

# MANAGING PATIENT FLOW ACROSS AN ACUTE TERTIARY CARE HOSPITAL THROUGH A CENTRALISED COORDINATION HUB: TECHNOLOGICAL AND CULTURAL CHANGE – A CASE STUDY

Rachael Smithson, Tracey Doherty, Andrew Fisher

Gold Coast Health, Queensland, Australia

Correspondence: [rachael.smithson@health.qld.gov.au](mailto:rachael.smithson@health.qld.gov.au)

## ABSTRACT

### AIM:

A centralised Coordination Hub was implemented at a large tertiary health service in Queensland, Australia to address problems associated with a fragmented, reactive and manual approach to patient flow.

### APPROACH:

The Hub was developed through challenging traditional ways of working, breaking down divisional silos, and developing technological enablers to manage patient flow as a whole-system issue. The Hub is a centralised space within the health service, where staff involved in patient flow are co-located and provided with real-time visibility of end-to-end data.

### CONTEXT:

This case study describes the implementation and early operation of the Hub, outlining the critical design features and some of the early challenges and how they are being addressed.

### MAIN FINDINGS:

This approach was designed to manage patient flow as a whole-system issue – co-locating staff, providing them with visibility of real time data, and accountability for decision-making to address flow blockages.

### CONCLUSIONS:

Greater visibility of data and co-location of staff is not sufficient to manage long-standing patient flow challenges. This must be accompanied by appropriate accountability and authority to ensure that those who see and understand emergent flow issues are equipped with the authority to act and respond.

### KEYWORDS

Patient flow; hospital management; accountability; bed capacity

## INTRODUCTION & BACKGROUND

Hospital delivery systems are under increasing pressure to improve both the quality and efficiency of patient care [1].

Efforts to improve hospital efficiency often focus on speeding up flow through parts of the system where patients wait – waiting to be seen in an emergency department (ED); waiting for an outpatient appointment; waiting for treatment; and – once in hospital – waiting to

be discharged. Hospitals and health systems are frequently held to account for achieving target thresholds against these markers, with safe and rapid entry into and out of hospital receiving the most attention. However, these different parts of the system frequently operate in isolation – potentially leading to a 'blame culture' whereby blockages are seen as a problem elsewhere in the system, over which the isolated areas consider themselves to have little influence [2,3]. Here we describe the development and impact of a centralised and systemic approach to managing patient flow across a large health service in Australia, considering the interplay between the technological and cultural dimensions of change. We conclude with some lessons for hospital and health service providers considering innovative ways of managing patient flow.

### **DEFINING THE PROBLEM: FRAGMENTED PATIENT FLOW MANAGEMENT**

In Australia and other countries [4,3], hospitals are held to account for the percentage of patients presenting to the emergency department (ED) who are treated (and then admitted or discharged) within four hours. In Australia, this is represented through the National Emergency Access Target – or NEAT. Meeting this percentage target is often considered to be the 'barometer' of how well a hospital is functioning [5]. At the other end of the acute hospital journey, there is increasing scrutiny of internal or external delays to discharging patients who may be otherwise clinically ready and safe to leave hospital [6,7].

All these issues relate to patient flow. How patients flow through a hospital not only focuses on movement through the physical space, but also on all the staff involved in ensuring that the flow runs smoothly. In many instances, blockages entering or exiting a hospital are not an issue to be solved by increasing the number of existing resources – it is a challenge with managing and coordinating processes related to throughput or flow across the system. However, there is very little research or commentary on 'end-to-end' patient flow management, with most of the literature focused specifically on patient flow in and out of the ED [3] or delayed discharge and transfers of care from inpatient facilities [7]. This case study details some early findings from the Gold Coast Hospital and Health Service (GCH), where a centralised approach to patient flow was developed through challenging traditional ways of working and developing technological enablers. We will firstly describe the objectives and development of the

intervention, and then consider its early impact on patient flow.

### **THE COORDINATION HUB AT GOLD COAST HEALTH**

In 2016, a project team led an internal review which concluded that there could be improvements in bed management and patient flow processes, which were reactive and reliant on manual processes. The review suggested examining patient flow as a whole system issue, not just a problem affecting, or caused by, the ED. A considerable amount of staff time was spent in duplicative, decentralised and ineffectual patient flow meetings, and there was opportunity to improve efficiency and support improvements in communication between all staff involved in patient flow management. The intention was to reform patient flow management with the following design features:

- Centralise bed allocation and patient flow functions
- Increase transparency and visibility
- Proactive processes and predictive analytics
- Coordinated patient care
- Automated real-time data flow and improved decision making.

The outcome of that review was the establishment of a Coordination Hub, based on similar models at Johns Hopkins Medical Centre (Maryland, US) and Humber River Hospital (Toronto, Canada) [8,9]. The Hub was to be a centralised unit where staff directly involved in patient flow are physically co-located in order to monitor and manage the flow of patients throughout the entire hospital journey. These staff included representatives from the ambulance service, nurse navigators, mental health practitioners, bed managers, environmental services, staffing allocations, incident controllers and information technology (IT) support staff. All of these staff had visibility of 24 different dashboards relating to activity across ambulance services, ED, inpatient units, discharges and transfers, management of complex patients and community-based inpatient services. The original intention was to centralise and therefore streamline: visibility of ED capacity and bed allocation and availability; predictive modelling and forecasting demand to improve patient flow in real time; and streamline communication across all staff involved in these processes.

## DISCUSSION AND OUTCOMES: IMPLICATIONS FOR MANAGEMENT PRACTICE

At the time of this case study development, the CoordinationHub has been in operation for five years. The technology and visible dashboards have remained relatively consistent throughout this time, but there have been some changes to team dynamics and individual ways of working. Throughout this process, staff in the Hub have taken on greater oversight and responsibility for the patient flow information that is in front of them.

### COMMUNICATION AND WAYS OF WORKING

In the early days of the Hub, the greatest change was in bringing all those involved in patient flow into the same room. Staff retained their existing management reporting lines but began to communicate with a common purpose to ease patient flow through the hospital system. Prior to this, staff were not aware where other colleagues were located within the hospital and had to chase others through numerous telephone calls, which created delays in transitioning patients through the system and created frustrations for those involved. This contributed to a lack of understanding of the pressures faced in individual parts of the system, and perpetuation of a blame culture.

Co-location of functions with a common purpose allowed more effective interpersonal relationships to form, through working together to understand issues and prioritise tasks. For instance, bed managers worked with environmental services staff to prioritise the order of cleaning beds depending on the order of patients being admitted from the ED. Ambulance service staff briefed bed managers on the likelihood that an incoming patient would be admitted, and what specialty support they might require.

The next phase of implementation involved making greater use of the end-to-end data to automate some of the processes that co-location enabled. For example, staff developed a flag in the electronic system to alert environmental services which beds need to be cleaned first, rather than having repeated routine conversations in the Hub every time.

During this period, forging these interpersonal relationships was considered more important by those in the Hub than the technology or visibility of end-to-end data. In these early days, staff were actually uncertain what to do with the information on the screens in front of them. The existing layers of decision-making to act on identified blockages or

create capacity in the system, meant that Hub staff still could not respond in a timely way to the problems they were seeing. As a result, while the physical environment changed and interpersonal relationships developed, the individual roles and decision-making processes did not initially change fundamentally.

### AUTONOMY AND ACCOUNTABILITY FOR DECISION-MAKING

In order to make best use of the data and technology, staff in the Hub needed to be empowered and clear on how to act on what they were seeing. This involved removing some of the decision-making layers and giving staff in the Hub greater autonomy to pre-empt and proactively manage patient flow, rather than reporting on blockages or crises that had already occurred. This was a challenge for divisional executives, who were required to relinquish some of their traditional day-to-day control over bed management and the associated budgetary implications for their particular areas and wards. In order to feel comfortable relinquishing this control, they needed to trust both the staff within the Hub and the data they were using for their decision-making.

This part of the process has taken considerable time and close working relationships between divisional executives and patient flow staff within the Hub. Visibility of the comprehensive end-to-end data allows everyone to have a common understanding of the pressure points and opportunities to ease flow or create capacity and supports the Hub staff to be accountable for the decisions they make. These ongoing relationships have allowed staff across the system to see patient flow management and bed occupancy as a whole system issue, and to make safe, sensible and proactive decisions.

## CONCLUSIONS AND LESSONS LEARNED

Some of the fundamental lessons for others considering the development of a technology-driven Coordination Hub for managing patient flow, are:

- Appreciate the impact of a new physical environment and the time it will take to embed new processes and practices
- Leave some process redesign until after the physical move into the Hub, allowing for action in response to any identified glitches.
- Continuously engage and involve staff in the design and implementation of the intervention

- Ambulance service engagement is critical to tackling the entry points into the patient flow journey
  - The technology and co-location of staff is a tool through which to collectively explore different models of care – it is not the entire solution in itself
  - Embed rigorous evaluation throughout the journey to capture lessons and progress, and ensure any problems are identified and managed early
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The Coordination Hub is continuously building on the progress already made, by customising the data to more appropriately target information to those responsible for particular parts of the patient journey. Patient flow management is a whole system issue, and the responsibility of all staff – not just those working directly in the Hub. For instance, some of the information is now available in inpatient areas so that ward staff can see the part they are playing in patient flow management and contextualise some of the decisions they are making and pressures they are facing from other parts of the system. Mental health practitioners have taken on an enhanced role in the Hub, working to avoid ED attendances for people in crisis. And ambulance staff and patient flow managers in the Hub support patients to find alternative care pathways.

The development of the Coordination Hub and its current ways of working continues to be an iterative process, tweaked over time in response to identified challenges; improvements in data quality; widening scope of responsibility; and greater transparency and accountability for escalation and decision-making. It has been successful in tackling the challenges that it was designed to address – siloed, reactive approaches to patient flow that focused on ED as the problem. Bed management and patient flow is now proactively seen as a whole of system issue. The technology itself is not a 'magic wand', but visibility of the end-to-end data supported staff in taking on greater accountability for escalation and decision-making throughout the whole system of hospital-based care.

## References

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