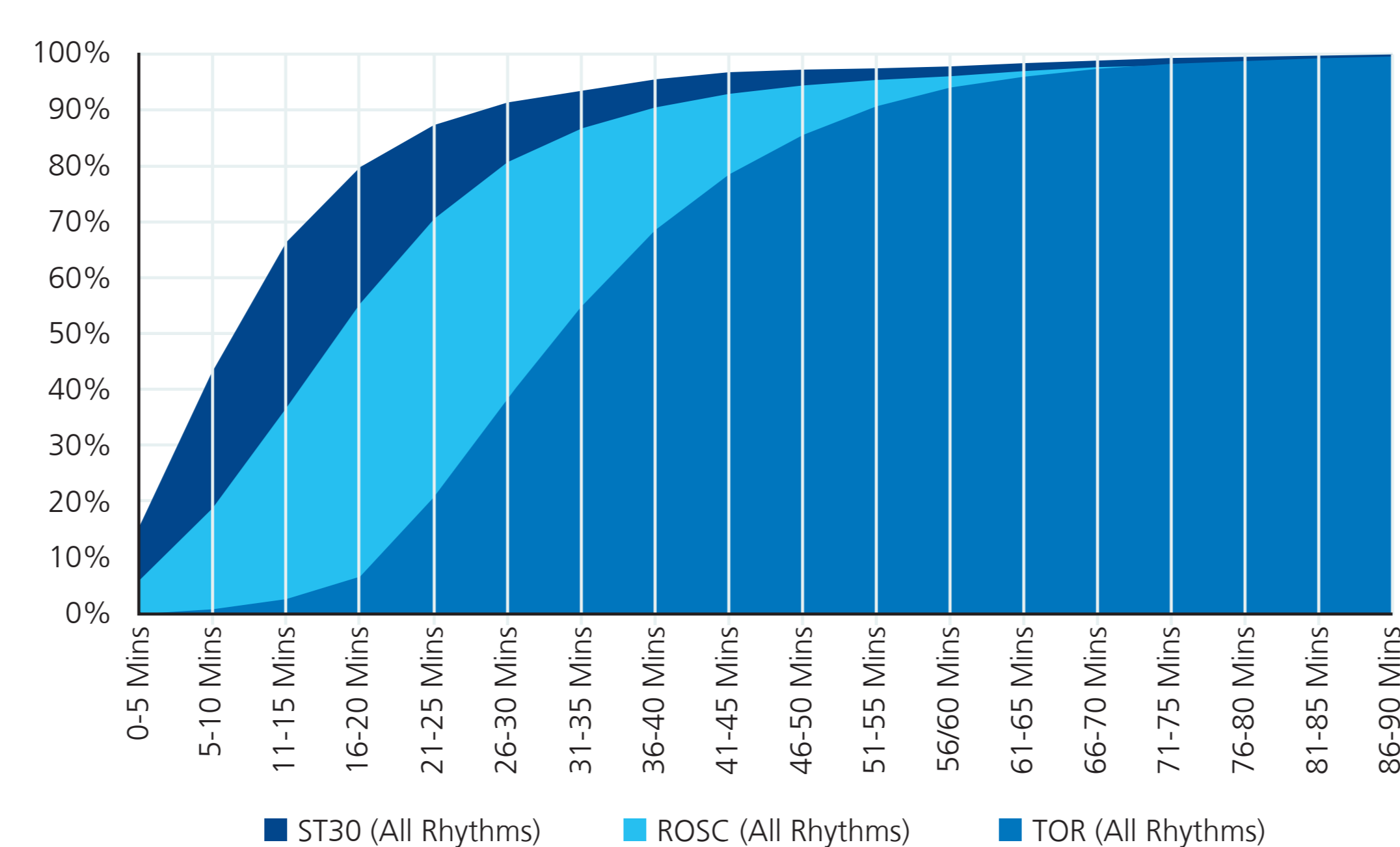
Patients who re-arrested following return of spontaneous circulation (ROSC) were also excluded. Resuscitation Duration (RD) was calculated as the time between the arrival of the first ambulance resource to either ROSC or TOR endpoints. Routinely collected 30-day survival data was included in the evaluation.

## Results

13,092 cases were eligible for analysis. 9,392 received TOR (median RD 34.50mins) whilst 3,700 achieved ROSC (median RD 20.10mins), 867 survived to 30-days (median RD 12.17mins).

	TOR	ROSC	ST30
	9,392	3,700	867
<b>Witnessed Collapse</b>	5,126 (55%)	2,795 (75%)	726 (84%)
<b>Bystander CPR</b>	7,167 (76%)	2,819 (76%)	723 (83%)
<b>Median RD</b>	34:50 mins	20:06 mins	12:10 mins

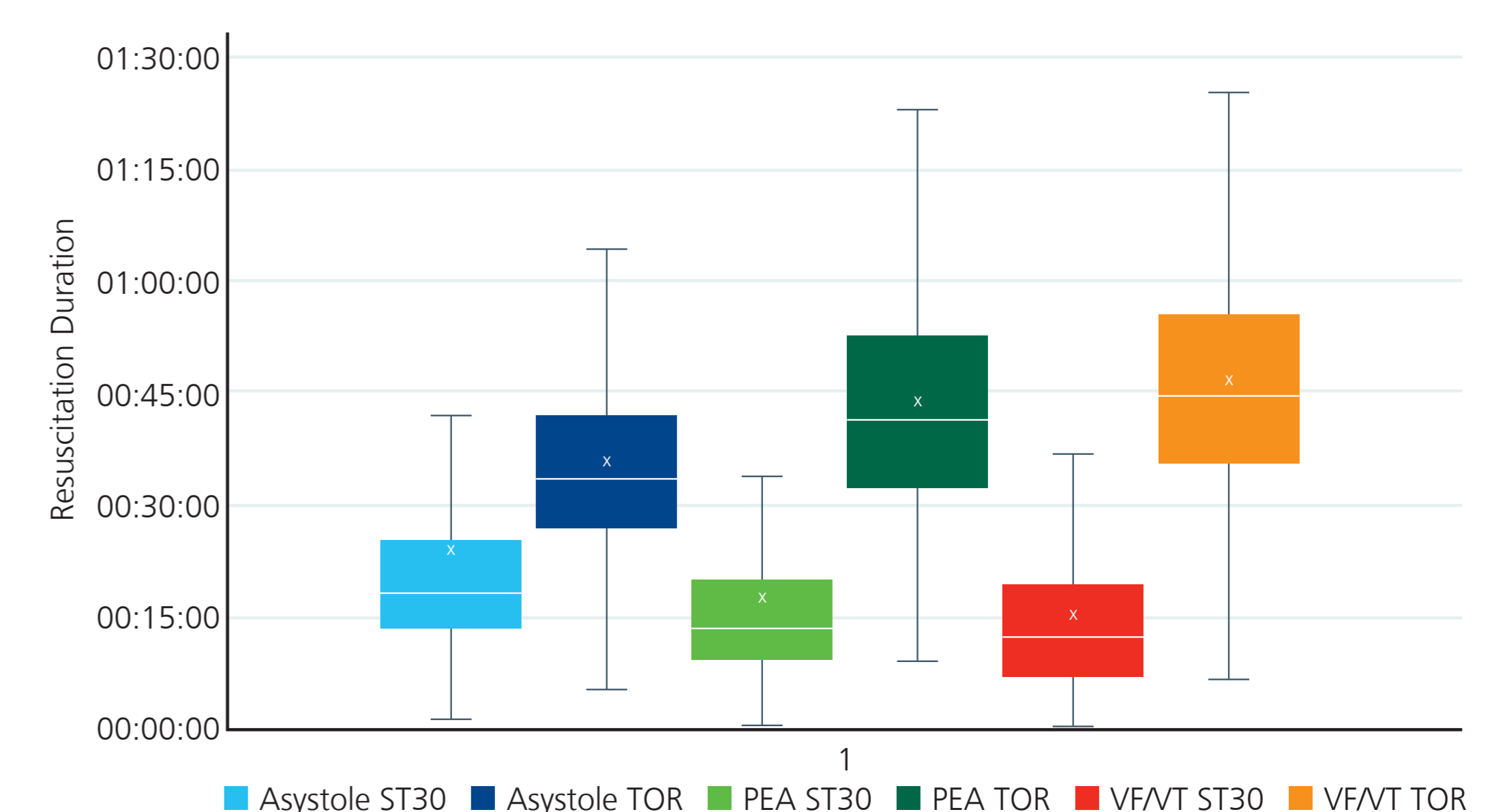
**Table 1:**  
 Demographics by Outcome (All Rhythms)



**Figure 1:**  
 Cumulative Resuscitation Duration by Outcome (All Rhythms)

	Asystole	PEA	VF/VT
	7,989	1,959	3,144
<b>TOR</b>	6,701 Median RD 34:30 mins	1,174 Median RD 39:49 mins	1,517 Median RD 42:51 mins
<b>ROSC</b>	1,288 Median RD 23:20 mins	785 Median RD 20:09 mins	1,627 Median RD 17:24 mins
<b>ST30</b>	47 Median RD 23:20 mins	112 Median RD 12:52 mins	708 Median RD 11:43 mins

**Table 2:**  
 Median Resuscitation Duration by Presenting Rhythm



**Figure 2:**  
 Resuscitation Duration by Presenting Rhythm and Outcome

## Conclusion

Existing Trust TOR guidance delivers resuscitation attempts lasting greater than 30 minutes to most patients, regardless of initial presenting rhythm. On average, resuscitation attempts ending in TOR exceed the duration needed to achieve ROSC for patient who survive to 30-days. This evaluation suggests that total resuscitation duration could be considered in future TOR guidance, irrespective of presenting or continuous arrhythmia.