

Sustainable Healthcare: Medical waste, Circular economy solutions

Project Team Leader: Dr Rebecca Patrick, Dr Mike Forrester
Project Team Members: Urvi Thanekar

INTRODUCTION

In 2017-18, Victorian public health services generated approximately 35,000 tonnes of waste and of this approximately 5,000 tonnes were clinical waste, and 22,000 tonnes was 'general waste' (1).

The improper disposal of healthcare waste, particularly items like single-use personal protective equipment (PPE) and medical packaging, significantly worsens the plastic pollution crisis we face today.

Australian health services are taking increasing responsibility for their environmental footprint including a willingness to explore participatory process and understand health systems from the perspectives of those who lead them, and design response to the issue of clinical waste. However, their current actions addressing this issue are unclear.



OBJECTIVES

To identify potential actions (e.g., circular economy-based initiatives) to map the drivers and challenges of medical waste, specifically (PPE) within Emergency Department (ED) in Barwon Health.

What factors impact the hospital ED's ability to reduce single-use PPE waste?

What type of actions will support the reduction of single use PPE waste in the hospital's ED?

METHOD

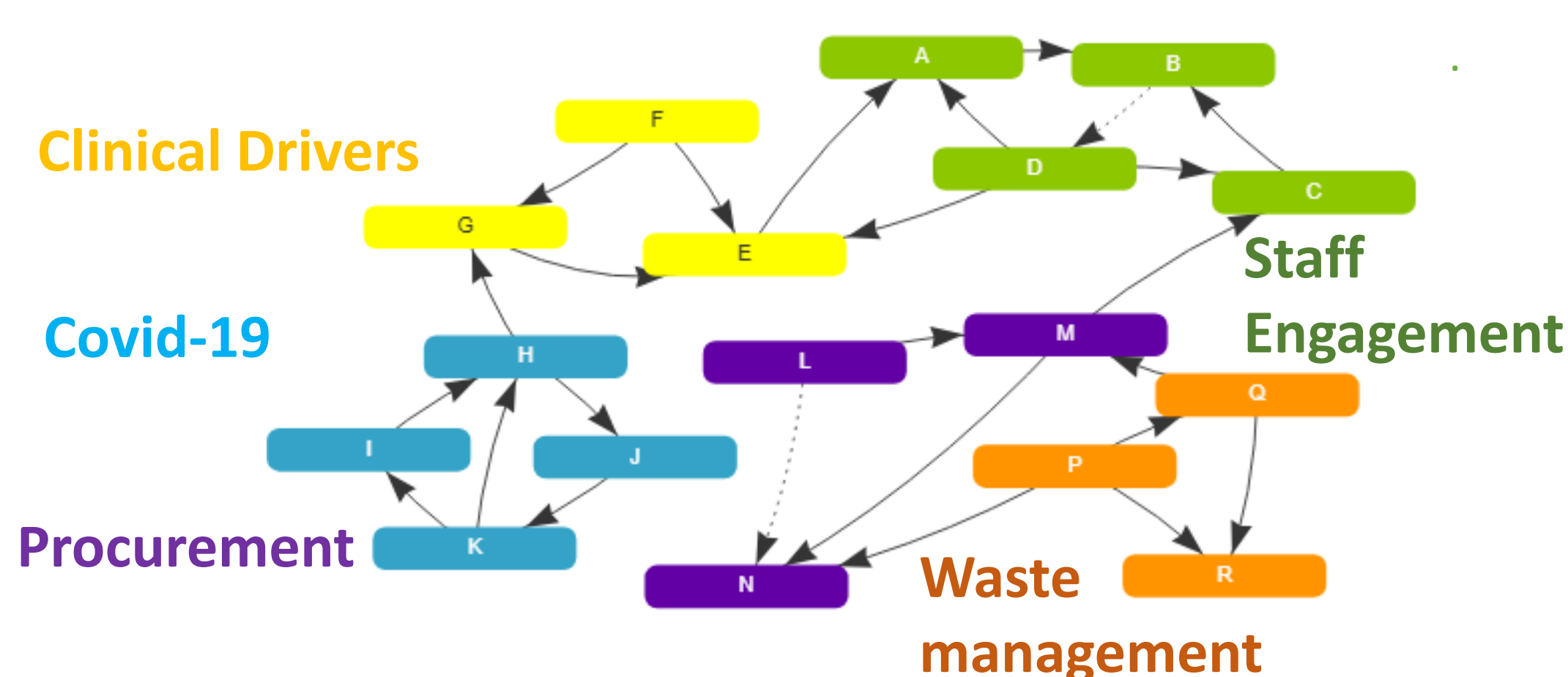
Three Participatory Group Model Building workshops with ED and PPE stakeholders associated with Barwon health. Causal loop diagramming (CLD) using STICKE software

to represent the system level factors driving PPE waste in the ED and recommendations for actions to address this waste.



RESULTS

Data from the workshops (n = 25) were used to generate a preliminary CLD including 30 separate variables categorised into five themes (waste management, staff engagement, COVID-19 pandemic, procurement, and clinical drivers). Stakeholders acknowledged the breadth of drivers impacting PPE waste and provided insights on strategies to help reduce PPE waste.



THEME 1

Waste Management

This theme highlighted waste management issues including time pressures, bin availability and proximity,

"if the bins were sorted regularly, I think you'll have better bin compliance.." [ED Clinician 4 GMB 1]

THEME 3

Covid-19 Pandemic

The fear of infection increases with the increase in COVID rates. This fear of infection leads to increased use of PPE by staff, patients and visitors.

"Screening of patients for respiratory symptoms. We never had to do that prior to 2019. We didn't have to wear PPE for that... but now we are screening all patients with respiratory symptoms as a potential Covid patient. So, we are wearing PPE the whole patient visiting time" [ED Clinician 3 - GMB1]

THEME 2

Staff Engagement

An increase in staff knowledge of the problem can increase appropriate waste management motivation, and trust in waste management processes.

"..After two years we found that the waste handlers were putting it all in the landfill I can go through this effort. But, if it's not making a difference, it feels like you are not actually changing anything."[ED Clinician 2, GMB1]

THEME 4

Clinical Drivers

Increased patients presenting with suspected COVID-19 respiratory diseases increases staff PPE use as donning and doffing is required for every patient interaction rather than in a designated Covid areas.

'Respiratory patients are distributed all over the department. So, there's PPE everywhere. And there's much more moving between respiratory patients and non-respiratory patients.' [ED Clinician 2 GMB1]

THEME 5

Procurement

Increase in centralized procurement decreases hospital's control over PPE options. Conversely, the competitive advantage of increased centralised procurement leads to an increase in single use PPE supplies.

'The Department of Health created a State supply chain which ..only stocked single use items, which were made out of plastic, because that was what we could get on a dime. That limited options of reusable vs single use.. They were mandated to be purchased through the State chain supply.' [Procurement staff GMB1]

DISCUSSION

This research represents diverse health sector stakeholder views generating consensus on five key and inter-related drivers of PPE waste in the ED and prioritizes solutions to address decarbonization within Barwon Health. The themes identified suggest alongside prioritising staff education and fostering champions there need to be mechanisms for stakeholder engagement with the EXEC (Environmental Sustainability Executive Subcommittee) in Barwon Health.

CONCLUSION

Adopting sustainability through the methodology presented here, demonstrates harvesting insights and ideas from a motivated group of health workers and changemakers to lead changes in theme areas alongside government leadership to design contextual system-oriented solutions to reduce PPE waste.