

Emergency Departments

Hospital Quarterly: Performance of NSW public hospitals

January to March 2013

More than half a million patients attended NSW public hospital emergency departments (EDs) during January to March 2013, 2% more than the same quarter in 2012. The greatest increase was seen in the emergency category (triage 2), with presentations 16% higher than the same quarter last year. These patients accounted for 11% of all emergency presentations.

The median times to start treatment are unchanged or slightly shorter compared to the same quarter one year ago and the 95th percentile times to start treatment have decreased by one minute (triage 2), five minutes (triage 3), 12 minutes (triage 4), and 22 minutes (triage 5).

The number of patients who travelled to the ED by ambulance has increased by 2% since the same quarter in 2012. The Bureau has not reported on ambulance performance measures in this report while it analyses new data to identify other options for reporting on the journeys of patients who arrive at hospital by ambulance. More information is available on [page 5](#).

In this quarter, 65% of all patients left the ED within four hours, compared with 60% in the same quarter in 2012. The NSW 2013 National Emergency Access Target requires that 71% of all patients who present to an ED leave the ED within four hours.

This is one of three *Hospital Quarterly* modules. For the Elective Surgery and Admitted Patients modules visit www.bhi.nsw.gov.au

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During the quarter	Jan-Mar 2013	Jan-Mar 2012	The difference
Visits to NSW emergency departments (EDs)	575,675 visits	562,646 visits	+13,029 (+2%)
People travelling to NSW EDs by ambulance	138,082 people	134,821 people	+3,261 (+2%)
Emergency attendances that were categorised as triage 2	58,570 attendances	50,628 attendances	+7,942 (+16%)
Median time to start treatment for triage 2 patients	8 minutes	8 minutes	unchanged
People leaving the ED within four hours of presentation (NEAT)	65% in four hours	60% in four hours	+5 percentage points
Admissions to hospital from NSW EDs	154,812 admissions	148,144 admissions	+6,668 (+5%)

Emergency department journeys

When a person is injured or requires medical care, they begin what we refer to as the patient's journey. The pathway each patient follows through the ED depends on the clinical needs and the decisions made about their treatment and management.

Most patients attend a NSW ED to receive treatment for an injury or acute illness.

Emergency patients are **'triaged'** by specialist clinical staff after they arrive in ED and are allocated to one of five categories, depending on how urgently they require care. Each triage category has a recommended maximum time that the patient should wait to be seen by a healthcare professional.

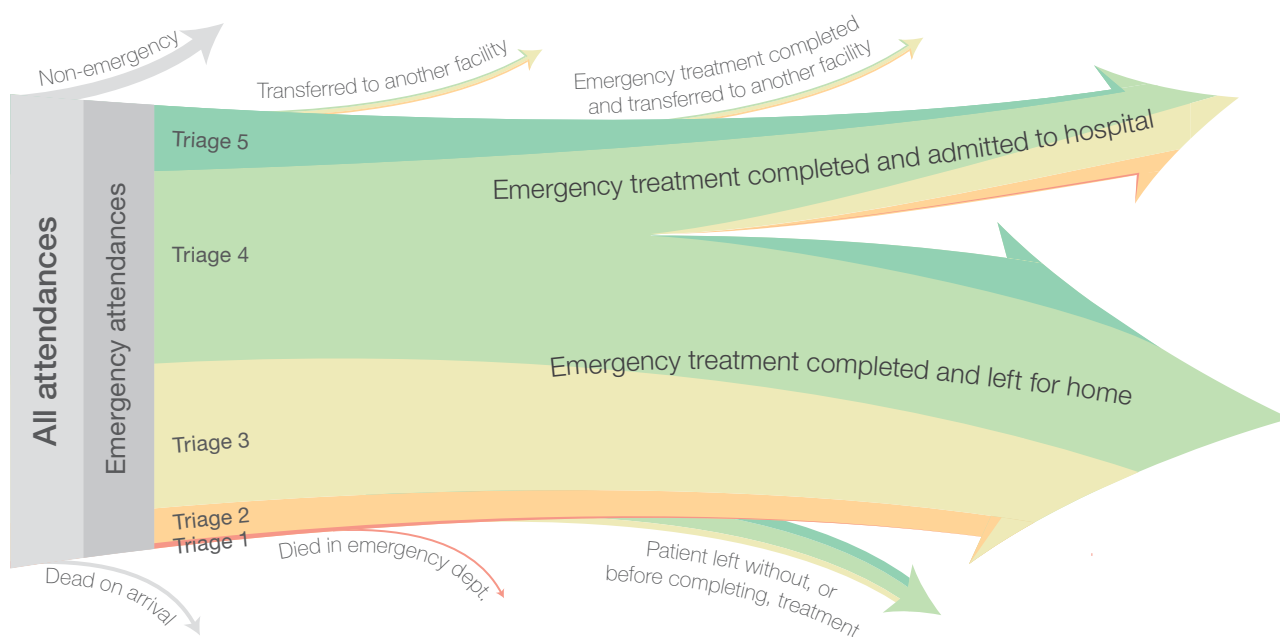
What happens next depends on the clinical needs of the patients. Patients from the most urgent triage categories (triage categories 1 and 2) are given priority and care typically begins immediately upon arrival. Patients from the less urgent triage categories (3 to 5) typically complete triage and administrative processes before treatment begins.

The majority of patients leave the ED after their treatment is complete or when they are admitted to hospital. Some patients are transferred to other hospitals or choose not to wait to begin or complete treatment. The journeys of all these patients during the January to March 2013 quarter are presented in this report and are summarised in **Figure 1**.

Figure 1: Summary of patients' journeys through NSW emergency departments

The thickness of each arrow is approximately proportional to the number of NSW emergency department patients in each category. The arrows are coloured by triage level.

Triage 1	Resuscitation
Triage 2	Emergency
Triage 3	Urgent
Triage 4	Semi-urgent
Triage 5	Non-urgent



Arriving at the emergency department

Emergency attendances this quarter

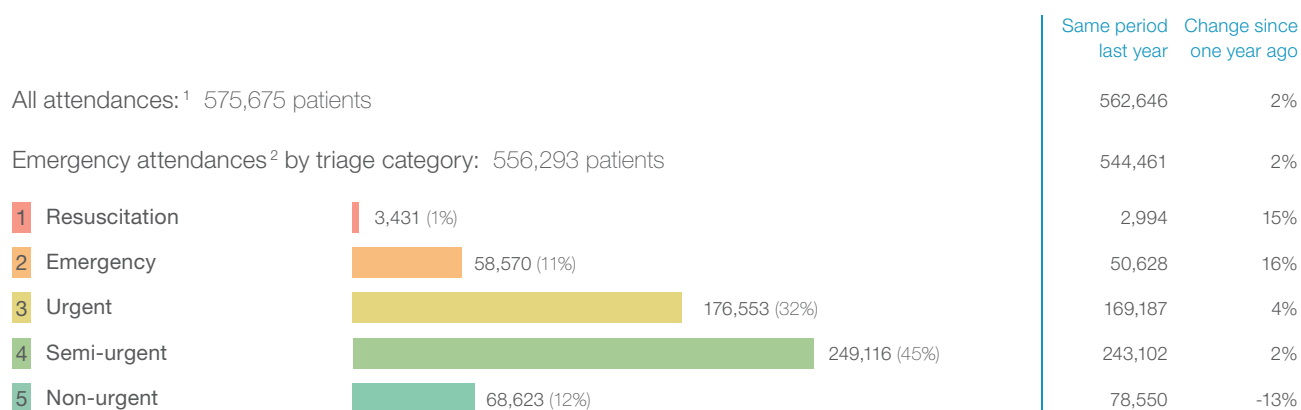
There were more than half a million attendances at NSW EDs during January to March 2013 (Figure 2). While almost all (97%) of these visits were considered 'emergency attendances', 19,382 patients attended for non-emergency reasons, such as planned return visits, attending some types of outpatient clinics or prearranged admissions to hospital. The percentage of patients attending NSW EDs for non-emergency reasons is similar to the same quarter last year.

A breakdown of emergency attendance figures shows that 45% were categorised as semi-urgent (triage 4), 32% were categorised as urgent (triage 3), 12% were non-urgent (triage 5) and 11% were in the emergency category (triage 2). Patients in the resuscitation category (triage 1) accounted for less than 1% of all people triaged in NSW EDs.

The greatest increase was seen in the emergency category (triage 2), with presentations 16% higher than the same quarter last year.

Note: The Bureau has simplified its descriptions of the triage categories 1 to 5. For example, replacing the triage 2 description of 'imminently life-threatening' with 'emergency'. This change reflects descriptions used by other organisations including the Australian Institute of Health and Welfare and the NSW Ministry of Health.

Figure 2: Attendances at NSW emergency departments, January to March 2013



1. All emergency and non-emergency attendances at the emergency department (ED).

2. All attendances that have a triage category and are coded as emergency presentations or unplanned return visits.

Note: All percentages rounded to whole numbers and therefore percentages may not add to 100%.

Note: Emergency department activity includes 96 facilities for which electronic data are reported. This covers approximately 87% of NSW emergency department activity.

Source: NSW Health, *Health Information Exchange*. Data extracted on 19 April 2013.

Emergency attendances and admissions over time

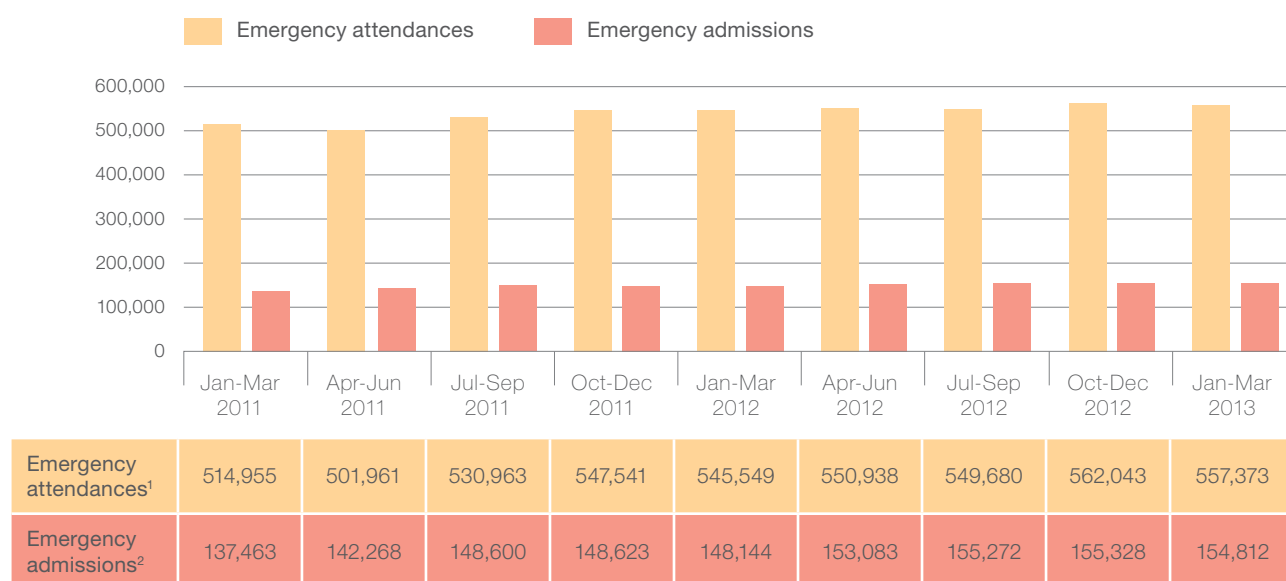
There tend to be seasonal trends in ED attendances throughout the year. The typical annual pattern sees ED attendances lower in the first half of the year and higher in the second half. Last year, however, we did not see the usual decrease in ED attendances in the first half of the year.

In the January to March 2013 quarter there were 557,373 emergency attendances. This is 2% higher than the same quarter one year ago (545,549) (Figure 3).

The number of emergency admissions from the ED has also been increasing. This quarter there were 154,812 admissions. This is 5% higher than the same quarter one year ago (148,144).

Over time, additional EDs have been included in *Hospital Quarterly* as electronic data become available. Comparisons of attendances and admissions with the same quarter two years ago may include the effect of the additional EDs being reported. Further detail can be found in the *Hospital Quarterly Technical Supplement: Emergency department measures, October to December 2012* available on the Bureau's website at www.bhi.nsw.gov.au

Figure 3: Emergency attendances at, and admissions from, NSW emergency departments, January 2011 to March 2013



1. Emergency attendances are ED visits for emergencies, unplanned return visits or disaster.

2. Admissions refers to emergency attendances that were admitted through the emergency department.

Note: Attendance and admission counts in this table are based on increasing numbers of EDs over time, so changes in trend in this table over time should be interpreted with caution. For more information, see the Bureau of Health Information's *Technical Supplement: Emergency department measures, October to December 2012*.

Note: Emergency department activity includes 96 facilities for which electronic data are reported. This covers approximately 87% of NSW emergency department activity.

Note: Numbers may differ from those previously reported due to differences in when data were extracted from the emergency department information system and in definitions of patient cohorts.

Source: NSW Health, *Health Information Exchange*. Data extracted on 19 April 2013.

Arrivals by ambulance this quarter and over time

In the January to March 2013 quarter, almost one-quarter (24%) of all people who attended NSW EDs arrived by ambulance, a total of 138,082 patients (Figure 4). The number of ambulance arrivals has increased compared with the same quarter one year ago, by 2%. This is comparable to the increase in emergency attendances (up 2%).

Ambulance performance measures

This report does not include ambulance performance measures. The Bureau is analysing new options for reporting on the time it takes for patients to be transferred from the ambulance into the care of ED staff.

Initial analysis of new data available to the Bureau suggests there may be differences across NSW in how information about patients who arrive by ambulance is recorded. These differences could make it difficult to accurately compare hospitals.

The Bureau expects to complete a thorough analysis of the data and will report ambulance performance in a fairer and more comparable way once this work is finalised.

Figure 4: Arrivals by ambulance to NSW emergency departments, January 2011 to March 2013

	Jan-Mar 2011	Apr-Jun 2011	Jul-Sep 2011	Oct-Dec 2011	Jan-Mar 2012	Apr-Jun 2012	Jul-Sep 2012	Oct-Dec 2012	Jan-Mar 2013
Ambulance arrivals	127,983	130,808	135,743	136,041	134,821	139,956	143,908	140,362	138,082

Source: Data provided by Ambulance Service of NSW on 26 April 2013.

Time to treatment performance

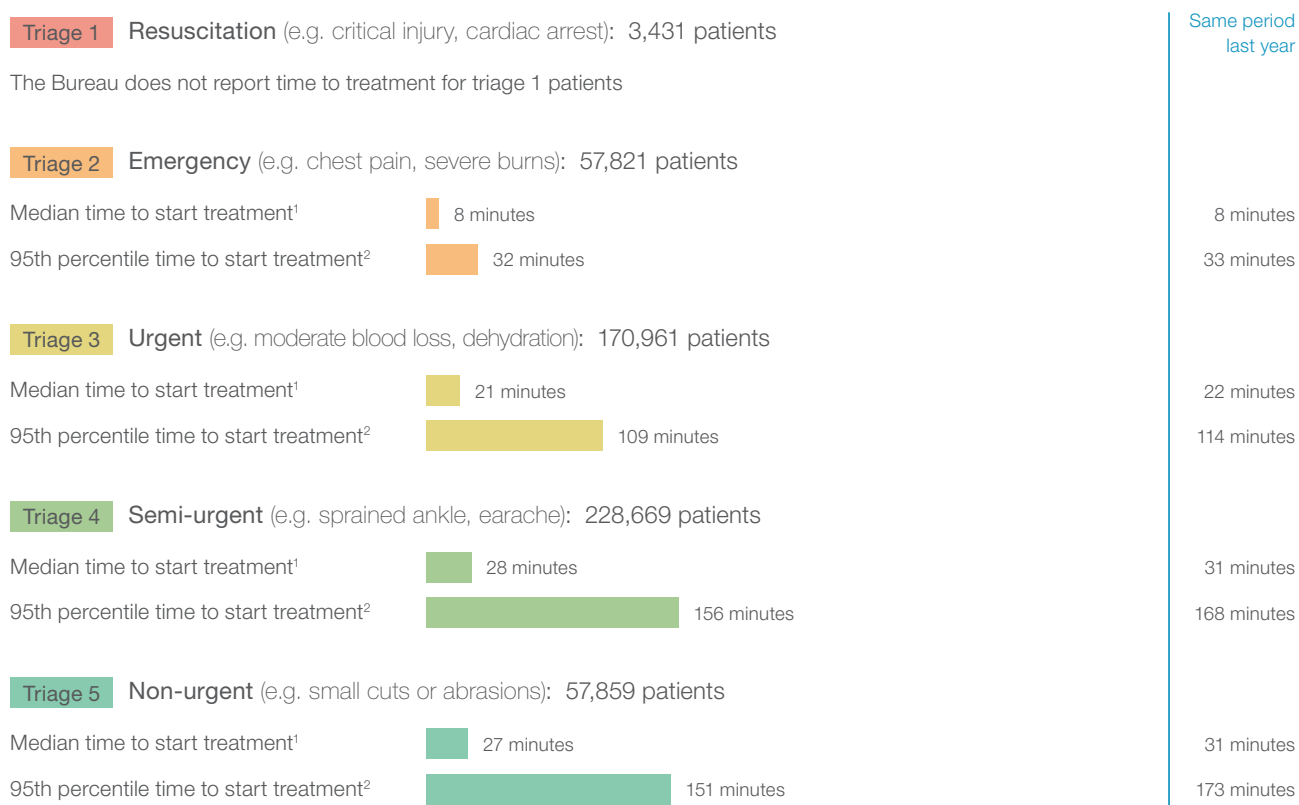
Time to treatment this quarter

In January to March 2013, the median times to start treatment were unchanged or slightly shorter compared to the same quarter in 2012 (Figure 5). The median time to start treatment for the emergency category (triage 2) remains unchanged at 8 minutes, the urgent category (triage 3) one minute less at 21 minutes, the semi-urgent category (triage 4) three minutes less at 28 minutes and the non-urgent category (triage 5) four minutes less at 27 minutes.

The 95th percentile times to start treatment were lower in each triage category. This quarter, 95% of patients began treatment within:

- 32 minutes, one minute shorter than one year ago (triage 2)
- 109 minutes, five minutes shorter than one year ago (triage 3)
- 156 minutes, 12 minutes shorter than one year ago (triage 4)
- 151 minutes, 22 minutes shorter than one year ago (triage 5).

Figure 5: Waiting times for treatment in NSW emergency departments, January to March 2013



1. The median is the time by which half of patients started treatment. The other half of patients took equal to or longer than this time.
2. The 95th percentile is the time by which 95% of patients started treatment. The final 5% of patients took equal to or longer than this time.

Note: Treatment time is the earliest time recorded when a healthcare professional gives medical care for the patient's presenting problems.

Source: NSW Health, *Health Information Exchange*. Data extracted on 19 April 2013.

Time to treatment over time

The time from presentation until treatment fluctuates throughout the year. At a state level, the time appears to be reasonably steady, however, the trend is affected by progressive implementation of new information systems.

Figures 6a–d show for triage categories 2 to 5, the median and 95th percentile times to start treatment. Data are reported according to triage category. The Bureau does not report time to treatment for patients with conditions triaged as resuscitation (triage 1).

Figure 6a: **Triage 2** - Median and 95th percentile times to start treatment (minutes) in NSW emergency departments, January 2008 to March 2013

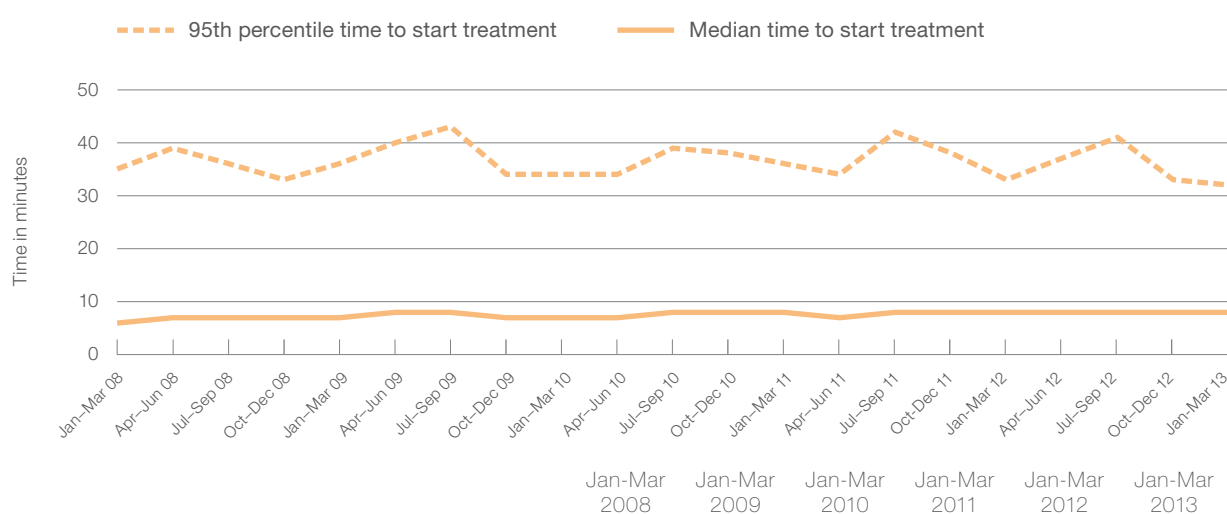


Figure 6b: **Triage 3** - Median and 95th percentile times to start treatment (minutes) in NSW emergency departments, January 2008 to March 2013

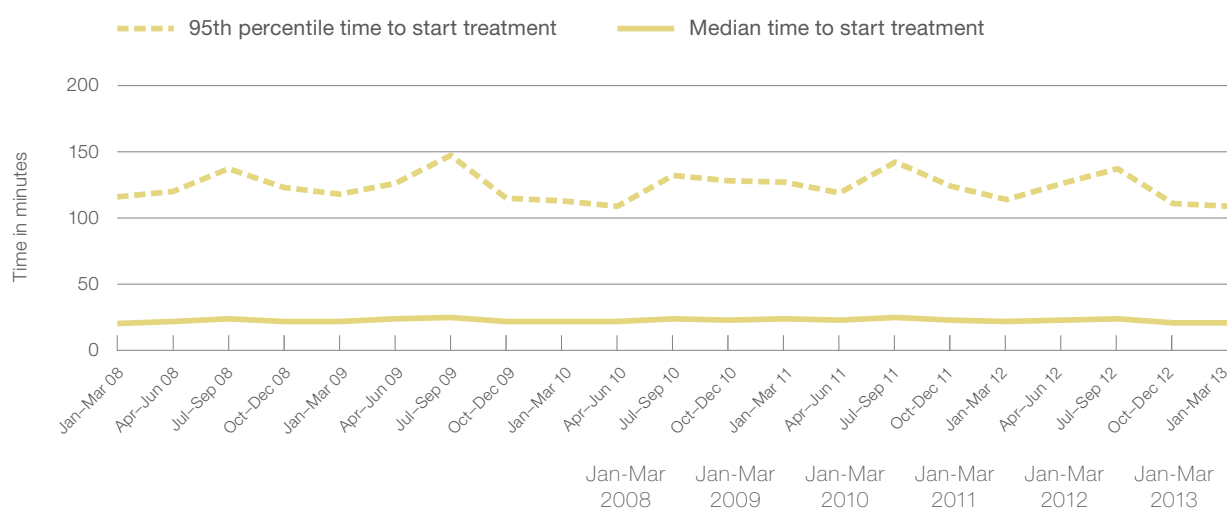


Figure 6c: **Triage 4** - Median and 95th percentile times to start treatment (minutes) in NSW emergency departments, January 2008 to March 2013

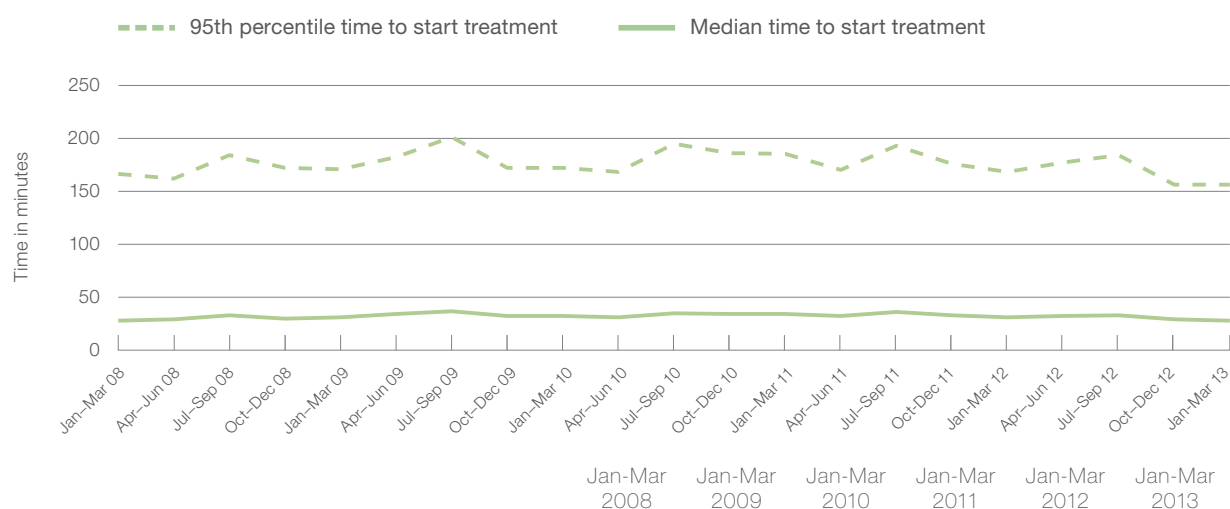
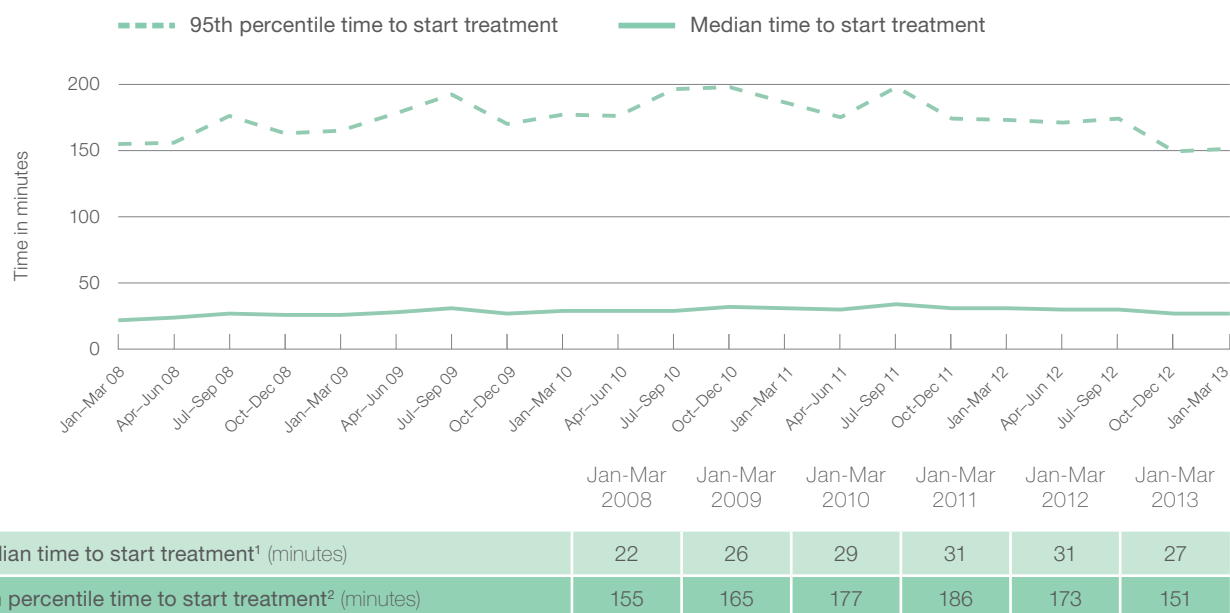


Figure 6d: **Triage 5** - Median and 95th percentile times to start treatment (minutes) in NSW emergency departments, January 2008 to March 2013



1. The median is the time by which half of patients started treatment. The other half of patients took equal to or longer than this time.
2. The 95th percentile is the time by which 95% of patients started treatment. The final 5% of patients took equal to or longer than this time.

Note: Hospitals transitioning to one of the major information systems are excluded from this data during the quarter(s) of implementation (For more information see *Hospital Quarterly Background Paper: Approaches to reporting time measures of emergency department performance, Addendum June 2012*).

Source: NSW Health, Health Information Exchange. Data extracted on 19 April 2013.

Leaving the emergency department

Time from presentation until leaving the ED this quarter

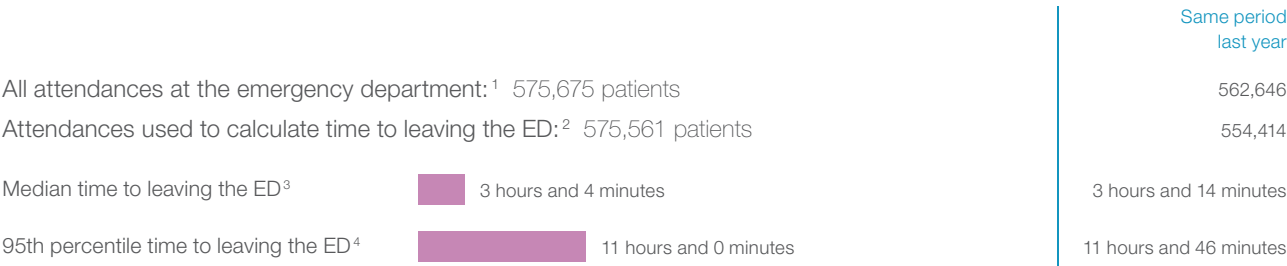
In the January to March 2013 quarter, the median time to leaving the ED was three hours and four minutes after presentation. The 95th percentile time to leaving the ED was 11 hours and 0 minutes after presentation (Figure 7).

There are different ways that a patient can leave the ED. The majority of patients leave the ED after their treatment is complete or when they

are admitted to hospital. Some patients choose not to wait to begin or complete treatment or are transferred to other hospitals. The way a patient leaves the ED is referred to as the mode of separation. The time that it takes for patients to leave the ED varies by the mode of separation.

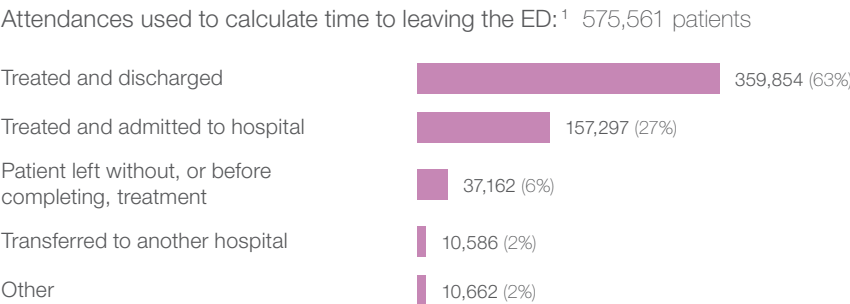
Figure 8 shows attendances at NSW EDs by mode of separation for the January to March 2013 quarter. Figure 9 shows the times in which patients left the ED by mode of separation for the January to March 2013 quarter.

Figure 7: Time from presentation until leaving the emergency department, January to March 2013



1. All emergency and non-emergency attendances at the emergency department (ED).
 2. All attendances that have a departure time.
 3. The median is the time by which half of patients left the ED. The other half of patients took equal to or longer than this time.
 4. The 95th percentile is the time by which 95% of patients left the ED. The final 5% of patients took equal to or longer than this time.
- Source: NSW Health, Health Information Exchange. Data extracted on 19 April 2013.

Figure 8: Leaving the emergency department by mode of separation, January to March 2013



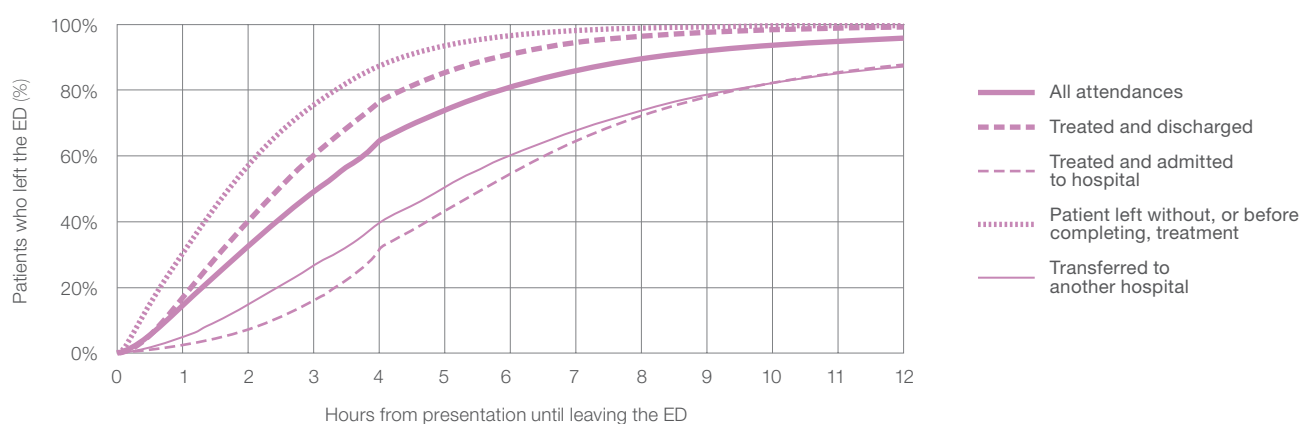
1. All attendances that have a departure time.
- Source: NSW Health, Health Information Exchange. Data extracted on 19 April 2013.

In the January to March 2013 quarter:

- Most patients (63%) received treatment in the ED and were discharged home (Figure 8). On average, these patients spent less time in the ED than other patients (Figure 9).
- About a quarter of patients (27%) received treatment in the ED and were subsequently admitted to a ward, a critical care unit or via an operating suite in the hospital (Figure 8). On average, these patients spent the most time in the ED (Figure 9).

- A small group of patients (2%) received treatment in the ED and were transferred to another hospital (Figure 8). On average, these patients also spent longer in the ED than patients who were discharged (Figure 9).
- Some patients (6%) left the ED without, or before completing, treatment (Figure 8). On average, these patients spent the shortest time in the ED (Figure 9).

Figure 9: Percentage of patients who left the emergency department, by time and mode of separation, January to March 2013



1 hour 2 hours 3 hours 4 hours 6 hours 8 hours 10 hours 12 hours

Treated and discharged	17%	40%	60%	77%	91%	96%	98%	99%
Treated and admitted to hospital	2%	7%	16%	32%	55%	72%	82%	88%
Patient left without, or before completing treatment	31%	57%	76%	88%	97%	99%	100%	100%
Transferred to another hospital	5%	15%	27%	40%	60%	74%	82%	87%
All attendances	14%	33%	49%	65%	81%	90%	94%	96%

Note: Time from presentation to the emergency department (ED) until recorded as leaving the ED.

Source: NSW Health, Health Information Exchange. Data extracted on 19 April 2013.

Time from presentation until leaving the ED over time

Figure 10 shows the median and 95th percentile time from presentation until leaving the ED by quarter over five years. During January to March 2013, the median time to leaving the ED was three hours and four minutes of presentation.

This is shorter than the same quarter in 2012 when the median time to leaving the ED was three hours and 14 minutes (Figure 10).

During the January to March 2013 quarter, the 95th percentile time to leaving the ED was 11 hours and 0 minutes after arriving in the ED.

This is shorter than the same quarter in 2012 when the 95th percentile time to leaving the ED was 11 hours and 46 minutes.



Figure 10: Time from presentation until leaving the emergency department by quarter, January 2008 to March 2013



1. The median is the time by which half of patients left the emergency department (ED). The other half of patients took equal to or longer than this time.
2. The 95th percentile is the time by which 95% of patients left the ED. The final 5% of patients took equal to or longer than this time.

Note: Time from presentation to the ED until recorded as leaving the ED.

Note: Hospitals transitioning to one of the major information systems are excluded from this data during the quarter(s) of implementation.

Source: NSW Health, *Health Information Exchange*. Data extracted on 19 April 2013.

The National Emergency Access Target (NEAT)

The NEAT aims to have as many patients as possible physically leaving the ED within four hours, whether for admission to hospital, referral to another hospital for treatment, or discharge.

Commencing from 2012, this target is being phased in over four years with annual interim targets set with the aim of achieving the 90% target by 2015.

Performance against the NEAT

The NSW 2013 target requires that 71% of all patients who present to an ED leave the ED within four hours.*

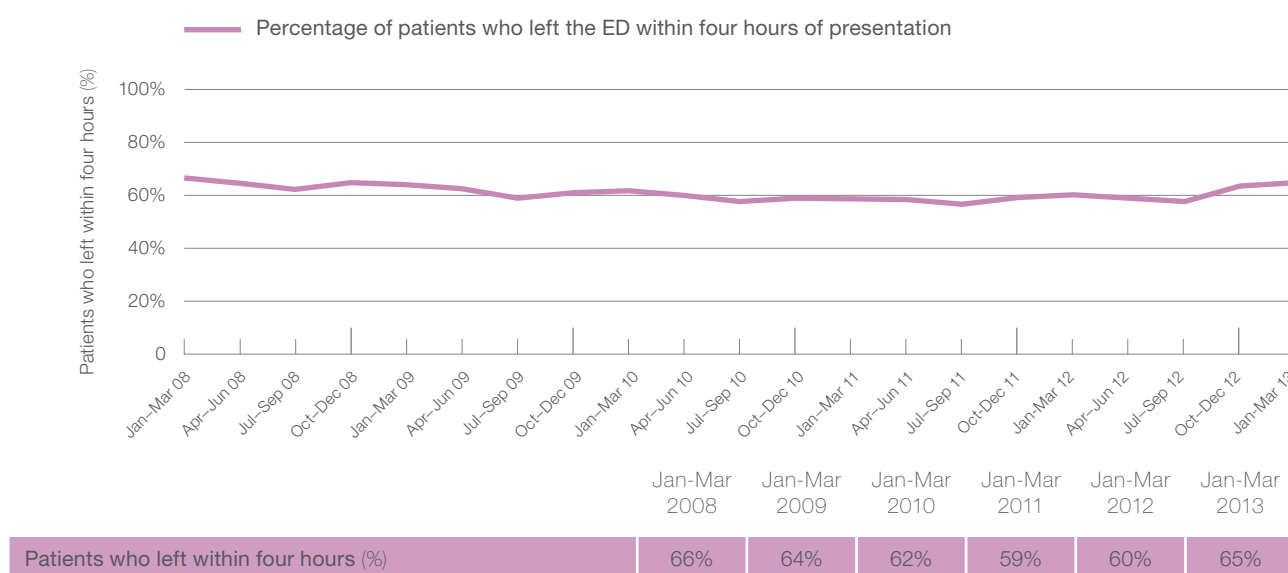
In the January to March 2013 quarter, 65% of patients left the ED within four hours of presentation and 81% of patients had left the ED by six hours (Figure 9).

For the January to March 2013 quarter, NSW did not achieve its state target for the annual NEAT.

Performance against the NEAT over time

During this quarter the percentage of patients who left the ED within four hours of presentation was 65%. This is higher than the same quarter one year ago (60%) and the same quarter two years ago (59%) (Figure 11).

Figure 11: Percentage of patients who left the emergency department within four hours of presentation, by quarter, January 2008 to March 2013



(*) The Ministry of Health informed the Bureau that the National Emergency Access Target for NSW in 2013 has been revised to 71% of patients to leave the emergency department (ED) within four hours.

Note: Time from presentation to the ED until recorded as leaving the ED.

Note: Hospitals transitioning to one of the major information systems are excluded from this data during the quarter(s) of implementation.

Source: NSW Health, *Health Information Exchange*. Data extracted on 19 April 2013.

Differences in performance between hospitals

Time to treatment in NSW EDs

[Appendix table 1](#) presents the median and 95th percentile times to start treatment for patients in each triage category (categories 2, 3, 4 and 5) for individual EDs.

There is variation between hospitals when comparing time to treatment by triage category. For example, among principal referral and major hospitals (Peer groups A1 and B) using one of the two predominant information systems, the range of results for triage 2 and 4 in the January to March 2013 quarter are summarised below:

- The median time to start treatment for all patients with conditions triaged as **emergency** (triage 2) ranged from six minutes at seven hospitals, to 12 minutes at Royal Prince Alfred Hospital and Sutherland Hospital
- The 95th percentile time to start treatment for patients with conditions triaged as **emergency** (triage 2) ranged from 10 minutes at Hornsby and Ku-Ring-Gai Hospital to 58 minutes at Westmead Hospital
- The median time to start treatment for all patients with conditions triaged as **semi-urgent** (triage 4) ranged from 15 minutes at Manly Hospital to 51 minutes at Lismore Base Hospital
- The 95th percentile time to start treatment for patients with conditions triaged as **semi-urgent** (triage 4) ranged from 85 minutes at Nepean Hospital to 218 minutes at Westmead Hospital.

Time to leaving the ED

[Appendix table 2](#) presents number of attendances, ambulance arrivals, the median and 95th percentile times to leaving the ED as well as the percentage of patients that left the ED within four hours, for individual EDs.

There is variation between hospitals when comparing the time to leaving the ED. For example, among principal referral and major hospitals (Peer groups A1 and B) using one of the two predominant information systems, the highest and lowest times in the January to March 2013 quarter are summarised below:

- The median time to leaving the ED ranged from two hours and 28 minutes at The Tweed Hospital to four hours and 40 minutes at Blacktown Hospital
- The 95th percentile time to leaving the ED ranged from six hours and 29 minutes at Manning Base Hospital to 25 hours and four minutes at Campbelltown Hospital
- The percentage of patients who left the ED within four hours from presentation ranged from 84% at Manly District Hospital to 43% at Blacktown Hospital.

For more detailed emergency department performance information about each public hospital see the [Appendices](#) section of this report on [page 17](#).

How to interpret our information

In 2011, the Bureau introduced a new approach to measuring the times patients spend in the ED and subsequently changes have been made to how this information is presented to further improve understanding.

Different ways of measuring the times patients spend in EDs

The Bureau presents information on the times by which patients start their treatment, and the times by which patients leave the ED. We report this information using medians and 95th percentiles. This is a common international approach to measuring wait times. It gives insight into the range of times that different patients spend in the ED.

The median times are the times by which half of patients started treatment or left the ED.

If you look at how long each patient in an ED waits for treatment and then list all of these patients in order of how long they waited, the median is the time the patient in the middle of the list waited.

For example, if the median time to start treatment is 23 minutes, this means half of patients started treatment between 0 and 23 minutes after arriving at the ED. The other half waited 23 minutes or longer for treatment.

The 95th percentile times are the times by which 95% of patients started treatment or left the ED. We use these values to indicate the longest times that patients waited for treatment or to leave the ED.

For example, if the 95th percentile time to treatment is 125 minutes, this means 95% of patients were seen between 0 and 125 minutes after arriving at the ED. The last 5% of patients (or 1 in 20) waited 125 minutes or longer for treatment.

The Bureau now also reports on the percentages of patients who leave the ED within four hours of presentation (performance against the National Emergency Access Target). We report on this benchmark as part of a national initiative to introduce consistent performance reporting of hospital services.

It is important to understand that the median and 95th percentile times are not the same as performance against a benchmark. The medians and 95th percentiles report *time*. The *percentage of patients* reports the performance achieved against the benchmark. Time cannot be compared directly against a percentage of patients.

Assessing ED performance

There are a number of ways to assess a hospital's performance. One way is to compare results to a target or benchmark. Other ways are to compare:

- Own performance over time (especially the same quarter in previous years as there are strong seasonal trends in EDs)
- Performance against NSW as a whole
- Performance against other hospitals of similar size and patient mix (known as '*peer group*').

The Bureau presents information to support comparisons of ED performance. For example, **Figure 14 on page 16** shows the median and 95th percentile time from presentation to treatment for triage 2 patients. It also shows comparable information for the same period last year and against NSW as a whole.

Other ways of presenting the times patients spend in EDs

Hospital Quarterly also presents information about the time patients spent in the ED by using cumulative graphs (Figure 12) and trend graphs (Figure 13).

Cumulative graphs

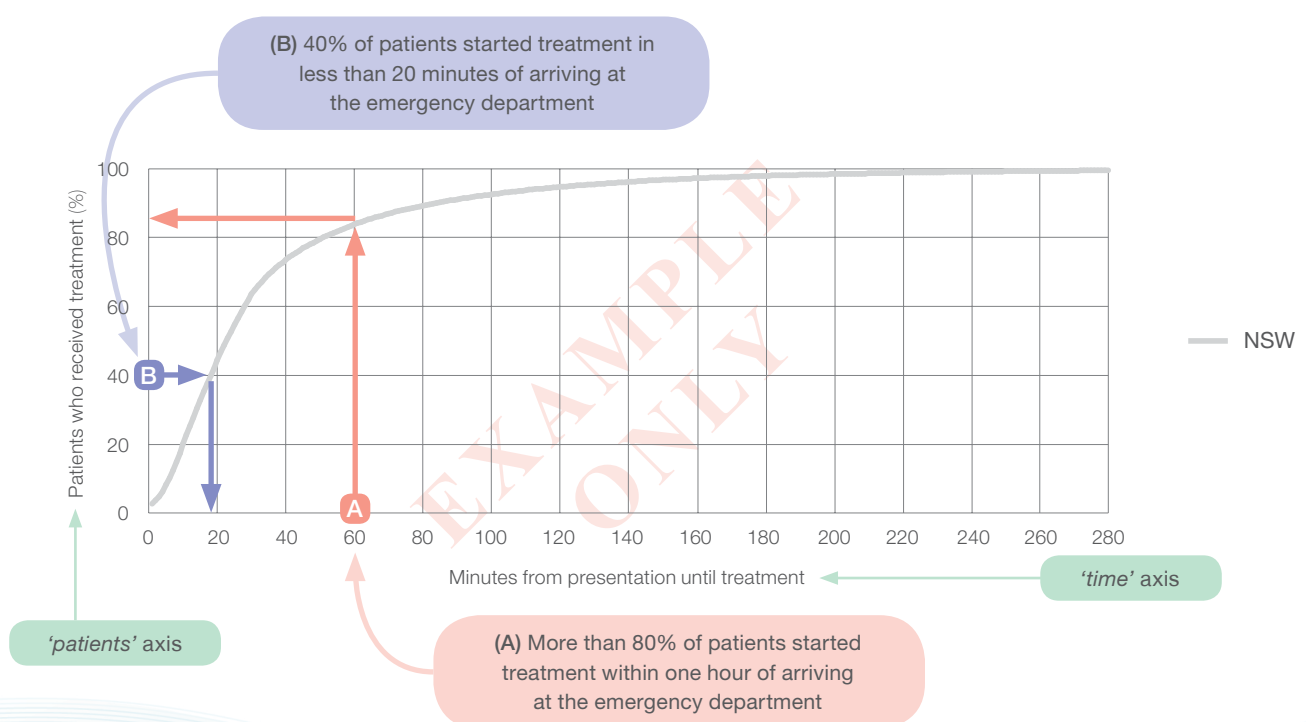
The Bureau uses cumulative graphs for time to treatment and time to leaving the ED. Cumulative graphs show the range of times during a single quarter. These graphs show the variation in times patients experience.

Here are some examples of how you can interpret this graph.

Example 1: What proportion of patients were seen within one hour? To understand the proportion of patients who were seen within given timeframe, begin at the axis labelled '*time*' on Figure 12. Find the 60 minute point (A) along this axis and follow the line up until it meets the curve, then straight to the left to see the percentage of patients. In this example, we can see that more than 80% of patients started treatment within one hour of arriving at the ED.

Example 2: How long did it take for 40% of patients to be seen? To understand how long a percentage of patients waited to be seen, begin at the axis labelled '*patients*' on Figure 12. Find the 40% point (B) along this axis and follow the line across until it meets the curve, then straight down to see the time in minutes. We can see that 40% of patients started treatment between 0 and less than 20 minutes of arriving at the ED. This means 60% of patients waited longer than this time for treatment to start.

Figure 12: Percentage of patients who received treatment by time



Trend graphs

Trend graphs show the way times in EDs have varied over the last few years. For example, the trend graph (Figure 13) presents the time to start treatment for patients in each quarter of the last five years. The solid line shows the median time to treatment for patients in NSW EDs and the dashed line shows the 95th percentile.

In this graph you can see the seasonal patterns, with the longest times to treatment (as shown by the 95th percentile line) occurring during the July to September quarter each year.

Figure 13: Median and 95th percentile times to start treatment (minutes) in NSW emergency departments, over five years

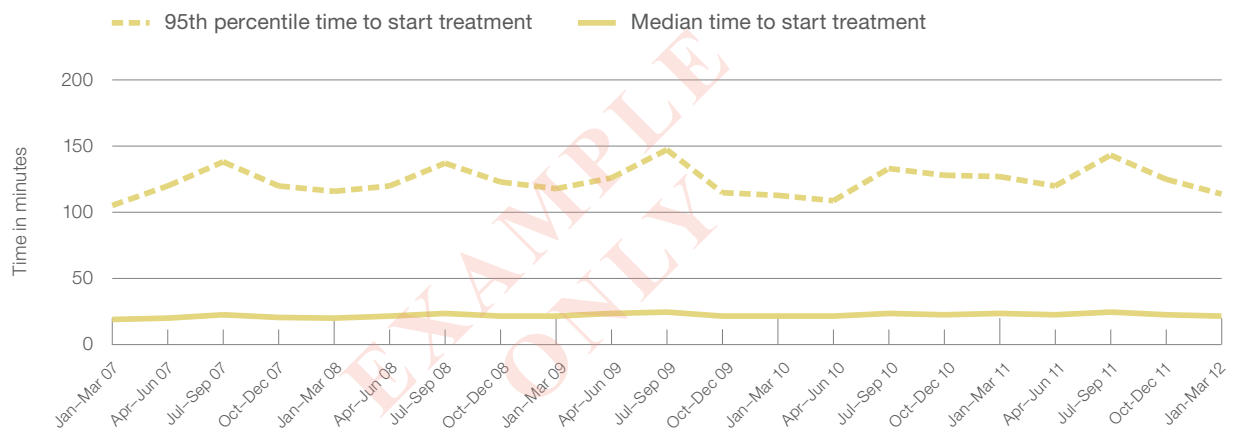


Figure 14: Time from presentation to treatment



Appendix: ED time performance measures

Download

ED time performance measures by
'local health district' in a PDF file

Download

ED time performance measures by
'peer group' in a PDF file

Download

ED time performance measures by
'local health district' in an Excel file

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ED time performance measures by
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About the Bureau

The Bureau of Health Information provides the community, healthcare professionals and the NSW Parliament with timely, accurate and comparable information on the performance of the NSW public health system in ways that enhance the system's accountability and inform efforts to increase its beneficial impact on the health and wellbeing of the people of NSW.

The Bureau is an independent, board-governed statutory health corporation. The conclusions in this report are those of the Bureau and no official endorsement by the NSW Minister for Health, the NSW Ministry of Health or any other NSW public health organisation is intended or should be inferred.

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Please note that there is the potential for minor revisions of data in this report. Please check the online version at www.bhi.nsw.gov.au for any amendments.