# A whole of system response to capture relationships and interactions between flow metrics to identify access issues and inform the design of interventions/solutions to improve patient flow at a system level

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## Abstract (300 word limit)

Statement of the Problem:

Hospital Emergency Departments are designed and resourced to be the first point of call for patients requiring urgent medical care, but in most countries, demand for emergency care has outpaced population growth over the last decade. We describe a whole-of-system study to establish the magnitude of factors leading to challenges with emergency access in hospitals and an evidence base for factors leading to access block.

Methodology & Theoretical Orientation:

A 5-step approach has been taken towards improving emergency access performance:

1. A systematic literature to provide a comprehensive and up-to-date summary of the challenges impeding patient flow in the ED and the evidence regarding patient flow interventions.

2. A scientific analytical study to determine contextual insights into causes of access block.

3. A scientific analytical study to identify and measure system-wide barriers to ED flow.

4. A qualitative assessment exploring barriers to discharging patients to offer a cross-sectional view of the experiences and opinions of service providers and consumers.

5. A key set of findings and recommendations that support the development of solutions that are practical and actionable.

Findings:

This study adopts a system-wide view to capture relationships and interactions between flow metrics to identify access issues and inform the design of interventions/solutions to improve patient flow at a system level. By integrating ambulance, ED and inpatient data, it is possible to identify blockages along the entire patient journey that have a flow-on effect on ED access. It is also possible to identify critical hospital and ambulance service levels when performance starts to degrade, suggesting where the system would benefit from revised strategies.

Conclusion & Significance:

Extending and applying the developed science to whole-of-system input-throughput-output models via site-specific data can help hospitals deeply understand individual flow performance and identify areas requiring targeted strategies to alleviate stress.

## Recent Publications (minimum 5)

1. Sullivan C, Staib A, Khanna S, Good NM, Boyle J, Cattell R, Heiniger L, Griffin BR, Bell AJ, Lind J, Scott IA. The National Emergency Access Target (NEAT) and the 4-hour rule: time to review the target. Med J Aust. 2016;204(9):354.

2. Khanna S, Boyle J, Good N, Lind J. Unravelling relationships: Hospital occupancy levels, discharge timing and emergency department access block. Emergency Medicine Australasia. 2012 Oct;24(5):510-7.

3. Khanna S, Boyle J, Good N, Bell A, Lind J, Analysing the emergency department patient journey: Discovery of bottlenecks to emergency department patient flow, Emerg Med Australas. 2017 Feb;29(1):18-23

4. Boyle J, Jessup M, Crilly J, Green D, Lind J, Wallis M, Miller P, Fitzgerald G. Predicting emergency department admissions. Emergency Medicine Journal. 2012 May;29(5):358-365

5. Boyle J, Sparks R. Syndromic surveillance to detect disease outbreaks using time between emergency department presentations. Emerg Med Australas. 2022 Feb;34(1):92-98.

## Biography (150 word limit)

The project team comprises experts from Queensland Health, Queensland Ambulance Service, University of Queensland and CSIRO, that collectively have a strong track record of using healthcare data for health systems research, the modelling of patient flow in the acute health sector, and the translation of research into clinical practice and policy. Together the partners have applied their expertise in collaborative research projects to increase the knowledge of acute hospital capacity management and explore the relationship between hospital performance and patient outcomes. The talk will be delivered by the Principal Investigator for the study Dr Justin Boyle, who's research has been used to set the first evidence-based hospital access performance target and has been patented and commercialised. Justin has been awarded the CeBIT Australia Business Award for Innovation, the Don Walker Award for Efficiency – presented by the Health Informatics Society of Australia, and iAwards presented by the Australian Information Industry Association.

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**Notes/Comment**