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**title** The National Emergency Access Target: aiming for the target but what about the goal?

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## Table of Contents

|                                                                             |    |
|-----------------------------------------------------------------------------|----|
| Executive summary .....                                                     | 1  |
| Acknowledgements.....                                                       | 2  |
| Introduction .....                                                          | 2  |
| <i>Policy Objective: National Emergency Access Target</i> .....             | 2  |
| <i>Context</i> .....                                                        | 2  |
| <i>4-hour targets in the United Kingdom</i> .....                           | 3  |
| Analysis of NEAT .....                                                      | 3  |
| Mechanisms used to achieve NEAT .....                                       | 4  |
| Target attainment .....                                                     | 5  |
| Evaluation of NEAT.....                                                     | 7  |
| <i>The target</i> .....                                                     | 7  |
| <i>Mortality</i> .....                                                      | 9  |
| <i>Achieving the target, but not the goal</i> .....                         | 9  |
| <i>Where is NEAT now?</i> .....                                             | 10 |
| Future implications for NEAT .....                                          | 10 |
| Implications for policy makers, health service leaders and clinicians ..... | 11 |
| Limitations .....                                                           | 11 |
| References .....                                                            | 12 |
| Contact.....                                                                | 16 |

## **Executive summary**

### **What is the problem?**

Australia has seen increasing demand on hospital Emergency Departments (ED) with a 65% rise in presentations between 2001 and 2011 (McCarthy 2013) resulting in increased waiting times, prolonged stays, overcrowding and delayed admission (Geelhoed and de Klerk 2012). Prolonged ED stays can adversely impact patient outcomes (Maumill et al. 2013; Sullivan et al. 2014; Sullivan et al. 2015; Sun et al. 2013) leading to increased length of hospital admission and higher mortality (Braitberg 2012; Forero et al. 2010; Green 2014; Mountain 2010).

### **What was the response?**

The National Emergency Access Target (NEAT) was adopted across Australia in 2011 under the premise that spending less than 4 hours in the ED would improve patient care. NEAT used a single time based target to incentivise patient flow through ED with the eventual goal that 90% of patients presenting to the ED would be discharged, transferred or admitted within 4 hours (COAG 2011). The target mirrored the United Kingdom's 4-hour rule, although concerns have been reported about cost, data manipulation and limited impact on quality improvement (Weber et al. 2012).

### **What does the evidence say?**

Despite improvement in NEAT attainment, hospitals broadly have been unable to achieve the targets particularly for admitted patients, the intended beneficiaries of the policy. NEAT has resulted in increases in hospital admissions (Goh 2012; Lowthian et al. 2015), potentially adding to access block and reducing patient flow (Perera et al. 2014) with reports of prioritising patients as they approach 4-hours (Green 2014) and data manipulation (ACT Auditor-General's Office 2012). Implementation of NEAT through a single incentivised process indicator presents risks to healthcare quality, appropriateness and safety (Baggoley et al. 2011; Mason et al. 2012; McCarthy 2013; Nicholls 2015; Weber et al. 2011), with potential for inadequate assessment and treatment due to rushed decision-making (Mountain 2010).

### **What does this mean for health service leaders and policy makers?**

Reform using a single, incentivised, process-based mechanism is unlikely to achieve broad changes to the effectiveness, safety, quality and equity of care provision, and risks producing unintended consequences. It is for these reasons that the NEAT policy at present cannot be considered a complete success.

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## Introduction

### *Policy Objective: National Emergency Access Target*

The National Emergency Access Target (NEAT) was introduced in 2011 as part of the *National Health Reform Agreement* and *National Partnership Agreement on Improving Public Hospital Services* between the Commonwealth, State and Territory Governments. Its purpose was to increase the proportion of patients presenting to Emergency Departments (EDs) who were discharged, admitted or transferred to another hospital within 4 hours. The target was intended to drive whole-of-hospital reform and improve patient flow, allowing patients to access an appropriate hospital bed and receive care in a timely manner (Mountain 2010). This was anticipated to improve access, safety and quality of care in the ED, resulting in reduced mortality and morbidity, improved patient experience and increased efficiency to offset rising healthcare demand (COAG 2011; Sullivan et al. 2015).

### *Context*

Australia has seen increasing demand on public hospital Emergency Departments (EDs) with a 65% rise in presentations between 2001 and 2011 (McCarthy 2013). This increase has been driven by demographic changes including population growth, an ageing population and increased chronic disease, with other factors such as shifts in how individuals access primary healthcare also impacting demand (Katelaris 2012). Increasing presentations coupled with a reduction in the total number of public hospital beds has led to increased ED wait times (Geelhoed and de Klerk 2012). Prolonged stays, overcrowding and access block in EDs have been identified as risks in the delivery of healthcare and can adversely impact the outcomes of admitted patients, including the seriously ill (Maumill et al. 2013; Sullivan et al. 2014; Sullivan et al. 2015; Sun et al. 2013). Evidence indicates that prolonged ED stays lead to increased length of hospital admission and an estimated 15-30% higher rate of mortality (Braitberg 2012; Forero et al. 2010; Green 2014; Mountain 2010). Prolonged ED waiting times have been recognised as a key pressure point for hospitals, generating significant public concern and negative media attention, intensifying the political pressure for appropriate policy solutions (Baggoley et al. 2011).

The 4-hour rule (as it is commonly known) was initially adopted by Western Australia (WA) in 2008 under the premise that spending less than 4 hours in the ED would lead to improved patient care (Geelhoed and de Klerk 2012), with NEAT commencing across Australia in 2011. The proportion of

patients expected to meet the 4-hour timeframe was progressively increased for each jurisdiction from their baseline, with the eventual national target in 2015 reaching 90% of ED patients being discharged, transferred or admitted within 4 hours (COAG 2011). The *National Health Reform Agreement* provided for up to \$750 million over 5 years to be paid to state and territory governments to support capital investment, and facilitation and reward funding (COAG 2011).

#### *4-hour targets in the United Kingdom*

The 4-hour target was chosen in Australia to mirror targets employed in the United Kingdom (UK), despite an absence of empirical evidence behind the stringent 4-hour cut-off (Boyle and Mason 2014; Mason et al. 2012; Perera et al. 2014). The UK commenced their 4-hour rule in 2002 with a 98% target and financial penalties for non-compliance. This was accompanied by an increase in ED funding of £820 million in 1998-2007 (Jones and Schimanski 2010). A systematic review examining the UK's 4-hour rule found that there was no evidence for any change to the quality of healthcare nor the ED mortality rate, despite significant improvements in achieving the 4-hour target (Weber et al. 2012). Reports also found a static or increased average length of stay in the ED, with significant activity occurring in the last 20 minutes of the 4-hour stay and widespread evidence of data manipulation (Jones and Schimanski 2010; Mason et al. 2012). The reports highlight effort substitution, where EDs were reallocating effort and resources away from their clinical priorities and towards those patients approaching the 4-hour target, particularly when performance was being measured. The use of a single, universal and arguably poorly chosen target, may have provided perverse incentives and inappropriate drivers resulting in unanticipated outcomes such as effort substitution and gaming. This left the policy unlikely to adequately impact the original problem, potentially compromising patient care (Mountain 2010). As a result of these unintended outcomes, the UK relaxed the 4-hour rule to 95% in 2010. In 2011 a proposed dashboard of 8 clinical quality indicators was endorsed by the Department of Health, moving away from the single time-based target, however this plan was later abandoned (Boyle and Mason 2014). The 4-hour target remains a key UK commitment and is a standard contractual requirement for public hospitals. The 95% target has not been reached in quarterly measures since 2013 with the lowest levels yet occurring in 2016 at 88% (QualityWatch 2016).

## Analysis of NEAT

The key performance target outlined in the *National Health Reform Agreement* (COAG 2011) was the proportion of patients who physically left the ED for admission, were referred to another service or were discharged. The advantage of using process measures such as the 4-hour target is that they are generally easy to measure, transferable across different organisations and relatively objective (Staib et al. 2015). The targets were to progressively increase from baseline up to 90% for all jurisdictions in 2015. Additional stated intentions were to reduce mortality (Hospital Standardised Mortality Rate) (NHPA 2012) as a result of improvements in ED overcrowding and access block, to improve quality of care, to improve patient experience and to reduce the number of unplanned re-attendances to ED

within 48 hours (McCarthy 2013). However, these objectives were not formally measured or evaluated as part of the NEAT performance framework.

## Considerations

Access block, that is when patients for admission remain in ED for more than 8 hours, is a problem that is not isolated to the confines of the ED. It requires whole-of-hospital reform, with improvements necessary across the system including for patients moving out of the ED, and extending to the backend of hospitals including rehabilitation and residential care to ensure throughput. Reform requires buy-in from executive, managers and clinicians across the healthcare landscape. These changes also require adequate recognition of the variability in hospital case-mix across Australia, with appreciation of the considerable differences in presentations between different hospitals, for example between a tertiary metropolitan hospital, a children's hospital and a rural hospital. This necessitates site-specific mechanisms with a level of local autonomy to allow development and implementation of appropriate solutions. As access to hospital services varies through the day, process reform requires changes to provide suitable and timely access to ancillary services, such as medical imaging, pathology and other allied health specialties.

Implementation of NEAT through a single incentivised process indicator presents risks to healthcare quality, appropriateness and safety (Baggoley et al. 2011; Mason et al. 2012; McCarthy 2013; Nicholls 2015; Weber et al. 2011). There is potential for inadequate assessment or treatment due to rushed decision-making (Mountain 2010), time-capped clinical concern, increased representation to ED, inappropriate hospital admissions, increased length of hospital stay and increased length of ED stay as there is no incentive payment below 4 hours, nor once 4 hours has been exceeded (Boyle and Mason 2014; Mason et al. 2012; Weber et al. 2012). Other issues include workforce implications as a result of greater time pressures placed on staff and rapid processing of patients, reducing diagnostic evaluation, clinical intervention and management in the ED. This has the potential to reduce training capacity, decrease professional satisfaction and risks alienating key clinical stakeholders and fostering a dysfunctional culture if consultation, planning and communication are inadequate (Boyle and Mason 2014; Mountain 2010; Vezyridis and Timmons 2014; Weber et al. 2011). Incentivisation of NEAT has gaming risks with anecdotal evidence of cherry-picking, effort-substitution (prioritising patients as they approach 4 hours), data manipulation and use of short stay admission units to buy more time (Baggoley et al. 2011; Queensland Clinical Senate 2014).

## Mechanisms used to achieve NEAT

States and Territories received funding from the Australian Government for capital and process development, and were provided financial incentives if targets were achieved. Targets were made equal across all ED triage categories to ensure care models adequately managed lower urgency patients as well as those who required urgent care. Pressure to achieve NEAT was placed on EDs to help drive change. Standardised definitions were developed regarding ED presentation and

discharge, and data relating to NEAT attainment was publicly reported. Infrastructure changes varied across Australia, but were aimed at facilitating new models of care to improve access.

Individual hospitals and health services developed site-specific change processes based on locally perceived issues and solutions, without prescriptive requirements. Process changes included:

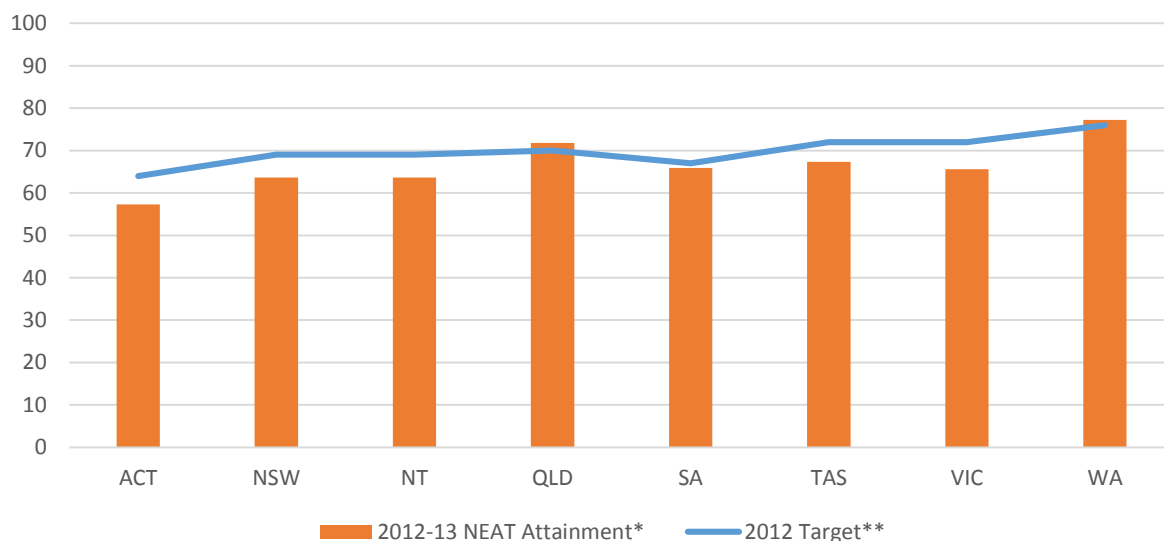
- improving the efficiency of discharges throughout the hospital
- rapid assessment ED teams or senior physicians
- new IT patient management systems
- improved processes to increase the speed at which patients were moved to the ward once need for admission was recognised
- nurse-initiated ED interventions
- improved access and timeliness of medical imaging, pathology, pharmacy and allied health services
- designated short-stay (24-48 hour admission) units contained in or adjacent to the ED
- designated short-stay bridging units for rapid assessment and care planning post ED but prior to home ward admission
- use of fast-track services to see low acuity patients with enhanced care primary contact nurses and physiotherapists and improvements to free or low-cost primary care outside hospitals

(Asha and Ajami 2013; Baggoley et al. 2011; Bell et al. 2014; Crawford et al. 2014; Davis et al. 2014; Mountain 2010; Vezyridis and Timmons 2014).

## Target attainment

Annual targets were agreed to by States and Territories in the *National Health Reform Agreement*. Targets progressively increased for each jurisdiction from their baseline towards the shared 2015 target of 90%. Despite NEAT performance incentives, only Queensland and WA achieved their targets in 2012-13 (Figure 1), and no jurisdictions achieved their targets in 2013-14 (Figure 2). NEAT performance incentives were then removed as part of the change to hospital funding arrangements announced in the 2014-15 Federal Budget.

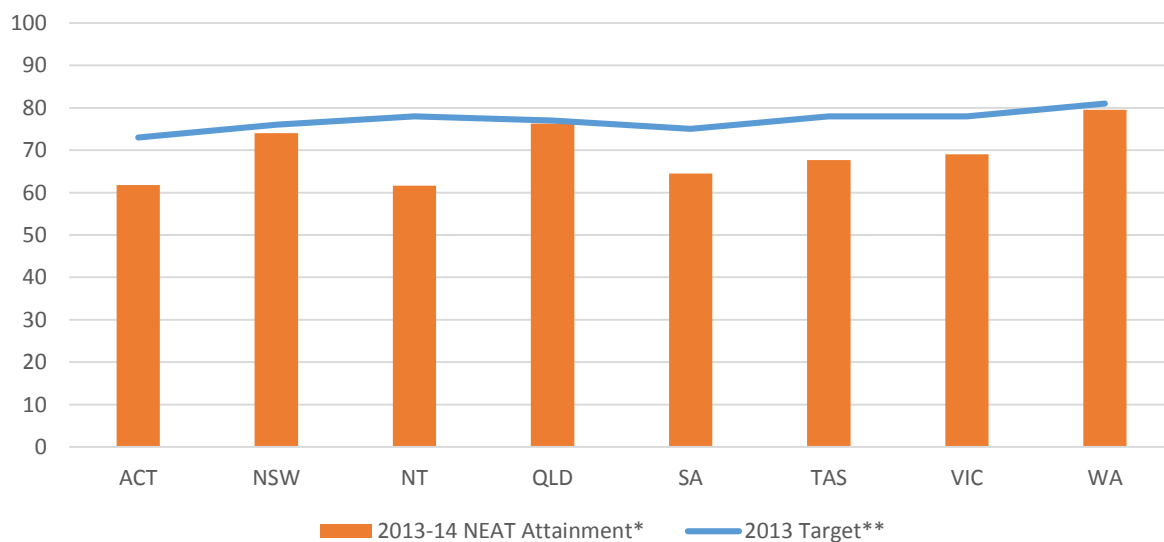
**Figure 1 The proportion of all ED Presentations achieving NEAT in 2012-13 versus the 2012 targets across all jurisdictions (COAG 2011; AIHW 2015).**



\* Financial years were used for annual NEAT attainment reporting after 2012

\*\* Calendar years were used for the annual targets

**Figure 2 The proportion of all ED Presentations achieving NEAT in 2013-14 versus the 2013 targets across all jurisdictions (COAG 2011; AIHW 2015).**



\* Financial years were used for annual NEAT attainment reporting after 2012

\*\* Calendar years were used for the annual targets

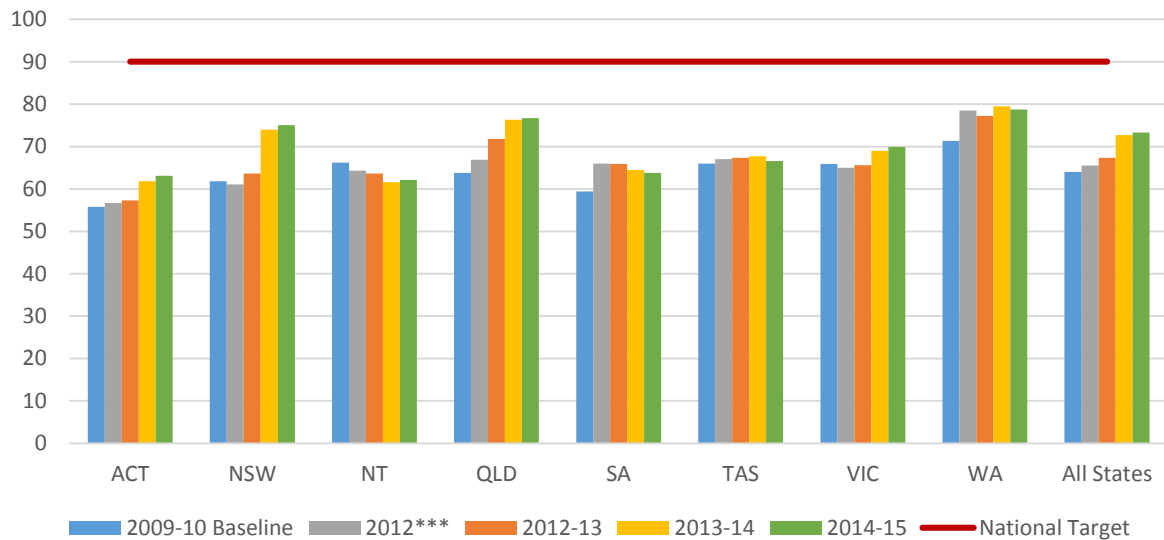
## Evaluation of NEAT

Since its implementation, NEAT has provided stimulation for whole-of-hospital process reform. Despite significant capital investment and organisational funding, all jurisdictions other than Queensland and WA were well behind achieving their federally mandated targets in 2013-14 (Figure 1). Nevertheless by 2013-14 significant improvements had been achieved when compared with baseline, even if targets had not been met and this occurred in spite of growing rates of ED presentations (Queensland Clinical Senate 2014). This has been confirmed in various individual hospitals with a reduction in ED length of stay, access block (Bell et al. 2014; Geelhoed and de Klerk 2012; Lawton et al. 2015; Lowthian et al. 2015) and reductions to ED representations (Lowthian et al. 2015). Success has not occurred in a uniform manner for all patients, across all jurisdictions, at all times of the day, indicating variation in hospital environments and the success of implementation (AIHW 2014; Khanna et al. 2013). Factors contributing to this variability have been proposed, including staff enthusiasm and engagement, staffing levels, clinical and administrative leadership, the underlying work ethos and culture (Mountain 2010), the mechanisms chosen and the success of their implementation, the location and variation in case-mix presentation (Khanna et al. 2013).

### *The target*

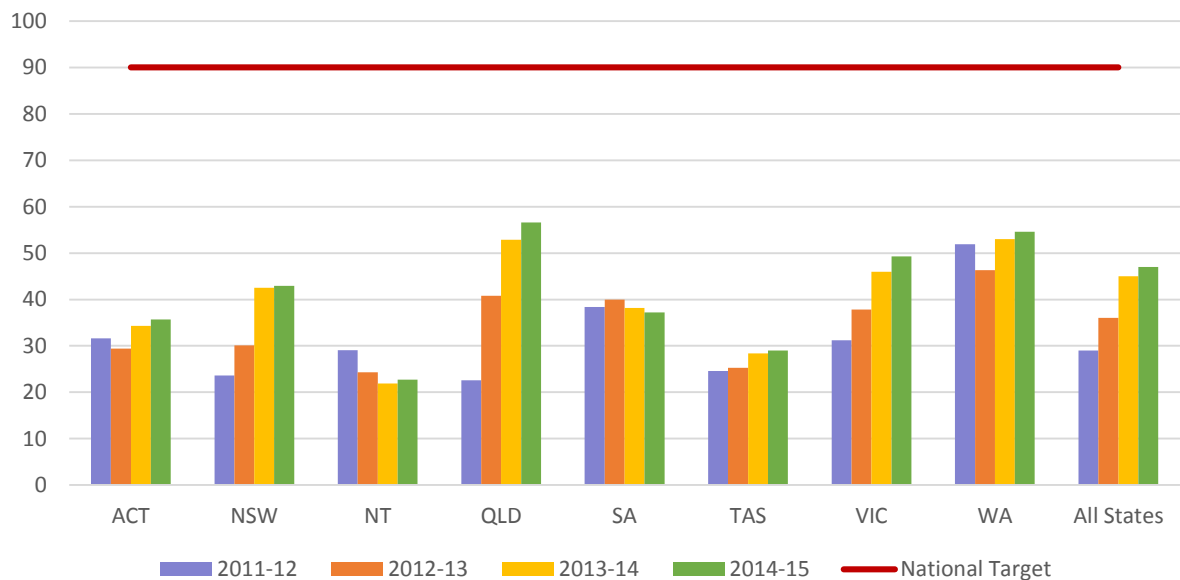
All jurisdictions excluding Northern Territory (NT) made improvements in the proportion of ED presentations achieving NEAT between baseline and 2013-14 (Figure 3). Despite improvement in the proportion of admitted patients achieving NEAT in all jurisdictions except NT and South Australia, this remained well below the targets (Figure 4), with substantial variation in NEAT attainment between admitted patients and all ED presentations (AIHW 2014).

Figure 3 The proportion of all ED Presentations achieving NEAT across all jurisdictions (COAG 2011; AIHW 2013; AIHW 2015).



\*\*\* Data for the 2012 calendar year is represented as this corresponds to the annual targets, financial years were utilised for subsequent reports

Figure 4 The proportion of admitted patients achieving NEAT across all jurisdictions (AIHW 2015).



Across Australia strategies have achieved reductions in the length of ED stay for non-admitted patients, but have made less of an impact for admitted patients (Figure 4) (AIHW 2014; Khanna et al. 2013), representing a mismatch between the primary problem of access block and the strategies employed. While some interventions to achieve reductions in access block may have been used, the evidence reflects that hospitals were targeting ED patients for discharge whose length of stay could be more easily reduced, or colloquially speaking ‘picking the low-hanging fruit’. This raises concerns that persisting access block would continue to perpetuate poorer outcomes for admitted patients. NEAT attainment remains worse during the afternoon and into the night (AIHW 2014), indicating that mechanisms have yet to adequately address after-hours performance.

### *Mortality*

After the introduction of the 4-hour rule in WA, reductions in hospital mortality rates were reported in two out of six hospitals in the Perth area, with two tertiary hospitals demonstrating a significant reduction (Geelhoed and de Klerk 2012). A strong inverse relationship was also shown between the mortality rate and NEAT attainment, particularly in the elderly at the Princess Alexandra Hospital in Brisbane (Sullivan et al. 2015; Sullivan et al. 2016). There were similar findings at the Alfred Hospital in Melbourne, where mortality among patients admitted to the hospital, but not the short stay unit, reduced from 3.5% to 2.2% in the two years after NEAT was introduced (Lowthian et al. 2015). Improved NEAT attainment has been associated with reduced mortality in some tertiary hospitals however causal mechanisms cannot be established.

### *Achieving the target, but not the goal*

Given the pressure to provide assessment and treatment within 4 hours, process changes have seen a major surge in the use of short-stay admission units, allowing the clock to stop and more time for investigations (Lawton et al. 2015). These patients who would have formally been ED patients rather than admitted patients are now low acuity patients and this dilutes the case-mix and consequently the hospital mortality rate (Toh et al. 2012). Short-stay units are often contained within or adjacent to the ED, which draws into question whether this is merely problem shifting to attain NEAT, without actually achieving changes to patient access or flow. Whether admission to short-stay units provides any clinical benefit over ED remains unknown.

NEAT has resulted in widespread and disproportionate increases in hospital admissions (Goh 2012; Lowthian et al. 2015), potentially adding to access block and reducing patient flow (Perera et al. 2014). Of concern is anecdotal evidence reporting increasing patient discharges occurring in the last 30 minutes of the time-target (Green 2014). This has also been problematic in the UK, conceivably indicating gaming or effort substitution. Data manipulation has also been recognised in at least one tertiary hospital (ACT Auditor-General’s Office 2012) emphasising the risk of incentivising a single output measure too heavily.

Limitations in the existing metrics, particularly those used in the measurement of national performance and accountability, make it difficult to achieve clear and conclusive statements regarding how NEAT has impacted quality (Sullivan et al. 2015). From the available data, there is no

clear evidence of healthcare quality reducing, however it must be emphasised that there is currently no broad method in place for evaluating this, other than mortality rate which is open to dilutionary and external effects. Green (2014) argues that it is important that the achievement of NEAT is not confused with the achievement of 'good' care as this is not established and is not part of performance evaluation in Australia.

#### *Where is NEAT now?*

Financial incentives for NEAT were withdrawn with the defunding of the *National Partnership Agreement* in the 2014-15 Federal Budget. Despite this, national hospital data for patients leaving the ED within 4 hours continues to be reported by the National Health and Performance Authority through the MyHospitals website as a measure of ED overcrowding (Staib et al. 2015). Hospitals across Australia continue to place varying emphasis on achieving the 4-hour ED targets.

### **Future implications for NEAT**

The utility of NEAT is questionable, with significant financial and resource investments achieving mediocre change (Forero et al. 2010). Changes to the NEAT performance framework could have improved its effectiveness through the addition of quality indicators to the time-target (FitzGerald et al. 2014). This would involve measuring factors such as inappropriate admissions (Toh et al. 2012), access block, ED representations and hospital standardised mortality rate for patients who are admitted through ED. Changes could also be made to modify time-targets to allow for the recognition of acuity (Keijzers 2014) or by having NEAT-free diagnoses (Mountain 2010). Any changes to performance indicators must be evidence-based and well chosen as it is necessary for incentives to be linked appropriately to desired outcomes, to prevent unintended consequences. Further improvement in NEAT attainment is conceivable, particularly for admitted patients. However careful consideration is needed to identify whether this target is worth attaining, including establishing whether it is effective at achieving the intended objectives and whether the additional expenditure is justified.

While the introduction of NEAT has resulted in improvements in ED timeliness and has had some modest effect on reducing access block (Maumill et al. 2013), it is difficult to argue for the reimplementing of NEAT in its previous form, as few jurisdictions achieved their targets despite significant attempts and substantial financial investment. Although NEAT has driven improvements in efficiency, its effectiveness in achieving the original aims and goals of improved access, quality and safety cannot be definitively concluded. Reform using a single, incentivised, process-based mechanism is unlikely to achieve broad changes to the effectiveness, safety, quality and equity of care provision, and risks producing unintended consequences. It is for these reasons that the NEAT policy at present cannot be considered a complete success.

## Implications for policy makers, health service leaders and clinicians

Analysis of NEAT has highlighted the importance of policy making processes in ensuring policy intentions are achieved. It is critical to ensure that appropriate policy instruments and evaluation methods are chosen in order to provide the appropriate incentives for institutional change. The use of process measures such as time targets for the evaluation of healthcare must be used with caution, as this describes healthcare processes but does not reflect the outcomes or quality of care. This is further complicated by the use of financial incentives as drivers of change.

NEAT was developed as a result of higher mortality and longer hospital admissions in those patients who were admitted to hospital after more than 8 hours in the ED. The premise was that spending less than 4 hours in the ED would lead to better patient outcomes. NEAT implementation has resulted in stimulation for whole-of-hospital reforms to improve patient flow and receive incentive payments. Despite improvement in NEAT attainment, hospitals broadly have been unable to achieve the targets particularly for admitted patients, the intended beneficiaries of the policy.

## Limitations

The scope of this brief has been restricted by the limited literature and publicly available data in this area. Limitations also exist in the availability of metrics used in measuring healthcare quality and in providing linked health data. This has restricted the conclusions and recommendations made.

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