Strategies to meet the NSW Health Net Zero clinical programs

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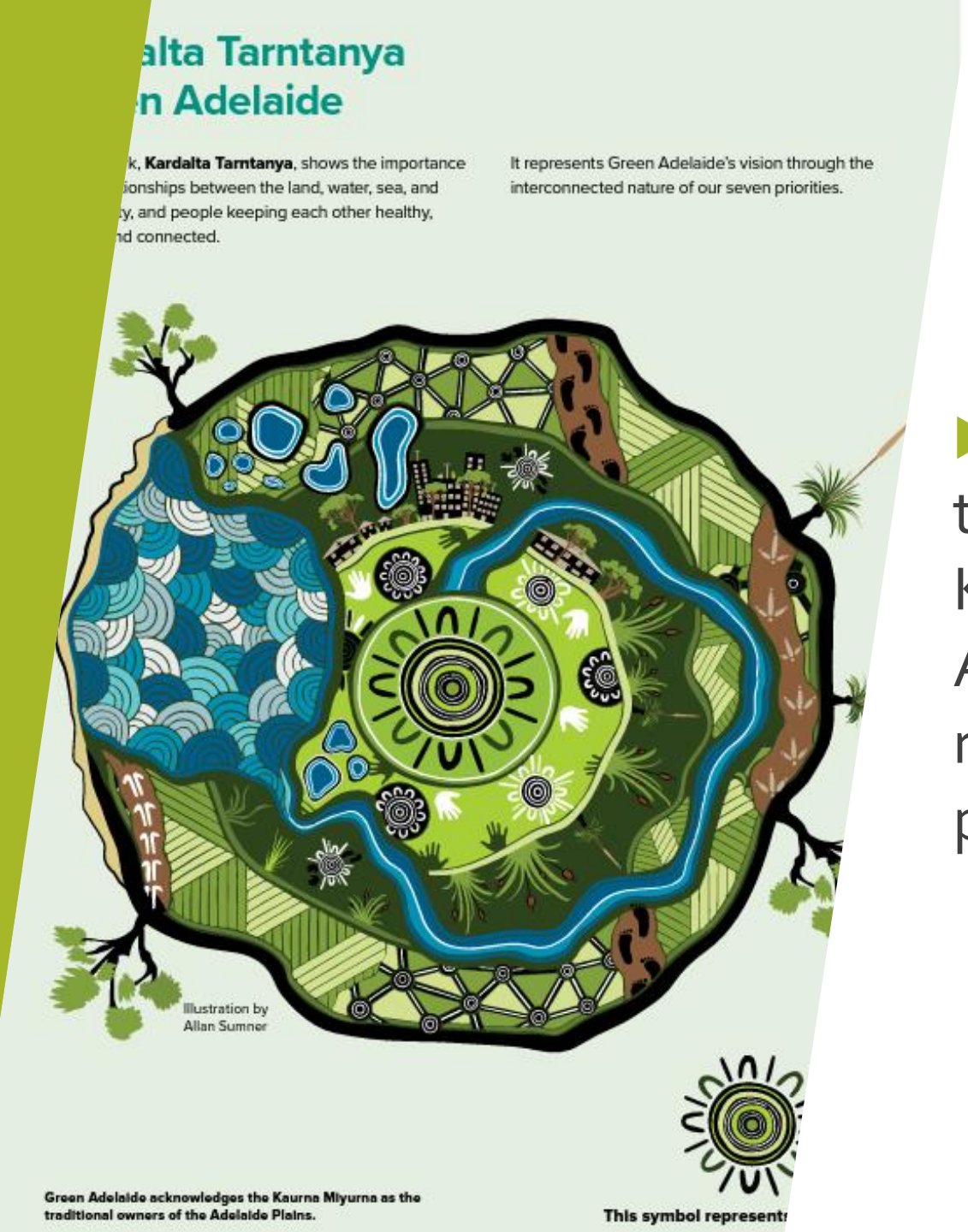
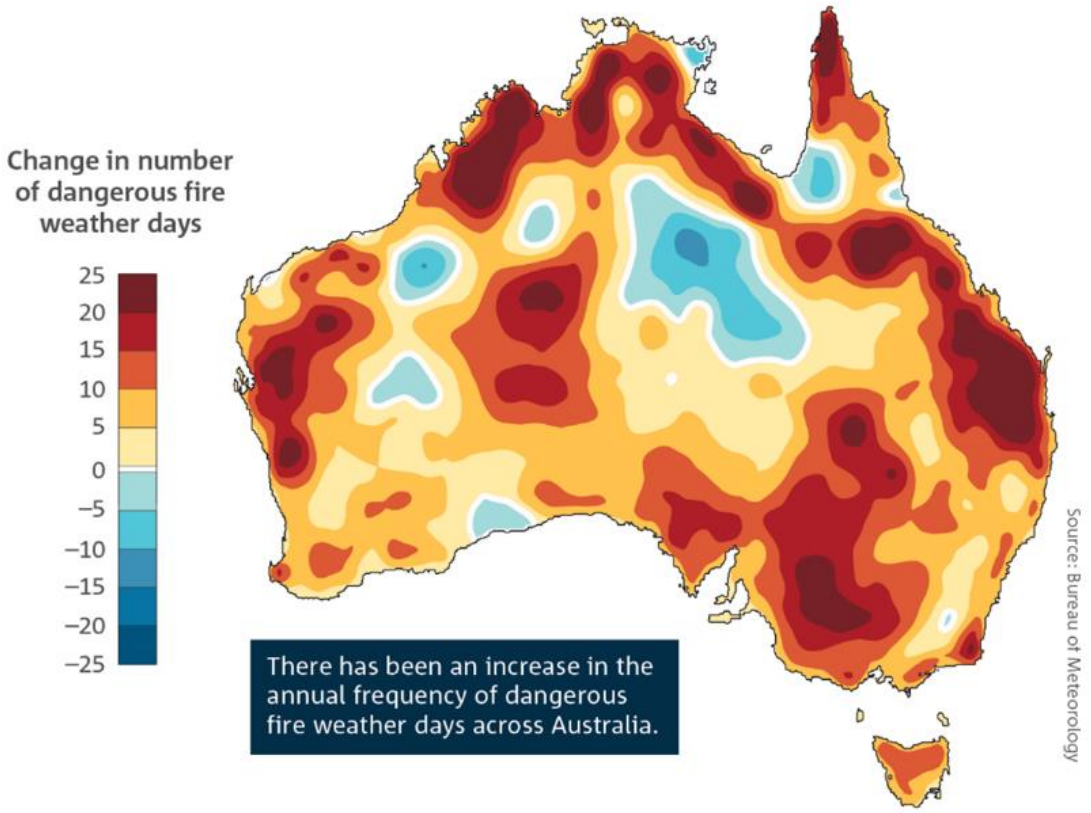


- I would like to acknowledge the traditional Country of the Kaurna people of the Adelaide Plains and pay respect to Elders past and present.

Disclosure

- I have no potential conflicts of interest to report.

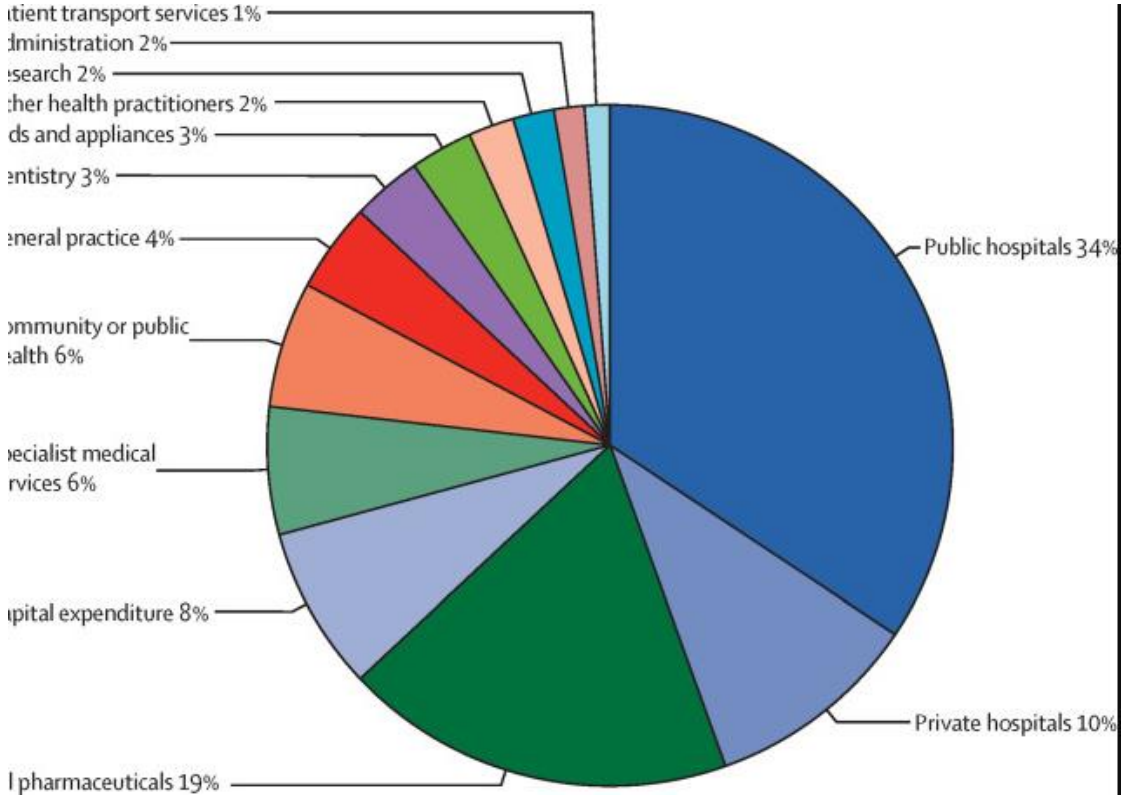
What Is Climate Change?



- Climate change refers to long-term shifts in temperatures and weather patterns due to human activities causing greenhouse gases that are warming the world faster than at any time in at least the last two thousand years.
- March 2022 quarterly update of Australia's National Greenhouse Gas Inventory- emissions were 487.1 million tonnes – 1.5% or 7.4 million tonnes higher than the same period in 2021

Source: BOM State of the Climate 2022

Australian Healthcare Carbon Emission



- Australian healthcare sector contributes 7% of the nation's total carbon emissions
- At a global level, the health sector is responsible for an estimated 4.4% of greenhouse gas emissions. For context, this is more than double the greenhouse gas emissions of the aviation industry (1.9%)
- Main areas of emission: Energy, Waste, Water, Transport, Procurement, and Infrastructure including emissions related to clinical care: supply chain, pharmaceuticals, medical devices, equipment, anaesthetic gases and metered dose inhalers.

Malik A et al 2018

NSW Commitment to Net Zero

- Net zero means cutting greenhouse gas emissions to as close to zero as possible, with any remaining emissions re-absorbed from the atmosphere, by oceans and forests for instance.
- NSW Health is committed to a value based healthcare delivering outcomes and experiences that matter to patients and the community.
- Value based healthcare requires engagement from patients, the community, clinicians and organisations

Principles of Sustainable Healthcare

- Keep people healthy, well and independent

- Minimise low-value and harmful care

- Decarbonise high-value care

NSW State Health Plan

- Future Health: Guiding the next decade of health care in NSW 2022-2032.

- NSW Health vision is to lead a modern, low carbon, low waste, climate resilient health system by focusing on quality, value, innovation and equity

Net zero clinical programs

Net zero clinical programs

Getting to a net zero health system will require changes and innovations across every service and every specialty. NSW Health's net zero programs will support, connect and inspire our staff to rethink and reimagine their service, with a net zero lens.

Meet the NSW Health Net Zero Leads who are leading and coordinating this work.

See what is happening and find key resources in your area.

Allied health

Find out how allied health professionals can contribute to a net zero health service.

Anaesthetics

Anaesthetic gases are 5% of a hospital's carbon footprint.

Emergency

We need to improve environmental sustainability within emergency departments.

Intensive care

Clinicians have an important role to play in decarbonising our health system.

Pathology

Pathology testing, together with imaging, contributes 9% of healthcare's carbon footprint.

Respiratory

Metered dose inhalers are 3% of healthcare's carbon footprint,

Surgery

Theatres currently produce 30% of a hospital's waste.

Mental health

The effects of climate change can seriously harm mental health.

Medical imaging

Find out how to reduce carbon emissions from diagnostic imaging.

Nursing and midwifery

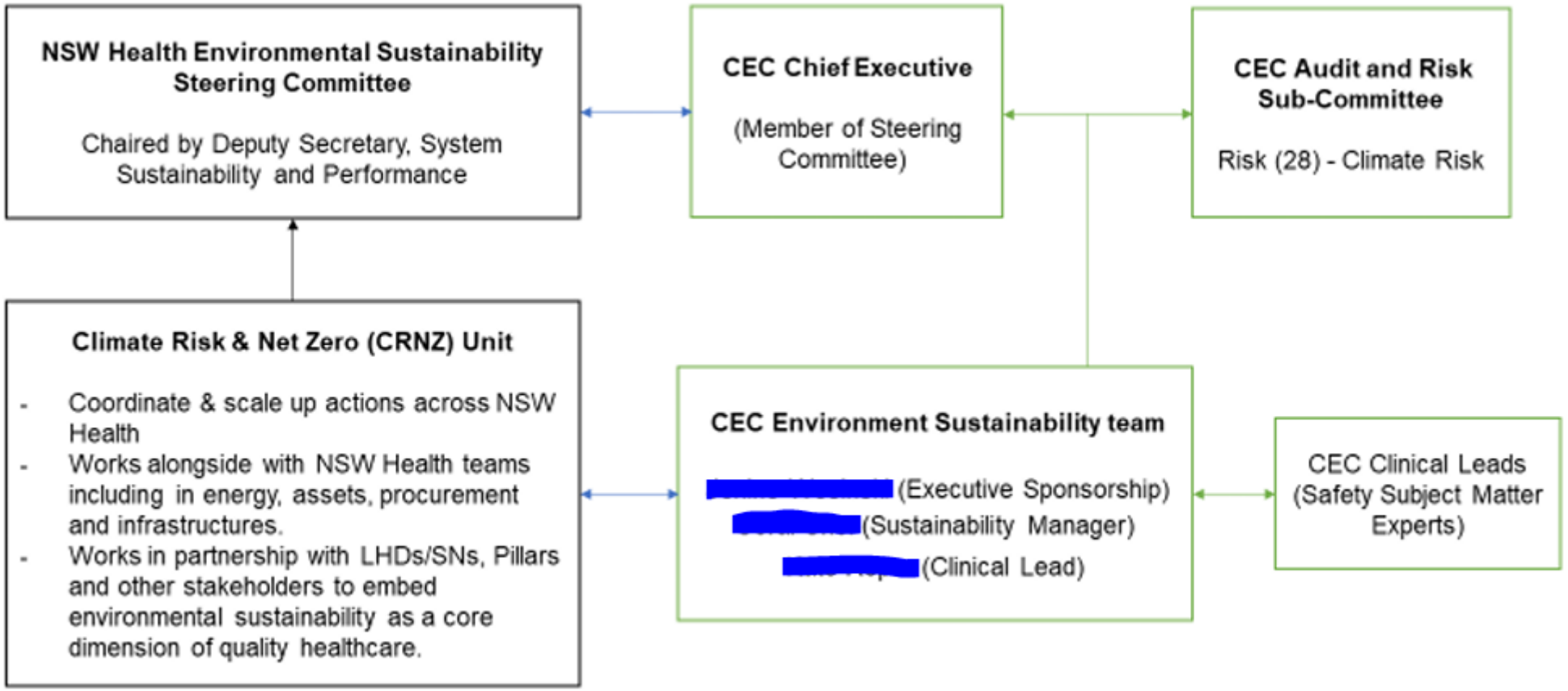
Nurses and midwives are critical in our transition to net zero.

Pharmacy

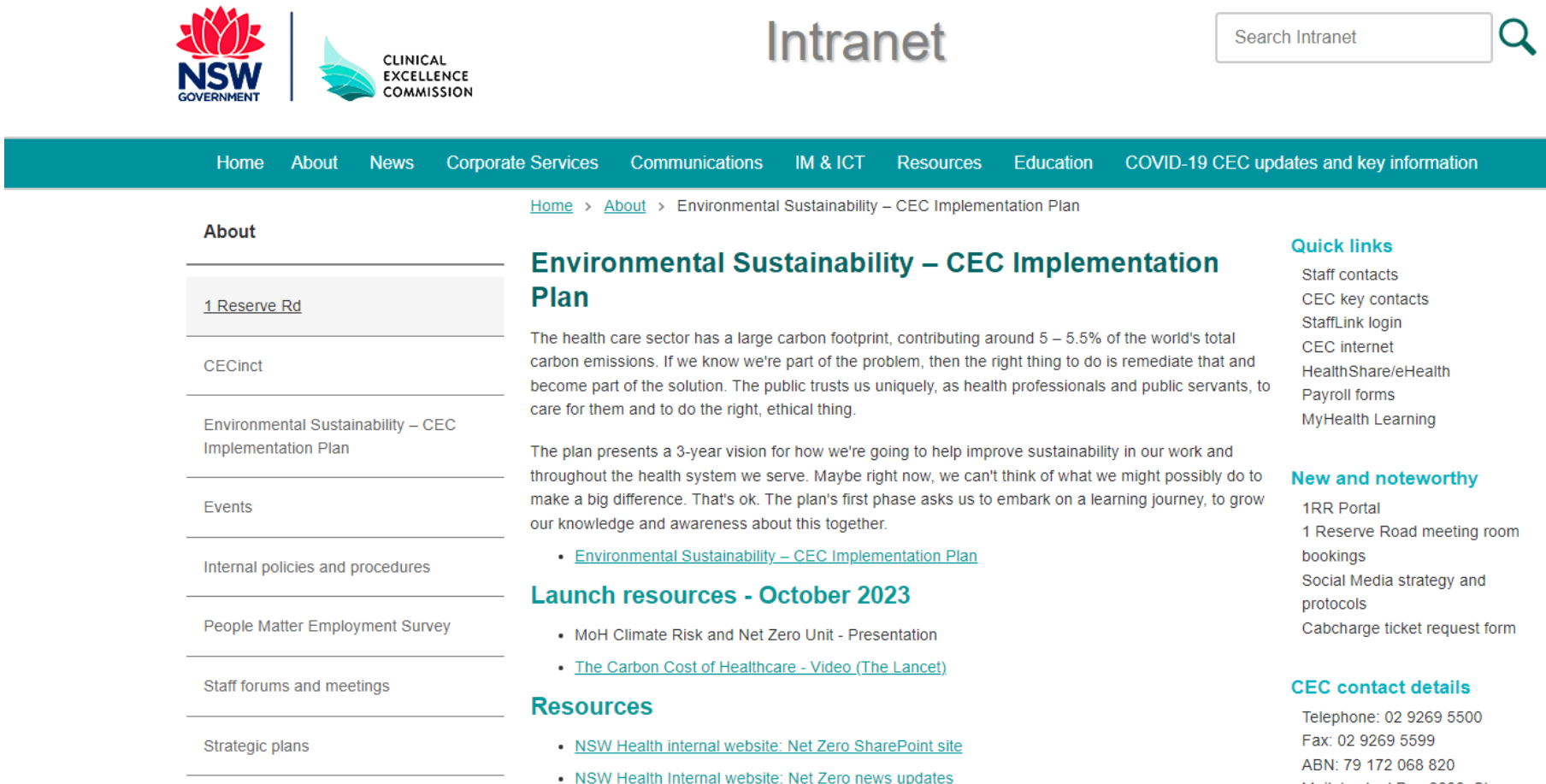
Pharmaceuticals are 19% of the Australian health system's carbon footprint.

Infection prevention and control is missing???

Clinical Excellence Commissions Plan



CEC initiatives



NSW Health IPAC PD2023_025

- Implementation of PPE must consider environmental impact and sustainability in addition to safety requirements.
- NSW Health Organisations are required to consider environmental sustainability with a balanced approach to decisions related to the implementation of single use or single patient use items versus reusable items

23. ENVIRONMENTAL SUSTAINABILITY

Environmental sustainability can also be achieved by adapting a model of care that focuses on fundamental processes and activities with technological innovations such as live data sharing and teleconferencing. The following areas for improvement are to be considered when focusing efforts on reducing the healthcare environmental footprint considerate of ensuring compliance with infection prevention and control:

- Transition to renewable energy sources.
- Purchase environmentally preferred and sustainable products.
- Reduce chemical use where feasible and practical.
- Include green building in infrastructure and planning.
- Reduce consumption of energy, water, and raw materials.
- Minimising waste.
- Introduce recycling programs.
- Eliminate incineration where possible and practical.

Where sustainable options are being considered compliance with infection prevention and control is required ensuring all standards are met and categorisation of procedure or equipment remains consistent and does not introduce other unintended risks or consequences.

Sustainable projects being implemented must include consultation with infection prevention and control in addition to other key stakeholders.[52]

HNE initiatives

- Caring for country and sustainability: The possibilities for integrating caring for country into sustainable development
- If we care for country, it will care for us
- Benefits of biodiversity, restoration of wet lands
- Preserve cultural learning, language, cohesion and connection with kin, ancestors and community

Sustainable Healthcare – Together towards Zero 2030

In 2021, HNE Health released the Sustainable Healthcare – Together towards Zero 2030, an ambitious initiative focused on an environmentally sustainable vision for the future.

Significant investments will be made in solar power, water sustainability and energy efficient practices in coming years to lighten and, eventually, eliminate the organisation's carbon footprint.

Our green vision is to be carbon and waste neutral by 2030, reduce our environmental impact while continuing to focus on Excellence – every patient, every time and to display public leadership and drive change in the market.

The goals of the programs are to:

01

Acknowledge and advocate the connection between human health and the environment

02

Eliminate our contribution to the burden of disease and work towards reducing our environmental impact while being fiscally responsible

03

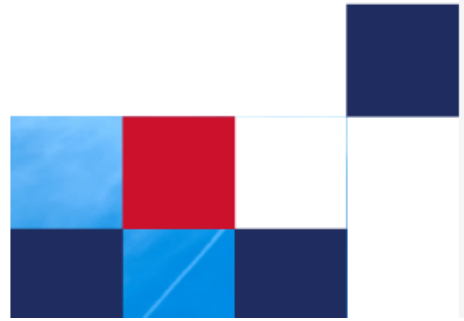
Adopt Aboriginal stewardship values for our environment and Caring for Country

04

Engage and empower our staff and community to participate in this journey of sustainability transformation

05

Contribute to leading a movement of sustainability



Embedding aboriginal knowledge into new builds

Connection to Land; spirituality and ancestry; kinship; and cultural continuity

Connecting to Country can be embedded through designing with Country in mind, including textures and colours that resonate with Country, bringing the outdoors in, having a space to sit and yarn with your family.

Designing with country is not possible without engaging with, and more importantly, being guided by aboriginal community and recognised knowledge holders.

Natural vs mechanical ventilation

- Culturally respectful rooms
- Mixed mode ventilation

Health
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Gloves Off Campaign

Research Project

Focusing on waste avoidance and best patient care.

The gloves off campaign was established in 2018 in England at Great Ormond Street Hospital London (GOSH). GOSH project reduced glove use by 30%, with associated cost and environmental savings.

The ‘Gloves Off’ project is a research project taking place on two trial wards at John Hunter Hospital to improve hand hygiene and reduce unnecessary non-sterile glove use.

Non-sterile gloves used annually = ~28.3 million

Gloves sent to landfill = 75 tonnes plus disposal costs

Carbon footprint = equivalent to driving an average petrol car around Australia 438 times

Glove off project- SWSLHD

- On average SWSLHD use 787 515 gloves per week. 4.6 million dollars on gloves in 2022
- A 1% decrease in examination glove use at SWSLHD would reduce glove use by 7000 a week and save $40,000 year. (The GOSH project reduced glove use by 36,000 a week).

❑Staff survey conducted 2023

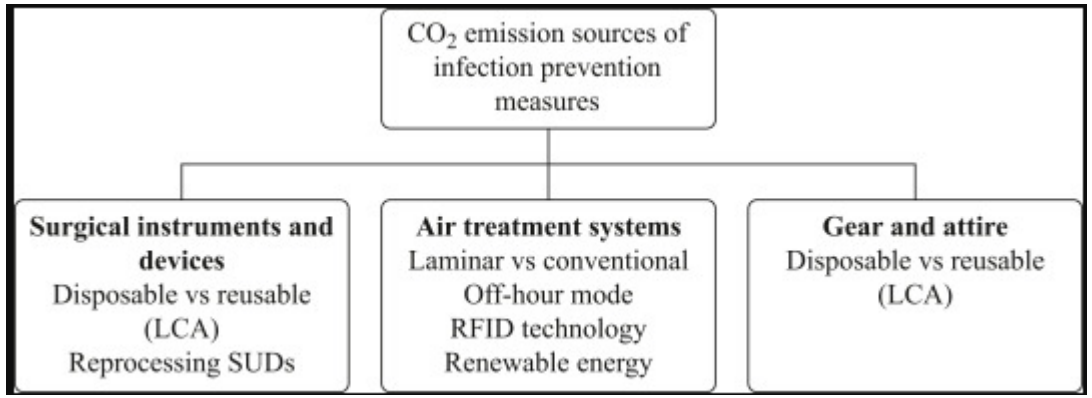
- > 50% believes glove should be worn when there is a potential exposure to blood and bodily fluids and 27% believe that gloves are required to undertake clinical procedure
- 30% believe that gloves is to protect staff and 15% believe it is there to protect patients
- 21% deem gloves should be worn for ALL patients
- 50% acknowledge that being in contact with non- intact skin is an indication of gloves use

- Focus groups being introduced and education packages under development

Single-use vs reusable, and its impact

- Bolten *et al* 2022-The carbon footprint of the operating room related to infection prevention measures: a scoping review

- Evidence suggests that the use of disposable items instead of reusable items generally increases the carbon footprint, **depending on sources of electricity**



Life-cycle assessment (LCA) studies a product over its whole life cycle, ideally following a 'cradle-to-grave' approach (i.e. from the extraction of the raw materials to the disposal, including production, transport and use phases)

Single use vs reusable

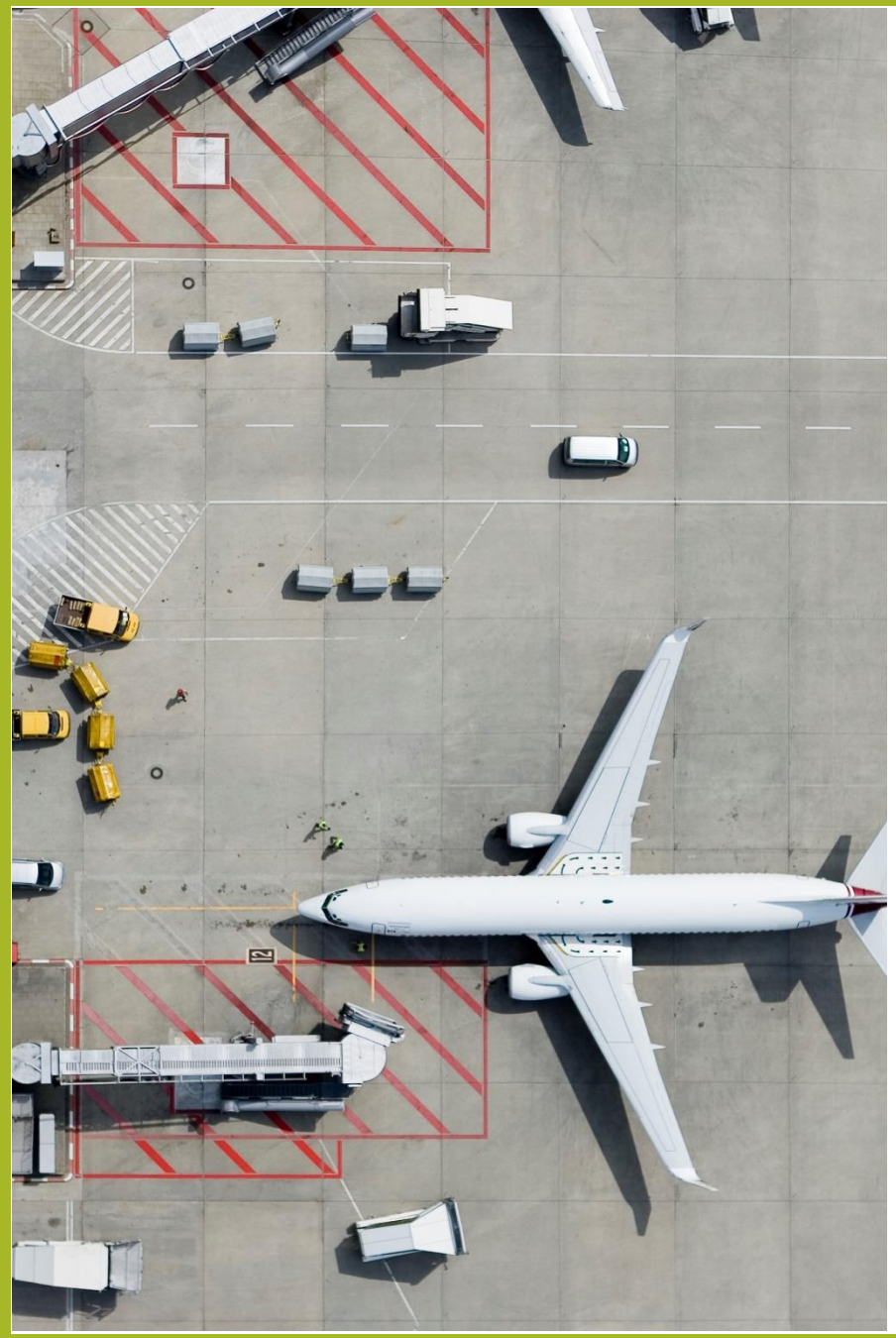
- Keil et al 2022 The impact of switching from single-use to reusable healthcare products: a transparency checklist and systematic review of life-cycle assessments
  - 27 studies were included in the analysis with five assigned categories: invasive medical devices, non-invasive medical devices, protection equipment and inhalers.
  - Switching to reusable healthcare products is likely to reduce most impacts on the environment **except water use**, but the effect size differs among product categories
  - Aspects such as the number of uses, approach to cleaning and disinfection, staffing requirements in hospitals, possible variability in comfort, usability have a crucial role to play.

EWater technology

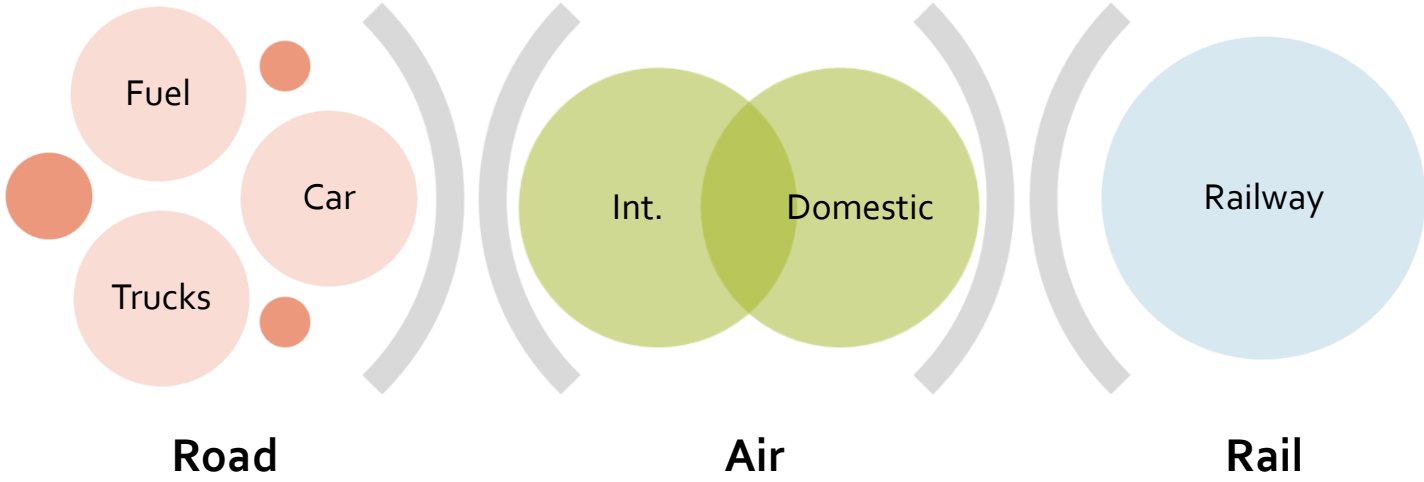
- EW is produced in an electrolysis chamber which contains dilute sodium chloride (salt) and tap water without any harmful chemical addition
- Mainly used in food industry for use in food processing
- Its disadvantages are rapid loss of antimicrobial potency due to continual loss of chlorine gas, and significant decreases in potency when in contact with organic matter such as blood and saliva or by blocking the physical access of the disinfectant to the microbial target
- EW (particularly the acidic type) is strongly acidic and its free chlorine content is corrosive to some metals during prolonged contact, which can also lead to the degradation of synthetic resin

Steam sterilisation's energy and water footprint

- McGain *et al* 2017 VIC Australia study over 304 days
- 2173 active cycles, 1343 standard (134°C) cycles that had an average load mass of 21.2kg, with 32% of cycles <15kg
- Electricity used for active cycles was 32,652kWh
- Water used was 1243495L
- Standby used 21457kWh
- Water 329200L
- Considerable electricity and water use occurred during standby, load mass was only moderately predictive of electricity consumption and light loads were common yet inefficient.

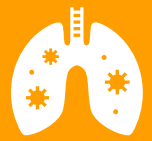


Transportation



Expectation vs reality

Glove off project- Use gloves in situations involving possible contact with blood or body fluids, mucous membranes, non-intact skin (standard precautions)



Natural vs mechanical ventilation - COVID-19, Influenza, ARI in general, TB, measles, Chickenpox etc

Single use vs reusable – Cost of cleaning, disinfection, sterilization (water, electricity, wrapping material, consumable e.g., indicator tape, dust cover, PPE, chemicals, storage space, human resource, transportation (fuel, time, human resource)

Sustainable IPAC: Our challenges

- Risk of healthcare associated infection
- Emerging pathogens and antimicrobial resistance
- Funding and resourcing
- Staffing challenges
- Access to medical supplies and equipment
- Infection prevention process and systems (not every facility is the same e.g. rural vs metro)
- Our standards, policies and obligations towards the provision of safe and quality healthcare
- Protecting our workforce

Environmentally sustainable- What can we do?

- environmentally preferred purchasing
- reducing chemical use
- actively seeking alternative sustainable products
- engaging in green building
- reducing consumption of energy, water and raw materials

Environmentally sustainable- What can we do?

- minimising waste
- engaging in recycling programs
- transitioning to renewable energy sources
- reducing incineration; and
- improving transportation strategies

- A full sustainability assessment or life-cycle sustainability analysis is a valuable avenue for further research efforts.

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Thank You

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