EMA Emergency Medicine Australasia

Emergency Medicine Australasia (2015) **27**, 11–15 doi: 10.1111/1742-6723.12345

ORIGINAL RESEARCH

Trends in access block 2011 to 2013: The Redcliffe National Emergency Access Target experience

Luke D LAWTON,[1,2]* Simon THOMAS[3] and Douglas G MOREL[3]

[1]Department of Emergency Medicine, The Townsville Hospital, Townsville, Queensland, Australia, [2]College of Medicine and Dentistry, James Cook University, Townsville, Queensland, Australia and [3]Department of Emergency Medicine, Redcliffe Hospital, Redcliffe, Queensland, Australia

Abstract

***Objective*:** To evaluate the impact of the introduction of National Emergency Access Target (NEAT) on access block and long-stay patients in Redcliffe Hospital ED, and to evaluate the possibility of forward compliance with the 2014 and 2015 NEAT thresholds.

***Setting and Design*:** Redcliffe hospital is a major urban district hospital in Brisbane with more than 55 000 adult and paediatric patients per annum. We evaluated aggregate Emergency Department Information System data for the years 2011, 2012 and 2013 to correlate presentations, NEAT compliance, access block and the number of long-stay patients in our department.

***Results*:** There has been a significant reduction in both access block and our number of long-stay patients corresponding with improvements in NEAT compliance. Our forward analysis suggests that without substantial improvements in the NEAT for admitted patients, compliance with 2014 and 2015 thresholds is unlikely to be achievable.

***Conclusions*:** NEAT has been a driver of significant improvements in access block at our institution. We see significant issues with raising the NEAT threshold to the proposed 90% in 2015, and support recent calls for re-evaluation and modification of the target.

Key words: *access block, ED, NEAT, performance.*

Key findings

- Access block at Redcliffe Hospital has significantly declined following the introduction of NEAT.
- NEAT has driven significant organisational change.
- Sustained achievement of higher NEAT levels may require further attention to structural and other factors to ensure acceptable balance between pursuits of time-based targets and other measures of patient-centred quality of care and safety.

Introduction

Access block is defined by the Australasian College for Emergency Medicine (ACEM) as the proportion of patients waiting longer than 8 h in an ED for admission to a ward.[1] It is associated with increased adverse incident rates due to ambulance diversion,[2] higher relative risk of death for admitted patients[3] and increased length of stay in hospital.[4] Access block correlates with morbidity and mortality[5] and in 2008 ACEM estimated the annual national mortality attributable to access block at 1500 deaths.[6]

As part of national health reform in 2011, the National Emergency Access Target (NEAT) was introduced with the aim of reducing access block.[7] In Western Australia the use of a 'four hour rule' had been shown to decrease ED overcrowding with a concurrent decrease in mortality.[8] The NEAT specified by 2015 that 90% of patients in Australian EDs would have left by 4 h. Interim compliance targets of 77% and 83% were set in 2012 and 2013, respectively.

Various criticisms have been levelled at the use of time-based rules for ED stays.[9–12] Excessive focus on time-based targets, abandonment of patient-centred outcomes, lack of concurrent metrics to measure quality and safety, and reduction of emergency services to triage levels are some of the issues raised. In Australia the eventual 90% compliance threshold for NEAT was envisaged to allow for clinical flexibility based on patient need.

Aside from Western Australia, no data have been published describing the effect of NEAT on access block. The question of whether NEAT has fundamentally addressed the problem it was implemented to fix therefore remains unanswered. Although NEAT is itself a time-based metric, were it to lead to an improvement in access block then this would be a profoundly important advance for ED patients. The institution of a 90% target by 2015 was decided by expert

Correspondence: Dr Douglas G Morel, Department of Emergency Medicine, Redcliffe Hospital, Locked Bag No. 1, Redcliffe, QLD 4020, Australia. Email: doug.morel@health.qld.gov.au

Luke D Lawton, BAppSc (Biochem), MBBS (Hons), MPH (Aeromed Retrieval), FACEM, Staff Specialist; Simon Thomas, BSc, BNursing, GradDipEd, GradCert Emergency Nursing, Acting Nurse Unit Manager; Douglas G Morel, MBBS, FACEM, FACHSM, Director.

*Previously of Redcliffe Hospital Department of Emergency Medicine.

Accepted 23 November 2014

panel consensus,[7] and questions remain over whether such a high threshold is both necessary and achievable. We have reviewed 3 years of data from Redcliffe to investigate these issues.

Methods

Setting

Redcliffe Hospital is a major outer metropolitan hospital 40 km north of Brisbane's central business district, with a patient population encompassing adult and paediatric presentations. Annual presentations were 55 986 in 2011, 56 896 in 2012 and 57 369 in 2013. The annual average admission rate to the hospital from ED presentations is 27%. According to the National Health Performance Authority, in 2011 53% of Redcliffe's patients departed ED within 4 h (8) – prior to the implementation of NEAT.

Design

This study is a retrospective cohort analysis of patient activity in Redcliffe Hospital's ED for the years 2011, 2012 and 2013.

The primary data collected were % NEAT compliance for the years. As end-points this was correlated with:

1. % Access block for matched time periods.
2. Absolute number of long-stay patients (defined as spending >24 h in emergency).

Data collection

Every patient presenting to Redcliffe Hospital has details entered into the Emergency Department Information System (EDIS). The system records demographic details, triage category, time of presentation and time of departure, and is completed for every patient attending the department.

Ethics

As this cohort study comprised a retrospective analysis of de-identified aggregate data already collected, formal ethics exemption was granted by the Metro North Health and Hospital Service ethics committee.

Analysis

Aggregate data for the calendar years 2011, 2012 and 2013 were de-identified and retrospectively analysed. Data on NEAT as well as access block were collected for the years concerned. Monthly numbers of patients staying more than 24 h in the ED were also collected.

Finally, NEAT was broken down into three categories:

1. % NEAT compliance for patients discharged directly from ED.
2. % NEAT compliance for patients admitted to the short-stay unit.
3. % NEAT compliance for patients admitted from ED to an inpatient bed.

Total NEAT compliance is a composite of these three groups. Based on Redcliffe's individual category NEAT compliance and most recent annual presentation numbers, forward analysis of data for NEAT targets 2014 and 2015 was calculated to evaluate the feasibility of NEAT compliance in these years, and to delineate what compliance levels would be necessary from ED based on admitted NEAT.

Results

For the years 2011, 2012 and 2013 annual presentations to the Redcliffe Emergency Department were 55 986, 56 896 and 57 369, respectively. In the year 2012 total admissions increased as a percentage of presentations, due to increased use of the ED short-stay unit. Over the 3 year period studied, there has been a gradual and sustained improvement in total NEAT for Redcliffe Hospital (Fig. 1).

For the year 2012 average monthly NEAT compliance was approximately 56% with a peak compliance of 66% in December. The percentage of patients discharged from the ED within 4 h rose from below 60% in January 2012 to 80% in December 2012, and the percentage of NEAT for other patients improved to 40% from a nadir of 12% in May 2012 (Fig. 2).

By subgroup analysis of admitted patients the percentage of short-stay admissions achieved in under 4 h improved from 25% in January 2012 to a peak of 87% in September 2012, and NEAT for patients admitted to the ward improved from under 20% in January 2012 to almost 40% by December 2012 (Fig. 3). At the same time number of short-stay unit admissions jumped from under 100 per month to routinely more than 400 per month (Fig. 3).

For the year 2013 average NEAT was approximately 61% with a peak compliance of 75% in October (Fig. 1). The percentage of patients discharged from the ED in compliance with NEAT continued to rise to a peak of 85% in November (Fig. 2). The gains in short-stay patient NEAT compliance were maintained, and NEAT for patients admitted to inpatient wards improved from 37% in January 2013 to over 55% in November 2013 (Fig. 3).

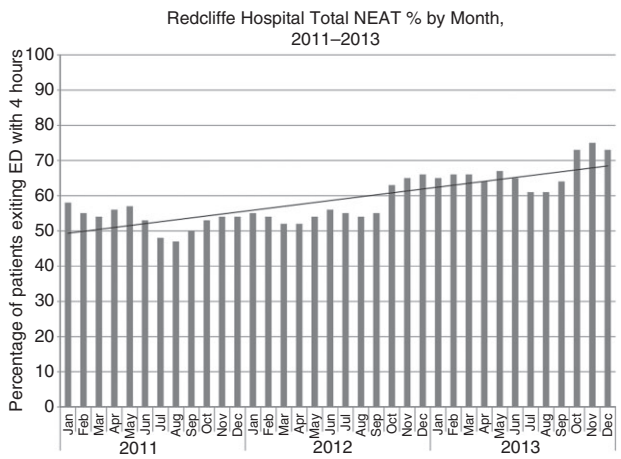

Figure 1. *Total monthly NEAT with line of best fit for 2011 to 2013. (▬), Total NEAT %; (—), Linear (Total NEAT %).*

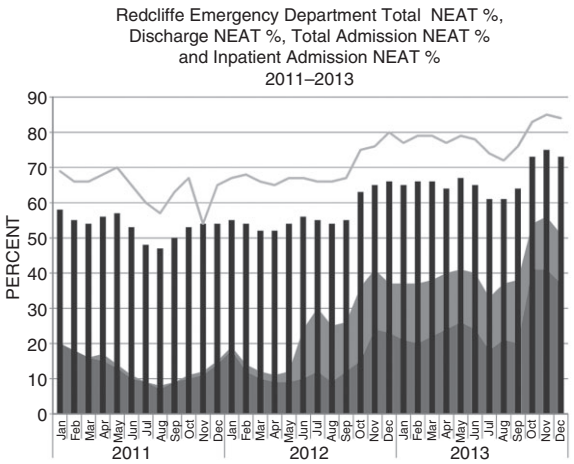

Figure 2. *Division of total NEAT by patients directly discharged from the ED and patients admitted to any unit (including ED short-stay unit). (▬), Total admission NEAT % (shaded); (▬), Inpatient admission NEAT % (shaded); (▬), Total NEAT % (bar); (—), Discharge NEAT % (linear).*

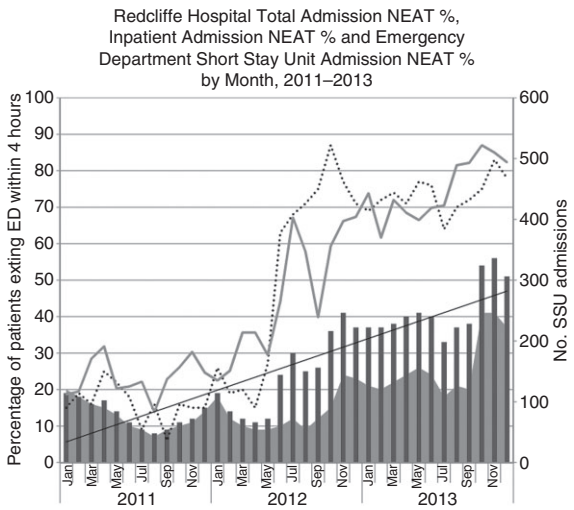

Figure 3. *Analysis of NEAT for ED short-stay unit (SSU) patients and admitted patients. (▬), Inpatient admission NEAT % (shaded); (▬), Total admission NEAT % (bar); (·····), ED SSU admission NEAT %; (—), Total number of SSU admissions.*

Accompanying the rise in NEAT compliance was a significant fall in both levels of access block and the absolute number of long-stay patients shown in Figure 4. Percent access block decreased from a monthly average of 39% in 2011 to 16% in 2013. Graphical analysis of the trend shows a sustained improvement in access block bottoming to a low of 8% moving into 2014. Similarly, the number of long-stay patients in the department decreased from a monthly average of 16.4 patients in 2011, to 11.1 patients in 2012 and 2.75 in 2013.

Our forward analysis of NEAT compliance targets in 2014 and 2015 (Fig. 5) illustrates the difficulty in achieving compliance as the NEAT threshold rises. Figure 5 assumes a 30% admission rate for ED patients (to the short-stay unit or hospital ward). It plots NEAT required for discharged patients against corresponding NEAT for admitted patients for the years 2013, 2014 and 2015, and describes the relationship between the two groups.

For the 2014 year (NEAT threshold 83%), a NEAT compliance rate for admitted patients of 50% will require more than 95% of patients discharged from the ED to depart within 4 h. Given the 2013 data presented above this target may well be achievable. However, for the 2015 calendar year (NEAT threshold 90%) a minimum of 70% of admitted patients must depart for the ward within 4 h to even raise the possibility of NEAT compliance. In the event that 70% of admitted patients do depart ED within 4 h, every patient not admitted will also need to be discharged from the ED within 4 h to achieve compliance.

Discussion

Our analysis of NEAT compliance and activity at Redcliffe Hospital raises several points worthy of discussion. First, our data show that over the 2013 and 2014 calendar year the NEAT has been relatively successful in addressing the issue of access block. There has been a 58% relative reduction in access block between the start of 2012 and the end of 2013, and an 83% decrease in the number of long-staying patients in our department over the same period. This has occurred with NEAT compliance levels of 75%.

Breaking down NEAT performance at Redcliffe, there are three conclusions that can be drawn:

1. There has been a significant improvement for ED patients that can be discharged directly, and the ED performs efficiently in managing these patients.
2. A major increase in the use of the ED short-stay unit has been a significant driver towards NEAT compliance.
3. Sustained improvements have been made in the discharge of admitted patients to the hospital, but this performance significantly lags behind NEAT.

Based on the data we have collected, at Redcliffe Hospital it is likely to be the third point that determines forward compliance with 2014 and 2015 NEAT.

NEAT has been introduced to allow a 'whole of hospital' approach to the issue of access block. On a local level, NEAT has brought about significant positive changes in our hospital. ED care has been increasingly 'front loaded' using senior staff as a first point of contact for emergency attendances. The scope of the ED short-stay unit has been expanded to allow increased utility. A change in our admission model using a medical admissions unit has seen the removal of medical clerking from ED to the ward. This takes a major choke point out of the area of highest volume and acuity (i.e. the ED) and streamlines the admission process. A daily hospital executive meeting was established on the floor of the ED to address issues of supply, demand and surge and thus effectively allocate limited hospital resources on a daily basis. Our data clearly show these and other interventions have had a positive effect on the issue of access block.

NEAT was established as a political reform as part of the National Partnership Agreement for Improving Public Hospitals. A recent *EMA* editorial recently highlighted the lack of evidence behind a 90% target for ED departures.[10] NEAT remains a single time-based metric, and does not reflect quality of care. The UK experience in the mid-Staffordshire trust, where clinical care was sacrificed for administrative targets is one that Australian hospitals would do well to avoid.[13] NEAT does not account for the acuity of presentations, variation in the time of presentation, or clinical need. It may not be appropriate to move a patient suffering from sepsis complicated by cardiogenic shock out of the ED within 4 h. Elderly patients who present between 22.00 and 03.00 hours might not be dischargeable for social reasons, yet have no requirement to utilise an inpatient hospital bed. In such cases compliance with NEAT would seem to be more concerned with indiscriminate, target-focused administration rather than the practice of good medicine.

Additionally NEAT only paints a single datum point picture of ED performance. Two hospitals may have similar NEAT compliances, for example 75%. However, if one hospital achieves 90% compliance within 5 h, and the other takes 10 h, there is a clear difference in performance. However, such data are not currently collected or used to interpret NEAT in any meaningful sense. At a base level, a hospital's capacity to provide inpatient care is limited by its bed days. The required number of bed days to eliminate access block will be roughly equal to the product of the annual ED presentations multiplied by the admission rate and average length of stay.

Our forward analysis raises significant questions regarding the ability of EDs to comply with the 2015 NEAT threshold of 90%. In our institution a minimum of 70% of admitted patients must depart ED within 4 h, and every patient not admitted will also need to be discharged from the ED within 4 h to achieve compliance. The clinical limitations of 100% compliance with discharge NEAT have been discussed. Therefore our data demonstrate a need to raise the compliance rate for admitted patients substantially above 70%, which is at least partly a question of resources.

Although NEAT has driven significant improvements in efficiency there is a limit to what this efficiency can achieve. In short, it is not possible to discharge a ST elevation myocardial infarction patient on the day of presentation. It is important that rather than simply focus on driving ED towards an administrative target, NEAT drives discussion about our underlying hospital and health service resourcing. Ser-

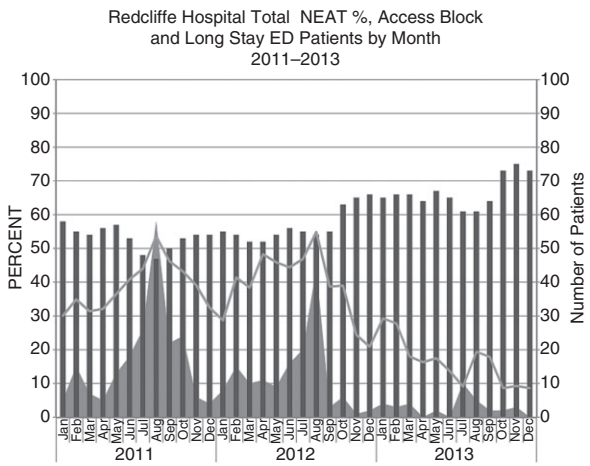

Figure 4. *Correlation of access block, long stay patient numbers and NEAT compliance. (▬), Number of admitted patients with ED LOS >24 h; (▬), Total NEAT % (bar); (—), Access block % (>8 h).*

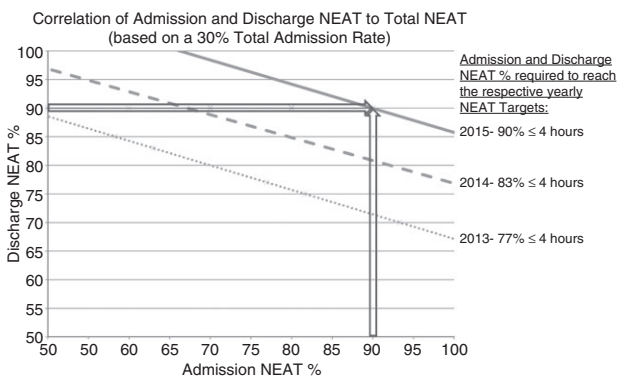

Figure 5. *Analysis of NEAT compliance by admitted and discharged patients for the years 2013, 2014 and 2015.*

vices that struggle to meet NEAT for admitted patients at least in part are likely to have a significant underlying resource deficit. In the authors' opinion, withholding funding from these organisations as a penalty for non-compliance with NEAT is unlikely to improve compliance rates.

Fundamentally NEAT was intended to be an instrument to drive change, but we see a real risk that it will become an end to within itself for ED care, to the detriment of ED patients. It is essential to ensure that as the NEAT evolves the focus remains on system improvement, rather than time-based targets. The alternative is to have every non-admitted patient discharged or admitted to the ED short-stay unit depart the main ED within 4 h. This will be limited by two practicalities. When ED demand exceeds surge capacity NEAT compliance will inevitably fall. Short of massive investment in ED resourcing to eliminate any question of surge capacity it is hard to see this problem being overcome. There will also be patients for whom it is clinically inappropriate to depart a critical care area such as the ED within 4 h. It is important that NEAT does not impair the ability of doctors to provide care for such patients. The issue of equal NEAT weighting for every patient regardless of volume or acuity has recently been raised in the literature.[10]

Our data suggest that significant improvements have been made in the critical problem of ED access block since the introduction of NEAT. Given that the problem has been so effectively addressed, we feel the real question posed by our analysis is whether a 90% compliance target is necessary. We are as yet unaware of any evidence to support this target. We are, however, aware of significant concerns regarding NEAT. The authors' opinion is that it is important that the administrative target does not overcome clinical care, it is important that ED does not devolve to the level of a triage sort area, it is important not to disengage clinicians, and it is important that patient quality and safety are not compromised in a blind drive towards an administrative target.

We note a recent call from the Queensland Clinical Senate to preserve the NEAT target at 83% (the 2014 threshold).[14] Our data suggest that NEAT has undoubtedly been a positive influence on Redcliffe Hospital's issues of access block and long-stay patients in the ED. It has driven positive organisational change to address these issues. We believe our data both support the use of NEAT and also support a call for re-evaluation of the NEAT target to ensure it remains both achievable, and focused on patient-centred outcomes rather than time-based ones. It is critical that Fellows of the Australasian College for Emergency Medicine (FACEMs) are involved at the forefront of such a conversation.

Author contributions

LDL, ST and DGM all contributed to the study design. ST performed the graphical analysis of data, and LDL and DGM authored the manuscript. The study has not been previously presented or published.

Competing interests

None declared.

References

1. Australasian College for Emergency Medicine. Policy document – standard terminology. *Emerg. Med.* 2002; **14**: 337–40.
2. Fatovich DM. Effect of ambulance diversion on patient mortality: how access block can save your life. *Med. J. Aust.* 2005; **183**: 672–3.
3. Richardson DB. Increase in patient mortality at 10 days associated with emergency department overcrowding. *Med. J. Aust.* 2006; **184**: 213–16.
4. Richardson DB. The access-block effect: relationship between delay to reaching an inpatient bed and inpatient length of stay. *Med. J. Aust.* 2002; **177**: 492–5.
5. Sprivulis PC, Da Silva JA, Jacobs IG, Frazer AR, Jelinek GA. The association between hospital overcrowding and mortality among patients admitted via Western Australian emergency departments. *Med. J. Aust.* 2006; **184**: 208–12.
6. Access block and overcrowding: a literature review. Prepared for the Australasian College for Emergency Medicine (ACEM). [Cited 5 Mar 2014.] Available from URL: http://www.acem.org.au/media/media_releases/Access_Block_Literature_Review_08_Sept_3.pdfwebcite
7. Council of Australian Governments. The National Health Reform Agreement – National Partnership Agreement On Improving Public Hospital Services. [Cited 10 Jun 2014.] Available from URL: http://www.federalfinancialrelations.gov.au/content/npa/health_reform/national-workforce-reform/national_partnership.pdf
8. Geelhoed GC, de Klerk NH. Emergency department overcrowding, mortality and the 4-hour rule in Western Australia. *Med. J. Aust.* 2012; **196**: 122–6.
9. Mason S, Weber EJ, Coster J *et al.* Time patients spend in the emergency department: England's 4-hour rule – a case of hitting the target but missing the point. *Ann. Emerg. Med.* 2012; **59**: 341–9.
10. Keijzers G. NEAT in need of a sweet spot. *Emerg. Med. Australas.* 2014; **26**: 217–8.
11. Green D. Is Nation Emergency Access Target dumbing down emergency physicians? *Emerg. Med. Australas.* 2014; **26**: 305–7.
12. Mountain D. Introduction of a 4-hour rule in Western Australian Emergency Departments. *Emerg. Med. Australas.* 2010; **22**: 374–8.
13. Robert Francis QC. (24 February 2010). 'Robert Francis Inquiry report into Mid-Staffordshire NHS Foundation Trust'. House of Commons. [Cited 16 Aug 2010.] Retrieved 8/6/14 Available from URL: http://webarchive.nationalarchives.gov.uk/20130107105354/ http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/@ps/documents/digitalasset/dh_113447.pdf
14. Queensland Clinical Senate. QCS 27-28 March 2014 meeting Report and recommendations. National Emergency Access Target: is 90% the right target? [Cited 9 Jun 2014.] Available from URL: http://www.health.qld.gov.au/qldclinicalsenate/docs/fin-rep-mar2014.pdf