

Statistical Note: Ambulance Quality Indicators (AQI)

The latest Systems Indicators for January 2019 for Ambulance Services in England showed that one of the six response standards in the Handbook¹ to the NHS constitution was met.

Survival to discharge from hospital, following cardiac arrest and transportation by Ambulance Services, in July 2018, was the highest figure ever.

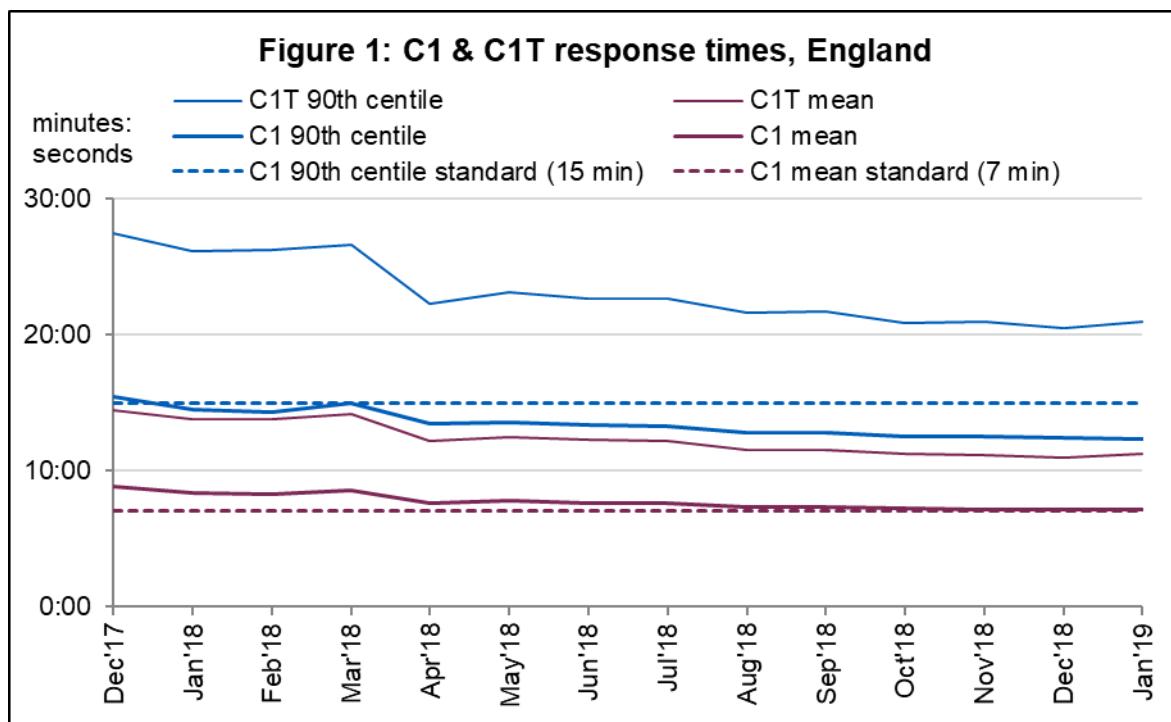
1. Systems Indicators

1.1 Response times

The mean average Category C1 response time across England was 7 minutes 8 seconds in January 2019, just longer than in December 2018 (7:06) and the standard of 7 minutes.

The C1 90th centile response times averaged 12:20 across England in January 2019, less than the standard of 15 minutes, and the shortest time ever, since the current categorisation was first in use throughout England² in December 2017.

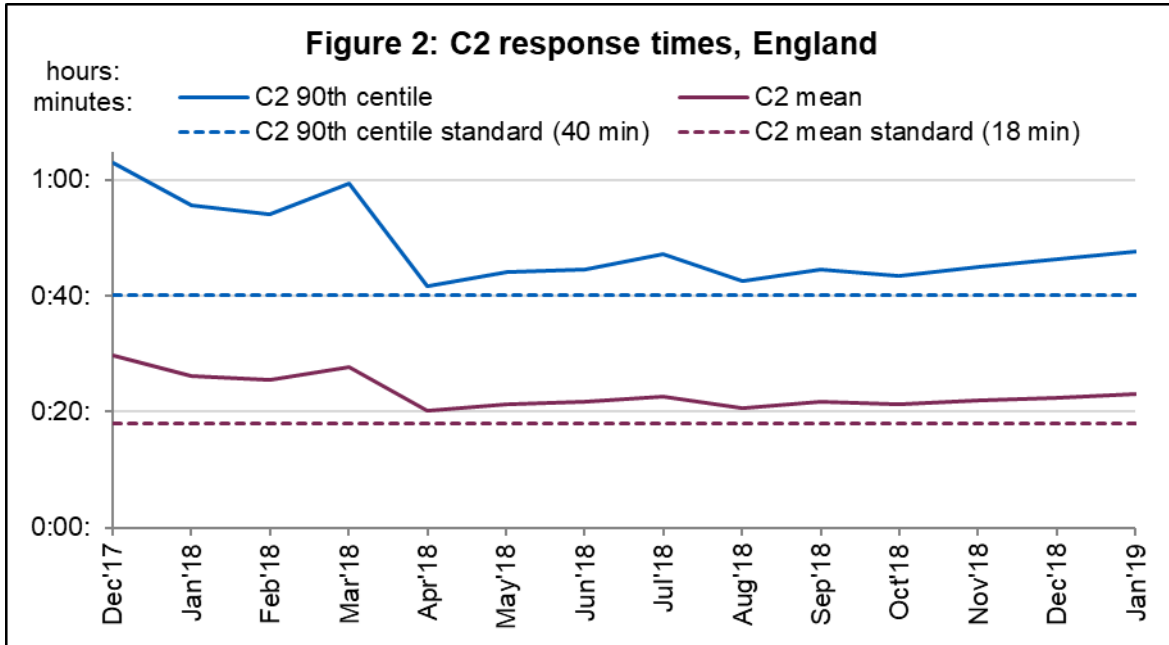
The mean and 90th centile for C1T (arrival of transporting vehicle, for C1 patients transported) both increased a little to 11:16 and 20:56 respectively in January.



¹ Ambulance standards are in the September 2017 addendum to the Handbook to the NHS Constitution: www.gov.uk/government/publications/supplements-to-the-nhs-constitution-for-england

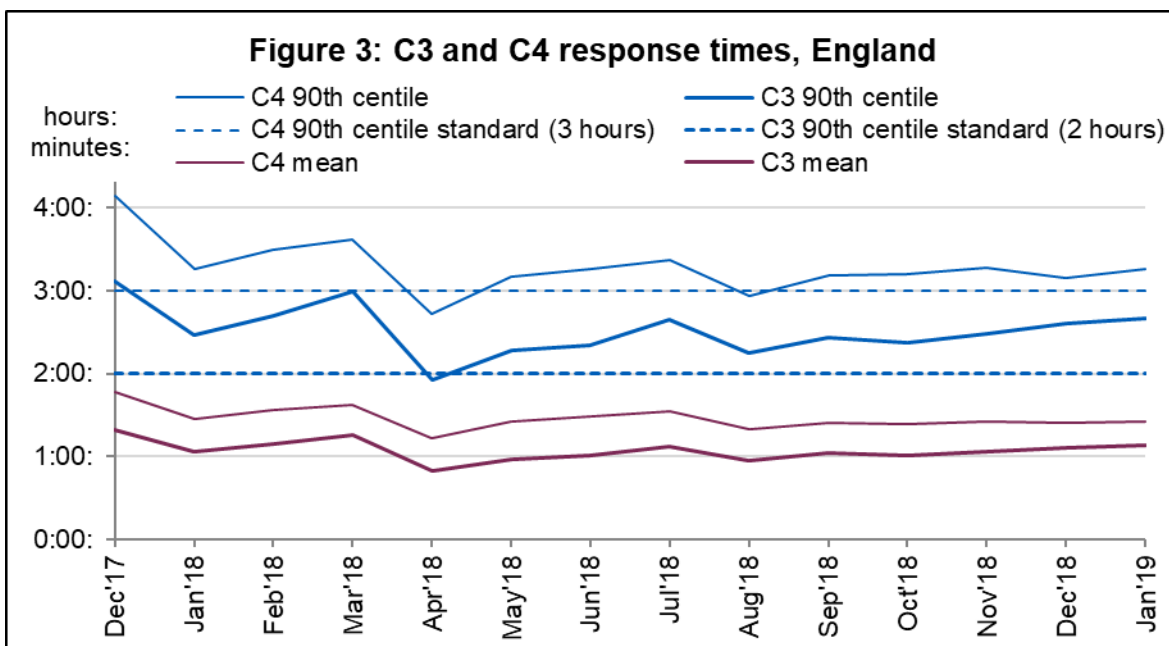
² The Isle of Wight (IOW) Ambulance Service has provided data from April 2018, including response times against the new categories C1 to C4. However, until 9 October 2018, it still used the old Red 1 / Red 2 / Green categories operationally, so its response times reflected the old category used at the time of the incident, and not the new category that the incident corresponded to.

Figure 2 shows the C2 mean average response time for England was 22:58 in January 2019, longer than the standard of 18 minutes. The C2 90th centiles averaged 47:39 across England, also longer than the standard of 40 minutes. Both the C2 mean and 90th centile times were the longest since March 2018.



Across England in January 2019, the C3 mean average response time was 1:07:42. The C3 90th centile times averaged 2:40:10, which is longer than the standard of 2 hours. Like the C2 average response times, both C3 times were the longest since March 2018.

The C4 mean average response time was 1:25:43 across England for January 2019. The C4 90th centile times averaged 3:16:00, longer than the standard of 3 hours. Both C4 times were similar to the C4 average so far in 2018-19.

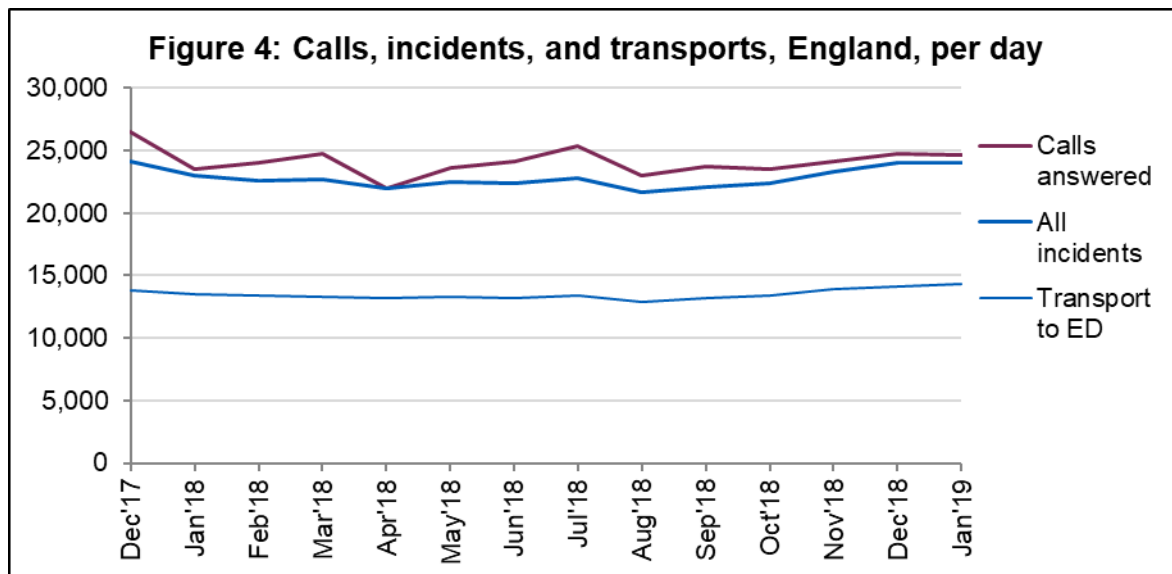


1.2 Other Systems Indicators

The mean average call answer time in January was 5 seconds, the shortest time in the series.

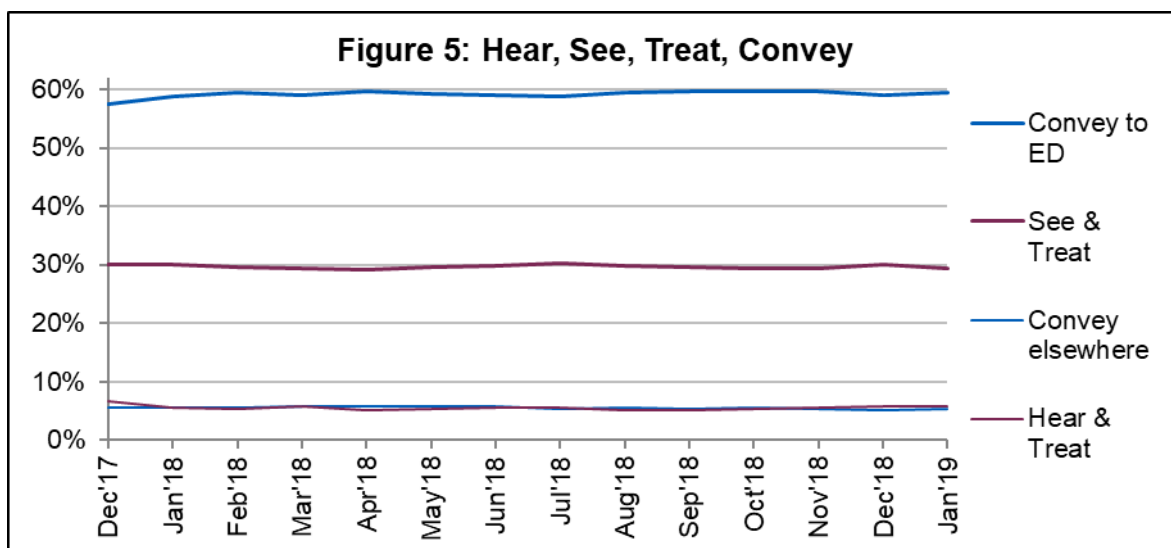
In January 2019, per day, there were (Figure 4):

- 24.6 thousand calls to 999 answered, a 0.4% decrease on December;
- 24.0 thousand incidents that received a response from an Ambulance Service, an increase of 0.1% on December;
- 14.3 thousand incidents where a patient was transported to an Emergency Department (ED), a 0.9% increase on December, and the highest count per day in the series.



However, as a proportion of all incidents, incidents with transport to ED was 59.5%, which is similar to the average for 2018-19 so far (59.4%).

Other incidents in January (Figure 5) comprised 5.4% with a patient transported elsewhere, 29.4% where patients were attended but not transported (see and treat), and 5.8% resolved on the telephone (hear and treat).



2. Clinical Outcomes

Today's publication includes unscheduled revisions to STEMI timeliness data. Data may change further in our next routine revisions across all Ambulance Clinical Outcomes, in a few months' time.

On 9 November 2017, we announced in the Statistical Note that we would continue to publish Clinical Outcome data every month, but only describe them in this Note once a quarter.

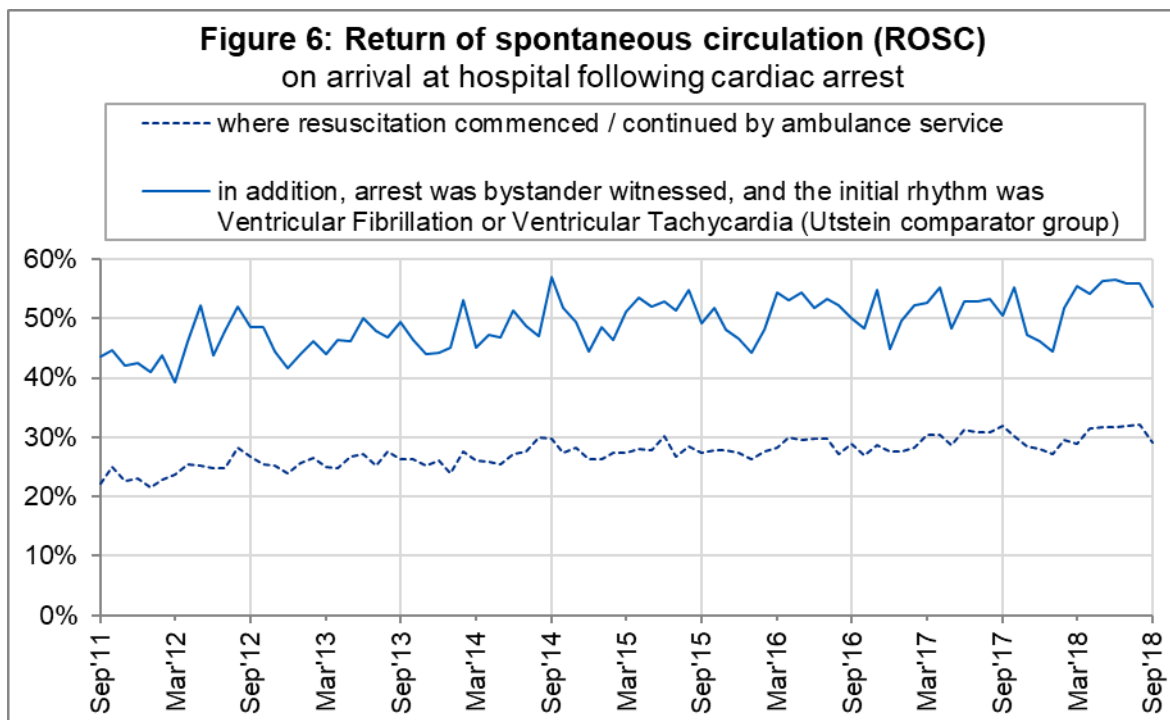
On 12 April 2018, we announced that we would only collect and publish monthly bundle data once a quarter, to free up Ambulance Service staff time to help develop new measures that are now part of this publication. As a result, we collect the post-ROSC (section 2.1) and STEMI (section 2.2) care bundle data for January, April, July, and October; stroke diagnostic bundle data (section 2.3) for February, May, August, and November; and sepsis care bundle (section 2.4) data for March, June, September, and December.

Today, we describe all Clinical Outcome measures, but in future months, we will discuss each topic area in the month when we publish new bundle data for that topic.

2.1 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).

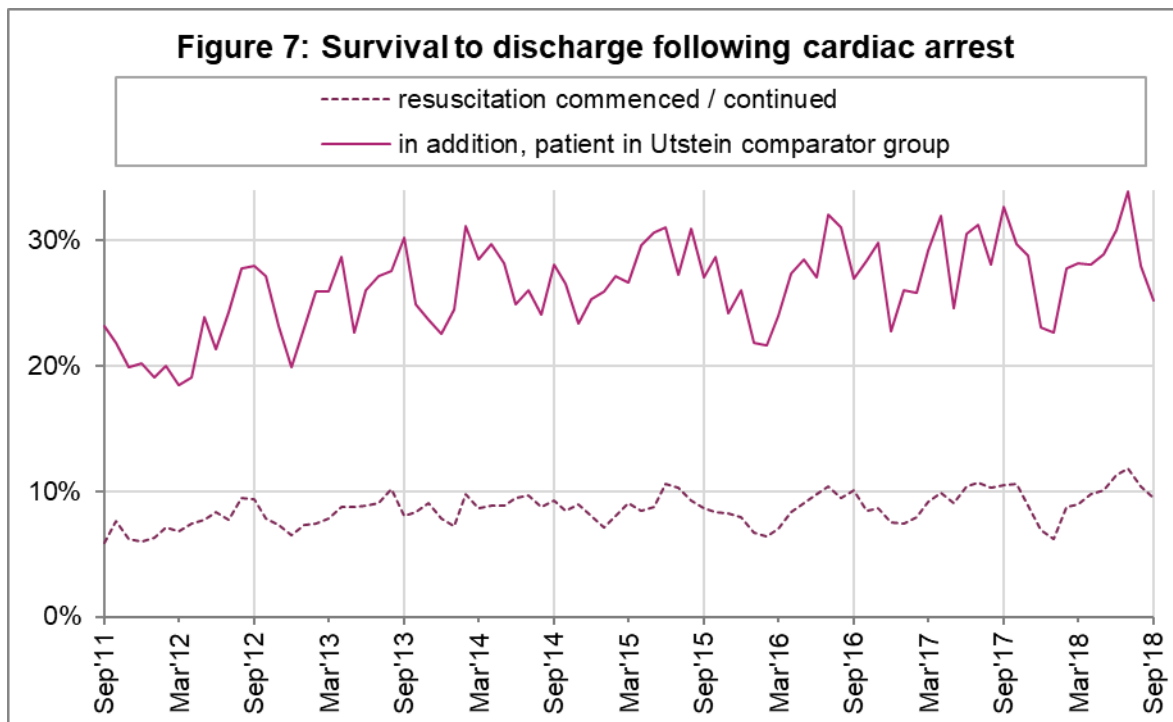
Starting with November 2017, these data are supplied by Ambulance Services via the University of Warwick Out of Hospital Cardiac Arrest Outcomes (OHCAO) study, rather than directly to NHS England.



At England level, for all patients, ROSC (Figure 6) increased each month from March 2018 to 32.1% in August 2018, the highest proportion in the time series, and significantly higher than the 2017-18 average (29.6%); in September 2018 it decreased to 29.0%.

The Utstein comparator group³ comprises patients who had resuscitation commenced or continued by the Ambulance Services, following 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.

For the Utstein group, ROSC was also high, particularly in July and August 2018, although not significantly higher than the 2017-18 average of 51.1% (Figure 6).



Survival to discharge (Figure 7) for all patients was 11.8% in July 2018, significantly higher than the 2017-18 average of 9.1%. The proportion in July 2018 was the highest in the time series, although it decreased to 9.4% in September.

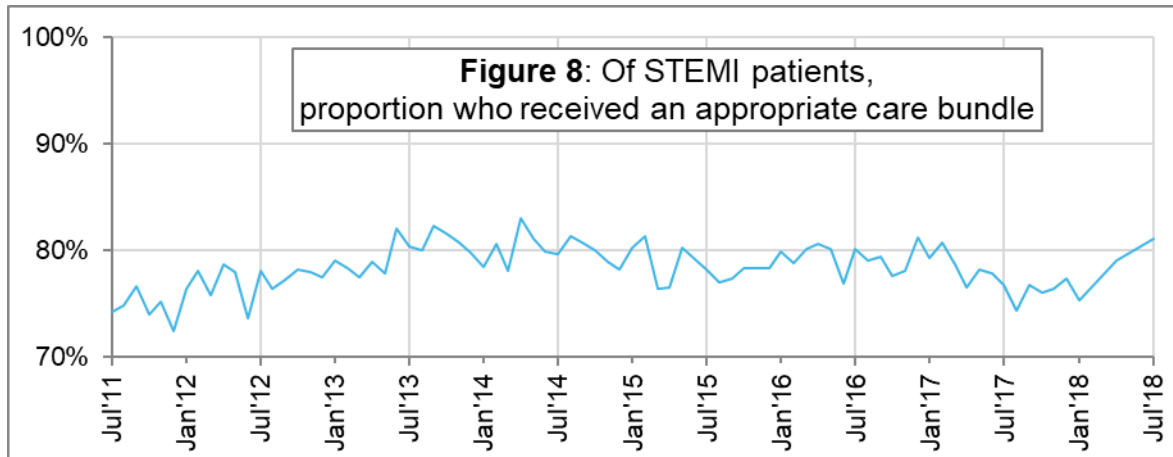
Survival to discharge for the Utstein group was 33.9% in July, also significantly higher than the 2017-18 average of 28.2%, and also the highest in the series. It too decreased in September, to 25.2%.

2.2 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.

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>

The proportion of patients with acute STEMI that received an appropriate care bundle was 81.2% in England in July 2018, significantly⁴ more than the average for 2017-18 (76.6%), and the highest proportion since December 2016 (Figure 8).



Starting with November 2017 data, the National Institute for Cardiovascular Outcomes Research (NICOR) have supplied data from their Myocardial Ischaemia National Audit Project (MINAP) for STEMI patients. These data include counts of patients and, for those patients, the time from ambulance call to primary percutaneous coronary intervention (PPCI): inflation of a balloon inside a blood vessel to restore blood flow to the heart.

NICOR are developing their systems so they can better collate and link data from Acute Trusts and Ambulance Services. These developments led to a temporary shortfall in 2018-19 MINAP data for this publication. To address this shortfall, for MINAP data alone, today we publish revisions back to November 2017, along with the August 2018 data that were unavailable for our 10 January publication.

Figure 9 shows how much this changes the counts of STEMI patients transported by Ambulance Services (blue lines) and, of those, how many went on to PPCI (purple lines); the July 2018 counts are more than twice the figures we originally published.

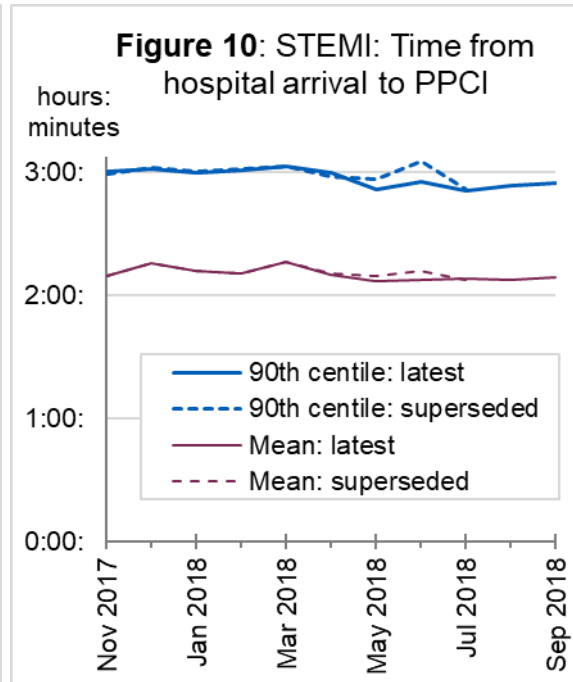
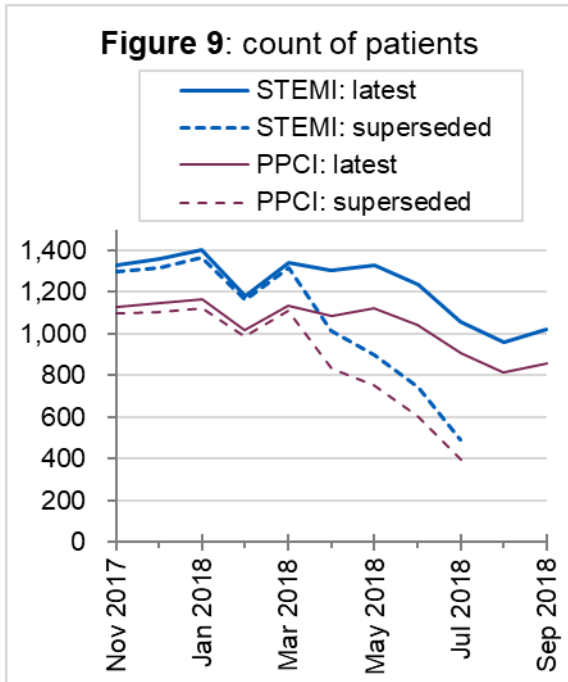
The lines in Figure 9 dip in the shorter month of February 2018, and also in the last few months. If there is more late reporting to MINAP, we will include it in the next revisions to all Clinical Outcomes, in a few months' time.

Figure 10 shows that the times from hospital arrival to PPCI are not changed as much by the late reporting; the largest revision for England as a whole is a reduction of less than ten minutes to the 90th centile time for June 2018.

The latest figures show that across England, in July, August, and September 2018, the mean average time (blue line) from Ambulance call to catheter insertion for PPCI was 2 hours and 7 or 8 minutes, and therefore within 10 minutes of all previous months (from November 2017).

The 90th centile equivalent measure (purple line) was between 2:51 and 2:54 for the latest three months. This measure also does not vary much; Figure 10 shows it is always within ten minutes of three hours.

⁴ Significance calculations reported in this document are Student's t-test with 95% significance.

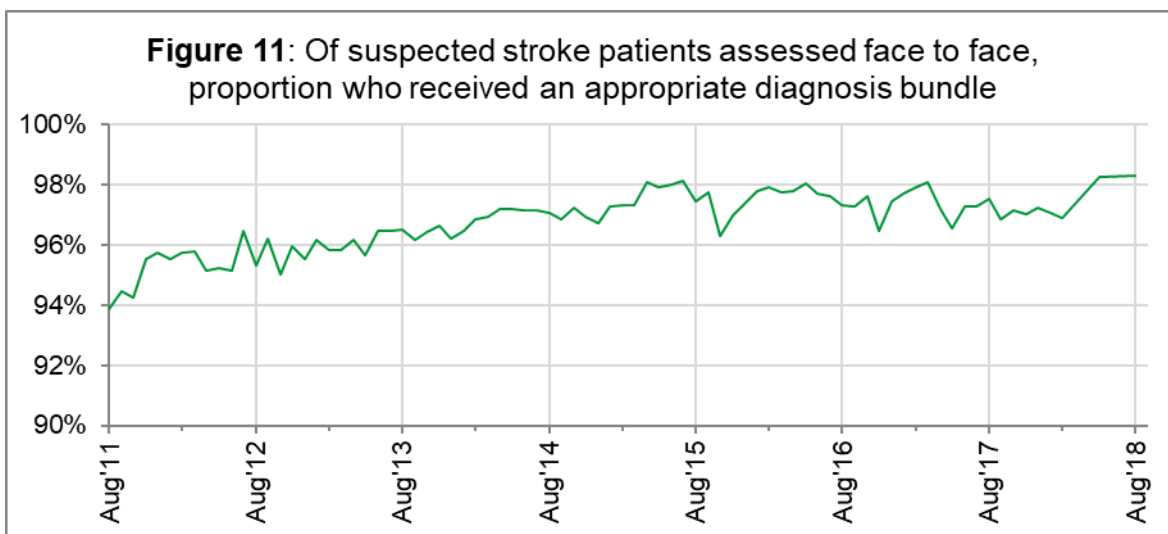


2.3 Stroke

The FAST procedure helps assess whether someone has suffered a stroke:

- Facial weakness: can the person smile? Has their mouth or eye drooped?
- Arm weakness: can the person raise both arms?
- Speech problems: can the person speak clearly and understand what you say?
- Time to call 999 for an ambulance if you spot any one of these signs.

Of stroke patients in England assessed face-to-face in August 2018, the proportion that received an appropriate diagnostic bundle was 98.3%. This was the highest proportion recorded in the time series, and significantly higher than the average for 2017-18 (97.1%), although, as Figure 11 shows, there is little variation in this measure; the average across England has exceeded 96% in every month since June 2013.



The mean average time from Ambulance call to hospital arrival for stroke was 1 hour 13 minutes in September 2018, the same as 2018-19 year-to-date average.

Mean times for Ambulance Service patients from hospital arrive to CT scan for stroke continue to exceed median times, suggesting particularly skewed data. Across England, the median Trust-level times from arrival at hospital to CT scan for stroke averaged 41 minutes in September 2018, similar to the 2018-19 year-to-date average of 40 minutes.

The median time for Ambulance Service patients from arrival at hospital to thrombolysis for stroke was 48 minutes, the same as the 2018-19 year-to-date average.

2.4 Sepsis

Sepsis is a time-critical condition. Early recognition and management of sepsis in the pre-hospital setting can reduce mortality and improve the health and well-being of patients. Making a diagnosis quickly and ensuring early transport of a patient to an appropriate Emergency Department capable of providing further tests, treatment and care (including appropriate antibiotics for those who are eligible) represents a standard of ambulance care.

In September 2018, the proportion of patients receiving the sepsis care bundle was 68.8%, similar to June 2018 (68.2%), which was the first month in which sepsis bundle data was collected.

3. Further information on AQI

3.1 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 3.4 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.

3.2 Related statistics in England

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 3.1 includes information on: a dashboard with an alternative layout for AQI data up to April 2016; the “Ambulance Services” publications⁵ by NHS Digital, with data from before 2000, to 2013-14; and the comparability of data for other countries of the UK:

Wales: <http://wales.gov.uk/statistics-and-research/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

3.3 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 3.1, incidents resulting from a call to NHS 111 are included in all Systems Indicators except call data items A1 to A6.

3.4 Contact information

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

The person responsible for producing this publication is Ian Kay, Operational Information for Commissioning (Central), NHS England, Room 5E24, Quarry House, Leeds, LS2 7UE; 0113 825 4606; i.kay@nhs.net

3.5 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.

⁵ <https://digital.nhs.uk/data-and-information/publications/statistical/ambulance-services>