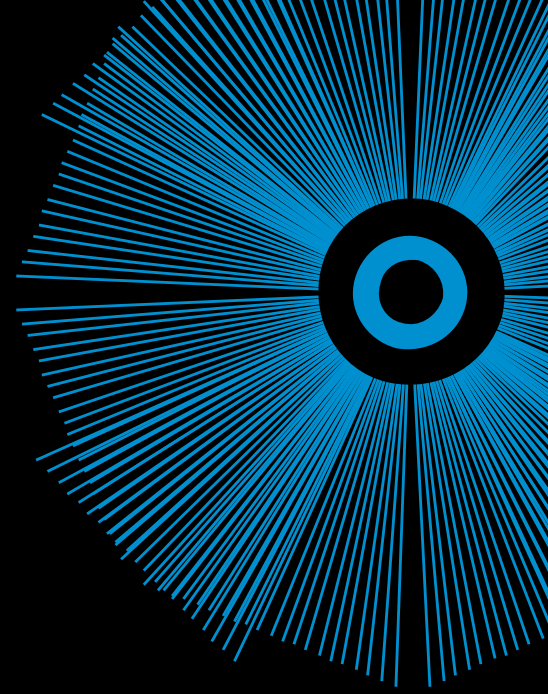




Shine



# Shine 2014 final report

An Innovation To Improve Safety in  
Emergency Care

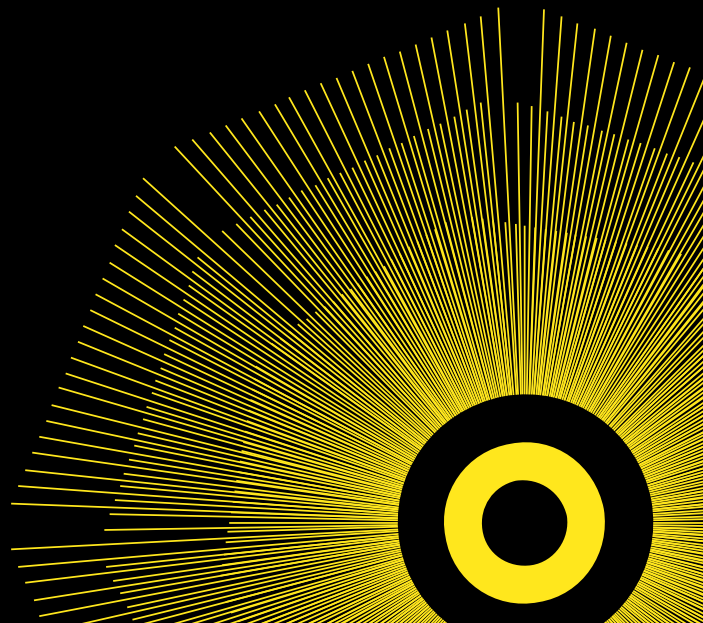
University Hospitals Bristol

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September 2015

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The Health Foundation  
Tel 020 7257 8000  
[www.health.org.uk](http://www.health.org.uk)



## **Part 1: Abstract**

**Project title: The Southwest Star: An Innovation to Improve Safety in Emergency Care**

**Lead organisation: University Hospitals Bristol NHS Foundation Trust**

**Lead Clinician: Dr Emma Redfern**

### **Abstract - Introduction**

A relentlessly increasing demand, an ageing population and 'Exit block' have led to intractable crowding in most UK Emergency Departments (ED). This is exacerbated by winter pressures, when acute Trusts are pushed beyond their operational capacity.

Crowding has a profound impact on the ED; patients are managed in makeshift extra capacity areas and conventional patient to nurse ratios are exceeded. In addition, an ED workforce staffing crisis has resulted in a reliance on agency and non ED-trained staff.

Crowding contributes to clinically significant delays to diagnosis, recognition of acute deterioration and in instigating the correct treatments; patients' suffering from time critical conditions such as stroke, sepsis or heart attack are particularly vulnerable.

<http://www.nhs.uk/NHSEngland/keogh-review/Documents/UECR.Ph1Report.Appendix%201.EvBase.FV.pdf>

Retrospective review of clinical incidents reported during times of crowding reveal that variation in practice and omissions in basic elements of care are common contributory factors. Human factors also play a central role in the delivery of substandard care during periods of crowding. Staff can become overwhelmed by the volume of tasks to be completed and the relentless interruptions in a busy ED. Checklists, when introduced appropriately, improve the standardisation and reliability in delivery of care resulting in improved patient outcomes (e.g. WHO surgical checklist).

### **Method**

An ED safety checklist was designed and introduced – a time based framework of tasks that is completed for every "majors" patient. The checklist can be completed by any member of clinical staff in any area. It is prescriptive and contains all basic elements of care. In addition, elements of Best Practice Tariffs and early triggers to specific care pathways such as sepsis are included. The checklist is particularly valuable during transfers of care, and has also been adopted by the regional ambulance service. An innovative bleep-free method of contacting the site team was also developed to try to improve the onward safety of a high risk subset of patients, to arrange the most appropriate bed at the earliest possible time.

### **Results**

Since implementation at UHB (SHINE 2014 project) key clinical performance indicators have shown significant improvements, including monitoring of vital signs, calculation of early warning scores, pain scoring and administration of medication, and we have had no clinical incidents related to failure or delay in recognising a deteriorating patient.

### **Conclusion**

A well-designed checklist can improve the delivery of safe care in overcrowded Emergency Department.

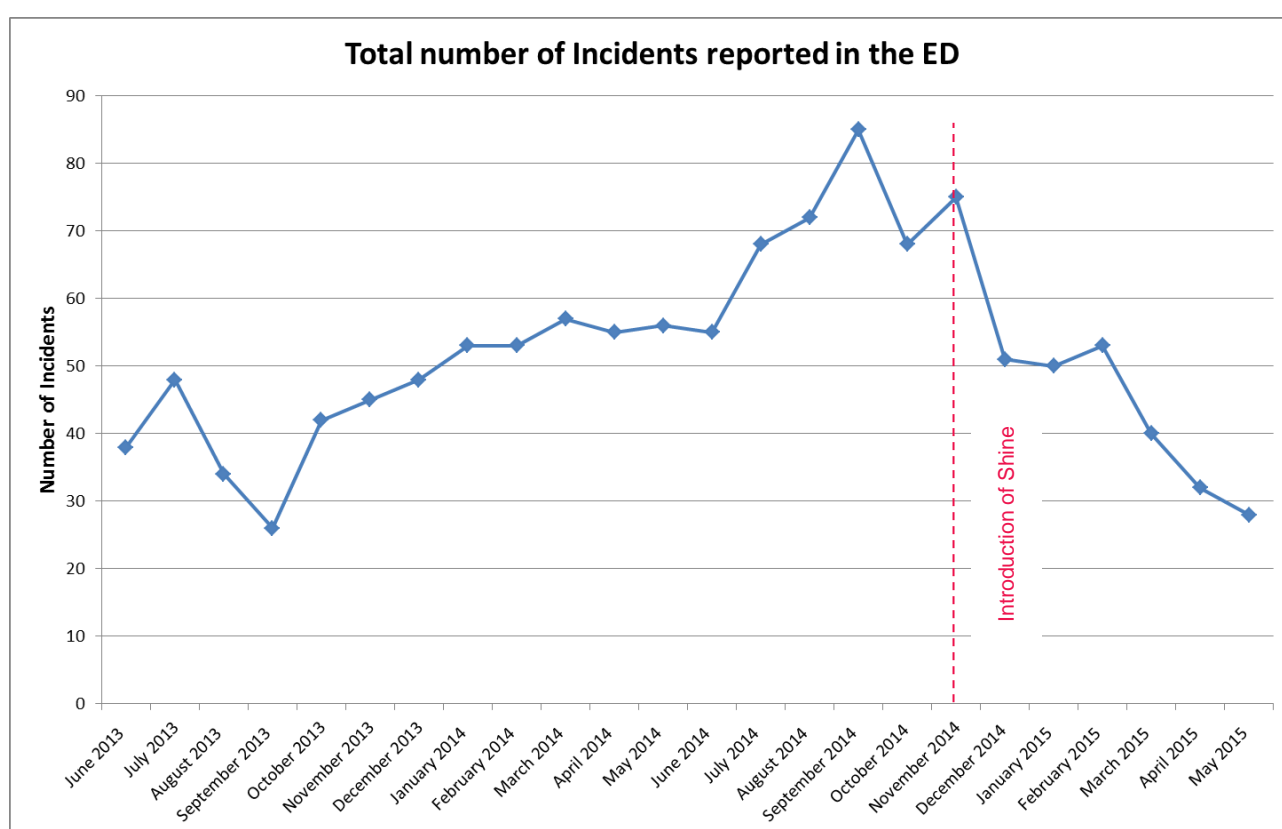
## Part 2: Quality impact: outcomes

### Clinical and Performance Metrics

Since the introduction of the checklist, we have experienced no clinical incidents related to failure to recognise deteriorating patients or delay in care delivery. We are confident that this is entirely due to the implementation of the checklist and its hourly intervention requirement.

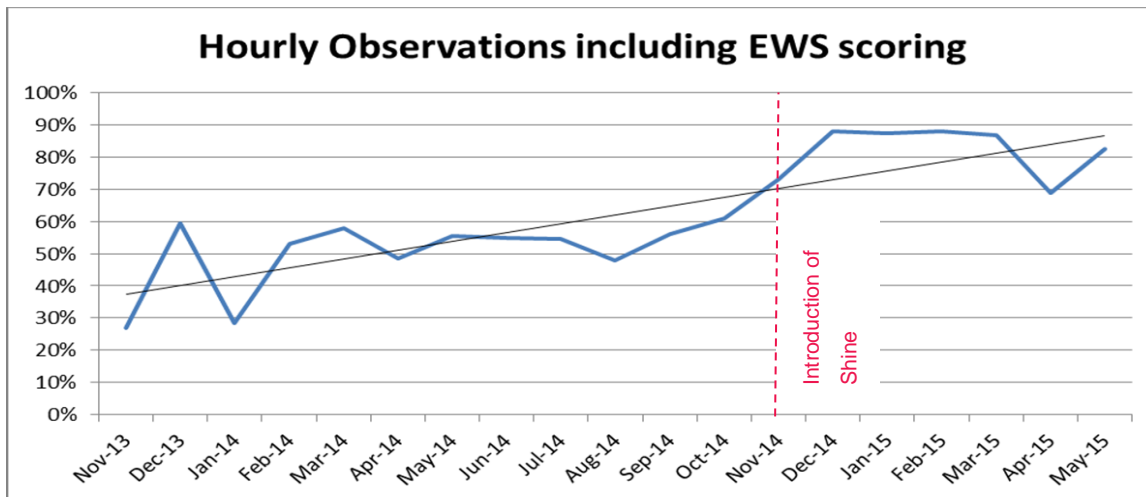
Whilst the total number of incidents reported in ED has continued to fall since the introduction of the project, the overall trajectory displays an increase in reported incidents in comparison to the previous year (figure 1). This is mainly due to the trusts success in encouraging a culture of incident reporting.

Figure 1 – Adverse Incident Reporting



The ED undertakes a monthly analysis of a range of clinical indicators. During the SHINE Project specific indicators were selected and audit activity increased tenfold to assess the clinical impact (Appendix 3). The results show a sustained improvement in performance since the start of the project in comparison to the baseline data. A key outcome for the project was to identify deteriorating patients by regular vital sign and early warning score monitoring. Since the introduction of the checklist the quality indicators metrics have displayed a significant improvement in compliance (figure 2).

Figure 2 – Observations & EWS Quality Indicators



Performance has also increased and been sustained in all aspects of stroke care (figure 3). This includes the number of patients receiving a CT Head within the hour and care within the stroke pathway (figure 3). Pain assessment and appropriate analgesia at triage has also been sustained by the use of the checklist (figure 4). All of these interventions contribute to the overall quality of care provide, whilst maintaining patient safety.

Figure 3 – Stroke Clinical Indicators

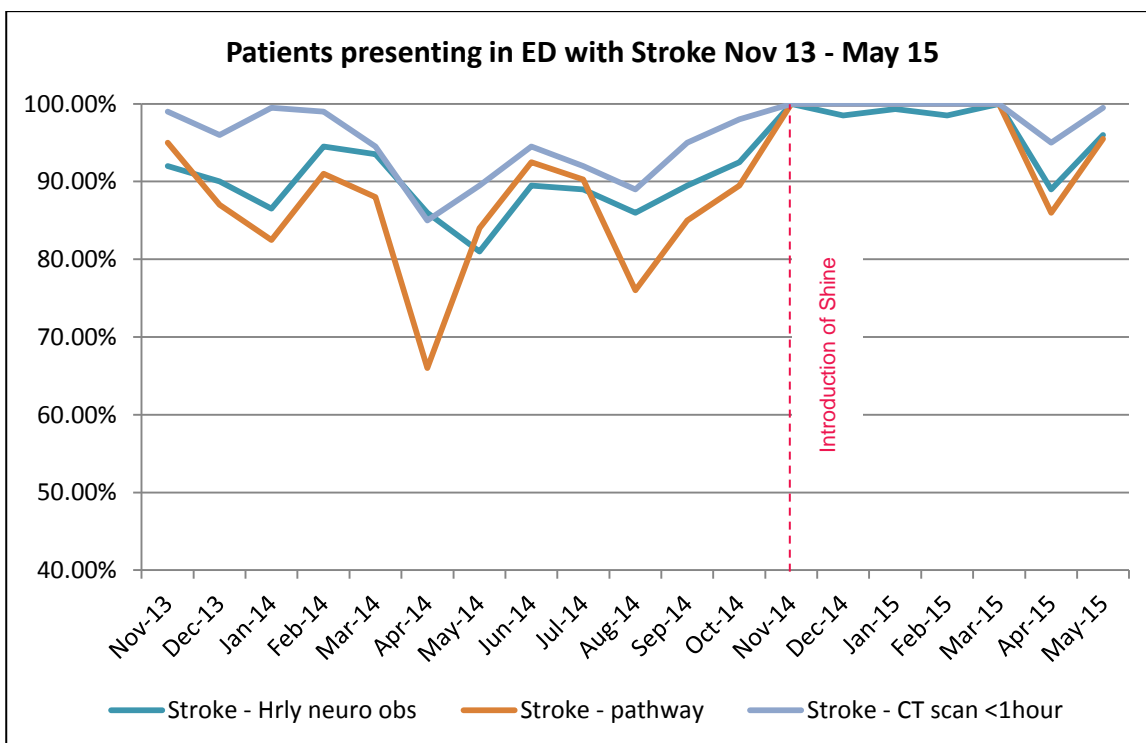
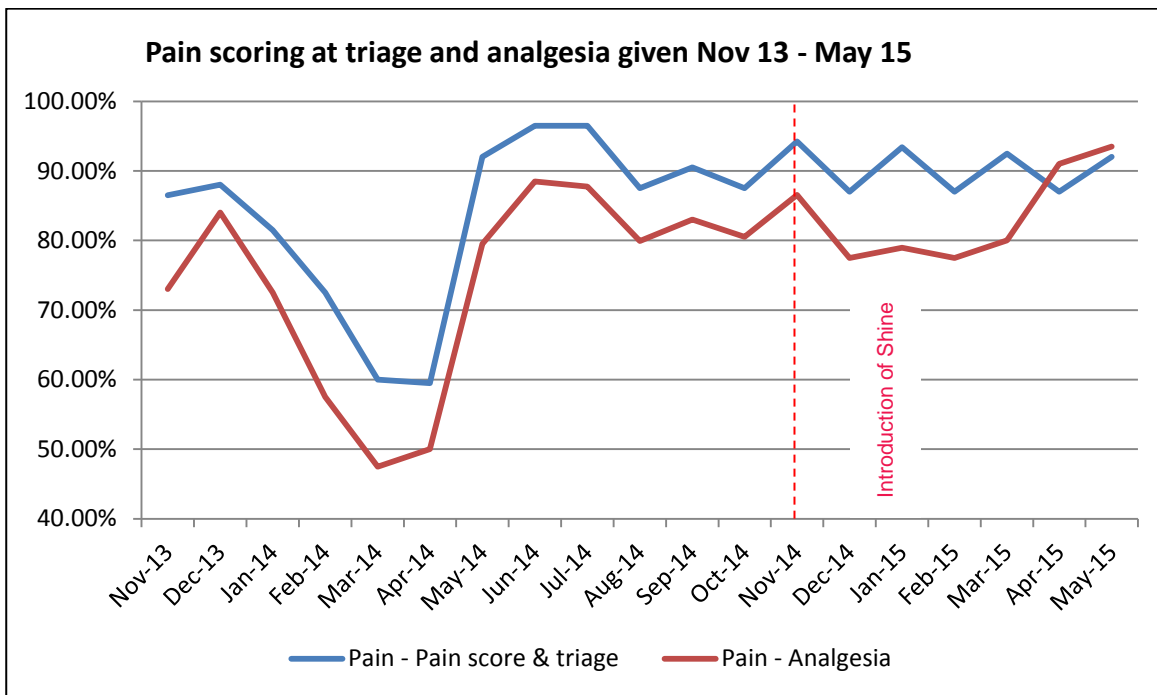


Figure 4 – Pain Scoring and Analgesia Quality Indicators

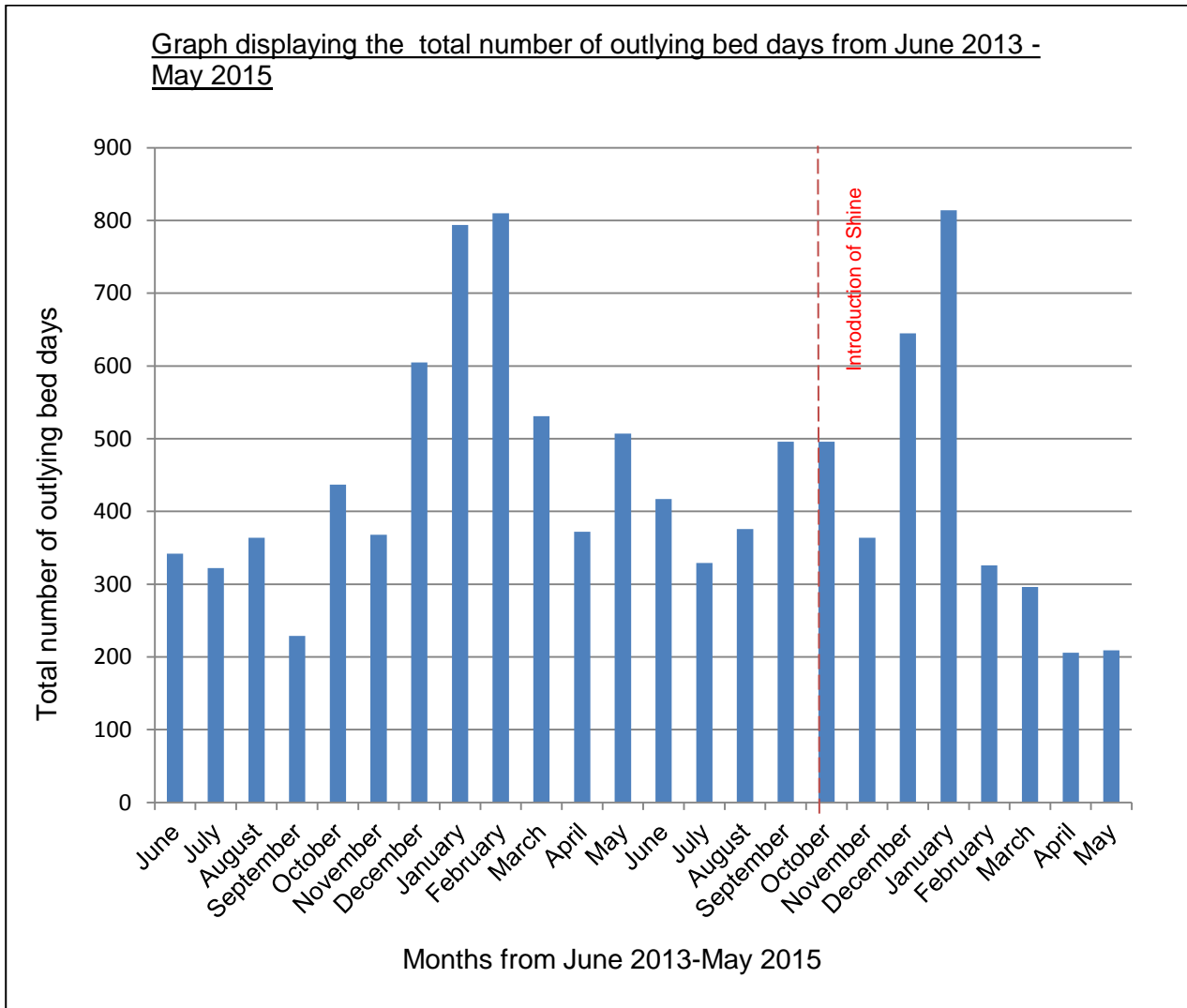


The project has shown no improvement in performance against the 4-hour ED target. However, this reflects the national trend in ED performance but also highlights that since the introduction of the checklist, our quality and safety has improved despite increasing demand and service pressure. The checklist operates in areas of the department where admission is likely. The challenge of exit block is a corporate issue for trusts with EDs often unable to influence the available admitting bed base. The checklist has increased the amount of patients who are classed as “ready for admission at 2.5 hours”. On reflection, it was therefore unlikely that the project would influence performance in this area.

Analysis of the number of bed days for patient admitted from ED and their overall length of stay show no direct correlation with the project. The length of stay of patient admitted from ED has been gradually decreasing since 2013, but there is no evidence from the data that the SHINE project has contributed to a further reduction in isolation (appendix 3). It is also recognised that there are a number of trust projects aimed at progressively reducing length of stay.

A key desired outcome for the project was to reduce the number of patients who were admitted to outlying areas, particularly those identified as in high-risk groups. High risks groups included patients admitted with fractured neck of femur, stroke, diabetic ketoacidosis or patients receiving specific treatment interventions e.g. chest drains or non-invasive ventilation. Analysis of the data (figure 5) shows a reduction in patients admitted from ED who are classified as outliers. It is reasonable to propose that the SHINE project has contributed to this, whilst acknowledging that there are parallel trust-wide projects aimed at reducing outlying safety.

Figure 5 – Outlying Data for Patients Admitted from ED



Analysis of the trust mortality data of patients admitted from ED reveals no overall decrease in mortality since the project has been operational. National mortality benchmarking data reveals that the trust is positively placed in the lower third and below the median line for England (appendix 3). It is not possible to extract from the data a correlation between the project and the overall trust mortality of patients admitted.

Table 1 - Differences (and 95% confidence intervals) in mean proportions for KPIs before and after SHINE intervention

Comparing a) all available time periods prior to Nov 14 with all available time periods from Nov 14 onwards b) comparable time periods (i.e. Nov 13-May 14 with Nov 14-May 15)				
Metric	Mean proportion before	Mean proportion after	Mean difference (95% CI)	p-value
Pain – score and appropriate triage category	84.23%	90.45%	6.22% (4.00%, 8.44%)	<0.0001
Pain – analgesia within time limits	74.72%	83.57%	8.85% (6.11%, 11.58%)	<0.0001
Chest Pain – ECG in 10 minutes of arrival	81.88%	87.64%	5.76% (3.33%, 8.19%)	<0.0001
Stroke – Hourly observations	89.15%	97.33%	8.18% (6.66%, 9.70%)	<0.0001
Stroke – Pathway completed	85.92%	97.36%	11.44% (9.81%, 13.07%)	<0.0001
Stroke – CT < 1 hour	94.08%	99.21%	5.13% (4.09%, 6.17%)	<0.0001
Fractured neck of femur (#NOF) – Xray within 30 minutes	93.50%	98.17%	4.67% (3.44%, 5.90%)	<0.0001
Fractured neck of femur (#NOF) – Pathway completed	92.45%	97.47%	5.02% (3.65%, 6.39%)	<0.0001
Sepsis – Pathway completed	93.00%	95.06%	2.06% (0.05%, 3.66%)	0.018
Mental health risk – Risk Assessment Matrix(RAM) completion	99.92%	99.64%	0.40% (0.05%, 0.93%)	0.130
Early Warning Score (EWS) - Hourly observations including EWS	50.69%	82.11%	25.2% (22.2%, 28.1%)	<0.0001

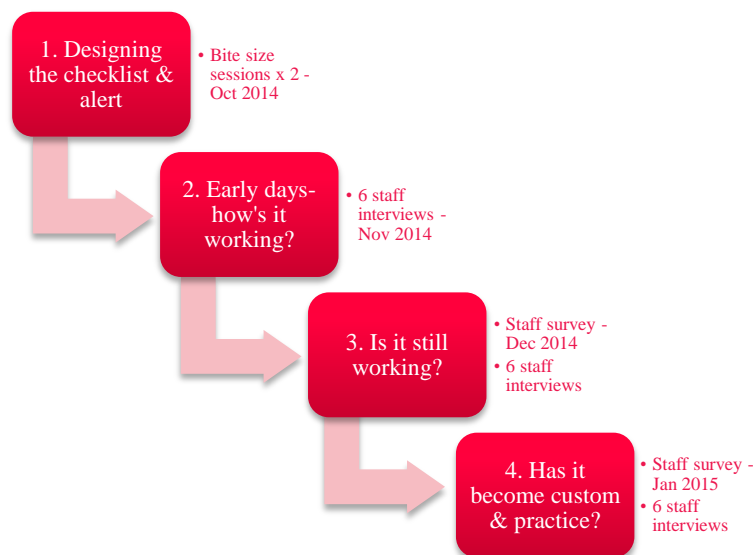
The clinical indicators were developed in the ED in order to reflect best practice standards in emergency care. Two hundred sets of notes were audited against these indicators each month. The results demonstrate a statistically significant improvement in 9/11 of the clinical indicators ( $p < 0.0001$ ).

## Staff Engagement

The importance of consulting and seeking staff feedback from ED staff at all stages was a vital component on the project. From the outset, staff discussion sessions were held at the beginning of several shifts to understand the general feeling about how a checklist would be viewed and what it should contain. Staff were asked what is important and what gets forgotten when the shift is busy, and feedback was given about earlier versions of the checklist, requesting additions or changes. Staff were encouraged to contribute at various stages of the checklist design to encourage a commitment to the project.

A programme of structured activity was developed to ascertain the views of staff throughout the project (figure 6). These were led by an external Qualitative Researcher who was not known to the staff to encourage responses and reduce likely barriers. Initial concerns included the additional burden of paperwork and potential for duplication of information. There was general appreciation for an efficient handover for staff unfamiliar with the requirements of the department (Bank, Agency etc.) However, little reference was made to the strategic goals of improved workload management, prioritisation, delegation, patient care and safety; short teaching sessions were implemented to disseminate this information.

Figure 6 – Qualitative Staff Reviews Process



Following the introduction of the checklist a five-question survey was emailed to staff on two occasions throughout the project. It contained questions related to managing workload, ease of use, practicality, recordkeeping, communication, prioritisation, patient safety, delegation and contribution to patient care. Consistent themes were expressed on both surveys and a range of responses were expressed between being supportive, ambivalent and resistant to the checklist use. Those who were supportive found the checklist easy to use but did not necessarily feel it helped with strategic aims of improving patient safety.

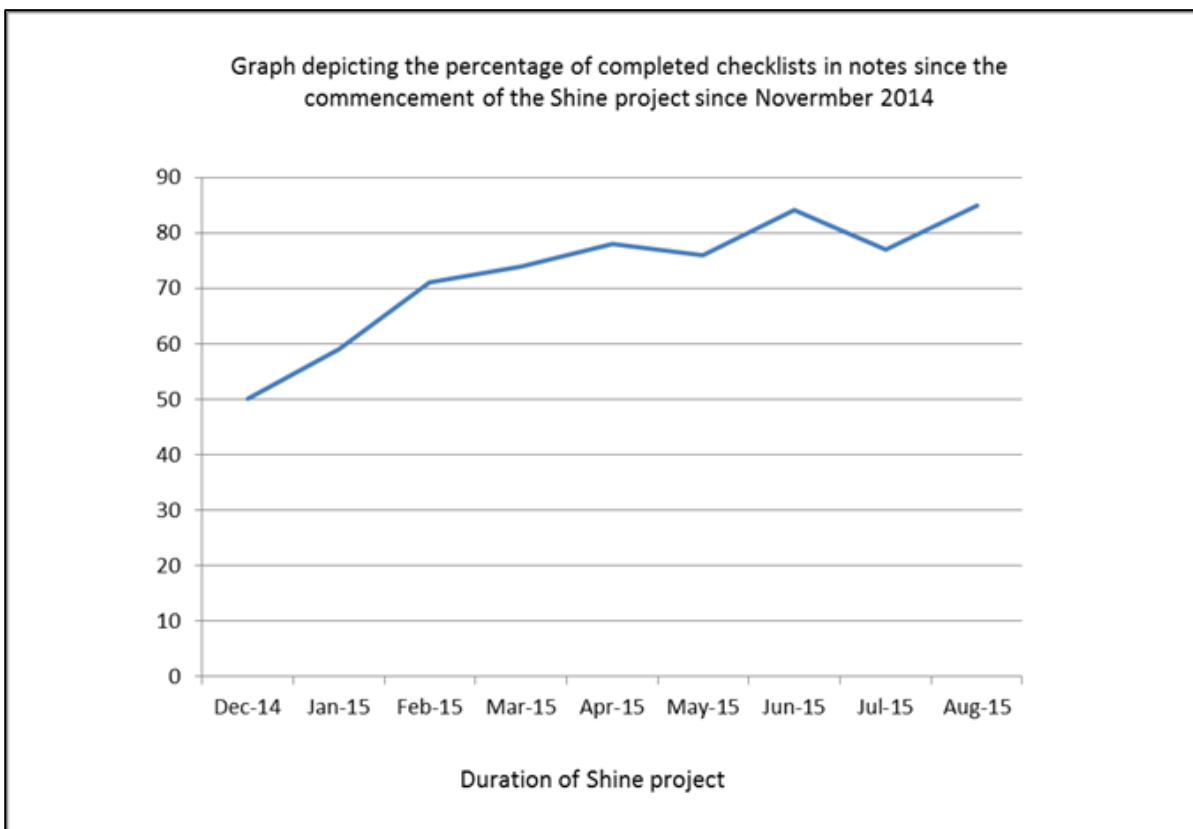
The second round of interviews interrogated the findings from the first survey in more depth, with respondents commenting that the checklist was a useful aide memoire; focussing on basic care needs; it had become familiar; less burdensome; removing duplication of note taking therefore speeding up record keeping. Findings suggested more feedback was required about the impact the



checklist has had on quality and safety. The alerting system had been welcomed by both the ED and site management team, since it gives more time for a bed to be found.

The results from the final interviews showed staff feeling that the checklist promoted continuity of care and ensured patients were reassessed hourly. However, there was some resentment in needing to complete a checklist that they perceived diminished their skills, even though they had the reassurance that this allowed more time for them to address complex issues. The project nurses communicated with staff on a regular basis through formal facilitated feedback sessions and were able to champion the checklist and answer questions or concerns. Over the period of the project the use of the checklist has increased significantly to where it is now seen as core documentation (figure 7).

Figure 7 – Completed checklists from Nov 2014



The ED safety checklist has been nominated for The Above and Beyond Recognising Success Awards in the categories of: – Clinical Team of the Year, Quality Champion, and Transforming Care.

### **Part 3: Cost impact**

The ED service provision provided is difficult to cost in real terms, e.g. during times of overcrowding there is a higher risk of adverse clinical incidents, which vary in complexity and hidden cost. Outliers often have an increased length of stay where a patient's needs are not matched closely to the ward's skill set, however, some outliers are legitimately outlying if an infection control risk has been identified in addition to the presenting condition. Other Trust safety and length of stay interventions contribute to the overall reductions that are being shown in the data collected before and after the introduction of the Shine intervention (appendix 3), which will make any reduction in costs in these areas difficult to fully attribute to this project.

The complications in estimating or measuring baseline costs and potential cost savings for the Trust prompted our decision to measure project success in terms of safety rather than pure reduction in costs.

Estimated project costs at the outset were largely accurate, although a greater focus of our staffing requirements towards the end of the project was on data collection and interpretation, which we were able to absorb within the staffing roles we had assigned. The costs were charged to a project budget and managed on a monthly basis in line with Trust budget monitoring timetables.

ED, Bank and Ambulance staff training on the ED checklist was carried out on the department as part of on-the-job training to avoid the need to take staff away from operational duties and incur back-fill training costs.

On reflection, the work undertaken to cover the change management aspects that the safety checklist introduced were underestimated and only became obvious during the staff surveys and feedback sessions. There was a catch up activity by key project staff and the project nurses to promote the checklist within the department and ensure that the benefits were obvious to staff, rather than their impression that this was just 'another paper filling exercise' or a duplication of work or a tool that would de-skill their work.

Additional costs that we were able to absorb within the budget include a short film production, and other promotional material which will go on to be used in conferences and presentations to promote the awareness of our safety and quality intervention.

The cost of printing the ED checklists were taken into account in the original budget and the cost of incorporating the checklist into the existing ED notes after the project closes has been agreed as an essential on-going safety requirement.

Although the ED safety intervention cannot prove that it is wholly responsible for some of the downward trends we are reporting in our data, we can be sure that the intervention is responsible for alerting to early patient deterioration, particularly during overcrowding and queuing in the corridor. The reduction of serious incidents that would have required substantial senior clinical and administrative time allocated to the subsequent investigations alone have made more than enough savings to support the continued use of the ED checklist.

## Part 4: Learning from your project

Our safety checklist achievements have exceeded those that we set out with at the start of the project. During September 2014, we consulted with our shop-floor ED staff and requested ideas for the content and design of the checklist. This provided a degree of ownership to staff expected to complete the safety checklist. At initial implementation in November 2014, there was enthusiasm for the project, and in the first month our key performance indicators looked promising.

Winter 2014 was a difficult period for the ED, crowding became the 'norm', and maintaining the initial enthusiasm was more difficult. Whilst we expected some challenge and resistance to changing our process, this became more marked during the sustained high pressure experienced with the winter operational difficulties. If we were running this project again, we would implement the checklist earlier in the year, so that the process would be embedded well before the winter pressure commences.

There is a recognised workforce crisis in most Emergency Departments, with a heavy reliance on agency nurses. In periods of crowding, assistance in caring for our patients is sought from paramedic colleagues and nurses from inpatient areas. There are often multiple members of the team who are unfamiliar with ED processes; we have found the safety checklist to be invaluable to these members of staff. Handover interface between members of staff is also improved when the checklist is used, and the nurse in charge can easily see what needs to happen next.

We analysed the uptake and completion of the checklist during different shifts, and it became apparent that the leadership of the ED Shift Co-ordinator was critical to the engagement and motivation of the rest of the team to utilise the checklist. If the checklist wasn't explained at the start of the shift / period of care, then it would not be completed. The nurses would follow the lead from the senior nurses and either complete the checklist correctly, or there would be inconsistent or no completion. The ED Shift Co-ordinator also affected whether the paramedic crew and bank staff were engaged in compliance with the checklist completion. This emphasises the importance of engaging senior nurses from the outset, to ensure that they drive the project throughout every shift. On reflection we would have spent more time engaging with the senior ED staff at the outset of the project to ensure they understood the importance of compliance.

There were some exemplars amongst the nursing staff in the ED whose completion of the checklist was always to an exceptionally high standard. These individuals were able to have some influence over their peer group, and real time positive reinforcement and feedback from the senior nurses and medical staff also reinforced this behaviour. This is built upon the existing safety culture that has been established within the BRI ED after a sustained focus in the preceding few years.

Many of our nursing staff were able to understand the benefits of the checklist very quickly, and could translate the completion of the tasks into an understanding of how this improved the delivery of safe care. Different staff were motivated by different factors; some individuals required an explanation of previous high risk incidents highlighting the omissions in basic care, where others were more able to interpret quality indicator factors. An ability to feedback real-time progress via a dashboard assisted in ensuring all staff were well informed and involved. We have had no clinical incidents reported related to failure to recognise deterioration since the implementation of the checklist, and this speaks volumes for the success of improving a critical mass of basic elements of care. The checklist has now been embedded into the departments ED clinical notes and is no longer an additional piece of paper. Any replication between the previous documents has also been eliminated by adding the checklist into the body of the ED notes.

The implementation of the checklist has naturally split into two parts. The first are the basic clinical care elements –which include all the KPI's directly related to the provision of safe clinical care – vital sign monitoring, pain scores, timely scans etc. The second is the 'value added' parts of the checklist, referral to alcohol and drug nurse specialists, vulnerable adult and cause for concern

referrals, and evidence that we were commencing the patient on the correct care pathway. The results suggested that we could only really focus on the value added issues once the basic clinical care components had been fully embedded. Going forward at further implementation sites, we would suggest a 2 phase staged roll out.

The technology aspect of the project was not as successful as we had hoped, however review of the data collected from the clinical site team (CSMs) found that only two out of thirteen individuals indicated the nudge system was more popular, and although popular for its ability to provide more information regarding age, name and diagnosis, the intermittent coverage of wifi in certain areas of the hospital resulted in the traditional system of bleeping deemed more reliable. This led to the 'value' of the bleep-less system being lost, as the message was not conveyed to the CSM in a timely fashion. The person referring the patient for admission often resulted in bleeping the CSM too, if they hadn't received a response. When the message was delivered quickly, it contained enough information to allow the CSM to respond promptly without the use of a phone call. However, because the system was unreliable, staff that had experienced a failure to transfer the message, quickly lost confidence and returned to use of the traditional bleep.

Whilst the project was running it became clear we needed more baseline data to be able to analyse the impact of the project, in hindsight, this data collection would have commenced right at the start, and been able to show the improvements more quickly. Rapid turnover of staff is always an issue in the ED and during the project; the Project Nurse was successful in applying for another role as the Lead Nurse for the ED. We recruited 2 other nurses to share the project role going forward, sharing the role between 2 people enabled us to have some resilience for periods of absence and leave as well as increasing the presence of a 'Shine Champion' on the shop floor.

## Part 5: Plans for sustainability and spread

The checklist is now embedded into routine practice in our ED. The success has not gone unrecognised, and our Commissioners have established a local CQUIN for 2015-2016. The focus for the CQUIN is to improve the compliance with the 'value added' parts of the checklist – such as referrals to alcohol, drug services, and completion of paperwork related to vulnerable adults, cause for concern forms and psychiatry liaison services. The CQUIN also ensures that we are maintaining the success of embedding the basic clinical care components of the checklist.

We have been successful in getting through to stage 2 of a scaling-up bid with The Health Foundation, to implement and evaluate the checklist in all EDs in the Southwest, working collaboratively with a range of partners. If this is successful, we will begin pre-mobilisation work for a second stage rollout in Wessex, Kent, Surrey and Sussex, to disseminate this intervention further.

Due to an evolving political landscape, two local trusts are adopting the ED safety checklist, supported with a financial package from the West of England Academic Health Science Network (WEAHSN). The results of implementation at these two sites will be particularly interesting to study, to evaluate if the critical issues are similar or different, and this will shape the project further if we are successful in the upscaling application.

The key stakeholders in the upscaling bid are already working together on a suite of complementary urgent care quality improvement initiatives, including system-wide use of the National Early Warning Score; ambulance service implementation of an Electronic Patient Record and introduction of the Health Foundation "Patient Flow" programme, all of which will support wider dissemination.

The scaling-up programme is designed to introduce the agreed checklist across the region to achieve consistency and reduce variation. Although the checklist has already been implemented in one ED we know that introducing this across the region will not be simple. Careful evaluation of our early adopters will provide invaluable information to shape the further upscaling. We would plan to use a 2 phase approach to upscaling, with the basic clinical care components initially implemented with a subsequent launch of the value added component once the basic elements are embedded. We will use a Breakthrough Series Collaborative, based on the principles of 'all teach, all share, all learn'.

We will build upon established links with the WEAHSN, the regional college safety network and the successes of the Safer Care South West Patient Safety Programme. An initial stakeholder engagement event with staff from all participating units, the ambulance service and patient/public partners will discuss:

- The intervention, considering any proposed modifications
- Plans for launch, using a single date or staggered approach
- The establishment of an operational group of key nursing staff

An implementation team will be formed at each trust. This will comprise a minimum of a Lead Consultant, Trainee Doctor, Senior Nurse and a Data Manager. These teams will be supported by a central 'faculty' comprising the original team, experts in collaborative management, training and data analysis. This will be combined with Quality Improvement training and peer support through the WEAHSN.

We will bring the teams together for events in order to share learning and data. Midpoint and final stakeholder meetings will be held, and a formal dissemination plan enacted.

The project has been presented to the Patient Safety Congress, National Ambulance Patient Safety Conference and locally at the West of England Academic Health Science Network and to the Senior Leaders meeting. This work has also been presented to Sir Bruce Keogh, National Medical Director, NHS England, who offered support for national roll out. The project has support from the Royal College of Emergency Medicine.

## Appendix 1: Resources from the project

Please attach any leaflets, posters, presentations, media coverage, blogs etc you feel would be beneficial to share with others



Safety Checklist  
FINAL.pdf



Improving safety in  
crowded Emergency I



Shine Awareness  
Poster



Shine Outcomes  
Poster

Link to Shine video here:

<https://vimeo.com/138183313>

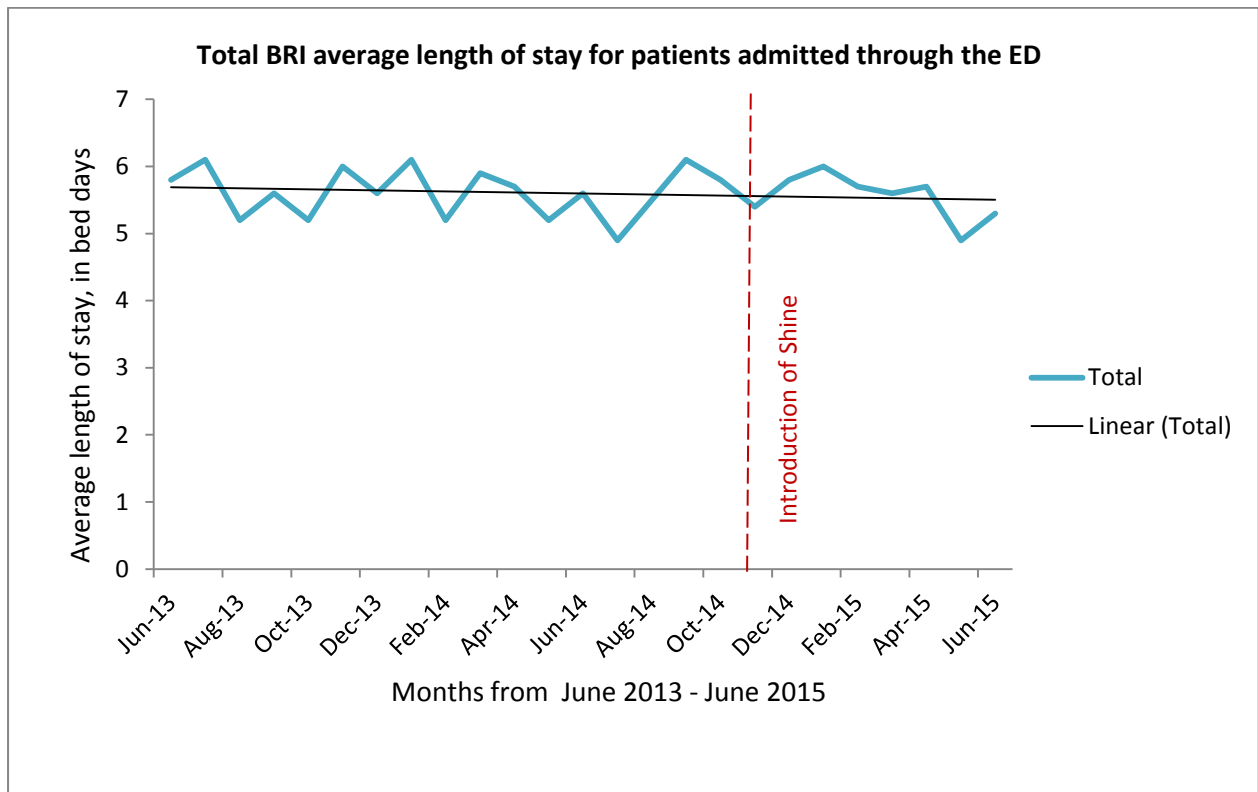
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### Appendix 3: Quality Indicators Metrics – Dashboard Results

	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15
Pain - Pain score & triage	86.50%	88.00%	81.50%	72.50%	60.00%	59.50%	92.00%	96.50%	96.50%	87.50%	90.50%	87.50%	94.23%	87.00%	93.42%	87.00%	92.50%	87.00%	92.00%
Pain - Analgesia	73.00%	84.00%	72.50%	57.50%	47.50%	50.00%	79.50%	88.50%	87.75%	79.90%	83.00%	80.50%	86.54%	77.50%	78.95%	77.50%	80.00%	91.00%	93.50%
Timeliness Chest pain - ECG in 10 mins	57.50%	71.50%	62.50%	87.50%	88.50%	95.00%	90.00%	87.00%	87.50%	90.50%	80.00%	79.50%	84.62%	74.00%	99.34%	74.00%	100.00%	84.50%	97.00%
Stroke - Hrly neuro obs	92.00%	90.00%	86.50%	94.50%	93.50%	86.00%	81.00%	89.50%	89.00%	86.00%	89.50%	92.50%	100.00%	98.50%	99.34%	98.50%	100.00%	89.00%	96.00%
Stroke - pathway	95.00%	87.00%	82.50%	91.00%	88.00%	66.00%	84.00%	92.50%	90.25%	76.00%	85.00%	89.50%	100.00%	100.00%	100.00%	100.00%	100.00%	86.00%	95.50%
Stroke - CT scan <1hour	99.00%	96.00%	99.50%	99.00%	94.50%	85.00%	89.50%	94.50%	92.00%	89.00%	95.00%	98.00%	100.00%	100.00%	100.00%	100.00%	100.00%	95.00%	99.50%
#NOF - XR , 30 mins	97.00%	97.50%	93.50%	99.50%	94.00%	96.50%	97.00%	87.50%	88.25%	92.00%	92.00%	92.50%	96.15%	100.00%	96.71%	100.00%	95.83%	99.50%	99.00%
#NOF - pathway	95.00%	90.00%	95.00%	98.50%	89.95%	88.94%	98.00%	85.50%	92.00%	91.00%	91.50%	94.50%	94.23%	100.00%	96.05%	100.00%	95.00%	98.00%	99.00%
SEPSIS - pathway	97.00%	92.00%	91.50%	89.00%	92.46%	90.00%	93.50%	99.50%	94.75%	93.50%	87.50%	93.50%	90.38%	98.00%	94.74%	98.00%	93.33%	92.50%	98.49%
Mental Health Risk assessment - RAM completed	100.00%	100.00%	100.00%	99.50%	100.00%	100.00%	99.50%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	99.50%	98.00%
EWS - Hourly Observations including EWS	27.00%	59.50%	28.50%	53.00%	58.00%	48.50%	55.50%	55.00%	54.50%	48.00%	56.00%	61.00%	73.08%	88.00%	87.50%	88.00%	86.67%	69.00%	82.50%



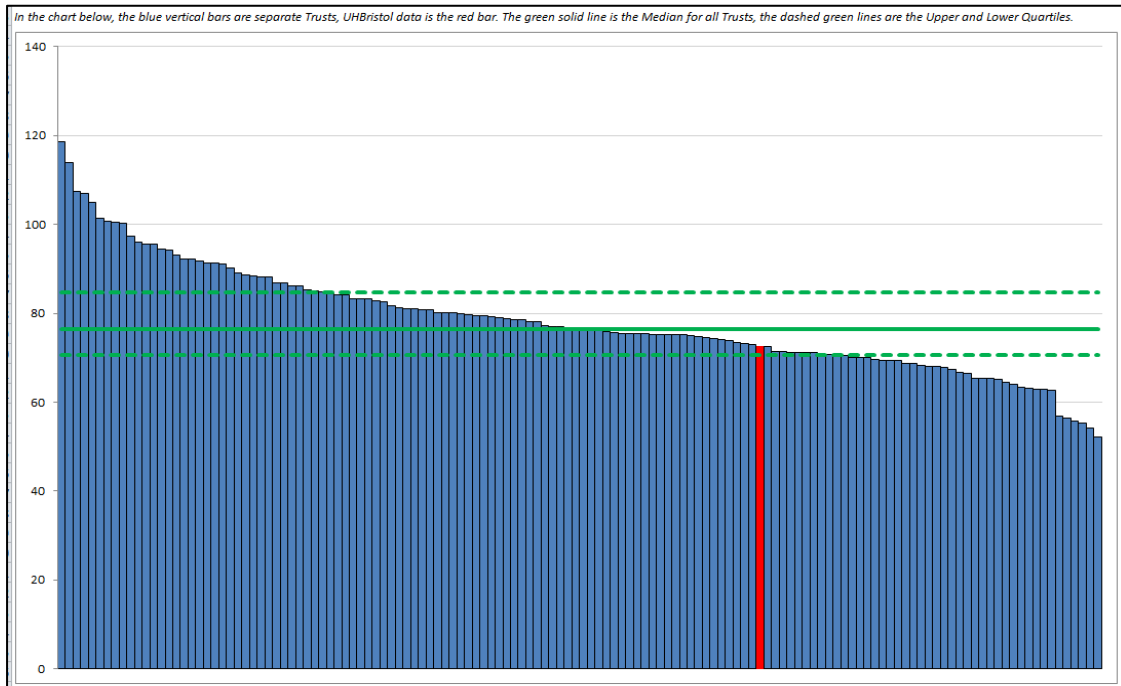
## BRI – Average Length of Stay, patients admitted through ED



This graph represents the average length of stay for patients admitted through the BRI Adults ED. Whilst there is no change in the length of stay in terms of average bed days, as depicted by the Total line the addition of a trend line has identified that from a year prior to the projects commencement – to date has proved that there is an overall decline in the length of time spent in hospital.

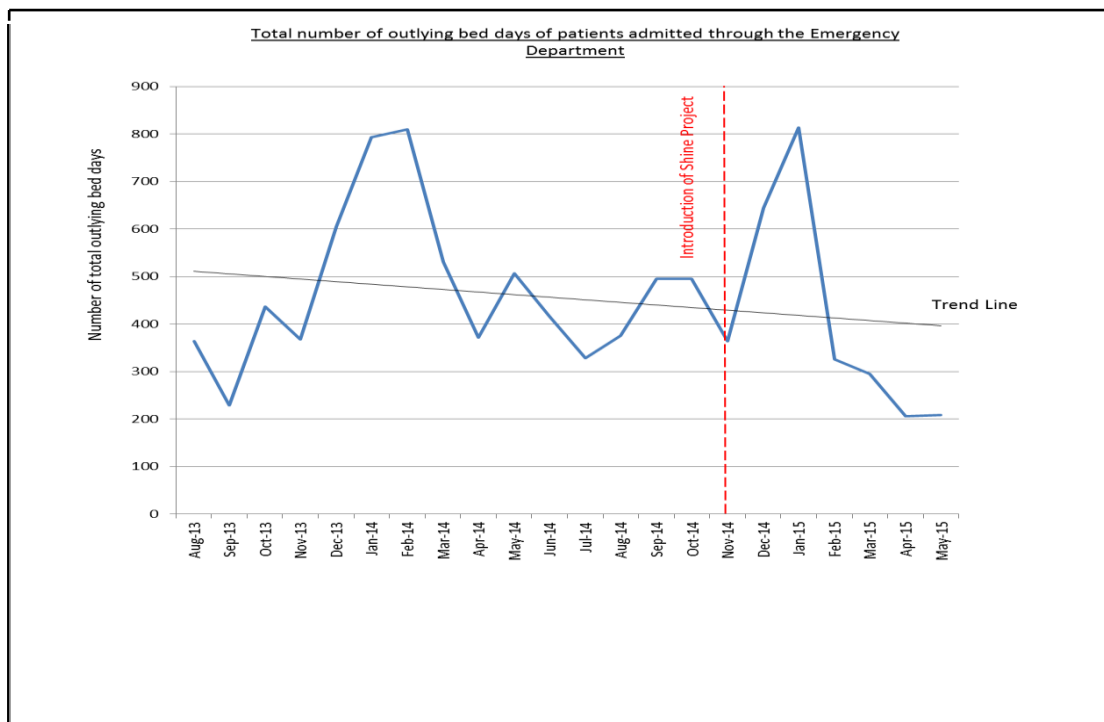
The Shine project is just one of trusts current initiatives that have been commenced to assist in reducing length of patient stay.

## Mortality Rate Comparison January 2015



Information from a benchmarking product utilised by the trust (CHKS), places the trust, indicated on the second graph by a red bar, in the lowest third of the country, with mortality figures for the trust falling well below the national median. The trust's position on the second graph in conjunction with the neutral position of the trend line on the first graph indicates that the country as a whole may have been exposed to external factors having a national impact on mortality rates, the trust remains well below the country's median mortality rate as seen on graph two.

## Total number of outlying bed days of patients admitted via ED



This graph shows seasonal winter pressures echoed for both years 2013 and 2014, with significantly elevated figures during the winter months. Whilst the January 2014 figures, following the commencement of the project, are as high as they have previously been, it is important to note that this period is concentrated into a one month 'spike' in outliers, and not a prolonged period as seen in the previous year. Following the project's commencement we see the lowest outlying figures in the two years of data collection and a significant overall decrease in the trend of outlying days within the trust.