## Statistical Note: Ambulance Quality Indicators (AQI)

The latest Systems Indicators for April 2017 for Ambulance Services in England showed, despite improvements, the standards in the Handbook[[1]](#footnote-1) to the NHS constitution were not met (pages 1 to 4).

The latest Clinical Outcomes data for January 2017 show, for patients with myocardial infarction, fewer timely angioplasty treatments (page 8).

## A. Systems Indicators

### A1 Emergency response in 8 minutes (Figure 1)

In April 2017, of Category A[[2]](#footnote-2), [[3]](#footnote-3) Red 1 calls in England, resulting in an emergency response, the proportion arriving within 8 minutes improved significantly[[4]](#footnote-4) to 73.0%.

In April 2017, of Category A3, 4 Red 2 calls in England resulting in an emergency response, the proportion arriving within 8 minutes was 66.2%, also a significant improvement on the previous 12 months.



The standard for Ambulance Services is to send an emergency response, with a defibrillator, within 8 minutes to 75% of Category A calls. Figure 1 shows that for England[[5]](#footnote-5),Red 1 performance in April 2017 was the highest proportion since some Services stopped using the Red 1 category.

For Red 1, out of the eight Services where Category A still applies, three met the 75% standard in April 2017: London (LAS, 79.2%), South Central (SCAS, 75.9%), and Isle of Wight (IOW, 77.8%); and all eight Services exceeded 70%, the first time this has happened since March 2014.

### A2 Dispatch on Disposition

In February 2015, the Secretary of State for Health announced the introduction of Dispatch on Disposition (DoD)[[6]](#footnote-6). This was the first change affecting the AQI due to the Ambulance Response Programme (ARP)[[7]](#footnote-7). It does not apply to Red 1 calls.

It meant that response data were still available across England, but for any affected Ambulance Service, Red 2 and Category A response data were no longer comparable before and after when DoD was introduced.

DoD increases the maximum time for triage, which means to identify the clinical situation and to take appropriate action. The change was based upon clinical advice that it would be likely to improve the overall outcomes for ambulance patients.

Until 10 February 2015, other than for Red 1 calls, the start time was the earliest of:

1. chief complaint or NHS Pathways initial disposition (Dx) code obtained;
2. first vehicle assigned;
3. 60 seconds after call connect.

From 10 February 2015, option 3 was increased from 60 seconds to 180 seconds for LAS and South Western (SWAS) Ambulance Services. From October 2015, further changes were tested in a variety of Ambulance Services on different dates, which are listed in full in the 8 December 2016 AQI Statistical Note. During October 2016, all Ambulance Services in England were aligned with a maximum start time of 240 seconds, except for IOW which aligned on 7 February 2017.

### A3 Clinical Coding Review

The second change affecting the AQI due to the ARP was the Clinical Coding Review (CCR). This was a clinically-led evidence based review of the call coding categorisations, to ensure patients receive the most appropriate response.

The existing Category A (Red 1 and Red 2) and Category C (Green 1, Green 2, Green 3, and Green 4) were replaced with new categories that were not comparable with those used previously.

The new categorisations were piloted by SWAS, Yorkshire (YAS) and West Midlands (WMAS) Ambulance Services from 19 April, 21 April and 8 June 2016 respectively. Therefore, from these dates, Red 1, Red 2, and Category A no longer apply to these Trusts and consequently data for these categories are no longer available for these Trusts.

### A4 Emergency Response in 8 minutes for Red 2 (Figure 2)

Figure 2 shows that in April 2017 the Red 2 measure for England[[8]](#footnote-8) was 66.2%, continuing the improvement in performance from the start of the year and also making this the highest proportion since YAS, WMAS and SWAS stopped using the Red 2 category. However, the 75% standard has not been met since January 2014 and performance has been below 70% since August 2015.

NWAS, South East Coast (SECAmb), East Midlands (EMAS) and East of England (EastAmb) Ambulance Services have always used the same DoD maximum clock start time as each other. All other Ambulance Services implemented DoD according to a unique timetable.

Figure 2 shows that the trend for England8 is similar to the trend for the four Services where the Red 2 measure is comparable, indicating that the trend for England8 is reliable, despite its discontinuities.



### A5 Category A Ambulance response in 19 minutes (Figure 3)

The second ambulance standard in the Handbook to the NHS Constitution is for trusts to send, within 19 minutes, a fully-equipped ambulance vehicle, able to transport the patient in a clinically safe manner, to 95% of Category A calls. For England[[9]](#footnote-9), in April 2017, performance increased further to 92.3%, continuing the improvement from January 2017, which was the lowest proportion recorded in the time series. Figure 3 shows that, as with the Red 2 measure, the trend for England9 is similar to that for the four trusts with the same DoD implementation timetable.

 

The numerators and denominators for Figures 2 and 3 are on the “DoD R2” and “DoD A19” tab respectively, in the Systems Indicators Time Series spreadsheet at <http://bit.ly/NHSAQI>.

In the trusts where Category A still applies, only IOW met the 8 minute Red 2 standard of 75% in April 2017, but LAS (95.5%), SCAS (95.9%), and IOW (95.3%), and all met the 19 minute Category A standard of 95%. SECAmb (56.2%) had the lowest proportion for Red 2 and EMAS (86.7%) had the lowest proportion for Category A.

For other Systems Indicators, DoD and the CCR do not affect comparability, but may lead to changes in levels. For example, a longer triage time may mean more calls are closed on the telephone, but the data for this measure remain comparable. Such changes may be difficult to detect within the habitual variation of the many AQI.

### A6 Systems Indicators: Ambulance volumes (Figure 4)

The number[[10]](#footnote-10) of emergency telephone calls presented to the switchboard in April 2017 was 772,747, an average of 25.8 thousand per day.

There were 564,655 emergency calls that received a face-to-face response from the ambulance service in April 2017, an average of 18.8 thousand per day.

In April 2017, there were 396,715 incidents with a patient transported to Type 1 or Type 2 A&E[[11]](#footnote-11), a daily average of 13.2 thousand.

Figure 4 shows that each measure habitually reduces after the annual December peak; and a general upward trend in calls and face-to-face responses, but less so for incidents where a patient was transported.



### A7 Latest monthly data for other Systems Indicators, April 2017

Of calls that received a face-to-face response from an Ambulance Service, the proportion managed without need for transport to Type 1 or Type 2 A&E was significantly less in April 2017 than in the previous year.

All other Systems Indicators, not already covered, were stable in April 2017 and within their ranges from the previous twelve months:

| Indicator | England | Lowest Trust[[12]](#footnote-12) | Highest Trust12 |
| --- | --- | --- | --- |
| Calls abandoned before being answered | 0.7% | SCAS | 0.2% | SWAS | 1.4% |
| Calls resolved through telephone assessment | 9.9% | WMAS | 4.8% | EMAS | 18.2% |
| Calls resolved without transport to Type 1 or Type 2 A&E | 37.0% | EMAS | 22.8% | SWAS | 49.1% |
| Recontact rate following discharge by telephone advice | 6.5% | EMAS | 0.8% | WMAS | 13.8% |
| Recontact rate following face-to-face treatment at scene | 5.1% | YAS | 1.1% | LAS | 8.5% |
| Incidents where a patient was transported | 396,715 | NEAS | 19,986 | LAS | 65,330 |

## B. Clinical Outcomes

### B1 Cardiac arrest: return of spontaneous circulation (ROSC)

Patients in cardiac arrest will typically have no pulse and will not be breathing. In January 2017, in England, resuscitation was commenced or continued by ambulance staff out-of-hospital for 3,305 such patients. Of these, 909 (28%) had ROSC, with a pulse, on arrival at hospital (Figure 5), the same as for the year ending September 2016 (28%). The largest proportion in January 2017 was 32% for NWAS and the smallest proportion was 22% for EMAS.

The Utstein group[[13]](#footnote-13) 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. The Utstein group therefore have a better chance of survival.

There were 427 such patients in England in January 2017, of which 213 (50%) had ROSC on arrival at hospital (Figure 5), similar to the year ending September 2016 (51%). The largest proportion in January 2017 was 64% for EastAmb and the smallest was 39% for SCAS.



### B2 Cardiac arrest: survival to discharge



The proportion of cardiac arrest patients in England discharged from hospital alive was 7% in January 2017 (Figure 6), slightly less than the year ending September 2016 (8%). The largest proportion in January 2017 was 14% for SCAS; the smallest was 3% for SECAmb.

For the Utstein group, survival to discharge in January 2017 was 25%, similar to the year ending September 2016 (27%). The largest proportion was 38% for YAS; the smallest was 11% for SECAmb.

### B3 ST-Elevation myocardial infarction

ST-segment elevation myocardial infarction (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.



1,036 STEMI patients in England received primary angioplasty in January 2017. Of these patients, 839 (81%) of them received it within 150 minutes of the call being connected to the ambulance service (Figure 7), significantly less than the year ending September 2016 (87%) and the lowest monthly figure since the data collection started in 2011. The largest proportion in January 2017 was 90% for EastAmb and the smallest was 70% for SWAS.

In January 2017, of 1,653 patients with an acute STEMI in England, 1,307 (79%) received the appropriate care bundle[[14]](#footnote-14). EastAmb had the largest proportion with 94% and the smallestwas SECAmb with 66%.

### B4 Stroke

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

* **F**acial weakness: can the person smile? Has their mouth or eye drooped?
* **A**rm weakness: can the person raise both arms?
* **S**peech problems: can the person speak clearly and understand what you say?
* **T**ime to call 999 for an ambulance if you spot any one of these signs.

In January 2017, of 3,557 FAST positive patients in England, assessed face to face, and potentially eligible for stroke thrombolysis within agreed local guidelines, 1,852 (52%) arrived at hospitals with a hyperacute stroke unit within 60 minutes of an emergency call connecting to the ambulance service (Figure 8), less than the year ending September 2016 (54%). The largest proportion for January 2017 was 59% for SECAmb and the smallest was 39% for SWAS.

There were 7,650 stroke patients assessed face to face in January 2017 in England, of which 7,470 (98%) received the appropriate care bundle, similar to the year ending September 2016 (97%).



## C. Further information on AQI

### C1 The AQI landing page and Quality Statement

[www.england.nhs.uk/statistics/statistical-work-areas/ambulance-quality-indicators](http://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 document for those who supply the data;
* timetables for data collection and publication;
* text files and time series spreadsheets containing all data from April 2011 up to the latest month;
* links to individual web pages for each financial year.

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](http://www.gov.uk/government/statistics/announcements).

### C2 Revisions Timetable

Revisions usually follow a six-monthly cycle. The dates for past and future AQI Systems Indicators (SI) and Clinical Outcomes (CO) scheduled revisions are below. The AQI Quality Statement above contains a more detailed revisions policy.

| Publication |  | Data  |  | Months affected |  |  | Publication |  | Data  |  | Months affected |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 14 Sep 2017 |  | CO |  | Apr ’16 - Mar ‘17 |  |  | 6 Nov 2014 |  | SI |  | Apr ‘13 - Aug ‘14 |
| 11 May 2017 |  | SI |  | Apr ‘15 - Feb ‘17 |  |  | 5 Sep 2014 |  | CO |  | Apr ‘13 - Mar ‘14 |
| 9 Mar 2017 |  | CO |  | Apr ‘16 - Sep ‘16 |  |  | 2 May 2014 |  | SI |  | Apr ‘13 - Feb ‘14 |
| 10 Nov 2016 |  | SI |  | Apr ‘16 - Aug ‘16 |  |  | 7 Mar 2014 |  | CO |  | Apr ‘13 - Sep ‘13 |
| 8 Sep 2016 |  | CO |  | Apr ‘15 - Apr ‘16 |  |  | 1 Nov 2013 |  | SI |  | Apr ‘13 - Aug ‘13 |
| 12 May 2016 |  | SI |  | Apr ‘15 - Feb ‘16 |  |  | 2 Aug 2013 |  | CO |  | Apr ‘12 - Mar ‘13 |
| 10 Apr 2016 |  | CO |  | Apr ‘15 - Sep ‘15 |  |  | 3 May 2013 |  | SI |  | Apr ‘12 - Mar ‘13 |
| 10 Sep 2015 |  | CO |  | Apr ‘14 - Mar ‘15 |  |  | 1 Feb 2013 |  | CO |  | Apr ‘12 - Aug ‘12 |
| 4 Jun 2015 |  | SI |  | Apr ‘14 - Feb ‘15 |  |  | 11 Jan 2013 |  | SI |  | Apr ‘11 - Oct ‘12 |
| 30 Apr 2015 |  | SI |  | Apr ‘14 - Feb ‘15 |  |  | 31 Aug 2012 |  | CO |  | Apr ‘11 - Mar ‘12 |
| 5 Mar 2015 |  | CO |  | Apr ‘14 - Sep ‘14 |  |  | 4 May 2012 |  | SI & CO |  | Apr ‘11 - Mar ‘12 |

### C3 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 specification guidance mentioned in section C1, calls made to NHS 111 are not included in the AQI measures for calls abandoned, re-contacts, frequent callers, time to answer calls, or calls resolved by telephone advice.

All other Systems Indicators involve the dispatch of an ambulance, and include ambulances dispatched as a result of a call to NHS 111, as well as 999 or 112.

### C4 Related statistics in England

A Clinical Dashboard on the AQI landing page presents an alternative layout for the AQI data. Because of the lack of comparability due to the Ambulance Response Programme (section A2), NHS England last updated the dashboard in April 2016.

The AQI were also used in the “Ambulance Services” publications[[15]](#footnote-15) by NHS Digital, which included additional annual analysis and commentary, up to and including 2014-15 data. The Quality Statement described in section C1 has more information on this publication. It also contains details of weekly ambulance situation reports that NHS England collected for six months from November 2010.

Ambulance handover delays of over 30 minutes at each Emergency Department were collected and published by NHS England each winter until 2014-15: [www.england.nhs.uk/statistics/statistical-work-areas/winter-daily-sitreps](http://www.england.nhs.uk/statistics/statistical-work-areas/winter-daily-sitreps)

### C5 Rest of United Kingdom

Ambulance statistics for other countries of the UK can be found at the following websites. The AQI Quality Statement described in section C1 contains more information about the comparability of these statistics.

|  |  |
| --- | --- |
| Wales: | <http://wales.gov.uk/statistics-and-research/ambulance-services> |
| Scotland: | See Quality Improvement Indicators (QII) documents at [www.scottishambulance.com/TheService/BoardPapers.aspx](http://www.scottishambulance.com/TheService/BoardPapers.aspx) |
| Northern Ireland: | [www.health-ni.gov.uk/articles/emergency-care-and-ambulance-statistics](http://www.health-ni.gov.uk/articles/emergency-care-and-ambulance-statistics) |

### C6 Contact information

For press enquiries, please contact the NHS England press office on 0113 825 0958 or nhsengland.media@nhs.net.

The person responsible for producing this publication is:

Ian Kay, Operational Information for Commissioning (Central), NHS England

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### C7 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.

1. Page 34 of the July 2015 Handbook to the NHS Constitution has Ambulance response time standards, [www.gov.uk/government/publications/supplements-to-the-nhs-constitution-for-england](http://www.gov.uk/government/publications/supplements-to-the-nhs-constitution-for-england). [↑](#footnote-ref-1)
2. After June 2016, Category A only applies to 8 of the 11 Ambulance Services in England, so Red 1 and Red 2 response data are not available for the other 3; see section A3 on the Clinical Coding Review. Also, from February 2015, changes in operational practice meant that Red 2 response data are still available but not always comparable; see section A2 on Dispatch on Disposition. [↑](#footnote-ref-2)
3. On 1 June 2012, Category A (immediately life-threatening) calls were split into Red 1 and Red 2. Red 1 calls are the most time critical, and cover cardiac arrest patients who are not breathing and do not have a pulse, and other severe conditions such as airway obstruction. Red 2 calls are serious, but less immediately time critical, and cover conditions such as stroke and fits. [www.gov.uk/government/news/changes-to-ambulance-response-time-categories](http://www.gov.uk/government/news/changes-to-ambulance-response-time-categories) [↑](#footnote-ref-3)
4. Significance calculations in this document are Student’s t-test with 95% significance. [↑](#footnote-ref-4)
5. England excludes YAS and SWAS after April 2016, and WMAS after June 2016. See section A3. [↑](#footnote-ref-5)
6. Dispatch on Disposition announcement: [www.parliament.uk/business/publications/written-questions-answers-statements/written-statement/Commons/2015-01-16/HCWS201](http://www.parliament.uk/business/publications/written-questions-answers-statements/written-statement/Commons/2015-01-16/HCWS201) [↑](#footnote-ref-6)
7. Ambulance Response Programme information: [www.england.nhs.uk/ourwork/qual-clin-lead/arp](http://www.england.nhs.uk/ourwork/qual-clin-lead/arp) [↑](#footnote-ref-7)
8. England excludes YAS and SWAS after April 2016, and WMAS after June 2016. See section A3. [↑](#footnote-ref-8)
9. England excludes YAS and SWAS after April 2016, and WMAS after June 2016. See section A3. [↑](#footnote-ref-9)
10. The number of emergency calls presented to switchboard does not usually include calls made to NHS 111 requiring an ambulance. 111 calls requiring an ambulance are usually transferred electronically direct to ambulance dispatch and not routed via 999 call handlers. Occasionally, manual requests for ambulances are made between 111 and 999 call handlers and such calls are included in the numbers of emergency calls presented to switchboard. [↑](#footnote-ref-10)
11. Type 1 are consultant-led 24 hour emergency departments with full resuscitation facilities.

Type 2 offer a consultant-led speciality A&E service such as ophthalmology or dental.

Type 3 is A&E / minor injury activity that may be doctor-led or nurse-led.

Type 4 are NHS walk-in centres. ([www.datadictionary.nhs.uk/data\_dictionary/attributes/a/acc/](http://www.datadictionary.nhs.uk/data_dictionary/attributes/a/acc/accident_and_emergency_department_type_de.asp)
[accident\_and\_emergency\_department\_type\_de.asp](http://www.datadictionary.nhs.uk/data_dictionary/attributes/a/acc/accident_and_emergency_department_type_de.asp)) [↑](#footnote-ref-11)
12. The Isle of Wight (IOW) contains 0.3% of the resident population of England. Its data vary more than other trusts because of its small size. Its data are all available in the accompanying spreadsheets, but in the remainder of this document, if the IOW has the largest or smallest value, we report the second largest or smallest value instead. [↑](#footnote-ref-12)
13. 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> [↑](#footnote-ref-13)
14. Pages 27 to 30 of the specification guidance for data suppliers on the AQI landing page at [www.england.nhs.uk/statistics/statistical-work-areas/ambulance-quality-indicators](http://www.england.nhs.uk/statistics/statistical-work-areas/ambulance-quality-indicators) describe the care bundles, and certain exclusions, for the STEMI and stroke indicators. [↑](#footnote-ref-14)
15. NHS Digital *Ambulance Services*: <http://content.digital.nhs.uk/article/2021/Website-Search?q=ka34> [↑](#footnote-ref-15)