Improvement Academy
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Yorkshire and Humber AHSN Improvement Academy
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IMPROVING THE SPEED AND APPROPRIATENESS OF TREATMENT IN EMERGENCY DEPARTMENTS USING EVIDENCE-BASED METHODS SUCH AS SENIOR DOCTOR TRIAGE

Senior Doctor Triage in the Emergency Department

Final Project Report

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Acknowledgements

We thank the staff in this acute NHS hospital emergency department for their continued support and perseverance throughout the duration of this improvement project, the hospital Information Team and all of the staff in ED, without whose hard work this project would not have been possible.

Executive summary

The winter of 2014/15 saw unprecedented pressures on the UK urgent care system in England. Hospitals had little spare capacity in their beds to deal with the winter spike in demand arriving in their emergency departments (ED), meaning staff were placed under further pressure to cope and patients were waiting even longer to be seen by a clinician. This was reflected in the ED waiting times target figures from January 2015, revealing the worst in a decade. In addition to demand by patients for services, there is the lack of available beds in the hospital for those patients needing to be admitted from the ED ('access block') and the crippling issue of ED staff, retention and lack of. Further funding from the UK Government into the NHS is unlikely, and therefore the NHS, and particularly ED's, need to find ways to improve how they operate within existing resources.

The ultimate aim recommended by the Royal College of Emergency Medicine is to have senior ED doctor advice and review for all patients attending the ED. Along with other recommendations, the College believes this will improve quality and safety of care delivered to patients. Published literature on this topic is inconsistent with respect to reduced waiting times and quality of care for patients, with the major issue surrounding this model of care being sustainability. There needs to be a number of senior clinicians available in the ED for this system to operate and to avoid staff burn-out. There is a strong belief amongst clinicians that this is a better way of providing care to patients but due to its resource requirements it is extremely difficult to implement. The Urgent Care team wanted to focus on this area with a view to supporting ED's to improve their patient triage and if appropriate, implementing a senior doctor triage system that works for them.

The first phase of the project focused on gaining an understanding of how ED's in the Yorkshire and Humber region operated and identifying best practice. It commenced in August 2014 with the development of a survey which collected information about existing ED resources, facilities and processes. Members of the Urgent Care team visited each ED to complete the survey and observe how they worked, whilst also forming relationships with senior ED clinicians. A workshop in March 2015 presented this collated information along with examples of practice where senior doctor triage was operational. A roundtable discussion also took place generating new and sharing existing ideas for improving the speed and appropriateness of care for patients arriving in the ED.

The second phase of the project involved working with an acute NHS Hospital emergency department (Hospital X) in England, supporting staff in identifying and implementing improvements to their existing triage process in the ambulance assessment area. The work commenced in September 2015, initially focusing on the experiences and views of staff. Building on this feedback, an improved process – senior doctor-led team, was developed and tested over a number of months which constantly evolved through trial and error. The work culminated in a continuous period of testing named The AAA 5-day Model week which took place in April 2016. Throughout the testing phase, outcome measures were collated and reviewed with results in this report focused on the AAA 5-day Model week. The involvement of the ED staff was essential both in the development and testing of the new process, as well as in the evaluation after the AAA 5-day Model week.

The results demonstrated that implementing a senior doctor-led team in the ambulance assessment area of this ED reduced the total time in the department for patients arriving by ambulance. Reductions in time to triage and decision making were also reported, as well as a general improvement in staff satisfaction. However, the process was resource intensive requiring redeployment of 3 members of staff to the ambulance assessment area in addition to the availability

of a dedicated porter to operate in comparison to the usual triage process in place and was heavily dependent on patient flow through the hospital. Continuing to operate a senior doctor-led initial assessment team to shorten patient journeys would require the combination of ring-fenced staffing numbers and an escalation policy to halt the process when patient flow is limited.

HOSPITAL X: Senior Doctor Triage in the Emergency Department

What is Senior Doctor Triage (SDT)?

- Involves a senior doctor undertaking early assessment of patients arriving in the emergency department
- The senior doctor may work alone or as part of a team, the latter is usually the most common model
- Undertake early assessment, develop the patient care plan early and identify and start any necessary investigations and testing. This adds value to the patient's journey by helping to ensure the patient receives the right care, at the right time and in the right place.

Background

Traditionally, triage of patients on arrival to the emergency department (ED) is usually undertaken by a nurse. With the issue of crowding in EDs continuing to escalate and its associated effects on increased patient waiting times and time spent in the ED, healthcare professionals are increasingly looking for measures to help manage this problem. There is a growing interest and body of evidence suggesting the use of senior doctor triage (SDT). Working alone or more commonly as part of a team, early patient assessment by a senior doctor can help to develop a care plan for the patient and initiate appropriate testing and treatment. Published studies that have tested this process have reported improvements in the time patients spend in the ED, time from arrival to see a doctor and those patients that leave without being seen. However, there are a number of challenges in operating this type of triage including intensive use of resources, staff paperwork and potential need for culture change.

Why Hospital X ED?

Prior to working with the AHSN Improvement Academy, Hospital X ED operated nurse triage for all patients attending the ED but separate triage processes were in place depending on the arrival method of patients, walk-in or ambulance arrival. Patients that arrived by ambulance were brought directly to the Ambulance Assessment Area (AAA) which is connected to the main ED and contains 7 curtained cubicles and a small reception desk. The cubicles have limited resources and are not equipped to the same standard as the main ED cubicles. The AAA was built with the aim that ambulance patients would be moved into it on arrival and after handover to ED staff, patients would be moved to where they needed to go. However, the time that patients spend in this area has gradually increased, in part due to reduced patient flow and bed space in the hospital, meaning at times the AAA has become an extension of the main ED area. This is not ideal as the AAA is neither staffed appropriately or has the sufficient equipment in the cubicles for patients to be cared for in the AAA, in this way.

The ED clinical quality indicator data available for Hospital X (Table 1) shows that 95% of patients that attended the ED in 2014 spent up to 287 minutes in the department, suggesting that more than 4240 (5%) patients were in the department for longer than 4 hours (240 minutes) missing the target set by the Department of Health. The introduction of a senior doctor-led team would reduce the time from arrival to initial assessment for patients and consequently help to reduce time to treatment and the overall time spent in the department, even though the focus of the triage will only be on patients arriving by ambulance.

Table 1. **ED clinical quality indicators, Hospital X 2014.**

	CLINICAL QUALITY INDICATORS	JAN – DEC 2014
	Attendance, n	84,785
Impact	Unplanned re-attendances (<7 days), %	-#
Impact	Left without being seen, %	4.1
Timeliness, minutes	Time admitted patients spend in the department, 95th percentile	354
Timeliness, minutes	Time non-admitted patients spend in the department, 95th percentile	253
Timeliness, minutes	Time all patients spend in the department, 95th percentile	287
Timeliness, minutes	Time from arrival to initial assessment, 95th percentile (ambulance arrivals only)	89
Timeliness, minutes	Time from assessment to treatment, median	43

Not available
Source: Data provided by CLAHRC Yorkshire & Humber, 2016.

Advantages of SDT

Advantages of introducing a team led by a senior doctor into the AAA to undertake patient triage would expect to include: -

- Early identification of inappropriate attendances allowing streaming to ED waiting room for less urgent cases or sign posting to primary care services such as local GP.
- Early identification of patients requiring admission thus being able to start the process of finding an appropriate bed and ensuring patient is ready to leave the ED when bed is available.
- Early development of patient care plan, providing clear direction to junior doctors and other medical staff
- Early initiation of time-sensitive treatments and investigations (i.e analgesia, etc)
- Reduction in unnecessary investigations and tests
- Senior doctor has an overview of patients entering the ED
- Improvement in the patient experience and outcomes due to early senior review and reduced time to see a doctor

Challenges of SDT

- A senior doctor-led team requires a minimum number of staff to operate efficiently, this is likely to include at least a senior doctor, nurse and healthcare worker (HCA)
- During operation, at least one further senior doctor will be required in the main ED
- Due to the staffing requirements both in the AAA and main ED, operating hours of the senior doctor-led team are likely to be restricted
- Operating this intensive triage is demanding, particularly for the senior doctor, thus a rota will be required
- Not all patients arriving by ambulance may require assessment by a senior doctor therefore need to have flexibility to stream patients as necessary
- Potential that any incorrect decisions or patient care plans made by the senior doctor may be carried through the patient journey. It is essential that staff feel empowered to constructively challenge decisions

- Potential to impact on junior doctors training if not involved in triage process
- Implementing a senior doctor-led team will involve a change in the way staff and existing processes operate, this will need to be recognized by all staff in the ED. Communication regarding the changes will be vital but more importantly, a positive attitude and change in mindset will be essential. Some staff, particularly senior doctors, may find it difficult to change their practice.
- Recognition that a senior doctor-led team may not always be the most appropriate assessment for the ED such as when there is a large number of patients attending the ED in a short space of time or there is limited flow through the hospital.

Collaboration

After completion of a survey of triage processes in the Yorkshire and Humber region, the next stage of the AHSN Improvement Academy project was to work closely with hospitals to help improve their existing processes in the ED. In September 2015, an ED Consultant agreed to be the main lead for Hospital X to implement a senior doctor-led team in the AAA. In collaboration with a member of the hospital Corporate Improvement Team, the following months were spent gathering information from staff about their views of existing and future triage services in the ED. Building on this information, a plan was developed for implementing a senior doctor-led team in the AAA alongside necessary documentation and outcome measures. The developed model was tested over a number of months, culminating in The AAA 5-day Model week taking place between 25th and 29th April 2016.

Timeline

Year	2015																2016															
Month	Sept				Oct				Nov				Dec				Jan				Feb				Mar				Apr				May			
Week	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Meetings																																				
Staff questionnaire																																				
Staff interviews																																				
Development of SDT process																																				
SDT process in operation*									3					4	3			5	4	2	1	3				3	2	2				5				

n * Number of days SDT process operated during week (full or half days)

Communication

Meetings were held either weekly or 2-weekly between the immediate team working on the project as well as regular attendance by ED Managers when appropriate. Information about the process was fed back to the staff in the ED either verbally or by email from the ED consultant. A number of staff surveys and interviews were undertaken throughout the project to gather staff views and experience of the AAA which were fedback through a newsletter. In preparation for the AAA 5-day Model week, posters and information leaflets were produced and distributed throughout the ED and staff room.

Documentation

The ED consultant along with other ED colleagues developed the documentation for the senior doctor-led team. The documentation included a protocol outlining staffing requirements and staff roles; outline (flowchart) of the model, patient assessment notes and senior doctor rotas. These

were updated as the process progressed, particularly after testing the process between December and March 2016, and before the AAA 5-day Model week.

Staff experience

Throughout the project it was essential to include all staff working in the ED, as these are the people who know the environment best. As a means of doing this, two surveys were undertaken before and after the implementation of the new process as well as a number of interviews. The surveys were created using SurveyMonkey, an online survey tool but Microsoft Word versions were also available on request. Interviews were undertaken face to face by Maxine Kuczawski with staff in the ED.

Pre-implementation staff survey

A link to the survey was emailed to all ED staff by the ED consultant on 10th September, with reminders (via email and verbal) disseminated to staff at regularly intervals until the survey closed on the 2nd October 2015. The survey contained 10 questions (appendix 1) and was anonymised.

Interim staff interviews

To gain an understanding of views from staff working in the ED after their initial experience of the senior doctor-led team process in the AAA, a number of interim face to face staff interviews took place in January 2016. Questions included details about individual experiences of the new process, if they felt there was improvements for staff and/ or patients due to the new process and any suggestions for changes (appendix 2).

Post-implementation staff survey and interviews

Using a similar method and set of questions to the pre-implementation survey, the post-implementation survey (appendix 3) was emailed to all staff on 16th May and closed on 3rd June 2016.

A series of face to face interviews also took place in the following weeks after the AAA 5-day Model week with a variety of staff, asking about their experiences during that week.

The senior doctor-led team process

Although small, the current physical environment of the AAA does lend itself to a rapid style assessment for patients arriving by ambulance. Having this already in place, the physical flow of patients through the AAA was mostly determined but details of staff involvement was clarified in the protocol (Appendix 4) and flowchart (figure 1). The process was set-up to operate during week days only (Monday to Friday) between 10am and 4pm due to staffing requirements (table 2).

Table 2. **Ideal staffing to support the senior doctor-led assessment process.**

Ideal staffing	Ideal hours	Testing phase
ED Senior doctor (consultant the majority of the time)	10-1; 1-4	10-1; 1-4
ED Junior doctor (F1 the majority of the time)*	10-4	10-4
ED Nurse	10-4	10-4
ED HCA (with extended skills)	10-4	10-4
Administrator	10-4	12-4
Dedicated Porter (10am-4pm)	10-4	Not available

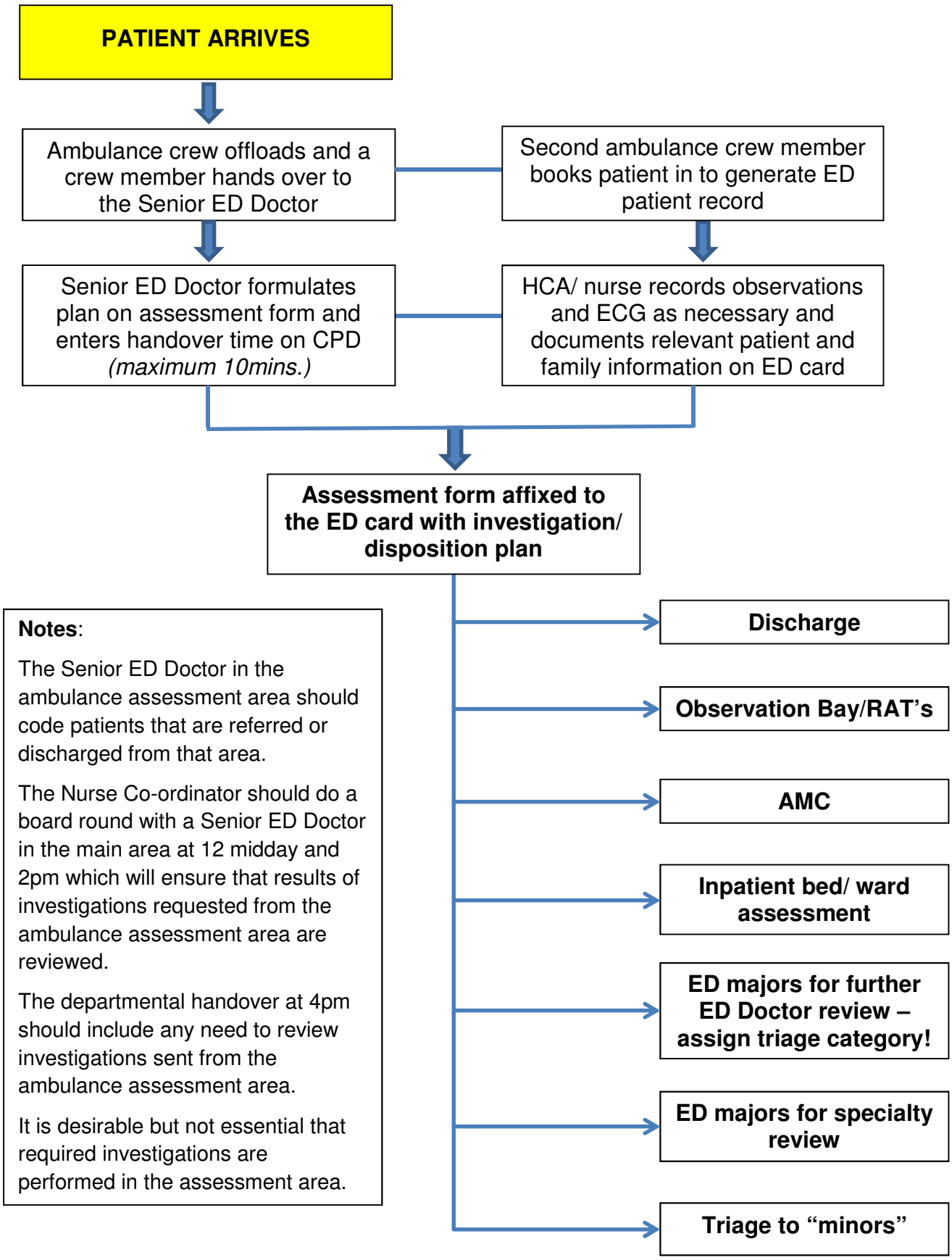
*There was no Junior Doctor available on Thursday afternoons due to teaching

Throughout the testing phase (December to March 2016), the staffing of the senior doctor-led team did not meet the ideal staffing as there was no porter available, an administrator was only able to work in the AAA during weekday afternoons and quite often either a nurse or HCA was unavailable.

An ED assessment proforma was specifically developed for use during the triage (Appendix 5). The aim was for the proforma to be self-adhesive, allowing staff to complete during patient assessment and attach later to patient notes once they became available. This also gave the added advantage of indicating to other staff on reading the patient notes, that the patient had been triaged through the AAA.

Although issues of space and some equipment were identified early in the testing phase, only the assessment proforma and a blood printer were provided to support the process. There was recognition that the reception desk area was small particularly when there was more than 2 staff members in the space but it was decided to manage with the space rather than take a cubicle out of use.

Figure 1. **Flowchart of Senior doctor-led team process.**



The senior doctor-led team first operated on 2nd November 2015 for 3 days but the process was halted due to a number of issues, these included:

- ED was perceived to be in 'crisis' with 5 hour waits for patients thus the process was deemed unworkable at times.
- Lack of senior doctor and HCA at times due to pre-planned meetings and commitments elsewhere.
- Assessment process not standardised between senior doctors causing confusion for nursing staff.
- Risks to data collection due to late coding on electronic patient record by senior doctor-led team.
- Lack of communication about the process amongst ED staff (including paramedics) causing confusion on patient arrival and later in the patient pathway.
- Potential duplication of paper work relating to assessment proforma and patient ED card.
- Further equipment required to support the assessment process such as additional laptop, printer (blood request forms) and mobile telephone.

The process restarted on 21st December 2015 with updated documentation and more communication to staff throughout the ED and beyond.

The AAA 5-day Model

Testing the Senior Doctor-led team process had identified issues and allowed various changes to be implemented. However, on analysing the monthly data, it became evident that it was difficult to identify whether improvements due to the process had taken place mainly, because the process often operated sporadically and not with the full complement of staff. To gauge the real extent of how a senior doctor-led team process in the AAA may improve the care and flow for patients arriving by ambulance, it was decided that the process must operate continually for a minimum period of time, and as designed with all the necessary staff and equipment. This became the AAA 5-day Model week which operated between Monday 25th and Friday 29th April 2016 (appendix 6).

During the AAA 5-day Model week, the area for administration was extended into a cubicle adjacent to the reception desk area. This allowed for an additional computer and scanner. A complete staff rota was prepared including administration staff (which had not previously taken place) ensuring the process was fully staffed (10:00-16:00hrs) for the 5 days with a senior doctor, junior doctor, 2 nurses, 1 HCA and an administrator. A porter was also requested and agreed but during the week, porter services were only available for limited periods. Staff were asked to complete a feedback form on a daily basis during this week about their experience in the AAA (appendix 7).

Outcome measures

The measures identified to reflect the impact on patients and to measure how well the process actually performed are detailed in table 3.

Table 3. **Outcome, process and balancing measures.**

Measure type	Impact	Details
Outcome	Patient	Total time ambulance patients spend in the ED: under 4 hours
		Total time ambulance patients spend in the ED: greater than 4 hours
		Total time ambulance patients spend in the ED: greater than 8 hours
Process	Hospital	Time from arrival to triage for ambulance patients: within 15 minutes
		Time from arrival to decision to admit time (referral to specialty) for ambulance patients
		Time from decision to admit (referral to specialty) to admission for ambulance patients
Balancing	Patient/ hospital	Total time "Other" patients spend in the ED: under 4 hours
		Total time "Other" patients spend in the ED: greater than 4 hours

Results

Pre-implementation staff survey

Prior to any changes, staff were asked about their experience, purpose of and suggested improvements to the AAA. There was a good response to the survey with 41 completed responses (26% doctors; 64% nurses; 10% HCA's).

The feeling amongst the respondents was generally positive about the existing assessment process in the AAA where 76% (n=31) felt it was either satisfactory, good or very good, although 71% (n=29) felt the AAA did not reduce the overall time to decision making/ admission for patients. Suggested changes to help reduce this target mainly included additional staff in the AAA such as a senior decision maker (n=17) and/ or nursing staff (n=16). When specifically asked if staff felt a senior doctor working in the AAA would reduce the time to decision making/ admission for patients, overwhelmingly the response was yes (92%; n=36), with staff also reporting that this would improve staff satisfaction when working in the AAA (90%; n=35).

Testing phase

During the testing phase (Dec to Mar 2016) most weeks a rota was drawn up for senior doctors to operate the senior doctor-led team process but due to issues within the department, lack of staff or other staff commitments the process did not continually operate (see Timeline section).

Although not continuously run, the testing phase was extremely useful in allowing the process to be trialed and issues flagged. Where problems were highlighted, these were discussed at the weekly meetings and ways forward identified. Some examples of issues raised during this phase are included in table 4.

Table 4. **Examples of some of the issues identified during testing phase and action taken.**

Issue		Action
• Electronic white board in the AAA. staff were not able to view bed capacity and patients in the main ED, only those in the AAA. This made transferring patients difficult to the main ED.	→	Communicate with IT to change screen set-up. This was undertaken and electronic white board screen updated as requested.
• Sporadic use of self-adhesive ED assessment proforma. Staff were not fully aware of the proforma, either to use it in the AAA or what it meant when seen in a patients' notes thus causing confusion.	→	After interim interviews with staff, it was decided to discontinue the use of the self-adhesive ED assessment proforma.
• Patient flow. Over a number of days when the senior doctor-led team process was in operation there was bursts of large numbers of ambulance arrivals in short spaces of time, coupled with limited bed capacity in the rest of the hospital. This meant there was little onward patient flow throughout the hospital and so staff were finding it almost impossible to operate the senior doctor-led team process and in turn feeling very distressed.	→	Recognition that the senior doctor-led team process could only operate when there is sufficient onward patient flow through the hospital. An escalation policy was developed by the team to guide staff in circumstances where there is minimal patient flow in the ED and halt the senior doctor-led team process. A different process should be in place for patients attending by ambulance (nurse assessment) and review of patient flow through the ED take place on a regular basis allowing for the senior doctor-led team process to be re-started when possible.

Data collation and analysis during the testing phase was undertaken by a Senior Analyst based in the Hospital X Information Team (Systems and Network Services). Due to the sporadic nature of when the senior doctor-led team process was operated, the charts produced were difficult to interpret (charts 1 & 2) regarding the impact of the new process in the AAA. Largely due to this fact was why the AAA 5-day Model week was planned.

Chart 1. **Time of arrival to triage for ambulance patients during the testing phase (Dec – Mar 2016).**

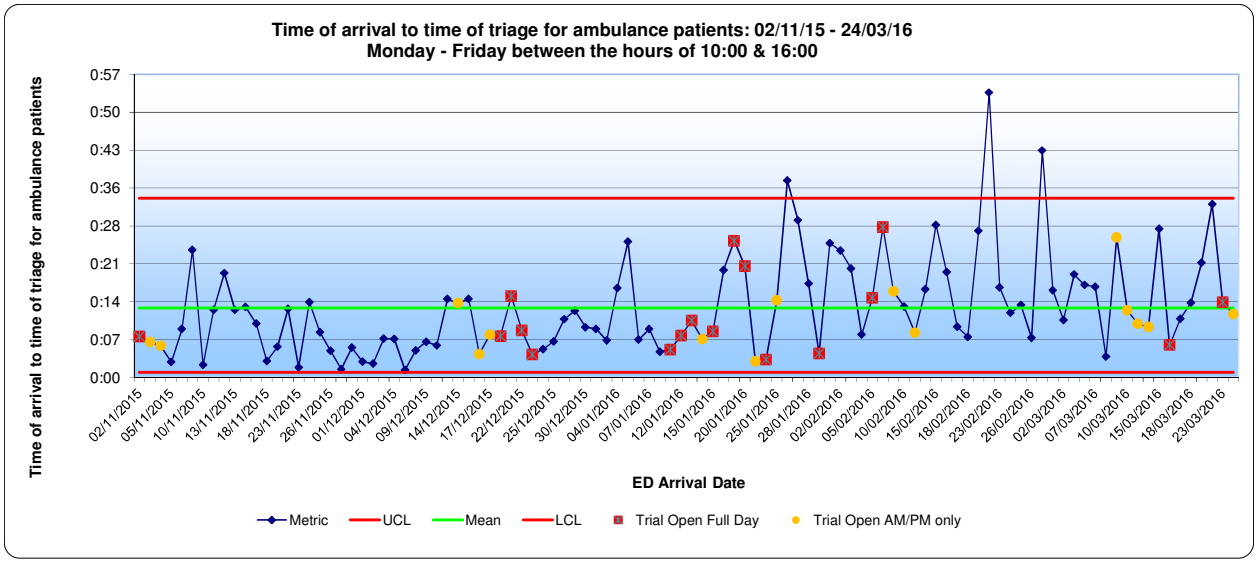
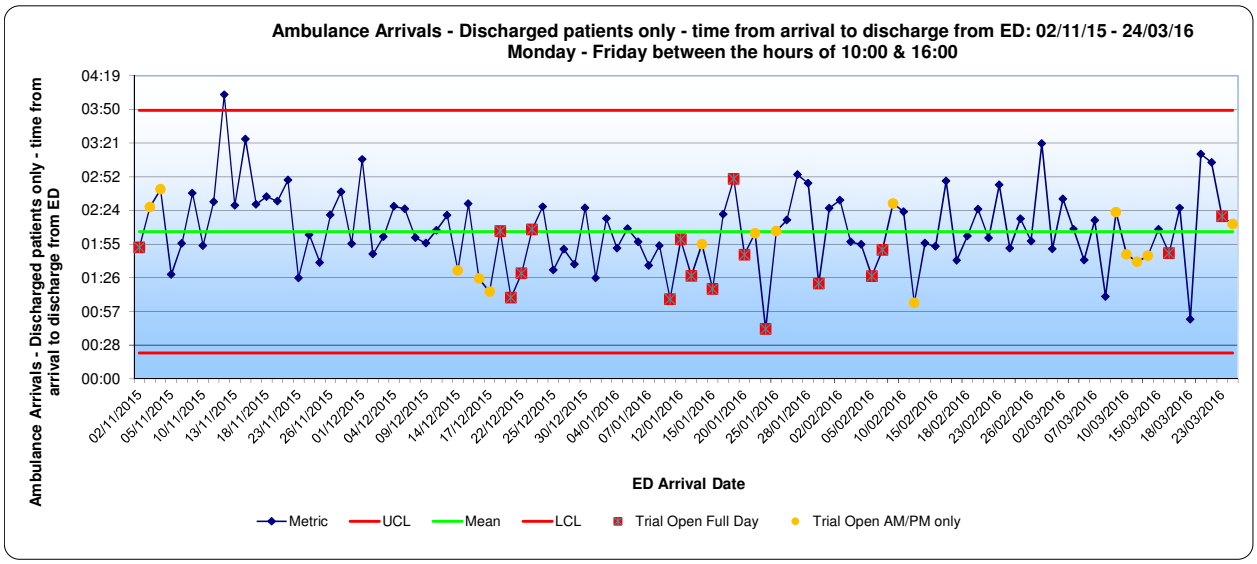


Chart 2. **Total time in the ED for discharged ambulance patients during the testing phase (Dec – Mar 2016).**



The AAA 5-day Model week

The AAA 5-day Model week took place between Monday 25th and Friday 29th April 2016, 10:00-16:00hrs. Although a junior doctor strike took place on 2 days during this week (26th and 27th April), ambulance attendances to the ED were not adversely different to the weeks preceding or following this week (chart 3; table 5) when the senior doctor-led team process was not in operation.

Chart 3. **Ambulance attendances between 28th March and 13th May 2016.**

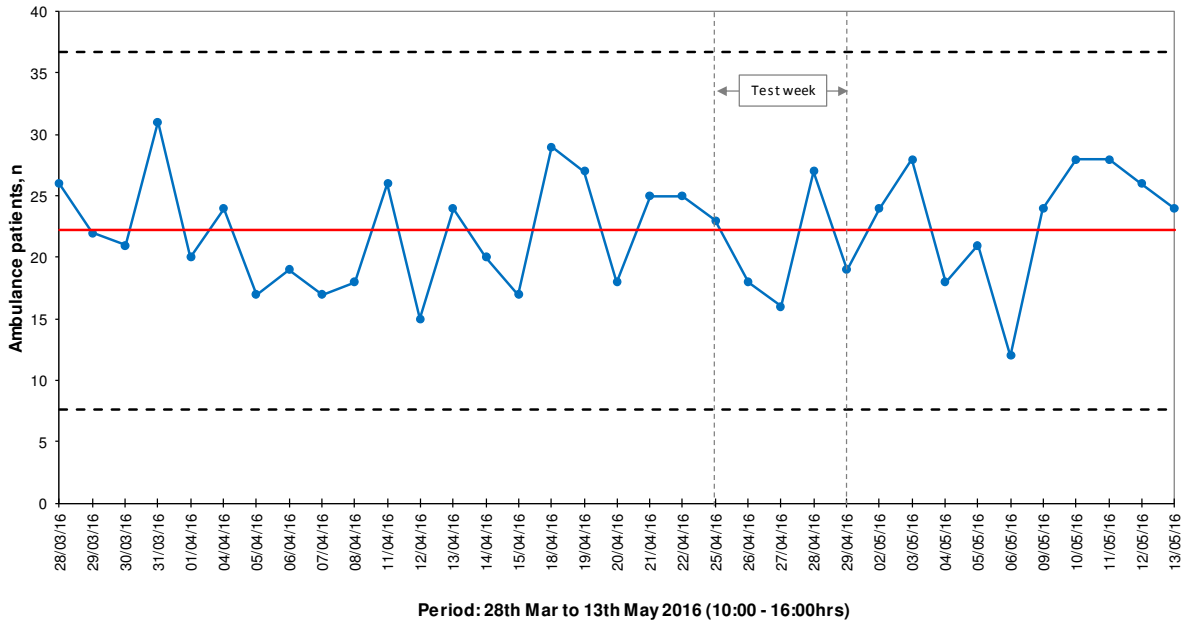


Table 5. N**umber of ambulance attendances per day between 10am and 4pm for the period 28th March and 13th May 2016.**

Week day	Daily ambulance attendances													
	w/c 28th Mar	n	w/c 4th Apr	n	w/c 11th Apr	n	w/c 18th Apr	n	**w/c 25th Apr***	n	w/c 2nd May	n	w/c 9th May	n
Monday		26		24		26		29		**23**		24		24
Tuesday		22		17		15		27		**18**		28		28
Wednesday		21		19		24		18		**16**		18		28
Thursday		31		17		20		25		**27**		21		26
Friday		20		18		17		25		**19**		12		24

* The AAA 5-day Model week.

Total time spent in the ED

During the AAA 5-day Model week 94% (97/103) of ambulance patients arriving between 10am and 4 pm spent less than 4 hours in the ED. Only 37% of ambulance patients (246/663) spent less 4 hours in the ED in the six weeks straddling the model week (chart 4 & 5).

Chart 4. **Ambulance patients with total time in ED less than 4 hours.**

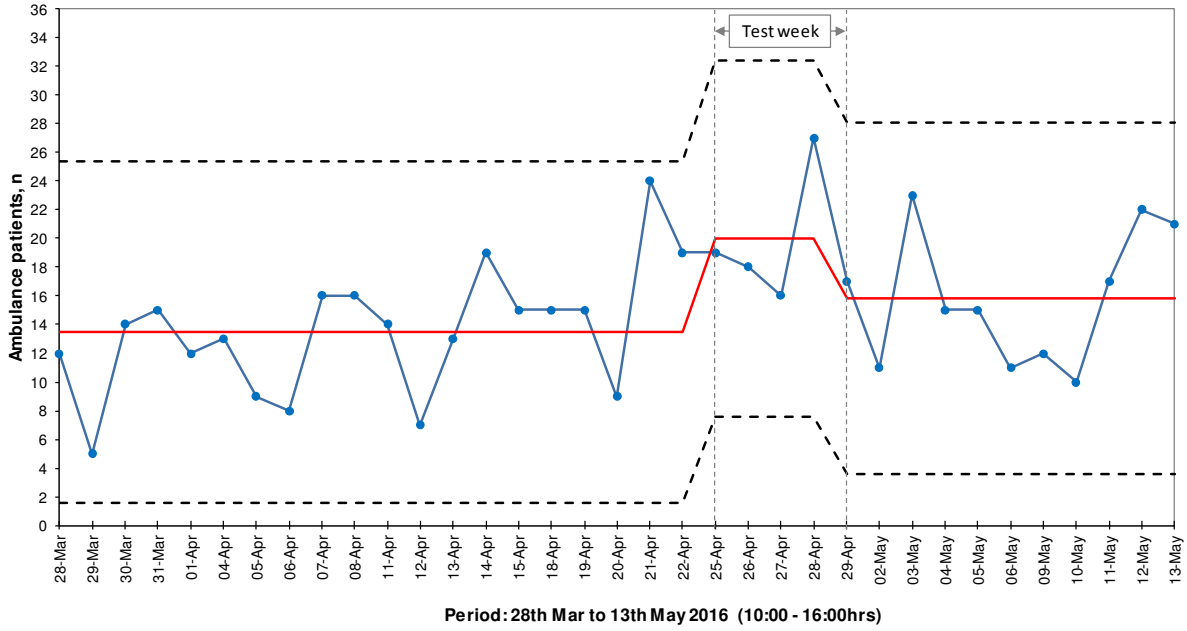


Chart 5. **Ambulance patients with total time in ED greater than 4 hours.**

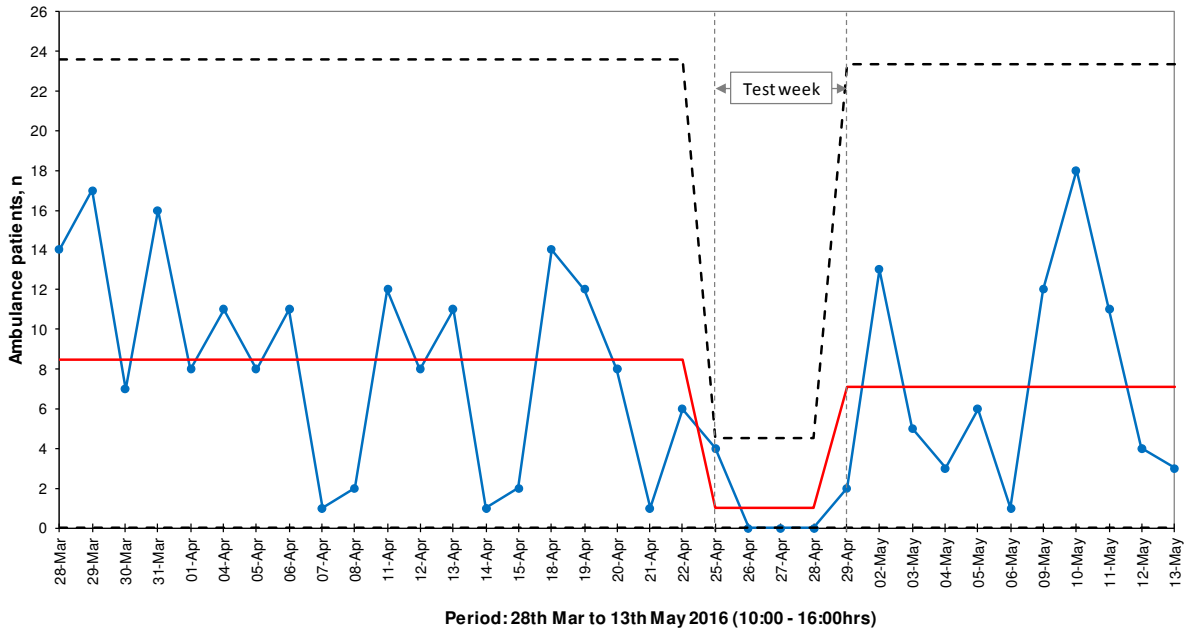


Table 6. **Number of ambulance patients arriving between 10am and 4pm on a weekday waiting less than 4hrs and greater than 4hrs by week.**

Week commencing	Total number of ambulance patients	
	Less than 4 hrs	Greater than 4 hrs
28-Mar	58	62
04-Apr	62	33
11-Apr	58	34
18-Apr	82	41
25-Apr*	**97**	**6**
02-May	75	28
09-May	82	48

* The AAA 5-day Model week.

There is a potential that patients arriving via other methods to the ED (i.e walk-in, etc) may be adversely affected by the introduction of a senior doctor-led team in the AAA. Due to the ability to rapidly assess patients arriving by ambulance, these patients may flow through the ED quicker and in turn slow down the journey for patients that are being assessed by other means. Staff and resources may therefore be potentially more focused on ambulance patients. To identify if there were consequences of the changed process in the AAA to patients arriving via other methods, balancing measures were identified which included the total time patients spent in the ED that arrived via other methods (charts 6 & 7).

Chart 6. **"Other" arrival patients with total time in ED less than 4 hours.**

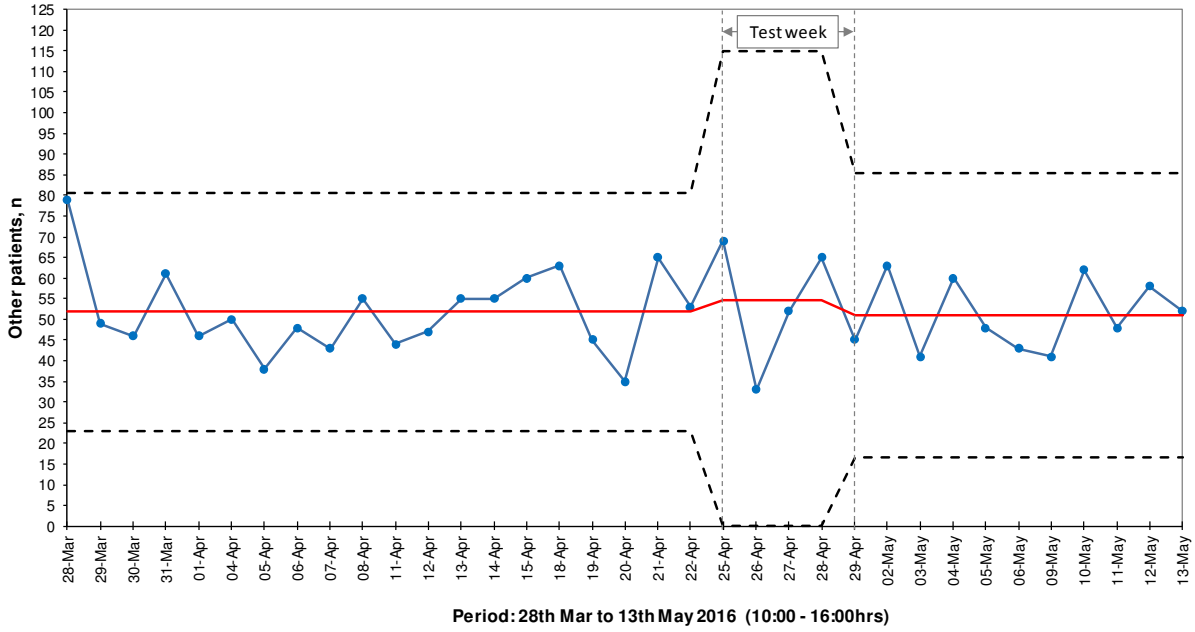
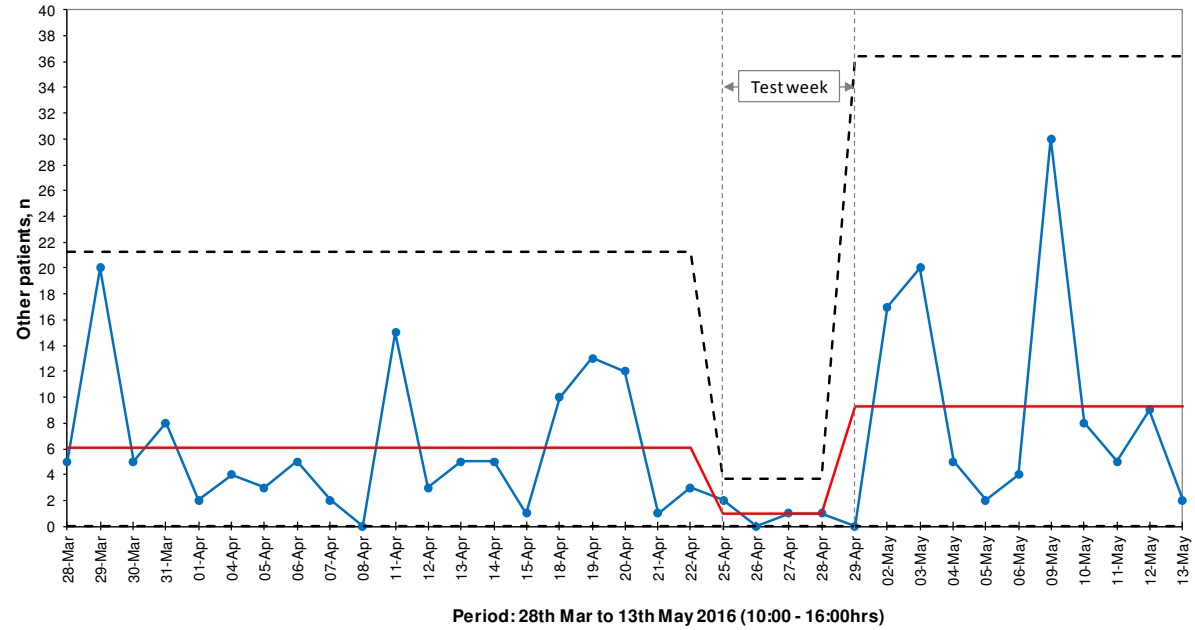


Chart 7. **"Other" arrival patients with total time in ED greater than 4 hours.**



Both charts appear to indicate an improvement in the total time patients spend in the ED that have arrived via other methods, although these appear to be minor in those in the ED for less than 4 hours. The median time for patients arriving via other methods during the AAA 5-day Model week was 135 minutes, which is comparable to the weeks leading to and after the test week (Table 7). Based on the 95th percentile figure for total time "Other" patients spent in the ED, most patients appear to have left the department within 320 minutes, which is a reduction compared to the surrounding weeks.

Table 7. **Total time in ED (median and 95th percentiles) for all patients by arrival mode.**

Week commencing	Median, mins		95th percentile, mins	
	Ambulance	Other	Ambulance	Other
28-Mar	249	132	333.2	573
04-Apr	223	100	281.45	601.2
11-Apr	205	140	287.9	551.25
18-Apr	213	149	342.4	519.4
25-Apr*	**127**	**135**	**225.55**	**319.8**
02-May	208	143	315.2	442
09-May	227	159	331.4	559.45

* The AAA 5-day Model week.

Time to triage within 15 minutes

A key process measure to identify if the senior doctor-led team process was performing as it should (i.e. rapid assessment) is to measure time from arrival to triage for ambulance patients. The control chart (chart 8) indicates there was an increase in the average number of patients arriving by ambulance triaged within 15 minutes compared to the preceding weeks but there does appear to be a trend over the same weeks of more patients being triaged within this time limit, even though the senior doctor-led team was not in operation.

The median time to triage also reflects an improvement in comparison to when the senior doctor-led process was not in place at 3 minutes (table 8). Although when calculating the 95th percentile for this measure - that is the time in which 95% of patients were triaged, the figure was 35.4 minutes or less. This is a vast improvement compared to when a senior doctor-led team is not in place but is still 15 minutes above the ED clinical quality indicator standard.

Chart 8. **Ambulance patients triaged within 15 minutes of arrival.**

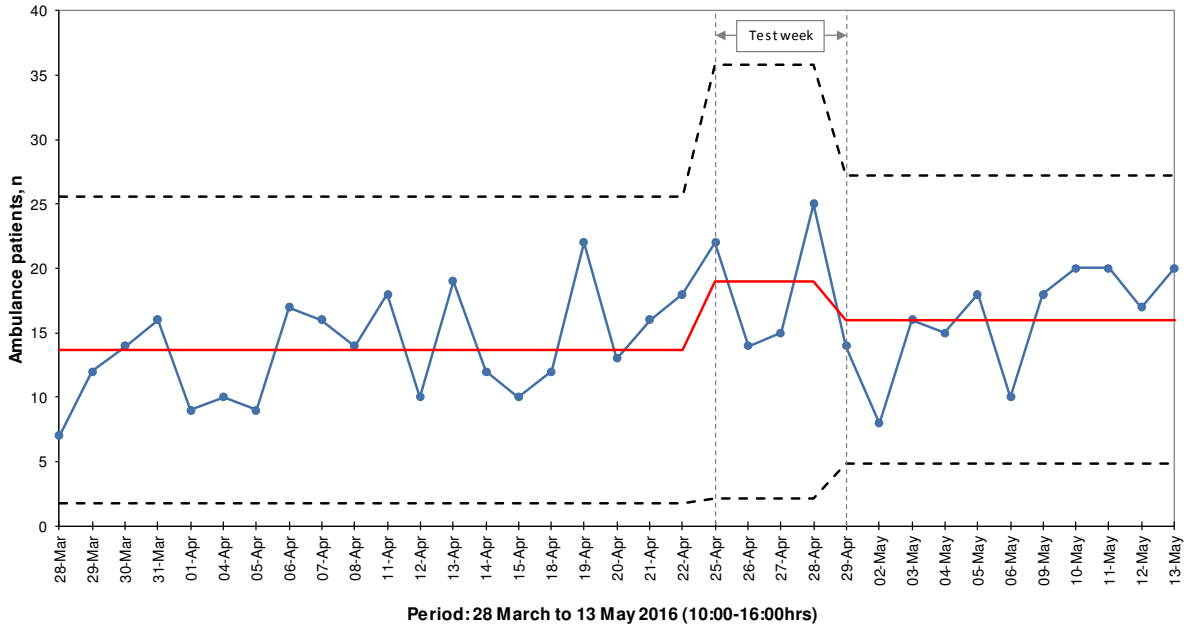


Table 8. **Ambulance patients by time to triage, weekly medians and 95th percentiles.**

Week commencing	Time to triage, mins	
	Median	95th percentile
28-Mar	15	90.0
04-Apr	9	82.3
11-Apr	9	36.8
18-Apr	11	48.3
25-Apr*	**3**	**35.4**
02-May	10.5	53.9
09-May	7	67.3

* The AAA 5-day Model week.

Time to decision to admit (referral to specialty)

As well as providing rapid initial assessment to patients arriving by ambulance, a senior doctor-led team in the AAA potentially allows early identification of those patients that need admission to hospital. The data collated from the AAA 5-day Model week appears to indicate that the introduction of a senior decision maker in the AAA does reduce the time from arrival to the decision to admit for patients (table 9). The AAA 5-day Model week had a median time from arrival to decision to admit of 69 minutes, which is over a 50% reduction on the week commencing 28th March (155 minutes) and lower than the comparative preceding and following weeks.

Table 9. **Ambulance patients by time to decision to admit, weekly averages, medians and 95th percentiles.**

Week commencing	Time to decision to admit, mins		
	Average	Median	95th percentile
28-Mar	161	155	326.8
04-Apr	101	88	256.2
11-Apr	121	112	310
18-Apr	145	131	408.6
25-Apr*	**90**	**69**	**234**
02-May	138	136	311.4
09-May	155	135	387.2

* The AAA 5-day Model week.

Time from decision to admit (referral to specialty) to admission

If patients requiring admission are being identified early after arrival to the ED, it is important that the ongoing admission process is efficient and that the necessary patients are transferred to their referral specialty from the ED. The time from decision to admit to admission provides some understanding of if this part of the patient journey which was also improved during the AAA 5-day Model week. However, it must be acknowledged that admission to the hospital from the ED is largely based on bed capacity, and if there is a lack of appropriate beds then patients cannot be moved and patient flow throughout the hospital and in particular in the ED, begins to slow – affecting all processes and patients in the ED.

The median time to admission from decision to admit during the AAA 5-day Model week was 48 minutes. This was lower than the comparable weeks when the senior doctor-led team was not in

place but there does appear to be a decreasing trend in the week prior to the test week with lower median times continuing in the following weeks for ambulance patients (table 10).

Table 10. **Ambulance patients by time from decision to admit to admission, weekly averages, medians and 95th percentiles.**

Week commencing	Time from decision to admit to admission, mins		
	Average	Median	95th percentile
28-Mar	160	115	498.6
04-Apr	150	105	553.4
11-Apr	131	107	459
18-Apr	88	53	299.25
25-Apr*	**62**	**48**	**160**
02-May	101	96	293.6
09-May	105	69	354.8

* The AAA 5-day Model week.

Post-implementation staff survey

Following the AAA 5-day Model week, staff were asked to complete a survey about their experience. Responses were received from 13 staff members including doctors (58%), nurses (8%), HCA's (17%) and administrators (17%).

All but one of the respondents had worked in the AAA (10:00-16:00hrs) during the AAA 5-day Model week (92%; n=12). When rating the resources (area, equipment, staffing) and communication during the week, the responses were mostly positive with between 62% and 85% of staff rating these elements as very good or good. The only poor ratings were attributed to equipment (n=1) and staffing (n=2). The overall senior doctor-led team process however was rated as very good by all respondents (100%; n=13). Similarly, to the pre-implementation survey, the majority of respondents felt that a senior doctor-led team in the AAA did reduce the time to decision making/ admission for patients (92%; n=12) and improved their satisfaction of working either in the AAA or both areas of the ED, main area and AAA (85%; n=11). Additional comments included that the new process would only work if there was patient flow through the hospital, that the process needed to be properly staffed and a porter would be beneficial.

Post-implementation staff interviews

In total, 9 staff in various positions were interviewed (3 senior doctors; 1 nurse; 2 sisters; 1 HCA; 2 paramedics) of whom, 6 had worked in the AAA during the AAA 5-day Model week. Generally, most of the interviewees were positive about their experience of the new process with one of the most positive comments being "*feel senior doctor in the AAA is brilliant; developing a plan early for patients is brilliant…*". In terms of resources, a common theme across most of the interviews was that the additional space and staffing was useful and beneficial, some of the comments made included "*space better used*", "*more privacy for patients*" and "*receptionist useful and a porter fantastic*". Additionally, most of the interviewees felt the communication between staff in the AAA was good but 2 staff members felt there was issues with the communication between the main area ED and the AAA. The staff member who did not work in the AAA stated "*Found it confusing. Was not really aware of what was happening regarding the process or the patients – communication could have been better*". Seven of the 9 interviewees thought that having the senior doctor-led team

process in the AAA did have some improvement in care for patients, although this was caveated in 4 responses that the process must be appropriately staffed and have patient flow through the hospital. In the case of patient flow, a number of interviewees stated that if patient flow is poor, then trying to operate the process in the AAA is "*very stressful*" and "*horrendous*". Those staff members that felt there was no improvement for patients commented "*the process is unfair to walk-in patients*" and "*the senior doctor process is more of a hindrance than a help*". In terms of suggestions the staff members might like to see if the senior doctor-led team process continues, the main theme of the interviews was that the process must be sufficiently staffed with a minimum of 2 nurses and a HCA, with the addition of an administrator and porter.

Conclusion

The overall number of attendances by ambulance to the ED did not appear to be significantly different over the AAA 5-day Model week in comparison to the preceding 4 weeks and following 2 weeks, even though there was strike action taken over 2 days. The outcomes measured during the week were positive where the total time in the ED reduced for ambulance patients, with a weekly median time of 127 minutes and 95% of patients leaving the department within 226 minutes. The time to triage was reduced with more patients on average triaged within 15 minutes of arrival and the weekly median time to triage being 3 minutes. Additionally, there appeared to be a reduction in the time to decision to admit for patients in the AAA (69 minutes) in comparison to the weeks when the senior doctor-led team process was not in operation. Although there was also a reduction noted in the time to admission from decision to admit, this is more a reflection on the patient flow through the rest of the hospital which is outside of the control of the ED.

A limitation of this work is the amount of outcomes assessed. Ideally further measures (outcomes, process and balancing) would have been included to allow more thorough evaluation of the impact of the senior doctor-led team process for example, patient re-attendance within 7 days, patients left without being seen and the number of investigations undertaken. However, this data was unavailable for analysis.

Prior to testing the senior doctor-led team process, staff views indicated that they did not feel the existing processes in the AAA reduced the time to decision making or admission, and that a senior decision maker would be very welcome. After experiencing the new process over many months and culminating in the AAA 5-day Model week, generally most staff felt the process was beneficial. However, in conjunction with this view was the proviso that the process should be appropriately staffed for it to be successful, and that it be acknowledged that it is heavily dependent on patient flow through the hospital.

Although continuously operated for only one week but with 4 months of prior intermittent testing, the outcomes from the AAA 5-day Model week do appear to suggest that incorporating a senior doctor and appropriately staffed team in the AAA does improve patient care and the working environment for staff. However, to achieve the continual improvement, a number of elements must be in place and regularly reviewed: -

- Appropriate staffing, in the case of Hospital X AAA suggested staffing would include 1 senior doctor, 1 junior doctor, 2 nurses, 1 HCA, administrator and porter.
- Additional space and equipment in the AAA (as per the AAA 5-day Model week).
- Good communication, particularly between staff in the AAA and the main ED area.

- Guidelines for individual roles and responsibilities working in the AAA and to some extent the main ED area (particularly for roles where there is interaction between the two areas).
- Protocol (tested) for handover of patients leaving the AAA.
- Escalation policy (tested) for recognising when the senior doctor-led team process is no longer effective and should be halted due to limited patient flow. The policy should clearly outline an alternative process to operate in the AAA, individual roles and responsibilities and a plan to of how and when to re-introduce the senior doctor-led team process when patient flow has improved.

Appendices

Appendix 1: Pre-implementation staff survey

Improvement Academy

TRIAGE IN THE EMERGENCY DEPARTMENT: FRONTLINE PERSPECTIVES				
1. How do you rate the existing initial assessment process for patients arriving by ambulance? Please circle response.				
Very good	**Good**	**Satisfactory**	**Poor**	**Very poor**
2. Do you think the ambulance assessment area reduces the overall time to decision making/admission?			**Yes** ☐	**No** ☐
3. Please list any changes to the assessment area that you feel could reduce the time to decision making/admission?				
Click here to enter text.				
4. Do you prefer working in the Ambulance Assessment (AA) area or the main area of the ED? Please circle response.				
Much prefer AA	**Prefer AA**	**No preference**	**Prefer main area ED**	**Much prefer main area ED**
5. What, if anything, would in your opinion improve your satisfaction with working in the ambulance assessment area?				
Click here to enter text.				
6. Do you think that a senior doctor working in this area would reduce the time to decision making/admission?			**Yes** ☐	**No** ☐
7. Do you think that a senior doctor working in this area would improve your satisfaction with working in ambulance assessment?			**Yes** ☐	**No** ☐
8. What would be the ideal mix of staff (number of staff and role) to deliver effective rapid initial assessment of ambulance patients?				
Click here to enter text.				
Any other comments, please add.				
Click here to enter text.				
BACKGROUND				
Date	Click here to enter text.			
Position				
Healthcare assistant		**Nurse**		**Doctor**
Years in specialty				
Less than 11 months	**1-2 years**	**2-4 years**	**5 years +**	

Appendix 2: Interim staff survey schedule

Yorkshire and Humber AHSN Improvement Academy
Communities of Improvement: URGENT CARE

HOSPITAL X ED: STAFF INTERVIEW SCHEDULE W/C 18th January 2016

1. Position
2. How often have you undertaken the senior-doctor led (SDT) assessment in the ambulance assessment (AA) area?
3. How did you find it? Prompts include:
    - Paperwork
    - Reception area
    - Equipment
    - Staffing
    - Communication
4. Do you feel/ think the SDT is improving the care for patients and the working environment for staff?
5. If the SDT continues, are there any suggestions or changes you would like to see?
6. Any other comments

Appendix 3: Post-implementation staff survey

TRIAGE IN THE EMERGENCY DEPARTMENT: FRONTLINE PERSPECTIVES

1. Where and when did you work during the AAA 5-day model week (25th to 29th April)? Please tick all that apply.

	10am-4pm	Before 10am or after 4pm
Main ED area	☐	☐
AAA	☐	☐

2. During the AAA 5-day model week, did you prefer working in the AAA or the main area of the ED? Please circle response.

Much prefer AA	Prefer AA	No preference	Prefer main area ED	Much prefer main area ED

3. During the AAA 5-day model week, how did you rate the following: Please circle response.

	Very good	Good	Satisfactory	Poor	Very poor
AAA area (reception desk & cubicle)	☐	☐	☐	☐	☐
AAA equipment	☐	☐	☐	☐	☐
AAA staffing (Senior doctor, 2 nurses, HCA, Administrator)	☐	☐	☐	☐	☐
Communication between staff based in AAA	☐	☐	☐	☐	☐
Communication between AAA and main ED staff	☐	☐	☐	☐	☐
Overall senior doctor assessment process	☐	☐	☐	☐	☐

4. Did you think that the senior doctor and team working in the AAA reduced the time to decision making/admission? Yes ☐ No ☐

5. Did you think that a senior doctor and team working in the AAA improved your satisfaction with working in the.....?

Yes, AAA ☐ Yes, main ED area ☐ No ☐

6. If the senior doctor and team were to continue working in the AAA, do you have any comments about what you would like, or not like to see, based on your experience during the AAA 5-day model week?

Click here to enter text.

Any other comments, please add.

Click here to enter text.

BACKGROUND

Date: Click here to enter text.

Position

Administrator	Healthcare assistant	Nurse	Doctor

Years in specialty

Less than 11 months	1-2 years	2-4 years	5 years +

Appendix 4: Senior doctor-led team process protocol

ED Senior Doctor Initial Assessment Project

The aim of this project is to facilitate:

- Rapid handover of ambulance patients
- Earlier ED senior doctor review
- Earlier and more tailored diagnostic tests
- Earlier decision making regarding need for admission or discharge

Target Patient Group

All ambulance patients presenting between 10am and 4pm (except pre-alerts requiring immediate resuscitation) plus select patient groups that arrive by other methods (initially chest pain only).

Resource requirements

Current medical staffing levels could support the running of this model in the Ambulance Assessment Area from 10am-4pm on most weekdays. It relies on adequate staffing of the rest of the Emergency Department and therefore it may not be possible (or desirable) to deliver during times of severe exit block, staff sickness or scheduled events eg Thursday afternoon junior doctor teaching.

For the process to function efficiently and to facilitate review of all ambulance arrivals it would need the following resource to be in place:

- ED Senior doctor (which will be a consultant the majority of the time)
- ED Junior doctor (which will be an F1 the majority of the time)
- ED Nurse
- ED HCA (with extended skills)
- Admin staff based in Ambulance Assessment area (10am-4pm)
- Dedicated Porter (10am-4pm)

- Blood label printer
- Slim mobile trolley unit with laptop linked to CPD with storage for forms/protocols
- Mobile phone for senior doctor
- Sticky label handover notes to adhere to the patient's ED record once the ambulance crew have booked them in
- ED card printer/ name band printer

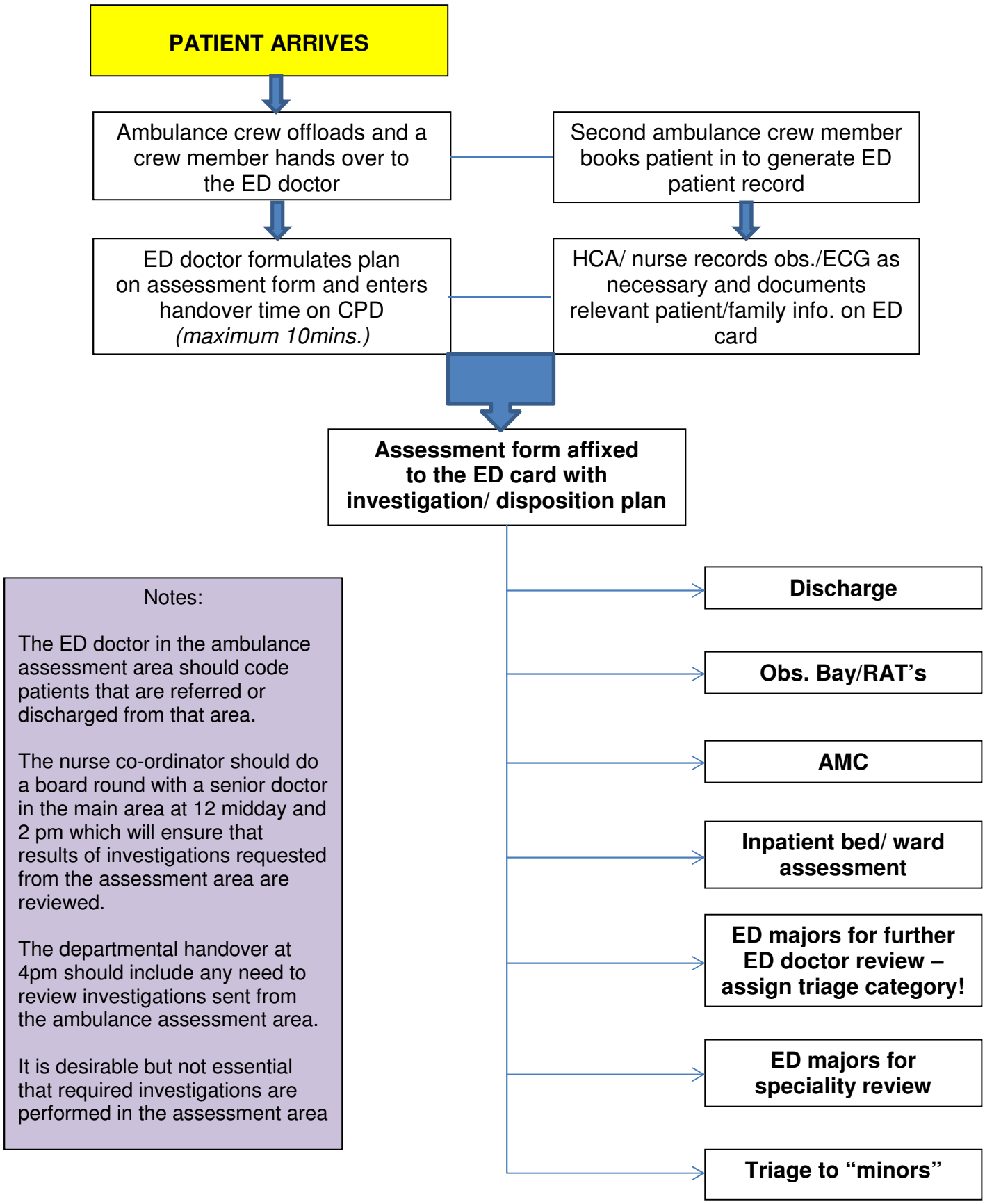
Roles

Person	Key roles	Don't do this!
Senior Doctor	Rapid assessment and streaming patients arriving by ambulance, making appropriate disposition decisions. Complete the initial assessment documentation and enter the handover time on CPD. Prescribe analgesia, fluids, etc. where early treatment is indicated Refer patients to specific teams if admission required and inform the receptionist, recognising where a side ward may be required. Assign triage priority to patients requiring ongoing ED doctor review Complete relevant imaging request forms Communicate closely with assessment area nurse regarding patient plans Code patients where a discharge or admission decision has been made in the ambulance assessment area Handover patients still within the ED footprint at 4pm. Inform the senior nurse/ DM if it is not felt to be in the best interests of the department to run the assessment model Delegate appropriate tasks to the junior doctor.	Delay patients that have been pre-alerted as requiring treatment in the resuscitation room Assess multiply injured patients in the ambulance assessment area Leave the assessment area without informing the team in the assessment area Record medications unless of immediate clinical relevance eg Warfarin/ insulin/ chemotherapy/ current antibiotics etc. Perform procedures/ review patients after x-ray or CT unless it is expected that a disposal decision can be made within 1 hour of assessment.
Junior doctor	Assist the senior doctor in completing the tasks listed for their role.	Take protracted histories or record medications unless of immediate clinical relevance eg Warfarin/

	Take the ambulance handover at times when the senior doctor is busy elsewhere. Present this information to the senior doctor at the earliest opportunity. Perform cannulation/ phlebotomy where the need is both urgent and it cannot be performed in a more timely fashion than the HCA. Take ABG samples where indicated.	insulin/ chemotherapy/ current antibiotics etc.
Nurse	Perform patient observations where indicated Administer urgently required medications and analgesia Assist HCA, where required in undressing patients to facilitate examination Address nursing/safety needs of patients in the ambulance assessment area Collect relevant patient NOK details Apply patient identification labels Apply allergy bracelets where indicated Communicate with patient relatives Communicate with senior doctor in assessment area Communicate with nurse co-ordinator regarding flow Communicate with ambulance area receptionist	Take patients to x-ray Take patients to wards Document medication lists Leave the assessment area without informing the team in the assessment area
HCA with extended Skill set	Assist nurse with above tasks where appropriate Populate the electronic board with required tasks indicated on the assessment form	Routinely take patients to x-ray

ED receptionist	Book in ambulances Print patient bracelets Communicate with patient relatives Communicate with staff in assessment area Communicate with bed manager and other ED receptionists Communicate with nurse co-ordinator regarding flow	
Ambulance assessment area porter	Transfer patients to other areas of the trust	

Outline of model



Notes:

The ED doctor in the ambulance assessment area should code patients that are referred or discharged from that area.

The nurse co-ordinator should do a board round with a senior doctor in the main area at 12 midday and 2 pm which will ensure that results of investigations requested from the assessment area are reviewed.

The departmental handover at 4pm should include any need to review investigations sent from the ambulance assessment area.

It is desirable but not essential that required investigations are performed in the assessment area

Appendix 5: ED assessment proforma

ED Initial Assessment			
Date:			Handover time:
Patient name:			D.O.B.:
Obs.:	Pulse_____bpm BP: /	Resp rate: Alert? Y/N	O_2 sats.: GCS if not alert:

History/ exam:

Plan:

Destination (please circle):

Discharge / Admit / AMC / Other (see plan above)

Further ED review majors - assign triage category P2 / P3/ P4

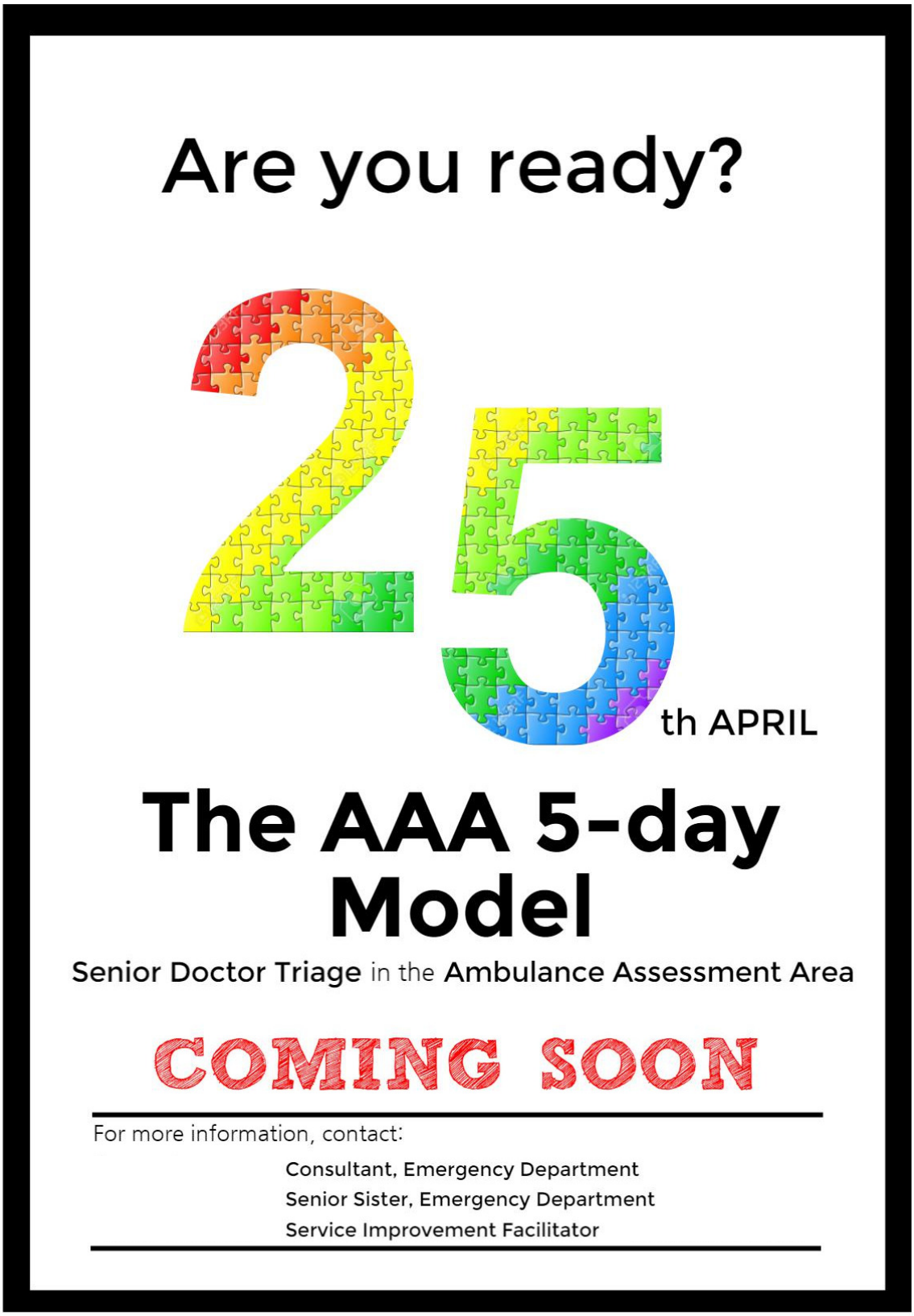
Further ED review minors

Investigations requ.	
ECG	
FBC	
U&E	
G&S	
D-Dimer	
Troponin	
LFT's	
Amylase	
ABG	
VBG	
Bm	
Blood culture	
CRP	
Urinalysis	
Preg Test	
CT	
CXR	
Other x-ray	
U/S	
MRI	

DOCTOR name and signature:

Please affix completed sticker to patient's ED card

Appendix 6: The AAA 5-day Model week poster and leaflet



25th APRIL

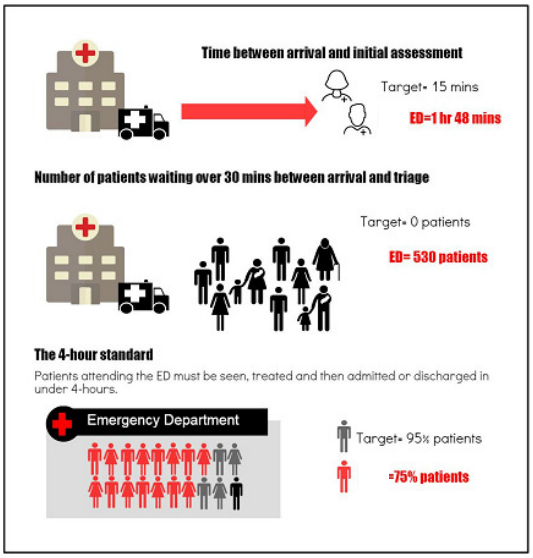
The AAA 5-day Model

Senior Doctor Triage in the Ambulance Assessment Area

Information about Why, When and Who

Background

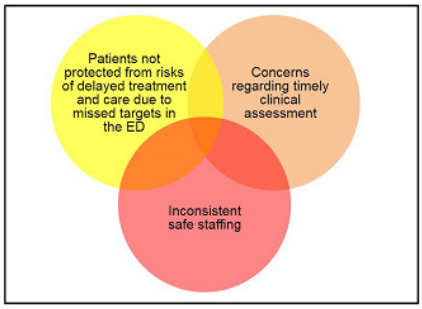
All emergency departments (EDs) in England need to report ED clinical indicators on how their department is performing in terms of timeliness and impact of care for patients. Some of the latest ED clinical indicators reported from February 2016 for ED are shown below.



Source: Information Team, Systems & Network Services, Hospital

These show that ED is not performing as well as it could according to the targets set for each of the ED clinical indicators.

Following a visit by the Care Quality Commission (CQC) in the Summer of 2015, a number of issues were highlighted specifically related to the ED that could be improved.



Source: CQC Report, October 2015

We want to ensure that the best possible care to all patients is provided, at the right time and right place. Based on the feedback from the CQC and the ED clinical indicators this does not always appear to be happening, we want to change this and improve patient and staff experience in the ED, particularly in the Ambulance Assessment Area.

What do we want to do?

For one week, the Ambulance Assessment Area will have extra help to test senior doctor triage to see if this rapid assessment process can improve the way patients move through the ED, and gain a better understanding of what support is needed to smooth the patient pathway to try to minimise delays.

When and where will 'The AAA 5-day Model' be happening?

The AAA 5-day Model will take place in the Ambulance Assessment Area of Hospital for one week. It will start on Monday 25th April at 10am and finish on Friday 29th April at 4pm.

Who will be involved in the AAA 5-day Model?

For the AAA 5-day Model to work, we need the support and commitment of all staff who work in the ED. In the build-up to the AAA 5-day Model, information will be circulated and short-meetings will take place to ensure all staff including porters, healthcare assistants, admin, nurses and doctors are fully aware of what will be expected of them during the AAA 5-day Model.

How will the AAA 5-day Model be measured?

As well as the routine ED clinical indicator data, other detailed data will be collected such as clinician decision time to admit or discharge, time of requested investigations, etc. These will be collected both before and during the AAA 5-day Model to compare and see what improvements have occurred. Additionally, staff and patients will be asked to provide their views of their experience of the AAA 5-day Model.

Where can I get more information now about the AAA 5-day Model?

There are a number of staff involved in helping to prepare for the AAA 5-day Model, if you would like more information please contact any of the following:-

Appendix 7: The AAA 5-day Model week staff feedback form

The AAA 5-day Model

Senior Doctor Triage in the Ambulance Assessment Area

STAFF FEEDBACK

Please could you take a minute to complete this feedback form about your experience of working in the ambulance assessment area.

Please circle the appropriate response and provide any further comments in the space provided.

Date (April 2016)				
Mon 25th	**Tues 26th**	**Wed 27th**	**Thurs 28th**	**Fri 29th**
Position				
Healthcare assistant		**Nurse**		**Doctor**
Years in specialty				
Less than 11 months	**1-2 years**	**2-4 years**		**5 years +**

About the ambulance assessment area

1. Do you work in the Ambulance Assessment Area today?	**Yes** ☐	**No** ☐

2. How do you feel the assessment process worked today, for patients arriving by ambulance?				
Very poor	**Poor**	**Satisfactory**	**Good**	**Very good**
3. Do you feel patient care improved for ambulance patients due to the assessment process?				
No improvement		**Some improvement**		**Lots of improvement**

Please provide comments about your experience today or suggestions for how, in your view, the assessment process could be improved?

Thank you for taking the time to provide feedback