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Emergency department checklist: an innovation to improve safety in emergency care

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PROBLEM

Emergency department (ED) attendances in the UK have increased significantly during the past 5 years, resulting in 23.4 million attendances in 2016/2017.[1] Crowding is now a familiar challenge in UK EDs. Crowding describes overwhelmed EDs unable to operate effectively; one consequence is that suboptimal care is delivered to patients, because longer waiting times delay diagnosis and treatment.[2] This can lead to significant negative outcomes including a reduced quality of care and increases in length of stay, serious incidents and mortality.[3–6] Workforce challenges, including difficulty in recruiting and retaining the nursing and medical workforce, also occur.[7 8] Crowding contributes to clinically significant delays in diagnosis, recognition of acute deterioration and the commencement of treatment; patients with time-critical conditions are particularly vulnerable.

BACKGROUND

The adult ED at Bristol Royal Infirmary is situated in an inner city centre setting, with an annual attendance of over 70 000 new patients. If there is no immediate capacity for patients arriving by ambulance, then after an initial assessment, the patient is moved to the corridor outside the ED on a trolley and ongoing care is provided by a 'queue nurse', who may be unfamiliar with the ED environment and associated clinical quality standards.

We found in retrospective reviews of clinical incidents reported during times of crowding that variation in practice and omissions in basic elements of care were common contributory factors to incidents. Human factors also play a central role in the delivery of substandard care during periods of crowding.[9] Checklists, when introduced appropriately, can improve standardisation and reliability in the delivery of care, resulting in improved patient outcomes.[10]

METHOD

We used the Institute for Healthcare Model for Improvement approach to change which incorporates the Plan, Do, Study, Act (PDSA) cycle.

This was a quality improvement project funded by the Health Foundation. A ED safety checklist was introduced to be completed for every 'majors' patient. A process mapping exercise was carried out to identify key aspects of the care a patient should receive each hour in the ED. The checklist was designed to be prescriptive and contained all basic elements of care as well as local and national quality metrics. It could be used by any member of clinical staff. In addition, Best Practice Tariffs and early triggers to specific care pathways, such as sepsis, were included. Outcome measures were developed by assessing achievement against a range of clinical and performance indicators already used in the ED to measure quality in clinical care.

We used a mixed methods approach to data analysis. The quantitative element focused on a monthly analysis of 200 sets of notes against the performance indicators during the implementation period of 7 months. The qualitative element focused on online questionnaires and staff group interviews throughout project implementation; these provided helpful feedback on how staff felt about the checklist and the impact on care.

PDSA cycles were led by a project nurse employed 2 days a week over 8 months. These involved revising the checklist in response to feedback from clinical staff. Staff were taught how to use the checklist through 'bite-sized' teaching repeated each weekday.

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Table 1 Differences (and 95% CIs) in mean proportions for 11 key performance indicators before and after the intervention

Metric	Mean proportion before checklist, November 2013–May 2014, 200 sets of notes per month: n=1400, %	Mean proportion after checklist implemented, November 2014–May 2015, 200 sets of notes per month: n=1400, %	Mean difference (95% CI
Pain—score and appropriate triage category	84.23	90.45	6.22 (4.00 to 8.44)
Pain—analgesia within time limits	74.72	83.57	8.85 (6.11 to 11.58)
Chest pain—ECG within 10 min of arrival	81.88	87.64	5.76 (3.33 to 8.19)
Stroke—hourly observations	89.15	97.33	8.18 (6.66 to 9.70)
Stroke—pathway completed	85.92	97.36	11.44 (9.81 to 13.07)
Stroke—CT head <1 hour	94.08	99.21	5.13 (4.09 to 6.17)
Fractured neck of femur (#NOF)—X-ray within 30 min	93.50	98.17	4.67 (3.44 to 5.90)
Fractured NOF—pathway completed	92.45	97.47	5.02 (3.65 to 6.39)
Sepsis—pathway completed	93.00	95.06	2.06 (0.05 to 3.66)
Mental health risk—Risk Assessment Matrix completed	99.92	99.64	−0.40 (0.05 to 0.93)
Early Warning Score (EWS)—hourly observations including EWS	50.69	82.11	25.2 (22.2 to 28.1)

RESULTS

The aim was to improve patient safety in the ED. Since the introduction of the checklist, no clinical incidents relating to failure to recognise deteriorating patients or delay in care delivery have been reported. This correlates with the implementation of the checklist and its hourly intervention requirement.

We chose to compare compliance with 11 clinical indicators using data from a random sample of 200 sets of patient notes each month for 14 months. In 2013, this represented 5% of total attendances and was felt to be representative. Compliance was compared using simple descriptive statistics and 95% CIs. The results are presented in table 1.

Performance increased in 10 of 11 indicators with an improvement in the management of time-critical conditions such as CT scan within 1 hour.

Thematic analysis from the staff questionnaires and interviews revealed themes suggesting that staff unfamiliar with the ED felt better supported, improved quality of handover of patients and better continuity of care.

DISCUSSION

Checklists have been adopted in several specialties to improve the standardisation and reliability of care and patient outcomes.[10 11] The implementation of our ED safety checklist was associated with improvements in key ED clinical performance indicators. There was improved management of time-critical conditions which included a mean increase of over 5% in CT scanning within an hour for patients with a suspected stroke. Additionally, there was a mean increase of 25% in hourly observations and Early Warning Score calculation with no clinical incidents relating to failure or delay in recognising a deteriorating patient. This is despite ongoing crowding, exit block and ambulance queues and leads us to believe that the checklist has significantly improved clinical quality and patient safety.

The importance of consulting and seeking feedback from ED staff was a vital component of the project. Staff were encouraged to contribute at various stages of the checklist design to encourage a commitment to the initiative.[11] We were aware of 'change fatigue' within the team and identified that staff support and active engagement were key to the success of implementation. The leadership of the ED Nursing Shift Coordinator was critical to the engagement and motivation of the rest of the team.

LIMITATIONS

Our evaluation methodology can only show association between the introduction of the checklist and improvements in quality and safety, but not causation. Our resources were insufficient to examine all patient notes, and so a sampling approach was used.

CONCLUSION

This study demonstrates that a simple checklist aimed at identifying the deteriorating patient in a busy ED can be successfully implemented and used effectively by staff unfamiliar with the intense and demanding work of the ED. The use of this checklist is supported and endorsed nationally by National Health Service (NHS) Improvement, NHS England, the Royal College of Emergency Medicine, the Royal College of Nursing and the Care Quality Commission.

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A toolkit to support national implementation can be found here: https://www.weahsn.net/what-we-do/enhancing-patient-safety/the-deteriorating-patient/emergency-department-ed-safety-checklist/.

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Contributors ER devised the concept of the patient safety checklist. JL devised the final checklist with input from ER, RH, JG, AH, CC and JB. The project implementation group were JG, JL, CC and AH. The paper was written by RH and JG with statistical input and review by JB.

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Competing interests None declared.

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Data sharing statement Raw data from the study is available via the Academic Health Science Network for the southwest.

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