



How to achieve New Zealand's shorter stays in emergency departments health target

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Abstract

The new shorter stays in the emergency department (ED) health target is an expression of the need for solutions to problems with acute health care in New Zealand. Long stays in the ED, and consequent ED overcrowding, result from the accumulation of contributions from throughout the acute care system, and are associated with bad patient experiences and bad patient outcomes. However, if pursued inappropriately, the shorter stays in the ED health target might be achieved without improving patient experiences or outcomes. In New Zealand, we have the opportunity for this target to drive genuine improvements in quality of care. To do this requires understanding, structure and planning, reflecting a commitment to whole of system reform.

A patient journey

2pm Thursday: A general practitioner (GP) sees a 48-year-old man with cough and fever, worsening despite 2 days of oral antibiotics. He notes high fever, tachycardia and crepitations in his right lung base and decides admission to hospital for intravenous antibiotics is required. He addresses a letter to the emergency department (ED) including his findings and requesting admission.

3pm: The patient is triaged and put in an ED cubicle. A nurse inserts an intravenous cannula and sends off blood tests.

3.50pm: A senior house officer (SHO) sees the man, takes a history, examines him, reviews the blood results and organises an X-ray of his chest.

5pm: The SHO reviews the X-ray and consults with an ED registrar. The registrar briefly takes the patient's history and listens to his chest. He concurs that the patient needs admission for intravenous antibiotics.

5.30pm: The general medical registrar is called.

6.45pm: The acute medical house officer (HO) attends to 'clerk' the patient on the general medical registrar's behalf. She does a thorough history and examination and reviews the results. She concurs that the patient needs admission for intravenous antibiotics, but she worries about a possible pulmonary embolism (PE; clot in the lung). She orders a D-dimer blood test and reports back to her registrar.

8.10pm: The registrar attends. He reviews the notes so far—from the GP, SHO, ED registrar, and the HO. Then he recaps the history with the patient, repeats the examination, records his notes and concludes that the patient needs admission to hospital for intravenous antibiotics.

9pm: A bed is ordered.

1am Friday: The patient is transferred to a bed in a surgical ward (the only suitable bed available).

2pm Friday: He is seen at the end of the 'post acute' round, by the general medical registrar, HO and consultant. His fever has abated, and he is much improved. However, he recounts some pain in his right side and his D-dimer blood test result is markedly raised. A nuclear medicine scan is ordered, to 'rule out PE'.

4.30pm: The scan result is 'indeterminate.'

5.30pm: His registrar organises a CT scan (CTPA) and asks the 'duty' registrar to review the result.

7pm: The duty registrar confirms there is no PE, and that the CT results are consistent with pneumonia. As the patient is being treated for pneumonia no changes to management are made.

The patient continues to be treated for pneumonia Friday night, Saturday and Sunday.

2pm Sunday: A duty house surgeon replaces his intravenous cannula and the patient asks how long he will be in hospital. The house surgeon confirms that the patient's own team of doctors will decide this when they return on Monday.

11.30am Monday: He is seen on the round and discharged from hospital to continue oral antibiotics under his general practitioner's supervision.

5.30pm: He is picked up by his wife.

This man spent 10 hours in the ED and 4 days in hospital, when all he needed was an hour of ED time, and no more than one day in hospital.

Why? We might ask about the processes of GP referral to hospital; why the patient stayed in the ED when the intention was admission to hospital; why the doctor who could confirm admission to hospital was the fifth doctor to see him; why the GP and subsequent doctors' determinations of need to admit were insufficiently worthy to allow admission; why ordering a bed and transfer to the ward could not occur earlier; why he went to a surgical ward, if the pursuit of the diagnosis of PE might be better informed by an evidence-based pathway; why he did not have decision-making capable doctors seeing him over the weekend; and why intravenous antibiotics could not be delivered in the community.

Although this patient journey is a contrived string of delays, these delays are happening now, to a greater or lesser extent, in all of our acute hospitals. Similar delays will be apparent when the pathways of other acute patients are examined.

A realisation of the amount of wasted time and duplicated effort in these pathways makes for an unstable platform from which to make calls for increased resources.

A new health target

In May 2009 the Minister of Health formally announced six national health targets for New Zealand (NZ). The first on the list was *Shorter stays in emergency departments*, defined as '95% of patients will be admitted, discharged or transferred from an ED within 6 hours.'

This target is a very significant development in acute care in this country. Its origins can be traced to the advocacy of clinicians, culminating in the presentation of a document to the Minister in late 2008: *The Report of the Working Group for Achieving Quality in Emergency Departments*.

While the British National Health Service has been working with an ED length of stay (LOS) target for some years, an important contrasting feature of the NZ target is the formative involvement of clinicians in its genesis.

Quality versus compliance

Despite its importance the target is blunt, high level and a bit of a misnomer. It measures patients staying a long time in the ED, but it is mostly about patients not being where they should be.

It is possible to achieve the ED LOS target without resolving important contributors to patients staying longer in EDs, and without getting patients more quickly to the care they should be receiving. It is possible to achieve compliance without improving quality—to hit the target but miss the point.

Without embedding genuine quality there are two possible adverse effects of the target: gaming the target, and shifting the problem.

Gaming the target may include delays to starting the clock (for example by keeping patients in ambulances), and premature stopping of the clock (for example by calling patients in the corridor admitted ‘observation patients’). The Ministry will keep an eye out for such activities, however it is hoped that external scrutiny will be mostly redundant. Unlike the British experience, the call for this target was ‘bottom up’, lifted by the passion of concerned clinicians. The passion persists and is unlikely to tolerate gaming on its patch.

If patients are moved out of the ED to hospital wards, without adequate provision for this work, the problem currently reflected in the ED will surface elsewhere. The solutions are ‘whole of system’—attention to this principle is a prerequisite for success.

Why does it matter?

First, it matters to the patient. Second, it matters because, by staying longer in the ED and in hospital, it obstructs access for others seeking these resources. Third, it causes the accumulation of patients in the ED—the flow coming in is unabated, but the flow out is obstructed. The ED becomes overcrowded and ED overcrowding matters.

The problems caused by ED overcrowding are well described, and interested readers may read further from the reference list. However ED overcrowding is bad; it is associated with delays to care, longer total hospital length of stay, decreased satisfaction, and adverse outcomes.^{1–6} But most significant are the associations between ED overcrowding and death.^{5,6}

Among the patient population who have gone through an overcrowded ED there are about one-third more deaths over the next 10 days. In Australia this equates to a death rate equivalent to the road toll. In NZ this would translate to more than 300 deaths each year.

How applicable these figures are to NZ is open to debate—there may be relatively fewer or more deaths in NZ, but the least plausible argument is that these figures have no relevance to NZ.

ED overcrowding is causing death and other harms in this country.

Achieving the target

Achieving the target will be challenging. However, it is a challenge we must embrace.

Approaching the target may be seen to proceed through four stages.

- *Understanding* the problem and the potential solutions.
- Constructing a *structure* to address the problems.
- Constructing a *plan* to address the problems.
- *Progress* towards the target.

Understanding—Understanding of the problem and therefore its potential solutions, is an essential first step.

Prolonged ED stays are a manifestation of a failing acute care system, with contributors relating to the number and complexity of patients seeking acute care, the ability of the ED to accommodate these patients (including the physical and human resources in the ED and the processes for getting things done), and the ease of getting the patient to the next phase of care (most notably into a hospital bed). One description of these three areas of contribution uses the cardiac failure analogy of preload, contractility and afterload,⁷ and another labels them input, throughput and output.⁸

Every system tends to have contributions in all three of these areas, with a different mix from place to place. Inevitably a complete list of contributors will be large. Focusing on a single solution (for example, efforts to reduce low acuity patient presentations, or opening more hospital beds)—independent of other contributing factors—will frustrate those attempting to fix the problem. So will attempts to fix the problem of ED overcrowding by focusing on the ED only, when two of the three contributing areas are outside the ED's influence.

Examining 'the patient journey' (like the journey of our patient with pneumonia), encourages a 'whole of system' perspective, as well as helping to identify quality as the patient might perceive it. Several different patient journeys can be examined (diagnostics) to identify which parts of the pathway are unnecessary and where in the pathway are the tightest bottlenecks to patients accessing the required next phase of care. Solutions then have two focuses; to eliminate unnecessary steps, or waste, (consistent with 'lean thinking') and to prioritise solutions which fix the narrowest bottlenecks first (consistent with 'theory of constraint').

Fixing obstructions to patient care, when there are bigger obstructions in the same pathway, will not improve patient movement and instead will disillusion and frustrate.

Models of care, for the purpose of this discussion, can be seen as the 'itinerary' of the whole patient journey. In other words; where does the patient go, what happens there, and who does it?

Some innovative models of care have had success in addressing ED overcrowding.^{9,10} The common features of these models are that they take the patient's perspective (what is good for the patient is good for the model), they continue the whole patient journey (therefore whole system) paradigm, and they emphasise lean thinking and working on the narrowest bottlenecks first. The additional contribution they make is the emphasis on value-added tasks, and how best to achieve them.

Patients have some value-added things happen to them on their journey, such as resuscitation, diagnosis, or definitive care. They also have a number of things happen which do not add value, such as waiting, repeated assessments and 'storage' in lieu of an appropriate place to go, and elimination of these steps is in keeping with the concept of 'lean thinking'.

To do the value-added tasks well it is appropriate to have a place resourced to do that task, with staff trained for, and focused on that task. Putting a number of different patients, with different required 'value added tasks', with multiple staff with different objectives, in a single clinical space (for example, an ED) results in inefficiency, confusion and frustration.

Consequences of this paradigm include streaming of patients from triage, to areas of the ED suited to their needs, and the formation of admission and planning units, where patients go specifically for work-up by acute general medical teams.

From this discussion, a number of guiding principles can be drawn:

- Many causes and solutions of long ED stays are outside the ED, so progress towards the target needs a 'whole of system' approach.
- Causes and solutions are multiple across the whole of system and a well structured, prioritised approach is needed so that the best things are done first.
- Wasted time and effort, and bottlenecks in the patient journey, can be identified, and then eliminated, using tools such as those found in 'lean thinking'.
- Innovative models of care, which associate value added tasks with appropriate people working in an appropriate space, have resulted in initiatives such as 'streaming' in the ED, and acute inpatient units such as *admission and planning units*.

Structure—Within the DHB there should be a tangible focus of activity, which is 'above' the ED, and includes prioritised activities across the whole patient journey. The structure includes the people, committees, working groups, and their responsibilities. The structure a DHB adopts will reflect local needs and opportunities, but should include clear leadership and ownership of the 'basket' of activities relevant to achieving the target.

Ideally leadership will include a clinical and corporate partnership, perhaps in the form of both a clinical and a corporate champion. These roles will differ from DHB to DHB, and may be a single person, or more than two. However, having identified champions is important, as is the shared clinical and corporate leadership—bringing different skills and perspectives and emphasising partnership and clinical governance. The title given to the champions should reflect their oversight and leadership of whole of system reforms. To this end it might be preferable to call them something like 'acute care reform champions', rather than 'ED target champions'.

The clinical champion could be an ED clinician, but this risks the perception that the target is an ED one, rather than whole of system. It may be preferable if the clinical champion is an informed, willing and able clinician from an inpatient service, however, local opportunity may determine who undertakes this task.

The corporate champion might be a portfolio manager from Funding and Planning, or another member of the DHB corporate community. Inevitably the projects, and the champions, will need administrative and project management support.

Whoever the individuals, the champions are charged with overseeing the approach to the target, and are the conduit for information between the DHB and the Ministry.

Different structures might already exist, or be chosen, but some structure is required. It is insufficient to report to the Ministry a group of activities which are unlinked except for the purposes of the report.

Plan—The contributors to the problem span the whole of the acute patient journey, and include problems of processes, staff resources and physical space. Consequently, there tend to be an overwhelming number of them. In addition, there is the potential to be repeatedly distracted from the task at hand by other compelling tasks.

While the problems are real and the responses to them are worthy, good things should not impede better things. All of the solutions should be put on paper and prioritised so that the better things are done first.

The plan might take a variety of forms, but the following gives an example of how it could be constructed.

- To begin to list actions, and to determine their relative priorities, several processes can be undertaken, including:
 - Analysis of common patient journeys using tools such as value stream mapping—to identify significant areas of waste and duplication.
 - Examination of ‘breach’ patients (those who stayed more than 6 hours)—to look at the reasons they stayed in the ED more than 6 hours.
 - Ideas and insights from those in the hospital who are ‘street wise’ (with an understanding of current processes, flow and barriers to flow, usually based on experience).
- Construct a 3 by 3 table (Table 1). We have established that there are three general areas of contribution to ED overcrowding: preload, contractility, and afterload. When considering the potential solutions, then we can consider the people (staff, numbers and roles), the plant (space, beds and equipment), and the processes (ways of getting things done).
- Populate the cells in the table with the actions. A few examples are included in Table 1, but do not represent the large number that might populate the plan initially.
- Prioritise the actions so that attention is focused on the right things first. Each of the actions can be graded according to;

- Urgency (based on assessment of degree of risk already present because of the problem the action is intended to address) and;
 - Importance (based on the contribution the project will make to high standards of clinical care, improving patient flow, reducing waiting times or resolving overcrowding, and consequently the degree of risk reduction the project is likely to bring about). Grading under these two headings might be high, moderate or low level of urgency or importance.
 - ‘Quickness’—according to whether the intended solution is a ‘quick fix’ or whether it is slower to achieve.
- Start with the ‘HHQ’ actions (high urgency, high importance, quick) and follow closely with beginning work on the ‘HHS’ actions (high urgency, high importance, but slower to achieve).

Table 1. A possible plan template (with a few examples of relevance to the presented case)

Variables	People	Plant	Processes
Preload (input)	Acute community nurse for IV antibiotics	Observation facility at after hours GP clinic	Pathway for community management of pneumonia
Contractility (throughput)	‘Front-loaded’ decision-making in the ED, with ED SMO briefly seeing referrals first to establish a plan	Reconfigure cubicles in ED to allow ‘streaming’ of patients to the ‘right’ area for their needs	Review ‘admission rights’ so that the last doctor to see the patient is not the first able to authorise admission
Afterload (output)	Review medical registrar roster to improve cover during busy times	Admission and planning unit for workup of stable referred patients	Evidence-based pathway for ‘rule out PE’

Progress—Progress towards the target is based on understanding and is lead by the ‘structure’ (the clinical and corporate champions and the working groups/committees they oversee, possibly defined by a focus on preload, contractility and afterload). It proceeds according to a ‘plan’ which categorises the many possible actions and prioritises them so that attention is applied to the most important things first.

Each DHB will have its own range of problems, and will be starting from different positions. Although there are many potential solutions, and a number of precedents and tools, solutions must be devised and prioritised locally.

Furthermore, efforts to address the target must be continuous, as both progress and changes in acute demand will cause a shift in priorities.

As discussed, the target is high level and blunt and, on its own, tells little about the quality of elements of the patient journey. To continue to progress towards the target, DHBs will need to examine a number of quality measures representing elements of the patient journey.

The Ministry will require reporting of performance against the ED LOS target, and it is expected that attention to triage waiting times will continue.

Other measures will not, individually, have accountability consequences at a Ministry level, but the Ministry team overseeing the target may request perusal of other measures to inform advice to the DHB regarding progress toward the target.

Such measures are likely to include demographic measures describing attendance at the ED, patient journey time measures and clinical measures (including times to critical treatments, and outcome measures). Those DHBs that do not routinely capture some of this data electronically could do periodic spot/manual audits, and work towards electronic capture of appropriate data.

Summary

The new shorter stays in the ED health target is an expression of the need for whole of system solutions to problems with acute health care in NZ, and efforts towards it might proceed through the steps of *understanding, structure, plan and progress*.

Understanding includes appreciation of the whole of system/whole DHB responsibility, the multiple contributions, the need to eliminate waste using tools such as those provided by 'lean thinking', the need to attend to the narrowest bottlenecks first, and the need to 'stream' patients to the area most appropriately set up for their needs.

The most important initial steps for DHBs are to establish a structure for addressing the problem, including clinical and corporate engagement in the form of champions, and a comprehensive, prioritised plan of actions. The structure might include projects in the areas of pre-load, contractility and after-load, with each area categorising actions into 'people', 'processes' and 'plant'. Actions will be multiple, and not all can be addressed at once. Prioritisation of actions is essential, and may include consideration according to urgency, importance and time required to achieve results.

Finally, progress will be identified by a suite of measures representing quality and value added elements of the patient journey.

Competing interests: None known.

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