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Climate and Health Alliance

Australian Nursing & Midwifery Federation

Health ready to cycle away from plastics

Case studies from the floor

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Climate and Health Alliance
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About Climate and Health Alliance

The Climate and Health Alliance (CAHA) is a national charity and the peak body on climate change and health in Australia. CAHA is an alliance of organisations within the health sector working together to raise awareness about the health risks of climate change and the health benefits of emissions reductions. The membership of CAHA includes a broad cross-section of health sector stakeholders (Appendix 1), representing healthcare professionals from a range of disciplines, as well as healthcare service providers, institutions, academics, researchers, and consumers.

Acknowledgements

We respectfully acknowledge the traditional owners and custodians of the country on which we usually work and acknowledge that sovereignty to this land was never ceded. CAHA commits to listening to and learning from First Nations people about how we can better reflect Indigenous ways of being and knowing in our work.

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Executive Summary

Plastics are now ubiquitous across society and healthcare. Yet, regulatory oversight has not kept pace with the rapid scale and complexity of plastic production, use and waste. This has resulted in substantial gaps in evaluation, governance and accountability within health systems.

In response, healthcare workers, services and organisations across Australia are trialling initiatives to reduce, substitute, reuse, reprocess and adopt circular procurement approaches. While these efforts demonstrate promising innovation and leadership at the clinical level, they remain fragmented, short-term and largely unsupported by coherent national policy, stable funding or consistent data standards.

To better understand the current landscape, a desktop review was undertaken between June and August, identifying 29 relevant peer-reviewed and grey literature case studies. The findings highlight that health professionals are actively leading plastics stewardship initiatives within their workplaces, signalling considerable commitment to sustainability in healthcare.

While there is no shortage of frontline innovation and commitment, systemic coordination, prioritising regulatory guidance and policy integration are urgently needed to enable effective, scalable and sustained plastics stewardship within healthcare across Australian health landscape

Key findings

- 83% of the case studies identified focused primarily on waste reduction and recycling, highlighting a need to expand stewardship efforts beyond end-of-life management toward upstream prevention and circular design.
- Multiple stakeholders are engaged in plastics stewardship, yet the broader governance and support landscape remains underdeveloped. 68% of the case studies did not reference or rely on any organisational, council, state or national policy frameworks, guidelines or protocols to support their activities.
- Barriers commonly reported include staff resistance, poor compliance, perceived increases in workload, and difficulties balancing sustainability initiatives with clinical responsibilities.

Background

Health Harms of Plastics

Growing evidence is substantiating the threat of plastics to human health at every phase of the product lifecycle from production through to disposal and management of waste (Geyer et al., 2017). Around three-quarters of chemicals used in plastics have never been evaluated in human health studies (Geueke et al., 2023). Among those with available data, three-quarters (over 4,200 substances) are considered highly hazardous due to their toxicity, persistence, ability to bioaccumulate, and mobility (Landrigan et al., 2025). Nearly 1,500 of these are classified as carcinogenic, mutagenic, or harmful to reproduction, while about 1,700 are linked to organ toxicity, including impacts on the liver. Microplastics and nano-plastics (MNPs) have been found in various human biological specimens including the blood, spleen, colon, breastmilk, liver, kidney, spleen, brain and heart. The health harms of plastics come at a cost to the economy, totalling almost $US1.5trillion in health-related economic losses. Although there is now clear evidence that plastics pose significant risks to human health, the available data likely underestimates the true extent of health harm from plastics, as the full scope of their health impacts has yet to be comprehensively characterised (Landrigan et al., 2025). Humans now unwittingly ingest (Geueke et al., 2023), inhale (Alabi et al., 2019), and drink plastics and their leached chemicals daily as their pervasive presence in everyday products makes them increasingly difficult to avoid.

Plastics contribute to climate change

In parallel with health harms, plastics drive climate change via fossil-fuel-dependent production, energy-intensive manufacture and transport, and emissions from waste management. Most plastics originate from fossil carbon: more than 98% are produced from gas, oil, or coal (Landrigan et al., 2025). Fossil feedstocks are refined and cracked into monomers such as ethylene and propylene, then polymerised into resins. Many fossil fuel companies are prolonging the role of fossil fuels by transitioning to petrochemicals. For example, a Saudi Arabian Company is planning to direct a third of its oil production to plastics and petrochemicals by 2030, and Shell has opened a cracking plant in western Pennsylvania, USA, that converts fracked gas from Appalachia into plastic pellets (Landrigan et al., 2025).

When plastics reach end-of-life, they contribute to growing waste problems. In many low- and middle-income countries, waste services are limited, meaning plastics (along with other waste products) are burned openly, releasing toxic pollutants (Alabi et al., 2019). Elsewhere, plastics are predominantly ending up in landfill, where they persist and may continue to further fragment into microplastics or leach additives. Only about 10% is recycled, impeded by material heterogeneity, contamination, product design, and weak market economics; much of what is recovered is downcycled into lower-value products with limited further recyclability (Landrigan et al., 2025).

Prolific use of plastics

Despite this growing body of evidence, plastics remain ubiquitous in everyday life, particularly within healthcare. Globally, plastics production has increased from two mega tonnes in 1950 to 475 mega tonnes in 2022 – a more than 237-fold increase (Landrigan et al., 2025). This reliance on plastics is reflected in health, where plastics have been widely embedded in health services for their convenience, adaptability, and perceived infection-prevention and control benefits (NSW Circular, 2021). In Australia, the health sector accounts for an estimated 5 to 7% of national emissions (De Sain et al., 2024; Malik et al., 2018), and up to 70% scope 1 and 2 emissions arise from the manufacture, transport, use and disposal of health care products (Australian Government Department of Health and Aged Care, 2024). Polyvinyl chloride (PVC) accounts for approximately 25% of healthcare plastics and has been used to make intravenous (IV) fluid bags, oxygen masks, oxygen tubing, catheters and other medical devices (Coalition on Materials Emissions Transparency, 2022). Polypropylene (PP) used to make items such as needle caps, basins, pitchers and trays; and Polyethylene (PE) plastics used for plastic ampoules and irrigation bottles make up most of the single-use non-clinical plastic waste used in health care (NSW Circular, 2021).

Stewardship options for plastics in health

To combat the prolific use of plastics in healthcare, stewardship of resources is needed. Plastics stewardship refers to the set of policies, practices, and shared responsibilities among all stakeholders (including producers, suppliers, users, waste managers, governments, and consumers) to minimise the environmental, health and social impacts of plastics across their life cycle. This includes design and material choices (to reduce harm and improve recyclability/reuse), reduction of single-use products, waste minimisation, transparent tracking, proper management at end-of-life (reuse, recycling, safe disposal), and alignment of incentives and costs.

In the Australian healthcare context, healthcare workers are typically predominantly involved in reducing plastic waste, re-using items wherever possible, recycling those that cannot be reused and disposing of items correctly. A critical way in which demand for plastics can be reduced is through uptake of non-single-use products that can be safely reused. The processes that make this possible are known as "reprocessing endpoints" specifically cleaning, disinfection, and sterilisation. These processes are guided by Infection Prevention and Control guidelines and the national reprocessing standard AS 5369:2023, with implementation guidance from the Australian Commission on Safety and Quality in Health Care (Australian Commission on Safety Quality in Health Care, 2024). Manufacturer instructions for use must be followed, and devices labelled single use must not be reprocessed.

For example, reusable kidney dishes (which can be made from various materials) are available and can tolerate validated thermal processes. When used for non-critical purposes, such as holding waste or items away from a sterile field, they may be cleaned and then disinfected in a compliant washer-disinfector. If the dish will be used on a sterile field or to hold sterile instruments, however, it must be sterilised and protected within a sterile barrier system, then stored under event-related sterility conditions (usually repacked in plastic) until use (Royal Australian College of General Practitioners, 2024).

Despite the availability of many reusable and non-plastic-based health products – many health services continue to perpetuate the use of single-use disposable products (NSW Circular, 2021). Because of this, in many settings, stewardship must also target demand and procurement. This means resisting default shifts to single-use items as a part of the procurement process. Where single use remains necessary, services may seek to implement effective recycling with clear segregation, contamination controls, verified end markets, and routine tracking of volumes, costs, and emissions to confirm real outcomes.

The gap

Population-level exposure to plastics harm can be reduced through effective harm-reducing stewardship mechanisms. Recognising the growing harm of plastics in healthcare, healthcare workers want to be part of the solution and consistently demonstrate their willingness to contribute. Across wards and services, there are examples of pragmatic changes made by health care workers to steward plastics. Examples include swapping selected single-use items for validated reusables, segregating clean PVC from IV bags and oxygen tubing for closed-loop recycling, standardising instrument packs, and trialling supplier take-back of packaging. However, scaling these efforts requires consistent resourcing - necessitating funding, procurement alignment, and shared data standards. Further, much of this work has to date been done with limited government oversight regarding outcomes. In order to better shape effective, scalable policy for plastics stewardship, it is necessary to examine the current practices in healthcare with particular attention to clinician's experiences of plastics stewardship. This report sought to synthesise publicly available Australian case studies of plastics stewardship in healthcare to synthesise what is already being done, identify policy enablers and barriers, and map gaps in data collection. The aim is to inform future research priorities and to guide policy development that can scale effective stewardship practices across the health sector.

Approach

A desktop search was undertaken between June and August to identify relevant peer-reviewed and grey literature. Sources included the Global Green Health Hospital program delivered by Climate and Health Alliance. Search terms included combinations of 'plastics' with 'reduction', 'recycling', and 'reuse'. In addition, individual organisation websites and health network (hospital group) websites were searched. Records were eligible for inclusion if they were located in Australia and addressed at least one aspect of plastics stewardship. Case studies did not need to adhere to formal case study methodology. Multiple case studies recorded in the same article were presented as separate case studies. Records were excluded if they originated outside of Australia or if plastics-related data could not be disaggregated from broader waste data.

Data extraction was conducted independently by two reviewers. From each identified record, the following data were extracted:

- Article type (empirical, theoretical, grey literature)
- Health service type and context (public/private; rural/regional)
- State or territory
- Stewardship focus area(s)
- Plastic type or product targeted
- Stakeholders involved
- Resources used
- Estimated cost or budget
- Guidelines or protocols in place
- Stage of the implementation cycle (conceptualisation, first delivery, outcomes)
- Outcomes or impact
- Barriers encountered
- Reference or contact
- Identified biohazards
- Limitations of the case study
- Extracted data were synthesised by one researcher and the findings are reported descriptively.

Results

Case study characteristics

A total of 29 case studies were included in the review. The majority of articles were 'grey literature' (18), 7 articles were classified as original research (empirical) and 4 articles were noted in both peer-reviewed discussion papers and grey literature reports.

Health service types predominantly included 'public, metropolitan' hospitals (16, >55%), followed by 'public, regional' and 'private metropolitan' (4 and 4 respectively). A public cancer research centre, and regional health service were also identified. The majority of case reports were based in Victoria (11), followed by New South Wales (8), Western Australia (3) Queensland (3) and Tasmania (2). One report was unspecified, and one included two states concurrently. Due to substantial contextual differences across the case studies, it was unclear how/if initiatives could be scaled at large. Further research is needed to understand the transferability of initiatives across jurisdictions.

Ref	Case Study	Health Service type, context and location	Stewardship Focus Area(s)	Outcomes / Impact	Barriers Encountered
Chen et al. 2024	Reusable sterile light handles – John Hunter Hospital	Public, Regional NSW	Waste reduction and transition to reusable products	26% reduction in device use; 26% cost saving; 92% less waste-to-landfill; slight increase in carbon footprint.	Increased carbon footprint due to energy source mix
Chen et al. 2024	Reusable sterile light handles – Belmont District Hospital	Public, Regional NSW	Waste reduction and transition to reusable products	Waste-to-landfill eliminated; costs increased 80.7%; six-fold increase in carbon footprint.	Heavy handle increased sterilisation energy requirements
Climate and Health Alliance. (2022)	Sustainable Christmas Decorations – Monash Healthcare Haemodialysis Unit	Public, Metropolitan VIC	Waste reduction, recycling, staff engagement	160 kg PVC diverted from landfill/year; cost savings; increased staff satisfaction and awareness	Time-intensive creation of decorations. Benefit minimised if decorations are just discarded
Climate and Health Alliance (2022)	Reducing single use plastics at Southwest Healthcare	Public, Regional VIC	Waste reduction and procurement of alternatives to plastic	Avoided 328,000 plastic items from landfill in one year.	Items introduced into the healthcare service must be 'fit for purpose' this need to be TGA approved, provide intended function, and have significant additional benefits to the existing item. Cost barriers.
Levett-Jones et al., (2024);	NICU plastics recycling – baby bottles and syringes (John Hunter Hospital)	Public, Metropolitan NSW	Recycling, circular procurement	>200,000 bottles and 2,500 syringes recycled; circular procurement loop created	Housekeeping/ waste management negotiations; procurement constraints; staff education
Levett-Jones et al., (2024);	Nappy waste stream – bamboo nappies + biodegradable bags (John Hunter Hospital)	Public, Metropolitan NSW	Plastics waste reduction	Reduced reliance on plastic-intensive nappies; 1,400+ nappies/week addressed	Procurement restrictions; higher costs; cleaning workflow integration
Levett-Jones et al., (2024);	EPIC – remanufacturing calf compressor sleeves (Austin Hospital ICU)	Public, Metropolitan VIC	Plastics waste diversion; reuse via remanufacture	221.4 kg/year baseline to landfill; >200 sleeves collected and >50 kg diverted	Entrenched habits; contamination risk; need for unambiguous bin signage

Ref	Case Study	Health Service type, context and location	Stewardship Focus Area(s)	Outcomes / Impact	Barriers Encountered
Levett-Jones et al., (2024);	"Save the Bluey" campaign (Fiona Stanley Hospital)	Public, Metropolitan WA	Plastics waste reduction	21% reduction; 1.9 tonnes and 82,150 fewer blueys to landfill. Savings $20,000 purchasing; $500 waste disposal	Nil reported.
GGHH (2025)	A Green Future for Green Labs: Peter Mac	Public, Cancer Research Centre VIC	Plastics waste reduction	Saved AUD$48,000 and 6 tonnes of hard plastic through waste pale reduction (Sharps containers); >300,000 litres of soft plastic diverted from landfill (Three years)	Gaining meaningful participation and engagement from lab staff, managing time with other work commitments
GGHH (2025)	Minimizing Plastic Straw Use	Private, Metropolitan QLD	Waste reduction and procurement of plastic alternatives	Decreased 480,000 plastic straws annually. Cost saving $3,420 annually. Reduced total monthly usage of plastic straws by 84%	Some resistance due to concerns for clinical needs, however aided by clear communication
GGHH (2025)	Kids War on Waste	Public, Metropolitan NSW	Waste reduction, staff engagement, education	Not reported	Staff participation, balance with clinical duties
GGHH (2025)	Auditing an Intensive Care Unit Recycling Program	Public, Metropolitan VIC	Waste audit: Identification of appropriate waste disposal, streamline recycling and audit adherence/ outcomes	Significant amount of potentially recyclable waste identified. Identified that the proportion of weighted items of actual recycling: Potential recycling in the 7-day period was 73kg:145mg (49%) 29% identified overall as potentially recyclable waste	Some items deemed not suitable or non-recyclable by the supplier, (plastic syringes) as composed of multiple plastics or concerns for contamination - thus disposed of in landfill. Patient precautions (eg VRE) this all waste associated with these patients disposed of into infectious waste.
GGHH (2025)	Comparing Reusable to Single use anaesthetic Equipment	Public, Metropolitan VIC	Life cycle assessments of single-use vs reusable products	Helped to stymie transition to single-use equipment. Savings of approximately $90,000 annually through using reusable options. Cleaning the equipment resulted in CO2 emissions by approximately 10%.	Nil reported.
DeSousa (2024)	Impact of a linerless reusable, clinical waste bin system on costs, waste volumes and infection risk in an Australian acute-care hospital	Private, Metropolitan NSW	Plastics waste reduction	Decrease in clinical waste volume and mass by 65.2% and general waste by 33.7%, decrease in bin transport labour workload, and decrease by 27.4% of total hospital waste-disposal costs. Approximately 5000 large plastic bin liners are eliminated annually. Increased room in utility rooms. 84% of staff prefer the new system.	Some staff resistance.

Ref	Case Study	Health Service type, context and location	Stewardship Focus Area(s)	Outcomes / Impact	Barriers Encountered
GGHH (2025)	Delivering a positive future – Fiona Stanley Hospital	Public, Metropolitan WA	Recycling	Diverted 44,602 bottles from landfill, increased use of syringe buckets (approx. 2 per day and ongoing compliance monitoring.	Some staff resistance with fear of increasing workload, poor compliance
GGHH (2025)	Eco WarriERs: Reducing waste in the Fiona Stanley Hospital Emergency Department South Metropolitan Health Service	Public, Metropolitan WA	Waste reduction, staff engagement	Increase in number of recycling buckets collected, from 20/ month to 35/month, 6 additional PVC buckets and 3 syringe buckets	Nil reported.
GGHH (2025)	Green champions in Mercy Health	Private, Metropolitan VIC and NSW	Waste reduction, recycling, staff engagement	Good staff engagement	
Paul A Lewandowski	Packaged hospital food appears safe and feasible to reuse	Public, Metropolitan Australian hospital (unspecified)	Reduction in food waste (pre-packaged in plastic)	Estimated saving of 19110 kg of CO2 emissions annually from diversion from landfill	Nil reported.
GGHH (2025)	Reducing Waste from Operating Theatres	Public, Metropolitan VIC	Waste reduction, recycling, procurement, staff engagement	Reduction of clinical waste with associated fiscal savings of $230,000 annually. Decrease in 187 tons of clinical waste.	Staff concerns for time
GGHH (2025)	Case Study: Diverting recyclable waste from landfill (Brisbane Day Surgery)	Private, Metropolitan QLD	Plastics recycling; waste diversion	Over 12 Months, diverted 53000 litres (53 cubic metres) of commingled recyclable material, 68640 litres (68.64 cubic metres) of healthcare plastics, 5760 litres (5.76 cubic metres) of PVC, / Diverted in first 12 months: 53,000L commingled recyclables; 68,640L healthcare plastics; 5,760L PVC; polystyrene volumes unmeasured	Staff constraints with time in separating waste streams
GGHH (2025)	Re-use of untouched Oral Nutrition Supplements (Cairns and Hinterland HHS)	Public Hospital and Health Service, Regional QLD	Plastics reduction via reuse; food waste minimisation	AUD$4,400 saved during the pilot. 2,664 supplement bottles reused; landfill diversion; cost savings; safe redistribution to patients	None reported (infection control support enabled smooth implementation)
Patrick et al (2024).	Reducing personal protective equipment waste in the emergency department of a large regional hospital: codesign informed by system science	Public, Regional VIC	Reducing plastic waste through co-design	Development of recommendations for priority actions and casual loop diagram to identify solutions.	Views expressed limited to 25 participants in the study.

Ref	Case Study	Health Service type, context and location	Stewardship Focus Area(s)	Outcomes / Impact	Barriers Encountered
Calvary Health Care (2024)	Calvary Launceston hospitals go green	Private, Regional TAS	Plastics waste reduction	4000 kg of single use waste avoiding landfill in 6 months, 200 kg of harder plastics collected in weeks, expansion across multiple sites	
Calvary Health Care (2024)	Calvary Lenah Valley and St John's Hospitals Go Green	Private, Regional TAS	Plastics waste reduction	Not noted	Not noted
Global Green and Healthy Hospitals (GGHH) (2018)	Reusable surgical gowns and drapes (Peter MacCallum Cancer Centre	Public, Cancer Research Centre VIC	Plastics avoidance; waste reduction; procurement reform; surgical sustainability	Reduction of approx. 9.2 tonnes solid waste annually if scaled; reduced energy, emissions and water consumption; 90% staff supported adoption; 93% supported ongoing use; improved comfort for staff; no infection concerns	Staff are eager to reduce plastics. Organisational bureaucracy can be the burden. Logistics, difficulties in changing hospital supply chairs, ensuring compliance with infection prevention standards, negotiating new textiles service providers for the hospitals, addressing staff concerns, time. The cost of linen cleaning is unclear.
Hansell, & McGain (2024).	Reducing unnecessary use of intermittent pneumatic compression in intensive care: A before-and-after pilot study with environmental perspective	Public, Metropolitan NSW	Plastics waste reduction	Decreased use of IPC's with identification of unnecessary use. Minimal annual saving of 14.98kg of waste and $7682.40 financial savings.	Nil noted.
GGHH (2025)	Waste management	Public, Metropolitan VIC	Waste reduction; plastics recycling (as part of broader waste management)	100 cartridges and 50 toners sent for plastic recycling; emissions reduction; reduced waste per patient (<5kg/day); 18% recycling achieved across all waste streams	Space limitations for multiple waste receptacles; ensuring end-use markets for recycled products; maintaining correct segregation practices

Stewardship initiatives

Almost all stewardship focus areas included plastic waste reduction or avoidance (n=24, 82.8%). Additional areas focused on procurement (n=5), plastic recycling or landfill diversion (n=6), auditing waste streams (n=2) and transitioning to plastic-free products (n=2). Two studies commented on plastic waste, after targeting a different waste stream within healthcare (packaged food waste).

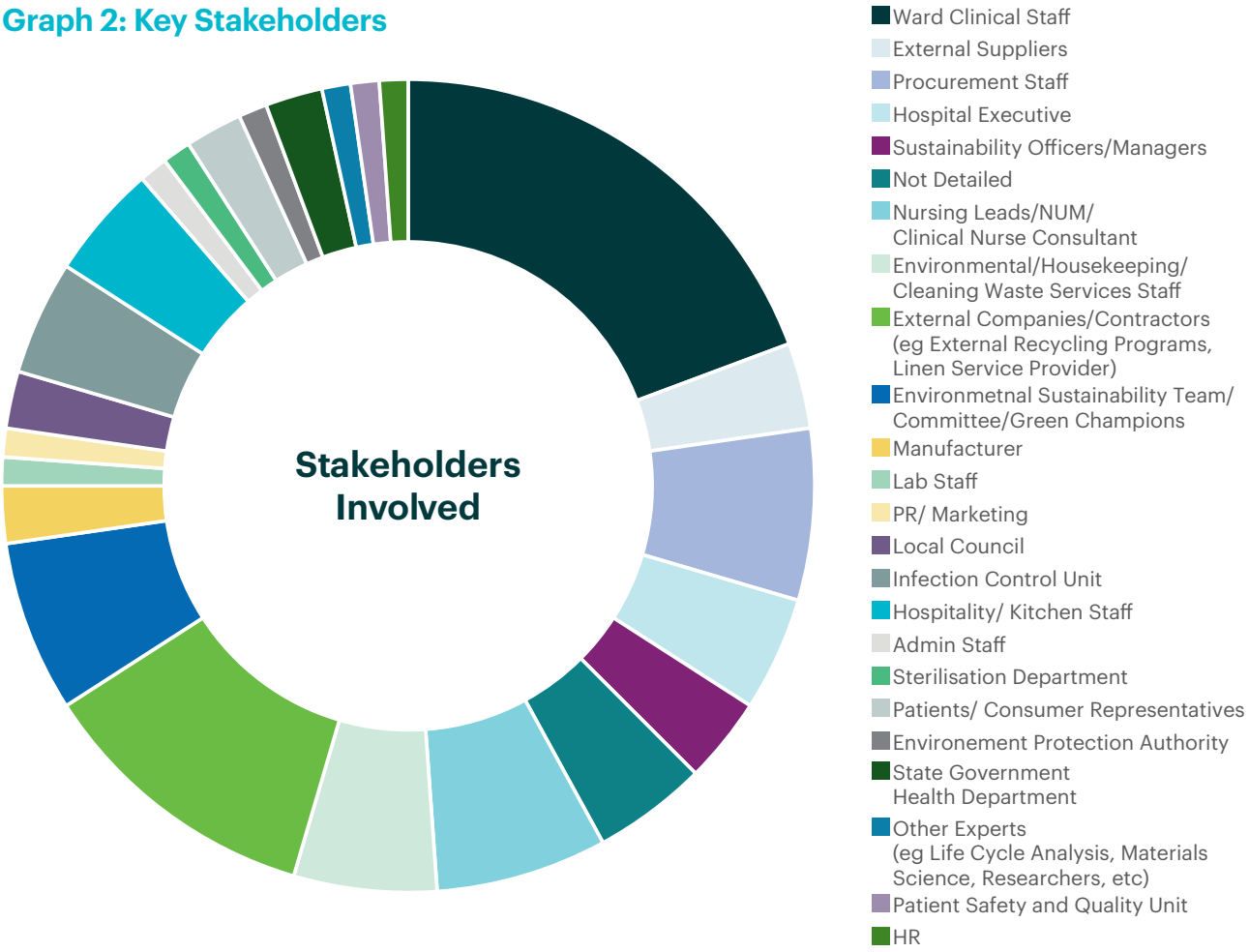
Many types of plastic and products were targeted, detailed in a mixture of chemical composition or end-product, as detailed in Graph 1. Two thirds of studies identified that the plastic type targeted was single-use (n=19).

Graph 1: Product target

Key stakeholders

Case studies detailed a range of various stakeholders. Most common included clinical ward staff (n=17, 59%), followed by external contractors such as linen services providers or external recycling companies (n=10, 34%). Environmental sustainability committees, and designated sustainability staff were noted in 9 studies (31%). Non-clinical staff were identified in multiple studies, including procurement staff, environmental and housekeeping services, kitchen services, sterilisation departments (n=6, 21%; n=5, 17%; n=4, 14%; n=1, 3% respectively). Hospital administration, management and governance were recognised through involvement of hospital executives (n=4), Patient Safety and Quality units (n=1), Human Resources (n=1), Infection Control Units (n=4) and consumer representatives (n=2). External stakeholders were identified, and included suppliers and manufacturers (n=5), local councils (n=1), state government departments (n=2) and other specialised experts.

Graph 2: Key Stakeholders



Resources

The case studies revealed that plastics stewardship initiatives often relied on a combination of resources, most commonly the purchase of reusable alternatives (n=5, 17%), time contributed by staff across disciplines (n=5, 17%), development of education programs or materials (n=4, 13%), or sterilisation services (n=3, 10%). Sterilisation services were critical for enabling the safe transition from single-use to reusable products, while an initial outlying investment in reusable consumables (such as bins, PPE, or clinical items) meant that there were some projects were contingent on financial support. Education was also a recurring need, with programs ranging from formal staff training to local awareness campaigns, reflecting the importance of workforce engagement and co-designed initiatives supported by change management frameworks.

Most case studies did not include information about budgets or estimated cost (n=21, 72%). Costs resulted from purchase of new supplies, contracting specialised recycling services, and funding sterilisation services, for which expenditure was detailed in three case reports of AUD$23,800, AUD$20,286 and AUD$47,071. Cost savings ranging from AUD$1,000 to AUD$32,000 were detailed in six studies.

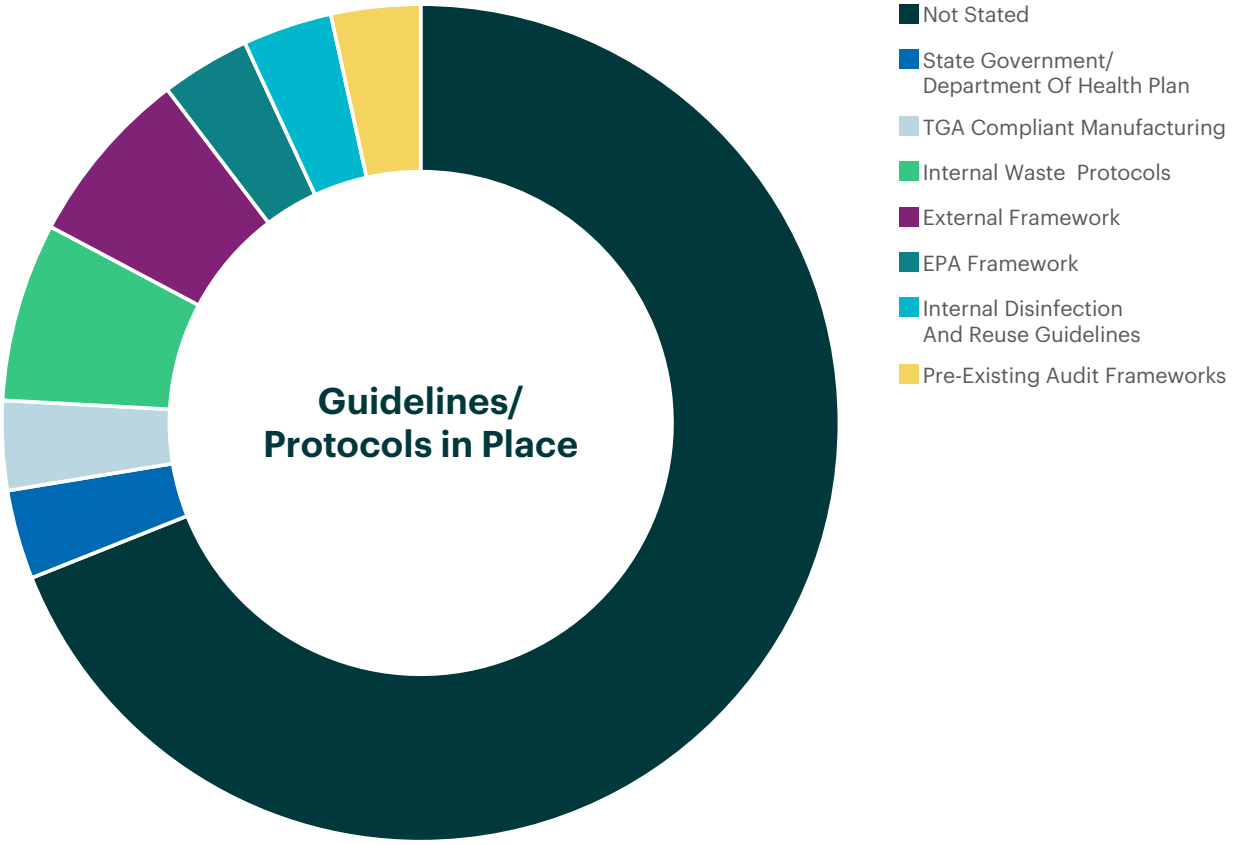
Purchasing supplies for signage (n=1), was also mentioned, albeit only by one case study. The remaining case studies did not specifically mention resources, reflecting either minimal additional resources or incomplete reporting. Together, these findings show that plastics stewardship is resource-dependent, requiring both material and human inputs, with variability in scale depending on the initiative.

Biohazard identification

Across the 29 case studies nearly half of them did not report a biohazard risk (n = 14, 48.3%). Three cases (10%) clarified that only clean or unsoiled plastics were used, while another three (10%) described biohazard risks as being “low and manageable through standard clinical waste precautions” or disinfection and infection control protocols. Several reported that infection prevention standards had been satisfied (n = 2, 7%) or that “the risk of nosocomial infection was discussed and mitigated” (n = 2, 7%). Collectively, these findings indicate that biohazards were rarely identified and, where present, were readily addressed through existing infection prevention measures, elucidating that concerns about biohazard risks were not a primary constraint on plastics stewardship in healthcare.

Policy to support action

Most retained case studies (n=20, 68%) did not report relying on or being supported by any organisational, council, state or national regulatory policy (including guidelines and protocols) to support their stewardship initiative. It is unclear whether this was due to a lack of knowledge/ awareness about policies that are available, or if there was no policy to guide their initiative. Of those that did report use of supporting guidelines, protocols and policies (n=9, 31%), the most reported ones were state government/ Department of Health Plan(s), TGA Compliant manufacturing guidelines, Internal organisational waste protocols, external waste frameworks, EPA Framework(s), Internal Disinfection and Reuse Guidelines and Pre-existing Audit Frameworks.



Outcomes of the initiatives

Implementation cycles were classified into 'conceptualisation' (n=2) 'conceptualisation/first delivery' (n=1), 'first delivery' (n=2), 'first delivery/ early outcomes' (n=5), 'outcomes' (n=18) and 'outcomes and scaling' (n=1).

For those case studies that reported on outcomes, there were reportedly significant reductions in healthcare plastics use/or waste, with many initiatives reporting both environmental and/or financial benefits. Over half of the case studies reported a reduction in plastic waste (n=16). For example, one case study reported a reduction in 200,000 plastic bottles and 2,500 syringes being diverted from landfill to recycling while another documented 160kg of PVC diverted from landfill per year. In some case studies (n=8, 27%) both waste reduction and substantial savings were reported, such as one initiative that achieved 82,150 (1.9 tonnes) fewer blueys being sent to landfill throughout the life of their 'Save the Bluey' campaign. This campaign was designed to foster critical thinking for health professionals deciding about appropriate use of blueys, and resulted in savings of $20,000 in purchasing costs and $500 in waste disposal for the organisation. Reductions in medical device use were also noted, with one project reporting a 26% reduction in device use, 26% cost saving, [and] 92% less waste to landfill.

Large-scale impacts were evident in initiatives that diverted thousands of kilograms of waste, with one case documenting 4,000kg of single use waste avoiding landfill in 6 months, 200kg of harder plastic collected in weeks, [and] expansion across multiple sites. These examples illustrate the diverse but measurable outcomes achieved through plastics stewardship in healthcare.

Barriers

The most commonly reported barriers to plastics stewardship were staff-related challenges (n=8, 27.0%), including staff resistance, poor compliance, or fear of increased workload and difficulties balancing clinical duties with additional sustainability practices. Waste segregation contamination risks were also frequently noted (n = 8, 27.0%), often linked to entrenched waste-segregation habits and the "need for clear bin signage." Organisational and systemic barriers followed, with logistical challenges and supply chain constraints and bureaucratic processes impeding implementation. Similarly, the lack of viable end-use markets for recycled products and physical space limitations for waste receptacles were highlighted as major infrastructure constraints. Other barriers were reported less frequently, each accounting for a single mention , including "increased carbon footprint from energy sources," "higher sterilisation energy requirements," "time-intensive decoration activities," "procurement restrictions and costs," "regulatory approval requirements," and "infection control standards leading to the disposal of some items (e.g., plastic syringes, VRE waste) into landfill." Importantly, while some initiatives noted "pushback due to clinical concerns," others found these could be overcome with clear communication. Taken together, the data suggest that while healthcare worker enthusiasm exists, plastic stewardship in healthcare remains constrained by persistent staff, regulatory, organisational, and infrastructure barriers.

Discussion

The findings of this report highlight that there is no shortage of examples where health professionals are actively leading efforts to advance plastics stewardship within healthcare. These initiatives demonstrate considerable commitment at the clinical level. However, a notable limitation across the majority of case studies was the absence of a clear justification for chosen interventions, underpinned by empirical research or policy guidelines.

One case study, for example, reported that any decision to adopt reusables should ideally be governed by assessments of long-term durability and safety, cost, weight, embodied carbon, and the anticipated financial and environmental implications of re-sterilisation. Undertaking both analysis of suitable procurement options, as well as capturing meaningful data throughout the implementation of initiatives, requires significant time and expertise. This review identified that time constraints were among the most frequently cited barriers to implementation. This highlights the need for researchers to work in partnership with health services to generate the data necessary to support robust decision-making at the clinical level, while also informing policy development.

In terms of intervention types, the majority of initiatives focused on recycling, particularly through improved segregation of waste streams. Waste audits were identified as a valuable mechanism within this context, providing the means to track performance against aspirational waste reduction targets and to embed stewardship cycles. By contrast, relatively few initiatives were directed towards the more ambitious goal of removing plastics from the system, either through the introduction of durable reusable products or through critical appraisal of when single-use products are not clinically indicated or necessary. Of particular note, no examples were identified in relation to reducing gloves use, despite their contribution to high volumes of healthcare waste. This suggests that upstream approaches of avoidance and substitution remain underexplored compared to downstream recycling strategies.

Limitations: This review was conducted as a rapid evidence assessment to meet policy timelines and provide timely insights into current plastics stewardship practices in healthcare. While the approach allowed for an efficient synthesis of available information, it may not have captured all relevant studies or emerging initiatives. A more comprehensive systematic or scoping review would enable deeper analysis of the evidence base, including evaluation of governance arrangements, accountability mechanisms and policy coherence across jurisdictions. Such future work would strengthen understanding of the enablers and barriers to coordinated plastics stewardship and inform the development of more rigorous, system-wide responses.

The findings also have clear implications for policy. There is evidence of significant clinician appetite for sustainable practices, yet without supportive policy frameworks, this enthusiasm risks being misdirected. An illustrative example is the uptake of compostable products in healthcare, where it was unclear whether such items were actually then processed through appropriate composting streams, raising doubts about their environmental benefit. This points to the critical role of policy in mandating stewardship obligations across the supply chain, ensuring that industry participation is compulsory and that responsibility for sustainability does not rest disproportionately with individual health care workers. In this way, the results make a strong case for embedding plastics stewardship within broader systems of healthcare governance, supported by federal and state government coordinated policy, industry accountability, and empirical evidence.

Conclusion

This report demonstrates a strong appetite among health care workers for reducing plastics in healthcare, yet highlights a persistent lack of robust data to guide decision-making. To translate this enthusiasm into sustained impact, support must extend beyond the clinical workforce, with policymakers and industry playing a central role in enabling and mandating effective plastics stewardship.

Recommendations

1. Advance research on enablers of plastics stewardship
2. Establish dedicated and ongoing funding
3. Embed plastics stewardship within healthcare governance

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