## Statistical Note: Ambulance Quality Indicators (AQI)

The latest Systems Indicators for December 2016 for Ambulance Services in England showed the standards in the Handbook[[1]](#footnote-1) to the NHS constitution were not met.

The latest Clinical Outcomes data are stable for patients transported by Ambulance Services in September 2016.

## A. Systems Indicators

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

In December 2016, of Category[[2]](#footnote-2), [[3]](#footnote-3) A Red 1 calls in England, resulting in an emergency response, the proportion arriving within 8 minutes was 66.4%.

In December 2016, of Category2, 3 A Red 2 calls in England resulting in an emergency response, the proportion arriving within 8 minutes was 58.8%.



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[[4]](#footnote-4), Red 1 performance significantly[[5]](#footnote-5) decreased to 66.4% in December 2016, the second lowest proportion recorded since the data collection began in June 2012.

For Red 1, out of the eight trusts where Category A still applied, none met the 75% standard in December 2016. Six trusts had proportions of less than 70%: North East (67.4%), North West (61.6%), East Midlands (66.3%), London (66.3%), South East Coast (63.9%) and Isle of Wight (52.5%).

### A2 Dispatch on Disposition

In January 2015, the Secretary of State for Health announced[[6]](#footnote-6) the introduction of Dispatch on Disposition (DoD). 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 London (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 except the Isle of Wight (IOW) were aligned with a maximum start time of 240 seconds.

### 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), Green 1, Green 2, Green 3 and Green 4 categories were replaced with new categories that were not comparable with those used previously.

The new categorisations were piloted by South Western, 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 response data for these categories are no longer available for these Trusts. Data in the AQI Statistical Notes and accompanying spreadsheets contain data for YAS and SWAS for part of April 2016, and for WMAS for part of June 2016.

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

Figure 2 shows that in December 2016 the Red 2 measure for England[[8]](#footnote-8) decreased to 58.8%. The 75% standard was last met in January 2014 and performance has been below 70% since August 2015.

North West (NWAS), East Midlands (EMAS), East of England (EastAmb) and South East Coast (SECAmb) 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, for the four Services where the Red 2 measure is always comparable, this measure follows a similar decline to England8 as a whole.

### 

### 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 England8 in December 2016 performance significantly decreased to 87.7%, making this the lowest proportion recorded since the data collection began in June 2012. For the four trusts with the same DoD implementation timetable, this measure has followed the same trend as England[[9]](#footnote-9) as a whole.



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

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 December 2016 was 912,924, an average of 29.4 thousand per day, making this the largest ever number of emergency and urgent calls presented to the switchboard since the time-series began (dating back to April 2011).

There were 628,489 emergency calls that received a face-to-face response from the ambulance service in December 2016, an average of 20.3 thousand per day and the largest number recorded in the series. It means that the total of 6.9 million for 2016 is 7% larger than the total for 2014.

There were 434,444 incidents with a patient transported to Type 1 or Type 2 A&E[[11]](#footnote-11) in December 2016, an average of 14.0 thousand per day. This is the second largest figure recorded in the time-series, with only December 2012 seeing higher volumes (437,726).

Figure 4 evidences a general upward trend in both total call volume and calls receiving a face-to-face response. However, transported incidents have increased less, with only a 3% increase between the totals for 2014 and 2016.



### A7 Latest monthly data for other Systems Indicators, December 2016

Of calls presented to the switchboard in December 2016, there was a significant increase to 2.2% in the proportion of calls abandoned before being answered.

Of calls that received a telephone or face-to-face response, the proportion resolved by telephone advice (Hear and Treat) was 10.8% in December 2016; this was a significant improvement and the highest proportion ever recorded in the time-series.

| Indicator | England | Lowest Trust | | Highest Trust | |
| --- | --- | --- | --- | --- | --- |
| Calls abandoned before being answered | 2.2% | London | 0.1% | North West | 7.8% |
| Calls resolved through telephone assessment | 10.8% | West Midlands | 5.2% | East Midlands | 17.2% |
| Calls resolved without transport to Type 1 or Type 2 A&E | 38.1% | East Midlands | 22.6% | South Western[[12]](#footnote-12) | 50.8% |
| Recontact rate following discharge by telephone advice | 6.1% | East Midlands | 1.2% | West Midlands | 16.0% |
| Recontact rate following face-to-face treatment at scene | 5.4% | Yorkshire12 | 1.6% | London | 9.4% |
| Incidents where a patient was transported | 434,444 | North  East12 | 21,364 | London | 70,725 |

## B. Clinical Outcomes

No thresholds to denote “poor” care are set for Clinical Outcomes. Commissioners are expected to examine trends in these data, and work in collaboration with ambulance trusts to achieve sustained improvement in patient outcomes over time; but commissioners are not expected to use Clinical Outcomes to performance manage trusts, because there will be significant variations in the populations served.

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

Patients in cardiac arrest will typically have no pulse and will not be breathing. In September 2016, in England, resuscitation was commenced or continued by ambulance staff out-of-hospital for 2,264 such patients. Of these, 649 (29%) had ROSC, with a pulse, on arrival at hospital (Figure 5), similar to the England average for 2015-16 of 28%. The largest proportion in September 2016 was 41% for North West and the smallest proportion was 21% for South Western.

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 346 such patients in England, in September 2016, of which 173 (50%) had ROSC on arrival at hospital (Figure 5), similar to the average for 2015-16 of 51%. The largest proportion in the September 2016 was 73% for North West and the smallest[[14]](#footnote-14) was 35% for West Midlands.



### B2 Cardiac arrest: survival to discharge

The proportion of cardiac arrest patients in England discharged from hospital alive was 9% in September 2016 (Figure 6), slightly higher than the average for 2015-16 of 8%. The largest proportion in September 2016 was 17% for South Central14; the smallest was 6% for South Western.

For the Utstein group, survival to discharge in September 2016 was 26%, slightly below the average for 2015-16 of 27%. The largest proportion was 42% for North East; the smallest was 12% for London.



### 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.

848 STEMI patients received primary angioplasty in September 2016, in England. Of these patients, 737 (87%) of them received it within 150 minutes of the call being connected to the ambulance service (Figure 7), the same as the average for 2015-16. The largest proportion in September 2016 was 97% for East of England and the smallest was 72% for South Western[[15]](#footnote-15).



In September 2016, of 1,386 patients with an acute STEMI in England, 1,105 (80%) received the appropriate care bundle[[16]](#footnote-16), slightly above the average for 2015-16 of 79%. East Midlands had the largest proportion with 92% and the smallest was South Central[[17]](#footnote-17) with 72%.

### 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 September 2016, of 3,052 FAST positive patients in England, assessed face to face, and potentially eligible for stroke thrombolysis within agreed local guidelines, 1,652 (54%) arrived at hospitals with a hyperacute stroke unit within 60 minutes of an emergency call connecting to the ambulance service. The largest proportion for September 2016 was 63% for South East Coast and the smallest was 36% for South Western.

There were 7,048 stroke patients assessed face to face in September 2016 in England, and 6,854 (97%) received the appropriate care bundle, similar to the average for 2015-16 of 98%.



## 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 scheduled revisions are below. The AQI Quality Statement above contains a more detailed revisions policy.

| Publication date |  | Series revised |  | Months affected |
| --- | --- | --- | --- | --- |
| 11 May 2017 |  | Systems Indicators |  | April 2015 to February 2017 |
| 9 March 2017 |  | Clinical Outcomes |  | April 2016 to September 2016 |
| 10 November 2016  8 September 2016  12 May 2016 |  | Systems Indicators  Clinical Outcomes  Systems Indicators |  | April 2016 to August 2016  April 2015 to April 2016  April 2015 to February 2016 |
| 10 April 2016 |  | Clinical Outcomes |  | April 2015 to September 2015 |
| 10 September 2015 |  | Clinical Outcomes |  | April 2014 to March 2015 |
| 4 June 2015 |  | Systems Indicators |  | April 2014 to February 2015 |
| 30 April 2015 |  | Systems Indicators |  | April 2014 to February 2015 |
| 5 March 2015 |  | Clinical Outcomes |  | April 2014 to September 2014 |
| 6 November 2014 |  | Systems Indicators |  | April 2013 to August 2014 |
| 5 September 2014 |  | Clinical Outcomes |  | April 2013 to March 2014 |
| 2 May 2014 |  | Systems Indicators |  | April 2013 to February 2014 |
| 7 March 2014 |  | Clinical Outcomes |  | April 2013 to September 2013 |
| 1 November 2013 |  | Systems Indicators |  | April 2013 to August 2013 |
| 2 August 2013 |  | Clinical Outcomes |  | April 2012 to March 2013 |
| 3 May 2013 |  | Systems Indicators |  | April 2012 to March 2013 |
| 1 February 2013 |  | Clinical Outcomes |  | April 2012 to August 2012 |
| 11 January 2013 |  | Systems Indicators |  | April 2011 to October 2012 |
| 31 August 2012 |  | Clinical Outcomes |  | April 2011 to March 2012 |

### 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

The AQI appear in a Clinical Dashboard, available from the AQI landing page, which presents an alternative layout for the same data. Because of the Ambulance Response Programme, described in section A2, and consequent lack of comparability, NHS England no longer updates this dashboard.

The AQI were also used in the “Ambulance Services” publications by NHS Digital, which included additional annual analysis and commentary. The April 2013 and earlier NHS Digital publications used the KA34 data collection, which was similar to the AQI Systems Indicators collection, but annual rather than monthly. The final two publications, before NHS Digital ended this publication, used AQI data. <http://content.digital.nhs.uk/article/2021/Website-Search?q=ka34>

The AQI Quality Statement described in section C1 contains more information on the NHS Digital 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/?lang=en> |
| 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](mailto:nhsengland.media@nhs.net).

The person responsible for producing this publication is:

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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. 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. Also, 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. [↑](#footnote-ref-2)
3. On 1 July 2012, Category A (immediately life-threatening) calls was 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. England excludes YAS and SWAS after April 2016, and WMAS after June 2016. See section A3. [↑](#footnote-ref-4)
5. Significance calculations in this document are Student’s t-test with 95% significance. [↑](#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. Due to its small size, performance on Isle of Wight tends to vary more than other trusts. If it has the largest or smallest value, the Table in Section A7 shows the second largest or smallest value, but has a footnote marker to show that Isle of Wight is more extreme. The Clinical Outcomes in section B also use this system. [↑](#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. Excluding Isle of Wight. See footnote 12 on page 6. [↑](#footnote-ref-14)
15. Excluding Isle of Wight. See footnote 12 on page 6. [↑](#footnote-ref-15)
16. 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-16)
17. Excluding Isle of Wight. See footnote 12 on page 6. [↑](#footnote-ref-17)