

Statistical Note: Ambulance Quality Indicators (AQI)

The latest Systems Indicators for ambulance services in England showed that, like in August 2018, response times for all categories in August 2019 were shorter than in the previous month.

The latest Clinical Outcomes data show that survival to discharge from hospital, following cardiac arrest, was stable in April 2019, after increasing in recent years.

1. Latest Systems Indicators

1.1 Response times

The mean average C1 response time across England was 7 minutes 5 seconds in August 2019, slightly longer than the standard of 7 minutes.

The C1 90th centile response times averaged 12:29 across England in August 2019, shorter than the standard of 15 minutes.

For C1T (arrival of transporting vehicle, for C1 patients transported) the mean and 90th centile response times were 10:44 and 20:09 respectively.

All the C1 and C1T response times were within seven seconds of the averages for 2019-20 so far.

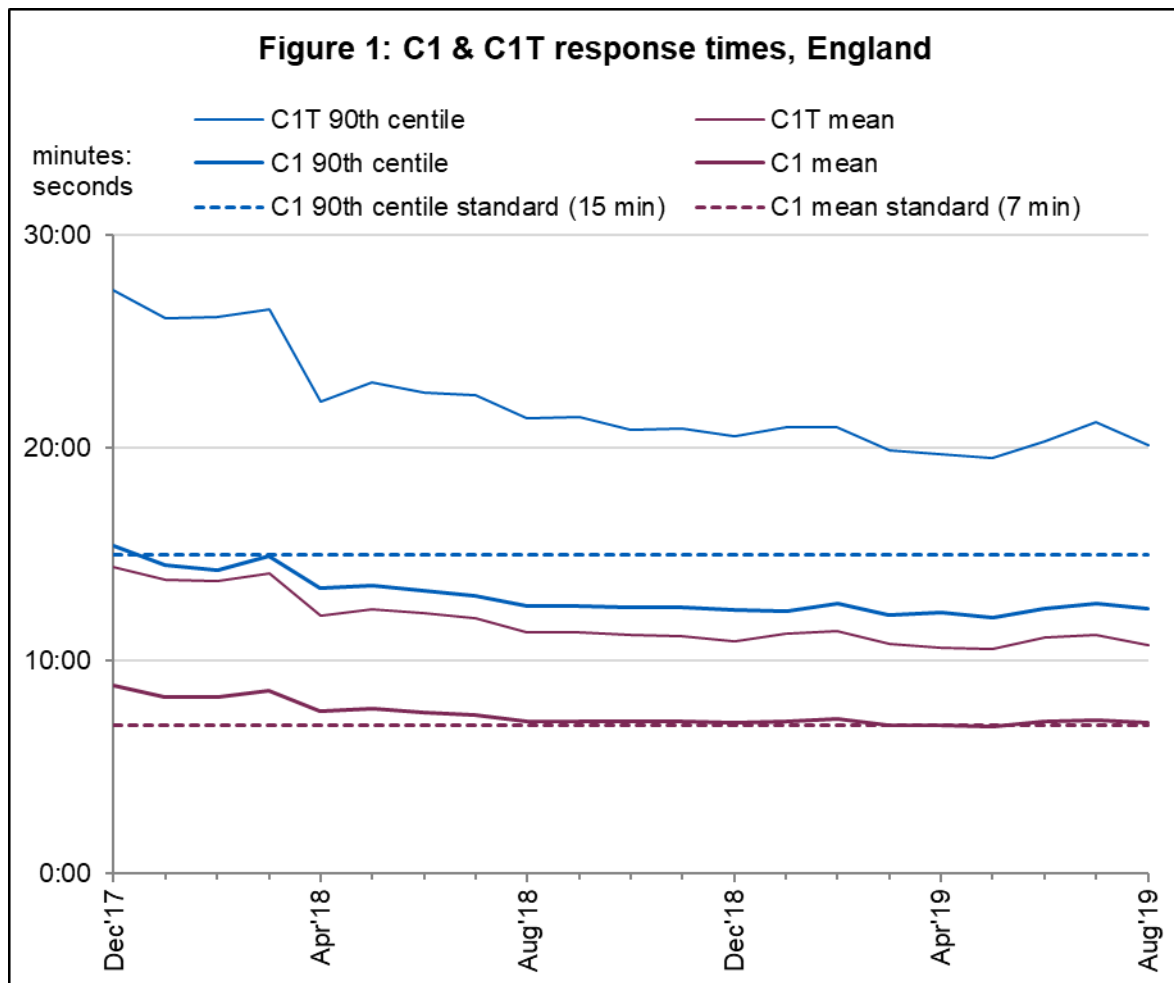
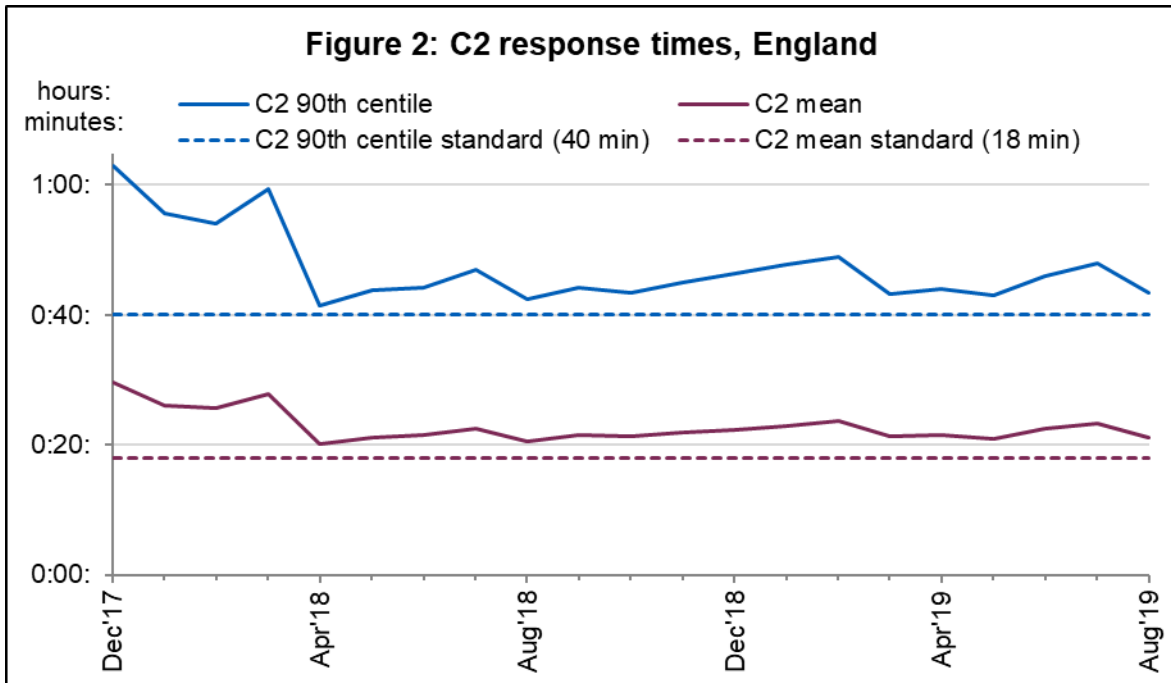
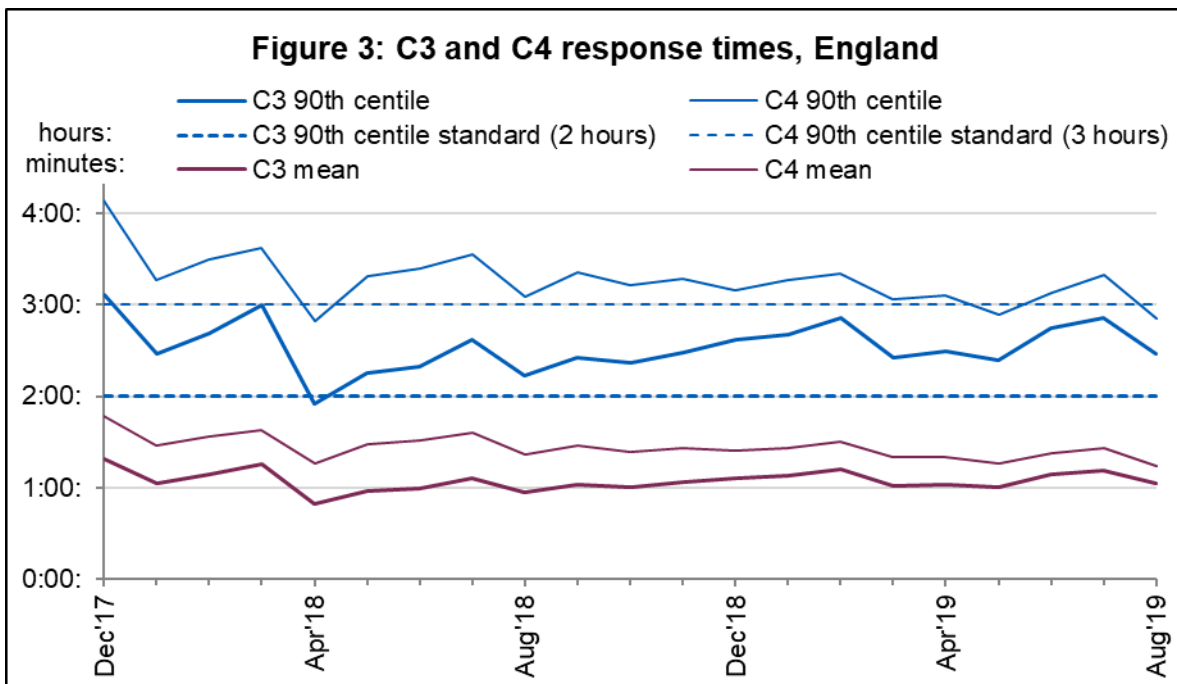


Figure 2 shows the C2 mean average response time for England was 21:13 in August, remaining longer than the standard of 18 minutes. The C2 90th centiles averaged 43:18 across England, also remaining longer than the 40 minute standard.



The thick lines in Figure 3 show that for England in August 2019, the C3 mean average response time was 1:02:42, shorter than in July. The C3 90th centile times averaged 2:28:07, also shorter than in July, but longer than the standard of 2 hours.

The thin lines in Figure 3 show that the August C4 mean average response time was 1:14:34. The C4 90th centile times averaged 2:50:57, shorter than the standard of 3 hours. Both these C4 times were the shortest they had been in over a year.

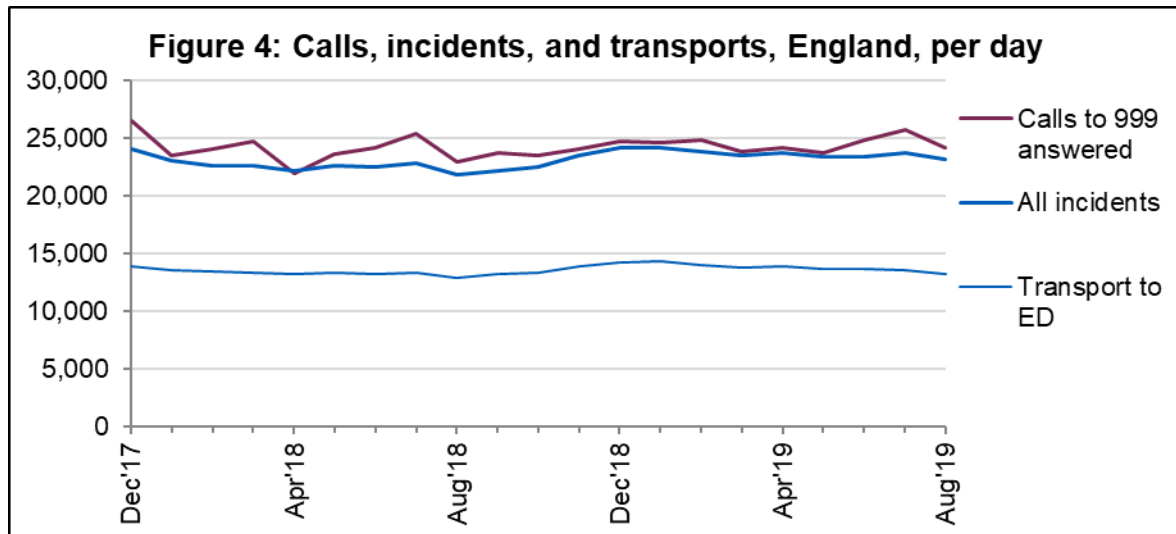


1.2 Other Systems Indicators

The mean average call answer time across England in August 2019 was 9 seconds. The 95th and 99th centile times averaged 52 and 109 seconds respectively. All were shorter than in July but longer than in April and May 2019.

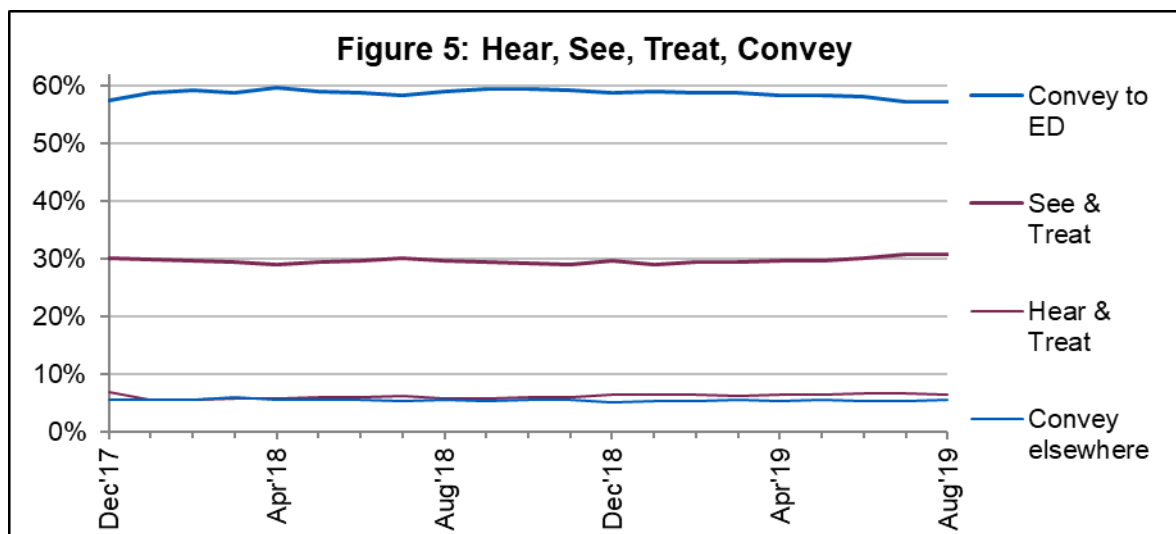
Per day, there were (Figure 4):

- 24.2 thousand calls to 999 answered in August 2019, a 6.2% decrease on July;
- 23.2 thousand incidents that received a response (whether on the telephone or on the scene) from an ambulance service in August 2019, 2.5% less than in July;
- 13.3 thousand incidents where a patient was transported to an Emergency Department (ED) in August 2019, also 2.5% less than in July.



For incidents in August 2019, the proportion where a patient was transported to an Emergency Department (ED) was 57.3%, the same as in July and the lowest since the time series began in 2017. The proportion where a patient was attended but not transported (see and treat) was 30.7%, also the same as in July.

Other incidents in August (Figure 5) comprised 6.4% resolved on the telephone (hear and treat), and 5.6% with a patient transported somewhere other than ED.



2. Systems Indicator changes

After the collection of data for September 2019, we will stop collecting data items A58 to A73, which are counts and response times for calls from Healthcare Professionals (HCPs).

Starting with the collection of data for October 2019, we will collect new data items A74 to A122 instead. Items A106 to A110 and A114 are already collected, starting from the collection of data for April 2019.

The change is because ambulance services are implementing new frameworks¹ for Inter-Facility Transfers (IFT) and HCP responses.

The 20190912 Systems Indicators specification on the AQI landing page www.england.nhs.uk/statistics/statistical-work-areas/ambulance-quality-indicators lists the data items in the collection of data for October 2019 onwards, and those which will no longer be collected. It includes a diagram of how all the data items relate to each other.

2.1 HCP and IFT framework implementation dates so far

WMAS	2 Aug 2018
NWAS	3 Dec 2018
NEAS	20 Feb 2019
IOW and SCAS	4 Jul 2019
SWAS	6 Aug 2019

2.2 Procedures before implementing the new frameworks

IFTs were triaged into categories C1 to C4, and were part of incident counts A8 to A12, and response times A24 to A38.

If HCP responses were triaged into categories C1 to C4, they were also part of incident counts A8 to A12, and response times A24 to A38. However, usually, ambulance services agreed with HCPs that a one-, two-, three-, or four-hour response was appropriate. Counts A58 to A61 and response times A62 to A73 comprised incidents where that was agreed.

2.3 New frameworks

HCP responses and IFTs are categorised as Level 1, 2, 3, or 4.

Level 1 and Level 2 are part of Categories C1 and C2 respectively and should receive the same respective response.

Level 3 and 4 are less urgent and should receive a locally determined response. For Level 3, 90% of responses should be within 2 hours, and for Level 4, 90% should be within 4 hours.

¹ For IFTs: www.england.nhs.uk/publication/inter-facility-transfers-framework. For HCP responses: www.england.nhs.uk/publication/healthcare-professional-ambulance-responses-framework

Counting HCP responses and IFTs from October 2019 data onwards

Incidents		Comprise:		Also part of:		
		Count	Response times	Category	Count	Response times
HCP	Level 1	A74	A82-A84	C1	A8	A24-A26
	Level 2	A75	A85-A87	C2	A10	A30-A32
	Level 3	A76	A88-A90			
	Level 4	A77	A91-A93			
IFT	Level 1	A78	A94-A96	C1	A8	A24-A26
	Level 2	A79	A97-A99	C2	A10	A30-A32
	Level 3	A80	A100-A102			
	Level 4	A81	A103-A105			

Some ambulance services may still be commissioned to agree one-, two-, three-, or four-hour responses for HCP responses. If so, they will be counted as Level 3 HCP responses (A76) if a one- or two-hour response was agreed, and as Level 4 HCP responses (A77) if a three- or four-hour response was agreed.

For the ambulance services that implemented the new protocols before October 2019, in their data before October 2019, incidents have been counted as follows:

Incidents	Included as part of:		
	Category	Incident count	Response times
Level 1 IFT and HCP	C1	A8	A24-A26
Level 2 IFT and HCP	C2	A10	A30-A32
Level 3 IFT	C3	A11	A33-A35
Level 3 HCP	2-hour HCP	A59	A65-A67
Level 4 IFT and HCP	4-hour HCP	A61	A71-A73

2.4 Other new items from October 2019

A111

The collection already includes A8, a count of C1 incidents, and A13, a count of C1 incidents that were identified using pre-triage questions (PTQ). We will add into the collection a new data item, A111, to count C1 incidents passed on electronically from NHS 111, because for these, PTQs are not asked. A111 can be subtracted from A8 to give a better denominator for assessing how often PTQs identify C1 incidents.

A112

The Systems Indicators specification defines incidents with non-emergency conveyance. We will collect a count of these, A112, to assess how often they occur.

A113

In the previous specification, the counts of C1, C2, C3, and C4 incidents (items A8, A10, A11 and A12), plus HCP responses (items A57 to A61), were intended to add up to the total number of incidents attended (item A56).

However, for most ambulance services, there was an imbalance, which corresponded to incidents that were categorised as C5 (and would therefore normally be closed on the telephone) but received a response on scene.

Often, this was where the Emergency Operations Centre had no clinicians available for telephone triage, but had ambulances available, and so would dispatch an ambulance.

We will therefore count these in a new data item, A113.

Up until the collection of data for September 2019, some services avoided an imbalance by including the C5 incidents with a response on scene in their C2 or C4 counts and response times. Starting with the collection of data for October 2019, all services will include them only in data item A113.

A115 to A122

We will publish counts of, and response times for, C1 and C2 incidents that are not HCP responses or IFTs, so that the difference in response times for IFTs, HCP responses, and other incidents, can be easily seen for both C1 and C2.

We will ask ambulance services to provide the 90th centile response times excluding HCP responses and IFTs, for C1 and C2 respectively, data items A118 and A122. Data items A115 to A117 and A119 to A121 will be calculated automatically; for example, A116 (total response time for C1 incidents that are not HCP responses or IFTs) will be A24 (total response time for all C1 incidents) minus A82 (total response time for C1 HCP responses) minus A94 (total response time for C1 IFTs).

3. Clinical Outcomes

We continue to publish Clinical Outcomes data in spreadsheets each month; and (for England as a whole) discuss data for each topic area in the month when we publish new bundle data for that topic. Today we describe the cardiac arrest (section 3.1) and STEMI (section 3.2) data for April 2019.

3.1 Cardiac arrest

Patients in cardiac arrest will typically have no pulse and will not be breathing. We show, of patients for whom resuscitation was commenced or continued by ambulance staff out-of-hospital, how many had return of spontaneous circulation (ROSC), with a pulse, on arrival at hospital (Figure 6), and how many survived to be discharged from hospital (Figure 7).

From April 2018, these data have been supplied by ambulance services via the University of Warwick Out of Hospital Cardiac Arrest Outcomes (OHCAO) study, rather than directly to NHS England and NHS Improvement.

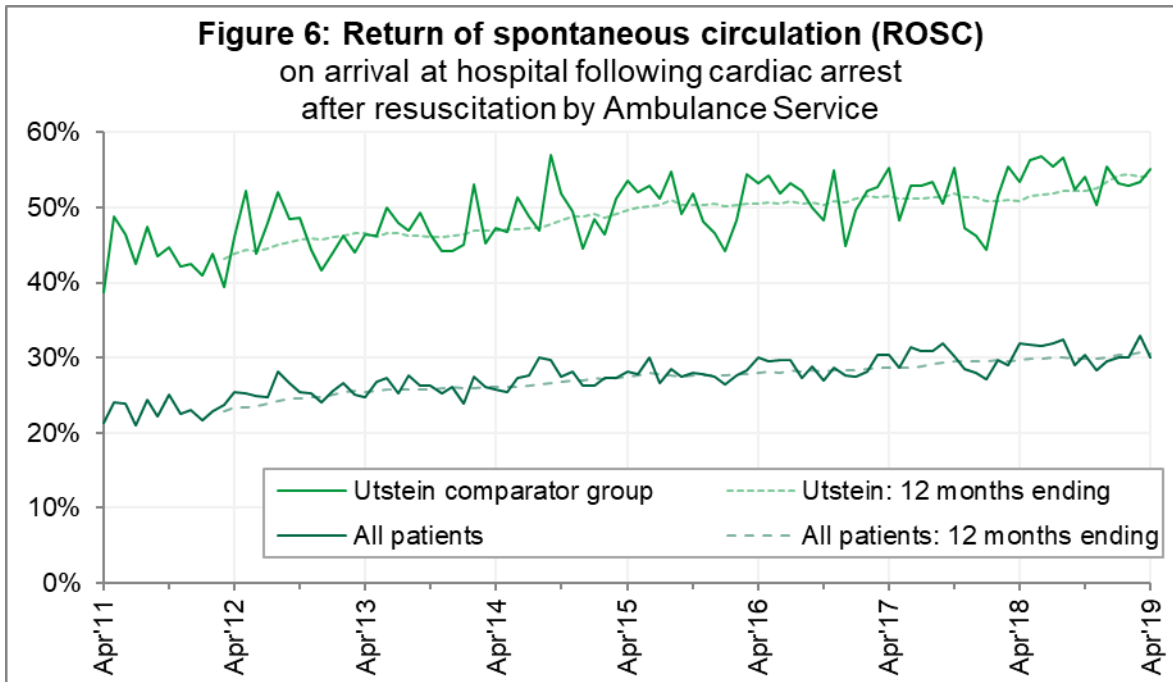
For all patients, in April 2019, at England level, ROSC (Figure 6) was 30%, not significantly² different to the proportion for the year ending March 2019 (31%).

The Utstein comparator group³ comprises patients with an out-of-hospital cardiac arrest of presumed cardiac origin, where the arrest was bystander witnessed, and the initial rhythm was Ventricular Fibrillation or Ventricular Tachycardia. This group therefore have a better chance of survival.

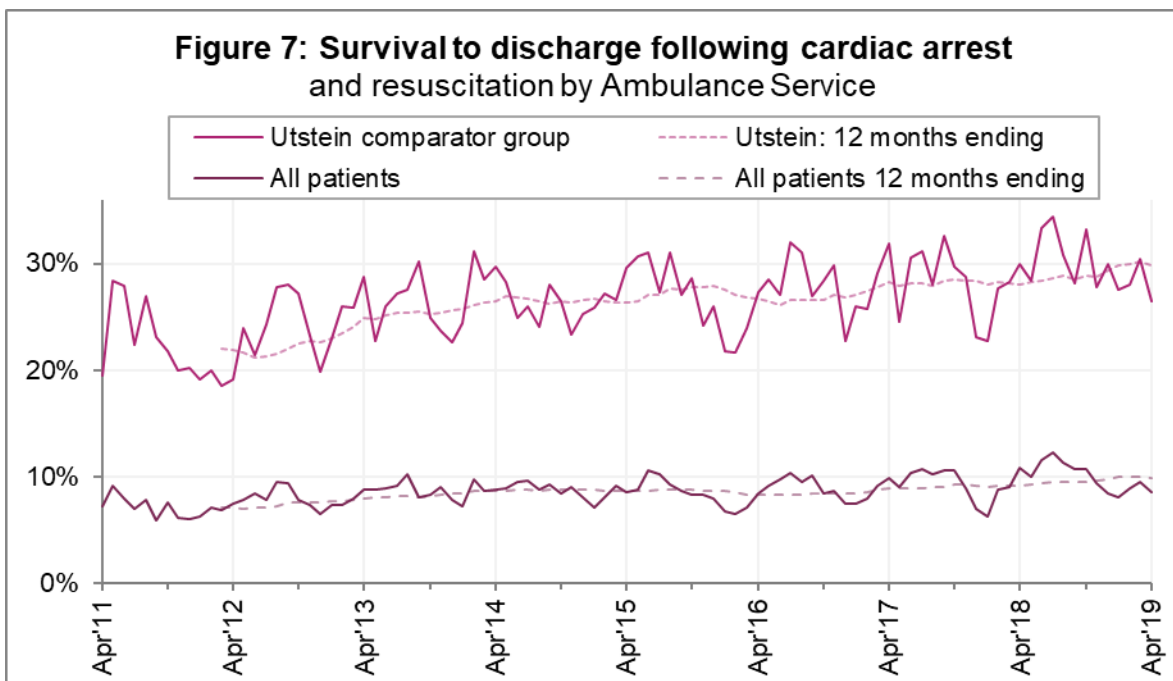
² Calculated using Student's t-test with 95% significance.

³ This definition was proposed at Utstein Abbey in Norway by an international group of cardiologists and other health professionals in 1990. <http://circ.ahajournals.org/content/110/21/3385>

For the Utstein group, ROSC was 55%. This was also not significantly different to the average for the year ending March 2019 (54%).



Survival to discharge following cardiac arrest in April 2019 was 9% for all patients, and 26% for the Utstein group (Figure 7). Both were similar to the respective averages for the year ending March 2019 (10% and 30%).



For patients with ROSC in April 2019, 68% received the post-ROSC care bundle, the largest proportion of the five months where these data have been collected.

3.2 ST-segment elevation myocardial infarction (STEMI)

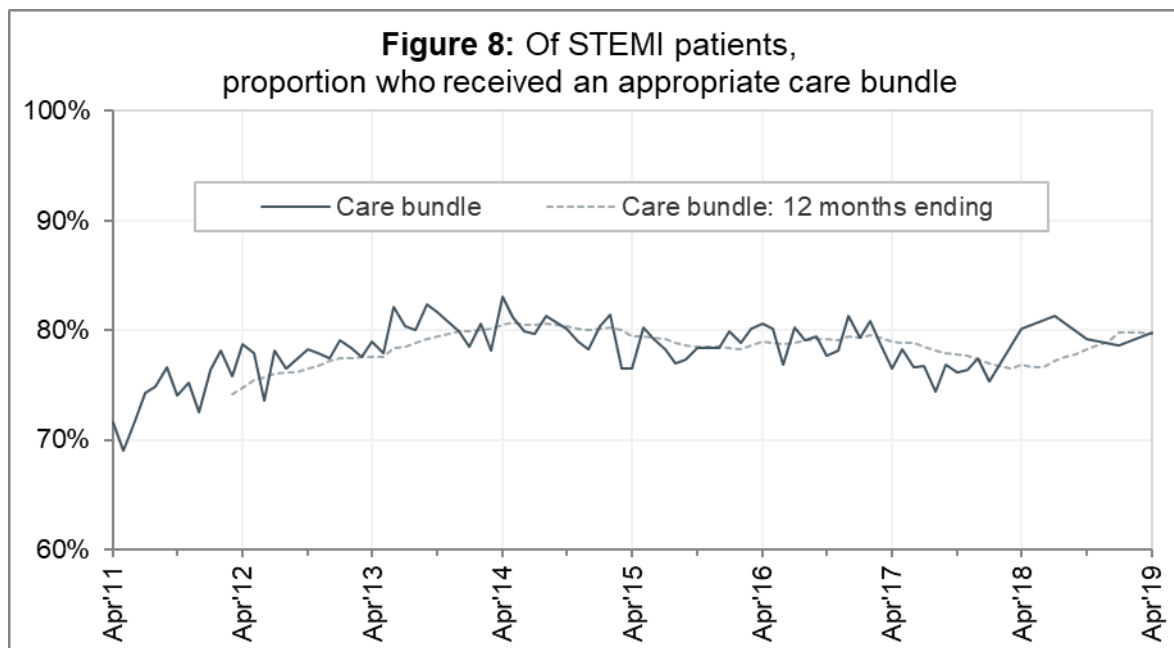
STEMI is a type of heart attack, determined by an electrocardiogram (ECG) test. Early access to reperfusion, where blocked arteries are opened to re-establish blood flow, and other assessment and care interventions, are associated with reductions in STEMI mortality and morbidity.

For STEMI patients, ambulance services measure the time from ambulance call to insertion of a catheter for primary percutaneous coronary intervention (PPCI): inflation of a balloon inside a blood vessel to restore blood flow to the heart.

In England in April 2019, the mean average time was 2 hours 14 minutes. This was longer than in each of the previous twelve months, even though it was only five minutes longer than the average for that year.

The 90th centile times across England from call to catheter insertion averaged 2 hours 56 minutes in April 2019, the same as for the previous year.

Figure 8 shows that the proportion of patients with an acute STEMI in England in March 2019 that received an appropriate care bundle was 80%. This was also the same as the average for the previous year.



4. Stroke data changes

For data up until March 2019, the times from call to hospital arrival after a stroke (data items K1m, K150, and K190) were supplied in aggregate form directly to NHS England by ambulance services, along with the patient counts (K1n) that these times applied to, which comprised suspected stroke patients and Face-Arm-Speech Test positive patients transported by an ambulance service.

From April 2019 onwards, ambulance services are supplying record-level data to the Sentinel Stroke National Audit Project (SSNAP) at King's College London, who then provide the times in aggregate form to NHS England.

In the csv file on the AQI landing page, these times are now displayed as counts of minutes, like the other time data in the csv. They still measure the time from the telephone call until the hospital arrival time as recorded by the ambulance service.

The counts of patients that the times apply to, K1n, are now counts of patients notified to SSNAP by acute trusts as having had a confirmed stroke, where enough information was provided for ambulance services to identify the patient in their records and therefore supply the time of call. Improvements in trusts' recording of NHS numbers and Computer-Aided Dispatch (CAD) numbers should lead to increases in the K1n patient counts in future.

5. Further information on AQI

5.1 The AQI landing page and Quality Statement

www.england.nhs.uk/statistics/statistical-work-areas/ambulance-quality-indicators, or <http://bit.ly/NHSAQI>, is the AQI landing page, and it holds:

- a Quality Statement for these statistics, which includes information on relevance, accuracy, timeliness, coherence, and user engagement;
- the specification guidance documents for those who supply the data;
- timetables for data collection and publication;
- time series spreadsheets and csv files from April 2011 up to the latest month;
- links to individual web pages for each financial year;
- contact details for the responsible statistician (also in section 5.4 below).

The web pages for each financial year hold:

- separate spreadsheets of each month's data;
- this Statistical Note, and equivalent versions from previous months;
- the list of people with pre-release access to the data.

Publication dates are also at

www.gov.uk/government/statistics/announcements?keywords=ambulance.

5.2 Related statistics

Ambulance handover delays of over 30 minutes at each Emergency Department were published by NHS England for winter 2012-13, 2013-14, 2014-15, 2017-18, and 2018-19, at www.england.nhs.uk/statistics/statistical-work-areas/winter-daily-sitreps.

The Quality Statement described in section 5.1 includes information on:

- the “Ambulance Services” publications⁴ by NHS Digital, with data from before 2000, to 2014-15;
- a dashboard with an alternative layout for AQI data up to April 2016;
- the comparability of data for other countries of the UK:

Wales: <https://statswales.gov.wales/Catalogue/Health-and-Social-Care/NHS-Performance/Ambulance-Services>

Scotland: See Quality Improvement Indicators (QII) documents at www.scottishambulance.com/TheService/BoardPapers.aspx

Northern Ireland: www.health-ni.gov.uk/articles/emergency-care-and-ambulance-statistics

5.3 AQI Scope

The AQI include calls made by dialling either the usual UK-wide number 999 or its international equivalent 112. As described in the guidance mentioned in section 5.1, incidents resulting from a call to NHS 111 are included in all Systems Indicators except call data items A1 to A6.

5.4 Contact information

Media: NHS England Media team, nhsengland.media@nhs.net, 0113 825 0958.

The person responsible for producing this publication is Ian Kay; Finance, Performance and Planning Directorate; NHS England and NHS Improvement; 0113 825 4606; i.kay@nhs.net; Room 5E24, Quarry House, Leeds, LS2 7UE.

5.5 National Statistics

The UK Statistics Authority has designated these statistics as National Statistics, in accordance with the Statistics and Registration Service Act 2007 and signifying compliance with the Code of Practice for Official Statistics.

Designation can be broadly interpreted to mean that the statistics:

- meet identified user needs;
- are well explained and readily accessible;
- are produced according to sound methods; and
- are managed impartially and objectively in the public interest.

Once statistics have been designated as National Statistics it is a statutory requirement that the Code of Practice shall continue to be observed.

⁴ <https://digital.nhs.uk/data-and-information/publications/statistical/ambulance-services>