Improving patient flow in your hospital

An introduction to the change theory from the Timely Emergency Care Collaborative

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Contents

Introduction

The Timely Emergency Care Collaborative (TECC) aimed to reduce delays for patients needing emergency care in Victoria through improving hospital-wide patient flow.

The project involved 14 teams from hospitals across Victoria, as well as a team from Ambulance Victoria. The Victorian Department of Health delivered the project in partnership with the Institute for Healthcare Improvement.

The project ran from December 2022 until the end of June 2024. Almost every team showed significant improvement in patient flow. The project set out with a change theory (refer below) about how to improve the timeliness of emergency care. This change theory was based on international evidence, local and international expert input, and the experience and ideas of participating teams.

Through the shared learning of teams, change ideas that were easier to test and implement were important enablers for patient flow or led to measurable improvement in the timeliness of emergency care.

This guide provides an overview of the change theory, how it was tested, and which change ideas were key to improving patient flow.

Individual guides for each of these high-impact change ideas is available from Emergency care <https://www.health.vic.gov.au/patient-care/emergency-care> or by contacting TEC2@health.vic.gov.au.

The change theory and learnings from the TECC project continue to inform other Department of Health projects including the Timely Emergency Care (TEC) 2 Program.

The TECC change theory

The TECC change theory focused on improving patient flow by making changes that were within the control of the participating organisations. At the start of the project, it was acknowledged that patient flow is impacted by many system drivers that are well beyond the control of hospital or ambulance teams. Some of these drivers are long-standing, significant and complex challenges that:

- require Commonwealth as well as state or territory support
- relate to socioeconomic factors
- need cross-sector collaboration to solve.

Therefore, the potential scope and scale of opportunities for improvement can be vast and overwhelming to even consider, let alone address.
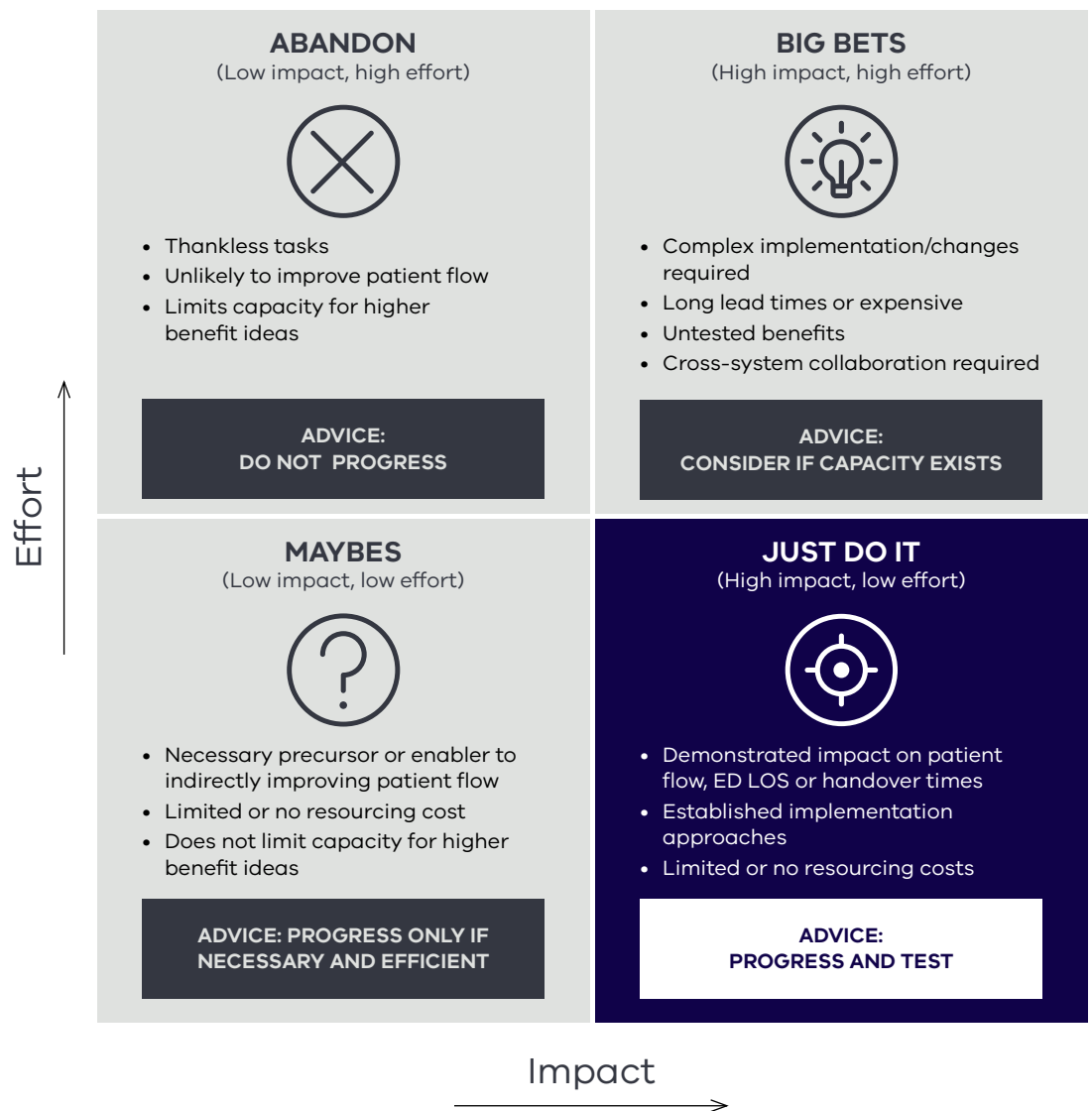
Tip:

To help teams prioritise opportunities for improvement, ask them to identify what is within their span of control. Then use an effort–impact matrix to assess the estimated effort needed to introduce the change and the predicted impact of the change on patient flow.
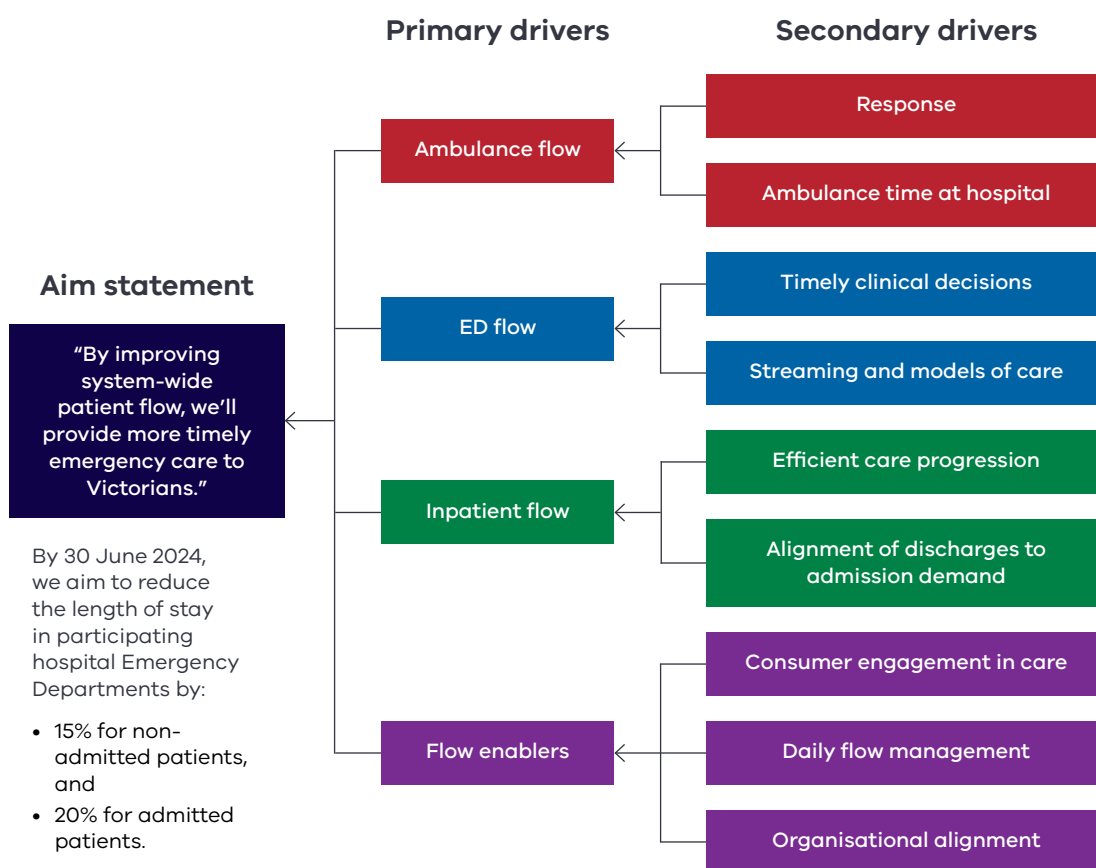
However, every part of this complex system has room for improvement. Focusing on problems 'over there' is akin to waiting for the cavalry to arrive. A catch cry for TECC was 'we are the cavalry!'. With this framing, the change theory for how to improve patient flow focused on what was within the control of hospital and ambulance teams to improve. We also considered the estimated effort versus impact of change ideas. As such, ideas that were thought to be relatively low effort and predicted to have high impact were prioritised for testing. These ideas were called 'just do its' (Figure 1).

Figure 1: TECC effort–impact matrix

	ABANDON (Low impact, high effort)	BIG BETS (High impact, high effort)
Effort	• Thankless tasks • Unlikely to improve patient flow • Limits capacity for higher benefit ideas **ADVICE: DO NOT PROGRESS**	• Complex implementation/changes required • Long lead times or expensive • Untested benefits • Cross-system collaboration required **ADVICE: CONSIDER IF CAPACITY EXISTS**
	MAYBES (Low impact, low effort)	JUST DO IT (High impact, low effort)
	• Necessary precursor or enabler to indirectly improving patient flow • Limited or no resourcing cost • Does not limit capacity for higher benefit ideas **ADVICE: PROGRESS ONLY IF NECESSARY AND EFFICIENT**	• Demonstrated impact on patient flow, ED LOS or handover times • Established implementation approaches • Limited or no resourcing costs **ADVICE: PROGRESS AND TEST**

Impact

Using these prioritised change ideas, the change theory was then designed around 4 primary drivers: ambulance flow, emergency department (ED) flow, inpatient flow and flow enablers. This helped participating organisations to establish workstream teams around these drivers and to focus on what was within the locus of control for these teams to improve. Figure 2 shows a driver diagram[1] that defines the primary and secondary system drivers.

Figure 2: TECC driver diagram[1]

Aim statement	Primary drivers	Secondary drivers
"By improving system-wide patient flow, we'll provide more timely emergency care to Victorians."	Ambulance flow	Response
		Ambulance time at hospital
By 30 June 2024, we aim to reduce the length of stay in participating hospital Emergency Departments by:	ED flow	Timely clinical decisions
		Streaming and models of care
• 15% for non-admitted patients, and	Inpatient flow	Efficient care progression
		Alignment of discharges to admission demand
• 20% for admitted patients.	Flow enablers	Consumer engagement in care
		Daily flow management
		Organisational alignment

1 To learn more about driver diagrams, refer to: Bennett B, Provost L (2015). Driver diagram serves as tool for building and testing theories for improvement. *Quality Progress*, 37–40.

Improvement methodology

All TECC teams got guidance on how to test and implement change ideas. This improvement approach was based on the 'model for improvement'[2] (Figure 3).

The engine of the model for improvement is the Plan-Do-Study-Act (PDSA) cycle. Using this cycle, teams:

- developed a change idea and planned how to test it (P)
- ran the test of change (D)
- studied what happened using data and qualitative findings (S)
- acted on what they learned – by deciding to either abandon the idea, adapt and test it again, or implement it as standard practice (A).

Running these learning cycles not only provides rapid insight about how the change is working but can also help to build confidence to try different ideas. It can also reduce resistance and unanticipated problems that can arise when changes are implemented.
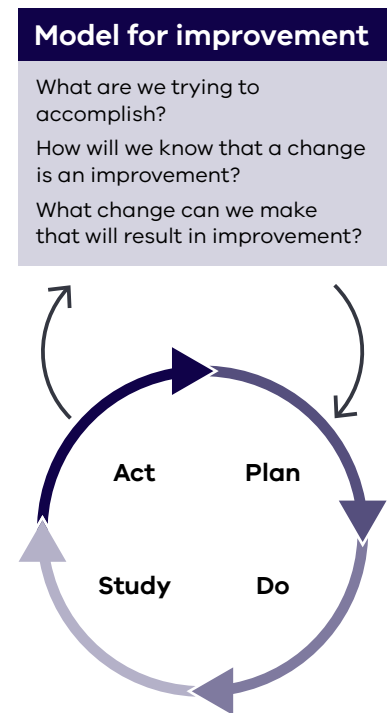
Each how-to guide for key change ideas from the TECC project is based on the PDSA structure. That way, other teams that would like to test a specific change idea are offered guidance on how to run a test of change.

Figure 3: Model for improvement[2]

Model for improvement

What are we trying to accomplish?

How will we know that a change is an improvement?

What change can we make that will result in improvement?

Act Plan

Study Do

Data-driven learning

Data-driven learning is a foundational principle of the improvement methodology used in TECC. It aligns to the second question in the model for improvement: 'How will we know that a change is an improvement?'.

A project-wide measurement strategy was developed for TECC (refer to the appendix at the end of this chapter) that enabled participating organisations to assess their improvement progress and for the Department of Health to assess the aggregate

> **Tip:**
>
> Improvement science is based on testing ideas and rapidly learning how these changes affect the system. The speed and quality of learning is increased if teams identify measures and collect data that will help them understand both the impact of the change idea and whether the change idea could be tested as planned.

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2 The model for improvement was developed by Associates in Process Improvement. [Source: Langley GL, Moen R, Nolan KM, Nolan TW, Norman CL, Provost LP (2009). *The improvement guide: a practical approach to enhancing organizational performance* (2nd edition). San Francisco: Jossey-Bass Publishers.]

progress and impact of the project. However, these system-level measures can be inadequate for understanding the impact of specific change ideas that are being tested. This is because they represent the aggregate of different processes and process steps, or the reporting of these measures can lag by several days or weeks. This slows the opportunity to learn through testing.

So, to understand the impact of individual change ideas being tested teams were coached to identify measures and collect data that would give them rapid insight and learning about how the change was impacting the system. These are called PDSA-level measures.

To develop PDSA-level measures, a team first needs to be clear on why they are testing the change idea (the impact they hope the change will have). Teams must also have qualitative or quantitative ways of assessing if the change is leading to improvement. They need to be able to check that the change was tested as planned. Each chapter of this guide recommends measures that will support rapid learning and adaptation for teams that want to test this idea.

Change enablers and ideas that had impact

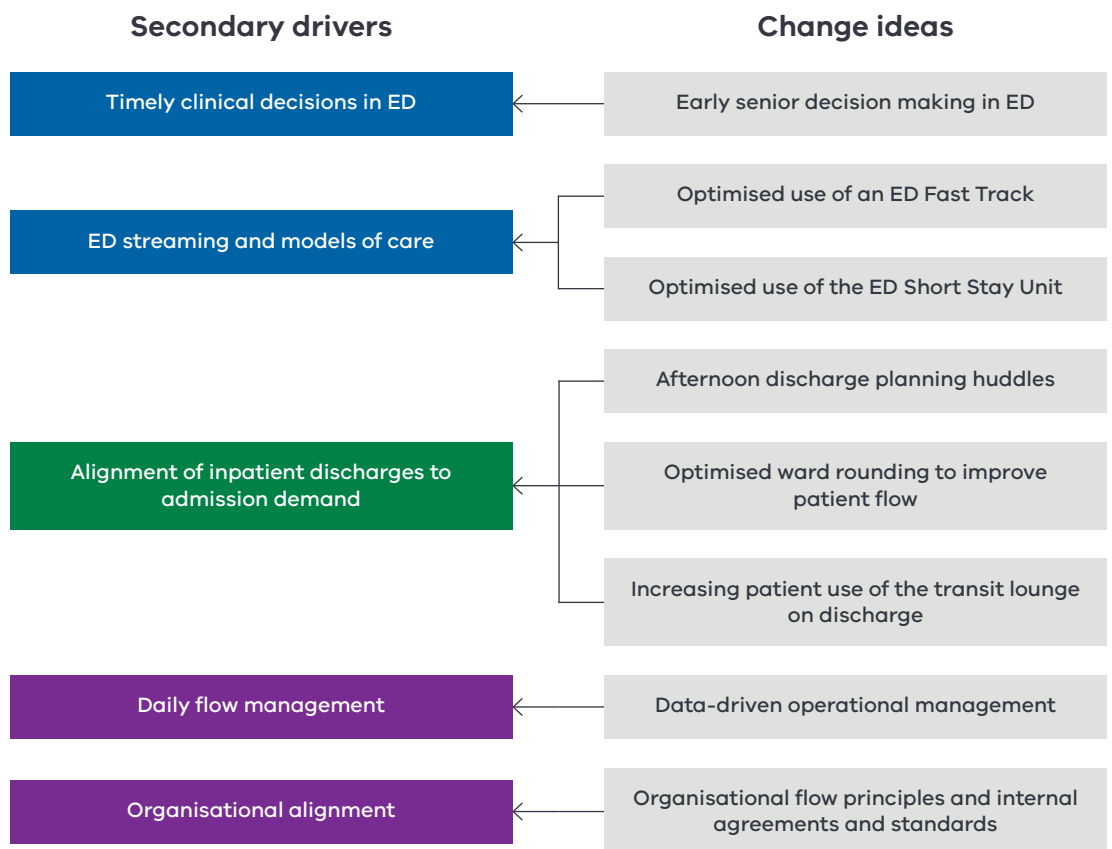During TECC there were several change ideas that:

- were more compelling (had higher interest and engagement around them)
- were easier for teams to test
- showed measurable improvements across multiple teams.

While these change ideas can deliver measurable impact, without organisational enablers to patient flow (for example, effective operational management and organisational alignment on what good patient flow means) there is a risk that the impact:

- will be limited to an 'exemplar' unit or service
- may not lead to a system-level impact on patient flow
- will be challenging to sustain.

The key change ideas and their alignment to secondary drivers from the change theory are shown in Figure 4.

Figure 4: Enabling and impactful change ideas from TECC

Secondary drivers	Change ideas
Timely clinical decisions in ED	Early senior decision making in ED
ED streaming and models of care	Optimised use of an ED Fast Track
	Optimised use of the ED Short Stay Unit
Alignment of inpatient discharges to admission demand	Afternoon discharge planning huddles
	Optimised ward rounding to improve patient flow
	Increasing patient use of the transit lounge on discharge
Daily flow management	Data-driven operational management
Organisational alignment	Organisational flow principles and internal agreements and standards

About the TECC how-to guides

The 'how-to guides' cover most of the change ideas shown in Figure 4. Many chapters of the guide also have one or more associated case studies that provide insight into how a TECC participating team tested the idea, what they learned and what the impact was. These resources are freely offered in the spirit of collaboration, for other teams to draw inspiration from or to 'steal shamelessly'.

Table 1 lists the how-to guides and the associated case studies that are included in each guide.

Table 1: TECC how-to guides and associated case studies

How-to guides	Case studies
1. Improving patient flow: Early senior decision making in emergency departments	Peninsula Health: EPIC
2. Improving patient flow: Optimising the fast track model in emergency departments	Goulburn Valley Health: Fast track The Royal Melbourne Hospital: Fast track
3. Improving patient flow: Optimising emergency department short stay units	The Royal Melbourne Hospital: Short stay unit Austin Health: Short stay unit
4. Improving patient flow: Afternoon discharge planning huddles	St Vincents Hospital Melbourne: Afternoon huddle
5. Improving patient flow: Optimising ward rounding	Mildura Base Public Hospital: SORT ward rounds
6. Improving patient flow: Optimising transit lounge use	Eastern Health: Transit lounge
7. Implementing internal agreements and standards	North Bristol Trust, NHS, United Kingdom

Appendix: TECC family of measures

Measuring for improvement is about learning, not judging. Creating a measurement strategy is about helping an improvement team or organisation to learn about the complex nature of their system. It also helps in detecting when improvement is occurring at different levels.

Establishing a measurement strategy involves:

- identifying the measures
- developing the data collection plan
- building a way to visualise, analyse and interpret the data.

The first step, identifying the measures, involves linking various measures of the system together. This is known as a 'family of measures'. The family of measures for TECC is shown in Figure 5.

Figure 5: Timely Emergency Care Collaborative family of measures

OUTCOME	PROCESS	BALANCE
• ED admitted length of stay • ED non-admitted length of stay	• Inpatient length of stay • Discharges before 12pm • Number of patients discharged with length of stay >7 days • Number of patients discharged with length of stay >21 days • Percentage of weekly discharges that occur on a weekend • Time from arrival to clinical decision to admit • ED short stay length of stay • ED length of stay by category • Transfer time (ambulance – ED) • Number of 000 patient calls triaged to alternative to ED transfer	• ED presentations • Percentage of presentations arriving by ambulance • Number of re-presentations within 48 hours of discharge • Number of readmissions within 28-days of discharge

The family of measures should logically align with the change theory, whereby the aim has associated *outcome measure(s)* and changes to contributing processes to this outcome are monitored using *process measures.*

Improvement teams also use balance measures to see whether their improvement work is having an unintended consequence in the system. Importantly, *balance measures* may also help teams to identify whether their improvement (or lack of improvement) is the due to a wider system change. For TECC, the number of ED presentations was considered a *balance measure* to monitor if the demand was changing outside of expected normal variation. If ED presentations were stable but the ED length of stay improved, then there was greater confidence that this change was the result of an improvement to the system rather than external factors that perhaps have led to a reduction in the number of ED presentations.