



Government of **Western Australia**
Department of **Health**



Environmentally sustainable healthcare: Delivering planetary health through low carbon care



Clinical Senate of WA

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Chair's Report

The care delivered by the health sector produces seven percent (7%) of Australia's greenhouse gas emissions contributing to environmental changes, disrupting the ecosystems on which we depend (Malik et al. 2018)¹. Climate change is an emergency and should be treated as such with the window of opportunity for effective action narrowing. The disruption faced by COVID is nothing compared to what we now face.

We have learnt that planetary health is vital to and linked with wellness. We have learnt climate change, environmental degradation, and biodiversity losses are affecting every community physically and psychologically with certain populations, such as First Nation's peoples, disproportionately affected. To ensure climate justice for First Nation's peoples, we as health professionals must value the knowledge of and learn from this group, recognising how they have protected their Country and could hold solutions to the climate crisis. We need to acknowledge the knowledge of First Nation's peoples and recognise that Climate change is another 'disease' of colonisation. We need to recognise the holistic understandings of health, as well as caring for country, community and culture, and that by doing this, we are caring for self which can create healthy, empowered, activated, and engaged communities.

The impacts of climate change are in front of us. We either see, don't see, or choose not to see these, thinking and hoping someone else will act. Climate change is an emergency we have been slow to react to, but we must do so now.

Climate change impacts directly, indirectly, and through social mechanisms, and is challenging 50 years of gains in Public Health. Its complexity, related health issues and systems threats must be considered in climate change strategy. This requires strong leadership, evidence-based innovation, and policies that support sustainability of a healthy Australia.

The WA Department of Health leads by a value system with core ethical principles². At its very core, sustainability is a value system. As a clinical senate we champion Value Based Health Care (VBHC) initiatives and environmentally sustainable healthcare is an incredible way to apply these. It is not only about the patient and their outcomes but the community and its outcomes. With much of health care being wasteful and low value, accounting for 30% of the carbon footprint of clinical care, changes to models of clinical care are essential to provide better value, low carbon emissions. VBHC requires a system approach, to consider the elements contributing to the cost of care whilst achieving efficiencies without compromising outcomes. Partnerships within and outside the health sector are fundamental to align interests with improving health outcomes and climate change.

As healthcare professionals we must acknowledge and recognise the threats of and linkages between climate change and emerging health impacts. Now is the time to prepare and respond, to develop and evaluate evidence-based solutions to safeguard an equitable, sustainable and healthy world. Sustainability is a cross-cutting issue, cutting across excellence, innovation, Public Health and research and needs to integrate and interface across all health delivery.

Planetary health and VBHC principles need to be incorporated into clinical routines and embedded in clinical guidelines. It is time to shape a sustainable health service that motivates clinicians to engage in sustainability changes whilst improving patient outcomes.

The purpose of this Clinical Senate is to assist in informing the WA Sustainable Development Unit (SDU) of clinical mitigations for strategy against climate change. We will propose suggestions, ideas and strategies to allow the SDU to prioritise what is needed to make a difference in our area of influence. The SDU will look at immediate and future initiatives, at infrastructure, planning, and broader energy and procurement issues. Together we can consider and design strategies to transition towards a green and resilient WA health system.

Senate members have a role in providing information on the health impacts of climate change and should actively question:

- What barriers prevent discussions on health-environment co-benefits?
- What resources are required to promote addressing climate change with patients?
- How can leadership be developed?
- Should clinical guidelines be implemented to expand planetary health into the clinical setting?
- How can health care be transformed to make it sustainable in the future?
- How can we do everything well every day and not just something well sometimes?

It is incumbent on individual clinicians and those working in the health care system to do things differently individually. To stand up with moral courage in serving patients and influencing their outcomes. If we cannot act, we will suffer moral injury. To act requires alignment, commitment and support of the broader system, and guidance and direction of system managers, health service providers, executives and boards of the organisations. Sustainability needs to become a core value, part of the language, and embedded in core business.



*Figure 1 Climate Change is a Health Crisis and Doctors aren't prepared*³

Executive Summary

A key finding from the series of webinars and virtual meetings were that the Senate process itself demonstrated the knowledge gap for clinicians in this space. This indicted the need for capacity building/skills development/education and training. It became clear people still see this as an 'environmental issue' - something that was nice that we could do 'on the side', with a key focus on 'waste'.

As a system we cannot expect clinicians to just 'get this' – it takes a different way of thinking. Key to changing is to centre it and demonstrate how it aligns with and crosses key clinical care issues both in its drivers and its outcomes and to arm clinicians with the knowledge of concepts of planetary health, climate justice, and the pillars of sustainable care. However, it is not enough to just give clinicians the knowledge, they need to be able to use it. This links in with leadership, providing the authorising environment, and putting the policies, structures, and systems in place, that empower clinicians to act.

The system must enable clinicians to think about sustainability as they would for any other issue of safety and quality of healthcare. The senators took inspiration from other jurisdictions in having 'sustainability clinical care centres', 'sustainable quality improvement programs', Sustainability fellow programs, clinical networks, and a dedicated Clinical Sustainability Officer' to push and lead a system wide reform. In particular the work at the Centre for Sustainable Healthcare, Net zero clinical programs - Climate risk and net zero (nsw.gov.au) and NHS England » Dr Nick Watts. The Senate respect that the process will be iterative, as everyone learns more about how do this well. We will get better at it – just like any other quality improvement issue.

The Climate and Health Inquiry flagged this as the critical decade for action. Urgent action requires collaboration and systems approach to catalyse and integrate more quickly. The Senate notes the establishment and work of the SDU, however recognised that sustainability themes need to be embedded in all areas, particularly into Safety and Quality. In doing so, connections can be made with work that is already happening (such as funding reforms, preventative health, high value care, virtual care, and models of care in the community), illustrating the circularity or interconnectedness of this as an issue and ensures people see that Sustainable healthcare is good healthcare.

The lowest carbon, and most sustainable hospital is one with no patients, where everyone is healthy and well and cared for on Country, in the community, or close to home. A system where patients are empowered and assisted to take ownership and manage their own care, and where care delivery is efficient, patient centred, value based, low waste, and low carbon. We must also enable the system and clinicians to understand what patients, communities, and services will face as a result of climate change – and ensure they can adapt to, and build resilience from, the shocks and stressors of climate change events.

Lastly – we cannot forget that nature, in itself, is medicine. Nature-based solutions and nature-based resilience forms a central aspect of wellbeing, especially for First Nations people. Through linking health and wellbeing in this two-way relationship we can create a health system that 'Regenerates the Health of the Planet, and the Health of People'.

Recommendations

The Australian healthcare system produces seven percent (7%) of the total greenhouse gas emissions of Australia with hospitals and pharmaceuticals the major contributors. Therefore, healthcare in Australia contributes to the devastating consequences experienced through climate change that are witnessed daily in the media¹. Without immediate changes, healthcare clinicians will be restricted in their knowledge and ability to make a difference through the provision of environmentally sustainable, low-carbon care in both hospital and community settings.

The WA health system should recognise climate change as an emergency and future proof the healthcare system through clear direction, clear alignment, and clear commitment. Just as the response to COVID galvanised WA Health to act immediately, it is time to come together for immediate action in light of the climate emergency that is gathering momentum each and every day.

The WA Clinical Senate recommends the following evidence based and/or peer benchmarked actions to support the mitigation, adaptation and delivery of environmentally sustainable, low-carbon and climate resilient healthcare to improve outcomes for WA's consumers, the whole population and the health of the planet. The following recommendations recognise a systems approach to build upon, leverage and complement existing departmental structures and collaboration for policy development and implementation guidance.

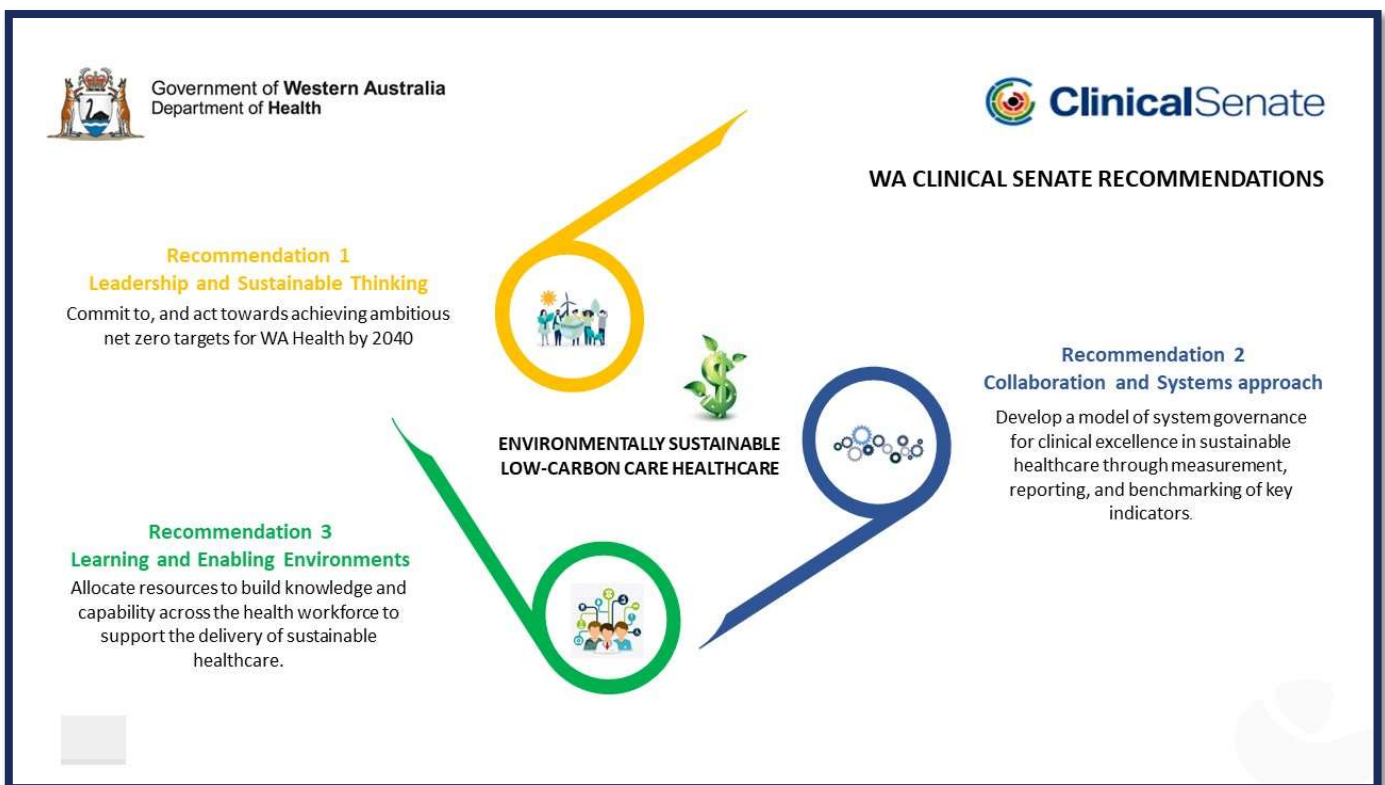


Figure 2 Environmentally Sustainable, Low Carbon Care WA Clinical Senate Recommendations

Leadership and Sustainable Thinking

System-level clinical leadership is critical to leverage and rapidly expand sustainable healthcare advancements.

Key Recommendation 1:

Commit to, and act towards achieving ambitious net zero targets for WA Health by 2040.

Supporting Actions for consideration:

- Appoint a Chief Sustainability Officer to lead and coordinate the WA health system's commitment to net zero emissions.
- Centre and elevate Aboriginal voices and knowledge into participatory co-design of sustainable healthcare.
- Include Sustainability as a core value for WA Health.
- Establish sustainability clinical networks, with specialist sustainability clinical leads, that connect clinicians, community, consumers, carers and cross-sector stakeholders, to develop pathways for net zero emissions.
- Embed sustainability principles and techniques into established quality improvement practices.
- Preference procurement with organisations that have made commitments to reduce their carbon emissions and address climate change.

Collaboration and Systems Approach

Environmentally sustainable healthcare is a complex and urgent issue that cuts across all parts of the health system. It requires a systems approach, with robust engagement and collaboration with stakeholders across all levels of the health system.

Key Recommendation 2:

Develop a model of system governance for clinical excellence in sustainable healthcare through measurement, reporting, and benchmarking of key indicators.

Supporting Actions for consideration:

- Advocate for funding mechanisms that incentivise return on investment and allow for the reinvestment of savings from sustainability initiatives.
- Integrate patient-centred, climate resilience into health promotion, preventative healthcare pathways and models of care and prioritise provision of care in a community setting.
- Ensure models of care enable clinicians to adopt climate resilient thinking when delivering clinical care.
- Incorporate sustainability as a standing agenda item for Health Executive and Board meetings.
- Share performance against key indicators widely across the system to provide transparency and foster shared accountability for achieving goals.

Learning and Enabling Environments

Clinicians require opportunities to build capability through authorising environments, policies, structures and systems that empower them to act. The system must enable clinicians to think about sustainable healthcare as they would for any other issue of safety and quality of healthcare.

Key Recommendation 3

Allocate resources to build knowledge and capability across the health workforce to support the delivery of sustainable healthcare.

Supporting Actions for consideration:

- Provide access to training in sustainability and climate resilient care for leaders and managers across the system.
- Incorporate sustainability and carbon literacy into existing education structures and make opportunities available for clinicians such as leadership programs, service improvement programs and mandatory training.
- Engage and partner with universities and Registered Training Organisations to provide opportunities for advanced education and training in relation to sustainability and climate resilient care.
- Establish grants to fund sustainability projects, initiatives, research, and clinical fellows.

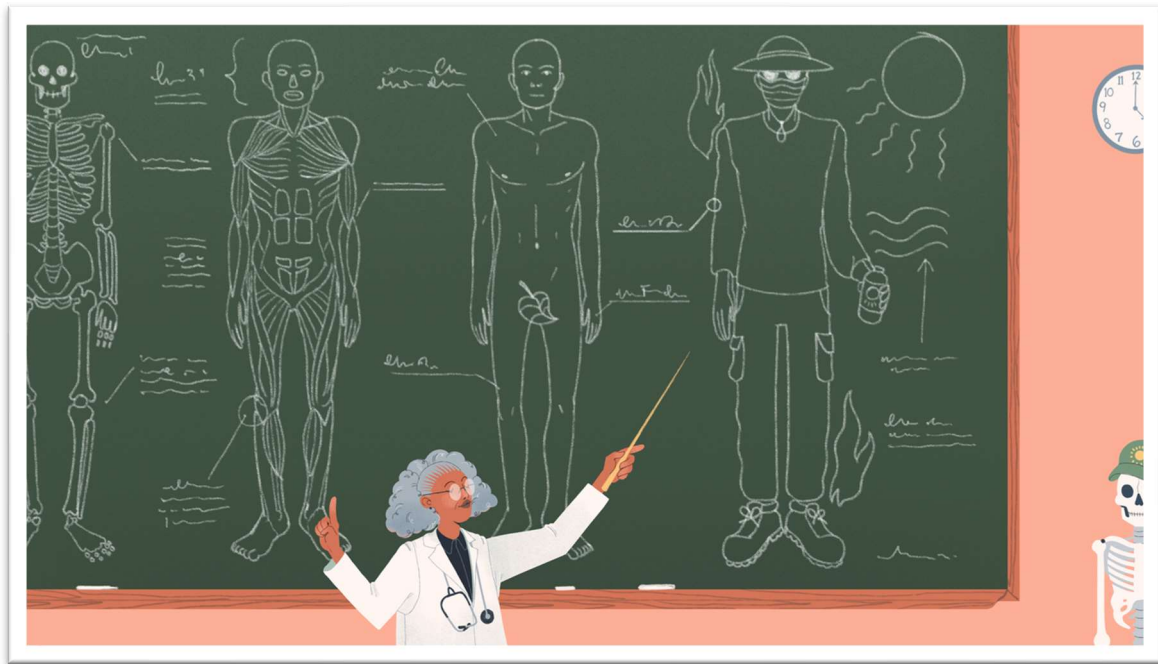


Figure 3. Medical residents learn to treat the growing health hazards of climate change⁴.

Introduction

“Primum non nocere”

Health professionals have a duty of care, an ethical responsibility to ‘first do no harm’ yet globally the health care sector is responsible for 4-5% of global greenhouse gas emissions. In Australia, the figure is 7%¹. This significant contribution to the global carbon footprint adds to global warming and pollution which in turn impacts the health outcomes of the community. Healthcare organisations across Australia have declared Climate Change a health emergency (Doctors for the Environment Australia 2022)⁵.

In 2021, the UN Secretary-General Antonia Guterres stated “We clearly know we have a planetary emergency. Humanity is waging war on nature. This is senseless and suicidal. The consequences of our recklessness are already apparent in human suffering, towering economic losses and the accelerating erosion of life on Earth”. There is now clearly an urgent need to consider the health of person, place and planet as indistinguishable⁶.

Planetary health is vital to, and inextricably interlinked with high-level wellness and must be advocated for by humankind. The effects of climate change, environmental degradation and macroscale biodiversity losses are increasingly affecting every community. Our changing climate is exposing Australians to climate-related illnesses, and healthcare services are vulnerable to a range of risks, including an increase in patient demand and threats to infrastructure, workforce and supply chains⁷.

Climate change is a wicked intergenerational systems issue that will particularly affect those marginalised within our communities. The climate crisis has already disproportionately affected the health and wellbeing of First Nations Peoples globally. Australia’s First Nations peoples are the world’s oldest surviving civilisation who recognise that without full planetary health and balance, there is no life (Standen et al,2022)⁸. To remove the barriers faced by First Nations Peoples, Australian health professionals must value the knowledge of, and learn from Aboriginal and Torres Strait Islander peoples. Aboriginal knowledges and cultural practices have shown enormous environmental, health and well-being benefits. Resourcing and empowering Aboriginal communities to lead place-based climate adaptation and mitigation processes will be critical to addressing current and future climate challenges in Australia⁸.

Professor Peter Doherty, Nobel Laureate for Medicine, calls in the Climate and Health Alliance Healthy, *Regenerative and Just Our vision for a better future*⁹ for a national strategy on climate, health and well-being for Australia emphasising that the window of opportunity for effective action on climate change is narrowing. He indicates there is just one decade left to apply available strategies to give us a chance to hand on a habitable planet. It is of paramount importance that the action taken is coordinated and compliments other efforts.

The problem of global climate change cannot be solved working independently. All levels of government, the health sector, business and community must come together and commit to reduce Australia’s greenhouse emissions, limit pollution and environmental damage, improve health outcomes and empower the Australian population to respond to the health impacts of climate change.

It is widely acknowledged that much of health care is wasteful and low value. Low value healthcare accounts for 30% of the carbon footprint of clinical care (Barratt, Bell and Charlesworth 2022)¹⁰. No matter how green we make healthcare facilities by changing electricity and water supplies and ending fossil fuel use, changes to models of clinical care that provide better value low carbon emissions are essential to reduce the overall carbon footprint of Australian healthcare.

Awareness and recognition in the healthcare community about the threats posed by, and interlinkages between, climate change and emerging health impacts is increasing. Health care professionals know now is the time to prepare and respond, to develop and evaluate evidence-based solutions to safeguard an equitable, sustainable and healthy world. The British clinical practice guidelines from the National Institute for Health and Care Excellence (NICE) already promote environmentally sustainable health care aiming to reduce the environmental footprint of health care¹¹.

Sustainability, planetary health and value-based health care principles therefore need to be incorporated into our clinical routines and embedded in clinical guidelines. It is time to shape a more sustainable health service that motivates clinicians to engage in sustainability changes whilst improving patient outcomes, not just of today but of the future.



Figure 4. Mitigating the Impact of Climate Change on Human Health - The Role of the Medical Community¹²

Sustainable Development Unit

The Climate Health WA Inquiry 2020¹³ is a guiding document and blueprint for the way forward in health for the next 10 years. Its recommendations included the establishment of a Sustainable Development Unit (SDU) and, to allow and incentivise a new normal in hospitals and health services. The WA Clinical Senate worked closely with Mr Neil Keen, Director, SDU and Dr Synnott, Medical Advisor, SDU to convene the webinar series and Senator meeting for this topic.

Mr Keen spoke of the generations of traditional knowledge and expertise in stewardship, resilience and adaptation aboriginal people have shown in caring for their country. He emphasised there is much to learn from aboriginal peoples to shape WA's response to climate change. Mr Keen thanked the Senate for its engagement and support, extending thanks to Dr Synnott for shaping the debate and webinars.

The SDU as a policy unit has key principles for action with a mission to support the health system in mitigation, adaptation, and resilience. Environmental sustainability offices (ESO) and officers can be found onsite in some Health Service Providers (HSPs) to support local activity. Mr Keen asked Senators if they were aware of the ESO at their workplace? If not, why not and how could clinicians better connect with happenings in this space?

Mr Keen explained the environment around climate change and sustainability is rapidly changing, highlighting the Western Australian State Climate Policy 2020¹⁴ and Climate Health WA Inquiry¹³ and the recent State Government announcement to target an 80% reduction in indirect and direct purchased emissions by 2030. Health has a lot of work to do to realise this. Even if energy usage is completely reformed to renewables, carbon must be removed from care delivery to meet this target and when achieved there is a further requirement to reach net zero by 2050. To reach net zero, WA health must electrify its hospitals, remove gas and replace aging infrastructure as well as addressing the challenges of waste and procurement.

The best way to reduce carbon in clinical care is to not produce it with the key tenets of low carbon care being prevention, promotion, and empowerment of patients to control their health. Lower carbon alternatives and lean service delivery lead to high value care, low waste and low duplication consistent with the core values of health practitioners.

Senators were encouraged to consider their personal bucket of carbon, to visualise it and to consider what was needed to reduce this and the amount generated in care delivery? Senators were asked:

As a clinician what could the system do to support and empower you in the delivery of low carbon care.

- what are the barriers and enablers for you as a clinician, for your team, for your service?
- what could the system do to address those barriers or assist those enablers?
- what is the role of the system, the services, and the individuals?

The answers to these questions will shape the way forward of the SDU and WA Health in meeting sustainable health care for our population and communities.

Methodology: Webinar Series and Senate Meeting

The Western Australian Clinical Senate brought together clinicians, consumers and health directors from across the state to discuss ‘Environmentally sustainable healthcare: Delivering planetary health through low carbon care’. This was a virtual event consisting of a series of three webinars and a final Senate meeting.

The Webinars were organised through MSTeams. In preparation, Senators were provided with generous pre-readings (Appendix 1) and a glossary of terms (Appendix 2), and participated in a series of three one-hour Webinars where invited expert witnesses provided evidence on the ‘Why’, the ‘What’, the ‘Who’ and the ‘How’ of the debate topic. Time was available at the end of each session for Senator’s questions to be addressed and answered.

The four-hour Senate meeting was conducted through Zoom videoconferencing using OpenSpace methodology to generate discussions on seven topics selected using GroupMap participation software (Appendix 3). The meeting provided Senators and guests the opportunity to diverge and converge on their selected topic and, using Driver Diagrams (Appendix 4) decide the system-level changes needed to enable the delivery of sustainable, low carbon care across the health system. The group convened at the end of the OpenSpace session to share their final discussions (Appendix 5).

Common themes from thematic analysis of GroupMap

1. Ways the system can assist in the development and prioritisation of models of care across the system to ensure they consider social and environmental value (and minimising costs)
2. Ways that the system can create capacity for clinicians to carry out dedicated sustainable clinical care
3. Ways the system can help clinicians recognise and understand Climate Justice and health
4. Ways the system can understand and enable Aboriginal leadership in codesigning with clinicians and clinician initiatives
5. How can the system help to improve the knowledge, skills, practice, and engagement of clinicians in health leadership, advocacy, and collective action at the interface in all areas of planetary health/sustainability?
6. Integrate sustainability (environment and social) as a core value for health care across all areas (innovation, clinical excellence, workforce, education, and public health)
7. System level resources/tools and incentives to help clinicians to better research, understand, measure, and reduce the impact of climate change at an individual, team and HSP level

Presentations and key messages

Webinar 1: 'Sustainability thinking, world views, and climate justice'

Purpose: To improve understanding in different world views to ensure the themes of justice and environment and social determinants of health are incorporated in all clinical decision making.

Sustainable care and sustainability thinking

Dr Emma-Leigh Synnott Medical Advisor, Sustainable Development Unit

Climate Change is a recognised global crisis bringing unprecedented challenges in sustainability and health. Challenges that cross countries and sectors, have complicated relationships, and involve multiple uncertainties and interdependencies - "Wicked" problems that threaten lives and livelihood. As society over-steps the safe operating planetary boundaries such as climate change and biodiversity loss, there will be cascading and compounding impacts that threaten the foundations of human health.

A rapid reduction of environmental harms is needed to minimise threats to health. These impacts from Climate change occur via direct, indirect and social mechanisms.



As a health threat multiplier, climate change exacerbates pre-existing health issues in individuals and communities, with vulnerable groups – the elderly, youth, those from lower socioeconomic backgrounds, with pre-existing disability, medical or mental health condition, and First Nations People – being most at risk and impacting health systems. There will also be increased health system burden that will threaten our service delivery and the health of communities including supply chain disruption, infrastructure risks, workforce challenges, and service delivery disruption.

Health systems and services consume large amounts of energy, water, and consumables, producing mind-numbing amounts of waste. Internationally health services yield around 4% of global emissions with Australian health services contributing to 7% of the country's carbon emission footprint. As part of the problem, health services must consider their contribution and rise to meet the challenge of reducing their contribution to assist in minimising future threats. With pharmaceuticals, equipment, pathology testing, interventions and patient/staff travel accounting for 70-80% of healthcare emissions clinicians have a powerful role in this and have the opportunity to put a sustainable lens on direct clinical care decision making. It is time to move towards sustainable healthcare that does not contribute to harm or compromise high quality care delivery.

Climate change and declining planetary health is a threat today and in the future. Senators, as experts, what does sustainable clinical care look like to ensure we "do no harm" and ensure the provision of high-quality healthcare into the future? Now is the opportunity to:

- rethink, reset and radically disrupt the way clinical and community care is conceptualised and delivered
- introduce the concepts of planetary health and the connection between the health of the planet and the health of the population.
- look at the interconnection between Climate Justice and Social Justice
- reframe the interactions between people and place and how healthcare is considered
- create robust, equitable, safe, and high-quality care that delivers outcomes for patients and communities that minimises costs and adds value across social, environmental, and financial domains now and into the future

Health, social systems and justice

Dr Naomi Godden Social Worker, Social Justice and Environmental activist

Climate justice brings a human rights lens to climate change and an understanding of how climate change affects vulnerable people in communities ensuring any response is equitable and fair. Individuals are informed by who they are having unique circumstances affected by lived experiences, social structures and forces. Climate change is experienced differently by everyone with those most vulnerable suffering disadvantage and marginalisation caused by social structures such as colonisation, capitalism and globalisation. To address climate change justly and fairly requires challenging these systems.

Displacement and increased homelessness are examples of social justice and climate change. Those experiencing homelessness suffer greater disadvantage and marginalisation without housing to cope with extreme heat or weather. Climate events cause populations to

be permanently or temporarily displaced from communities with associated identity, resource, coping and mental health implications. Wealth distribution is also affected with those suffering poverty or low income having less resources to cope and respond to emergencies, with food and water security and affordability affecting this group more.

Issues related to climate change events and ongoing prevention should be considered systemically. Heat related illnesses, injuries and deaths are already being observed and mental health issues are manifesting as a result of trauma and stress from climate events, growing ecosystem anxiety and climate grief. There is also increased rates of violence and conflict during and after climate events with greater community legitimacy for such violence.

Power and decision-making are significant components of social justice thinking and climate change. Currently Australian and international climate policy is largely held in white, elite middle-class space with those marginalised from social systems and structures disregarded from decision making. Governments, organisations and institutions are challenged to practically address this reality and as such responses to climate change must be accessible and inclusive and recognise the difficulties marginalised groups have accessing these.

The recent national strategy for Just Adaptation¹⁰ states that in responding to climate change all people must be recognised along with their knowledge and understanding of climate change. Just Adaptation should be approached through a transformational lens, transforming the systems and structures of power to be inclusive and accessible for all. A good understanding and insight into effective ways of producing just approaches to climate change resilience will be gained by following the five priority reform areas in this strategy.

Indigenous world views

Ms Ronda Clark Senior Project Officer, Community Health Aboriginal Health Team, Child and Adolescent Health Services

Aboriginal people are the traditional custodians of the lands on which we work, walk and live. For thousands of years Aboriginal people have lived in harmony with the land, sharing their traditions, values and cultural beliefs, passing these from generation to generation through stories, songs and dance. “The dreaming” is the history of how the world was transformed into mountains, hills, valleys and waters, how stars were formed, and the sun came to be.

Aboriginals will always be connected to their culture, country, community, the land and sea. They are nomadic, knowing how to protect and look after their land and country, moving when food and water sources dissipate to allow regrowth, living sustainably on Country for a time beyond comprehension. They understand the interconnectedness and richness of holistic and cultural health, that everything is connected, and that the health and wellbeing of an individual includes community, country, spiritual and cultural health. In Western views these are labelled ‘social’ or ‘environmental’ determinants of health when really, they are components of our overall health. Aboriginals hold the knowledge and solutions and ‘ways of knowing and being’. If the time was taken to listen to this, everyone’s health and wellbeing could be radically improved as well as healing country and looking after the community.

The impacts of climate change are felt worldwide. For Aboriginal communities, climate change is seen as an unknown illness coming from the sky, raising itself through the ground with the impacts resembling the experience of colonisation causing a loss of Aboriginal culture. People are being forced from their communities and home due to weather events, fire and the loss of traditional lands. The man-made impacts bringing new diseases seen through landscape, waterways and waterhole changes, and the resultant loss and disappearance of traditional bush medicines and tucker.

Everyone has a part to play in climate health, our environment, sustainability, healthcare, planetary health and low carbon care. Impacts are experienced by everybody with the importance of a healthy life changing daily and ripple effects felt at all levels. People must come together and change, using a collective methodology of co-design and adaptation to address the needs of the community. A whole of government approach must be applied to reduce the health system’s environmental footprint using innovative care pathways to focus on waste energy and low carbon healthcare providing an approach for designing, building, operating and investing in facilities that generate minimal greenhouse gases.

The health care system is complex and challenging. To understand what is sustainable requires planning to address preparedness, workforce capacity, research, early intervention and prevention, and improving efficiencies for health service demand. A model of care that benefits all, protects the vulnerable and has better connections to healthcare systems should be considered. A flexible model that reflects the environment a person lives in, whether rural, remote or urban, and identifies their differences.

The synergy between improving healthcare, environment, sustainability and improved healthcare efficiency, effectiveness and financial sustainability needs to be understood. Behavioural change should be encouraged to improve, maintain or restore health while minimising negative environmental impacts and leveraging opportunities to restore and heal. The country united through COVID with everyone’s voice heard. If we call climate change a disease or a pandemic, would more people take notice and come together? This journey and timeline cannot happen without a united approach.

Webinar 2: “Planetary Health and Health Responses”

Purpose: To raise awareness of what is currently happening around health care and sustainability. How is care being delivered sustainably internationally? What is already happening nationally?

Planetary Health (delayed from first webinar due to time difficulties)

Dr Tony Capon Director Monash Sustainable Development Institute

Planetary health safeguards human health in the Anthropocene epoch. It is the health of human civilization and the state of the natural systems on which it depends.

The Lancet Commission on Planetary Health and the Safeguarding Human Health in the Anthropocene Epoch report introduced the concept of sustainable development and the enduring health and well-being of people on Earth in the context of natural systems, and that sustainable development comes from health and medical understandings (Whitmee et al 2015)¹⁵. The key finding was the human population is healthier now, with average life expectancy rising in all world regions. To achieve this the planet has been exploited at an unprecedented rate. Carbon dioxide emissions have increased at a greater degree of acceleration, with a steeper trajectory than that of life expectancy, along with greater ocean acidification, energy use, global deforestation and fertilizer use.

Whilst a relatively new term in health research and public policy, planetary health is not new for Indigenous people. Their understandings of connections between health and the health of natural systems are fundamental in Indigenous spiritual understandings and the way they understand their place in the world.

The Millennium Ecosystem Assessment¹⁶ outlined links between environmental changes and ecosystem impairment caused by the escalation of human pressure on the global environment and associated health effects. These health effects are classified as Direct Ecosystem-mediated and Indirect, deferred and displaced health effects. Ecosystem-mediated health effects include novel diseases like COVID which spill from wild animals through domestic animals to people. In the context of climate change, forest clearance and urbanisation provide new opportunities for contact between animals and people. Diverse health consequences include loss of livelihoods and population displacement providing potential for conflict.

We are currently facing a spectrum of challenges, amongst these are health consequences and what can be done to meet them. At the heart of the challenge is the need to transition to circular thinking. Humans must remember the value of human ecology, where all activities have either positive or negative impacts on our health and understand patterns of human health alongside epidemiology as a core method in health research, education policy and practice. Often overlooked are the environmental impacts of human activities and what this means for the health of the planet, climate stability, biodiversity, and ecosystems. An eco-social approach is needed to acknowledge the interdependence of all species. Intergenerational health equities and the legacy and future of generations must also be considered along with valuing Indigenous and local knowledge.

There is a need to work integratively in a transdisciplinary way using co-design solutions. At the heart of what must change is our culture and the need for planetary consciousness in the work done in health, whether research, training, policy or practice.

International Responses – National Health Service UK

Dr Nick Watts Chief Sustainability Officer, NHS

The NHS is the fifth largest organisation in the world with 1.4 million healthcare professionals and a £120 billion spend every year. The NHS has a world beating commitment to tackle

climate change with net zero for direct inhouse emissions by 2040 and indirect emissions by 2045 embedding climate change targets into national legislation¹⁷. From July 1, 2022 [The Health and Care Act 2022](#)¹⁸ directly addresses the health professional's response to climate change and places duties on every hospital, clinic and integrated care system across the country. As part of high-quality medicine, strategies to tackle climate change are expected, with dedicated resources and broad level leadership.

The response to net zero for a healthcare system is a fantastic business opportunity. It is possible to act on 82% of an emissions profile with almost no additional capital investment. Although the remaining 18% requires upfront investment, the return is astronomical. The NHS invests £657 million annually into decarbonisation and estimates that reaching net zero will add £7.7 billion to the budget over a decade.

The myth that the response to climate change is expensive has not been experienced. The NHS uses its resources intelligently. Capital uplift has required investment with hospitals installing solar panels, ground and air source heat pumps and has electrified its vehicle fleet. These initiatives have provided a good return on investment.

As a large purchaser of goods, the NHS has considered what it buys, the supply chain and procurements having two categories of intervention. It works on demand and supply, retaining agency over what is prescribed, what catering staff purchase and where food comes from, imposing bans on items high-quality healthcare systems no longer require. For example, in 2020, one hospital phased out desflurane, in 2021, 56 hospitals phased it out and in 2022, the Royal College of Anaesthetists demanded it be phased out entirely.

With 82,000 global suppliers, the NHS has introduced a 10% weighting into everything purchased, weighted towards low carbon products. From April 1, 2027 suppliers must demonstrate a net zero strategy fully aligned to that of the NHS before starting conversations regarding purchasing products. Within the decade the NHS will no longer purchase from any supplier that does not meet or exceed its commitments on net zero.

Clinical fellowship teams were introduced into clinical leadership through a £31 million investment. Health professionals are seconded for a year into national policy where they consider how to decarbonise the work environment, looking at net zero strategies and ways to reinterpret these into the clinical world before returning to implement changes, having fun along the way.

A microgrants system worth £15,000 was also introduced focusing on individual clinician engagement with frontline clinicians encouraged to submit innovative ideas that tackled climate change whilst delivering care for patients and was fun. Clinicians stood up and engaged with 17,000 proposals submitted in 10 days.

The core purpose of the NHS is to deliver high quality care for all, now and for future generations. Unless climate change is tackled, this cannot be delivered. The NHS has discovered staff are energised when given the autonomy, capability, capacity, relationships, and ownership over the future of healthcare and the future of medicine, making this the inevitable direction of healthcare in the UK.

Australian Activities

Professor Eugenie Kayak Enterprise Professor Sustainable Healthcare, Department of Critical Care, Melbourne Medical School

Sustainability in healthcare means providing high quality care today in a manner that does not compromise the health and delivery of healthcare for present and future generations. Climate change is an emergency impacting the capacity to deliver and provide healthcare. As a major

contributor, the health system must act to be part of the solution providing agency, influence, tools and support.

In 2021, 200 international journals including the Medical Journal of Australia published an editorial calling for emergency action to limit global temperature increases, restore biodiversity and protect health (Atwoli et al 2021)¹⁹. It was acknowledged that governments met the COVID pandemic with unprecedented funding and called for a similar response to this climate crisis.

Healthcare systems must be net zero by 2040, earlier for wealthy nations. The response has been slow, but support is increasing amongst healthcare and medical professions. The Australian Medical Association and Doctors for the Environment Australia (DEA) led a communique in August 2022 calling for the Australian healthcare system to be net zero by 2040, with 80% emission cuts by 2030²⁰. The communique recommended 100% renewable electricity for hospitals, removing gas, reducing healthcare demand and decarbonising the supply chain. It called for the establishment of a National Sustainable Healthcare Unit to support reduction in emissions and for current and future doctors to be educated to provide health in our changing climate whilst providing sustainable healthcare.

High value care is low carbon care. Professor Barrett et al. suggest 80% of the Australian healthcare carbon footprint comes from clinical care, 40% being harmful or low value contributing to almost one-third of total greenhouse gas emissions¹⁰. To decrease the clinical care carbon footprint and healthcare demand, preventative and primary care, and evidence based effective care pathways supplying the right care at the right time in the right place, must be prioritised.

Sustainable models of care are becoming acceptable to decarbonise the healthcare system. The Climate Risk and Net Zero Unit of New South Wales (NSW), taking the lead from the NHS, established net zero lead programs employing clinical staff to lead decarbonisation within their service²¹. Currently there is no mechanism for standardised measurement, and it is hard to make changes without measuring and benchmarking. A larger evidence base is needed to plan mapping to net zero, prioritise reduced healthcare demand and address the carbon footprint of goods and services. The Australian Government Department of Health and Aged Care has introduced a new climate change and health team to oversee reducing the carbon footprint of healthcare, collaborating with stakeholders to drive efficient, consistent, measurable and effective climate and health actions²². Additionally, The Australian Commission on Safety and Quality and Healthcare is developing a sustainable healthcare module²³.

There is a lot to do but we know what to do and have the tools, agency and support. Healthcare can be part of the solution and must act now to deliver the right care in the right place at the right time.

Western Australian Context – Sustainable Development Unit

Ali Radomiljac A/Lead Sustainable Development Officer, Sustainable Development Unit, Department of Health, WA

The SDU is placed within the Office of the Chief Health Officer and the Public and Aboriginal Health Division, allowing synergies for public health responses to climate change impacts and was established as a recommendation of the 2019 Sustainable Health Review (SHR)²⁴.

The SHR recommended the WA health system reduce its environmental footprint ensuring availability of mitigation and adaptation strategies to respond to health impacts, setting targets and measures aligned with national and international goals. This led to the Climate Health WA Inquiry¹³ which set the blueprint for the next 10 years for the WA Health system's response to adapt to climate change, protect the community and reduce emissions and waste. The Western

Australian Climate Policy¹⁴ underscores the WA government's commitment to adapt to climate change and work with all sectors to achieve net zero greenhouse gas emissions by 2050.

The priorities of the SDU are broken into 4 key areas.

Strategy and leadership

- Provide operational direction and adaptation strategies to reduce emissions
- Provide leadership, advocacy and innovation to establish climate health and sustainability as a system priority
- Embed climate change and sustainability into all documents and frameworks
- Develop Climate and Sustainability framework to provide high level direction to transform WA health into an environmentally sustainable low carbon and climate resilient health system
- Identify, develop and facilitate the rollout of adaptation plans and projects

Monitoring and evaluation

- Development of dashboards to provide data and track progress of emissions
- Undertake environmental footprint of WA health using cost data to identify hot spots
- Identify change opportunities

Stakeholder engagement and communication

- Build and develop partnerships with diverse stakeholders

Public Relations

- Build identity and awareness of SDU
- Promote climate sustainability initiatives
- Education and training
- Scholarship program partnerships with Notre Dame University

Webinar 3: “Clinical Care and Patient experiences”

Purpose: To provide tangible grounding points for discussions. To highlight what sustainable measures Senators are already doing and what could be explored to achieve this and more. To determine where and what patients are already experiencing regarding sustainable health care, what they need now and what they may need in the future.

The Patient experience

Samantha Connor President People with Disability Australia

People with disability have been impacted by COVID and experienced enormous change in their lives over the past few years. The intersection between COVID and climate isn't well understood as many don't understand urban sprawl and the impact of animals creeping into cities resulting in zoonotic affected conditions. Additionally, there is a lack of understanding around how climate change impacts people with disability e.g. a person with thermoregulatory issues, or quadriplegia, may need to maintain their house at a certain temperature incurring greater energy costs leading to issues with poverty.

Climate change has led to many natural disasters. In 2009 large bushfires impacted Toodyay in Western Australia, causing the displacement of many residents. Homelessness was already an issue in the area placing a larger burden on the availability of shelter. Community members who had insurance found it difficult and lengthy to rebuild, whilst those uninsured and living in poverty did not have this opportunity. The fires impacted the health system. As people tried to rescue possessions, they suffered smoke inhalation requiring medical treatment and possible hospitalisation. Samantha herself experienced losing her house in a fire prior to the Toodyay fires and reflected on the physical and mental health difficulties she faced, as a person with a disability in a wheelchair, living in a portable home on 5 acres of land caring for 6 young children.

When considering climate change and sustainability, most people focus on waste within clinical environments. However, there is a need to think broader to consider the manufacture, distribution and provision of healthcare goods along with the supply chain and services used. When faced with widespread disease caused by climate change, there is a greater requirement for products to be manufactured in significant amounts leading to increased costs and emissions. Climate change is a circular problem.

General Practice and community care

Dr George Crisp General Practitioner, member of Doctors for the Environment Australia

General Practitioners (GPs), Drs George Crisp and Richard Yan, started their Shenton Park practice 20 years ago. They were cognisant of the interface between the environment and health and how environmental determinants of health were a growing factor for shaping future health. They also realised the impact practicing medicine had on emissions and waste and how this harmed individuals. So, in 2007 this thinking was incorporated into their work.

The Green Practice started as a formulation incorporating 'green' themes into everyday work with the first iteration redesigning and incorporating environmentalism. The garden was turned into a water wise landscape providing community accessible areas for growing food and edible plants and composting bins for neighbours and patients. Notice boards became chalkboards for writing healthy messaging.

The carbon footprint of the practice was assessed to determine how energy, paper waste and supplies could be reduced. Solar panels were installed, and the gas disconnected. Realising waiting rooms provide huge exposure for public health messaging, 80% of Australians visit their doctor every year, reading materials were designed to communicate climate, health and biodiversity impacts. The practice launched a website gaining exposure through articles in

magazines to highlight their cause and gain traction, but nothing happened. The doctors were ahead of where public sentiment and many other health professionals were. Despite their investment of time and effort, the concept did not take off.

Health is responsible for 7% of Australia's emissions with general practice 4% of this. GPs can reach out to communities, involve people, and be role models. General practice is integral to the response and resilience of healthcare and central to patient education. It is involved in the interface between communities and the consequences of climate change treating patients in their recovery.

The practice has re-launched the initiative involving a business consultant. Leaflets and materials have been created and circulated through peers and the practice is web-based, streamlined and structured. Integral to the project is the ability to calculate and measure emissions to provide a focus for reducing these. Hence carbon literacy is important and entails knowing where emissions arise in terms of energies, utilities, transport and procurement and how to measure and reduce these. The Royal Australian College of General Practitioners is hoping to embed sustainability in general practice with a view to this becoming an accreditable part of practice.

There is a divide between hospital-based services and general practice, and it is critical to make changes that span all of health, healthcare and health services. Consistent communication and uniformity of messages, involving collaboration with DEA and other agencies, is required to ensure patients understand everyone is talking the same language.

Sustainability in action in clinical decision making

Dr Matthew Anstey Intensive Care Unit Specialist Consultant

Choosing wisely originated from an American Board of Internal Medicine principle where the medical profession must promote justice in the healthcare system, including fair distribution of healthcare resources to ensure sustainability. Choosing the right path for a patient is a partnership between consumer and clinician where the clinician offers expertise and guidance and the consumer chooses their care pathway. Resource stewardship and choosing the right patient path are opportunities for clinicians to consider branch points of care that offer opportunities to do something, or to do nothing.

Consider Doris and choosing wisely branch points. Doris lives in a nursing home, has multiple medical problems, dementia, poor quality of life and needs assistance with all ADLs. She develops an ischaemic leg and is sent to the Emergency Department. In this scenario there are points for opportunities, for change in direction, or to choose your own adventure. Questions to contemplate:

- What were Doris's documented goals of care (GoC) at the nursing home?
- Had discussions been had in the event of a deterioration?
- What would Doris want to happen if the goals of care weren't in place?
- What happens in the emergency department?
- What are clinicians willing to do?

Doris's GoC were discussed during a previous hospital visit but did not include operations or hospital admission.

- Was that a missed opportunity?
- Do you refer Doris to the vascular surgeon for an operation?
- Is this an opportunity to go in a different direction?

Doris has had a long illness, and this is a life ending episode. The answers are different for everyone and another clinician may go a different direction. This is an opportunity to highlight time points in a patient's journey that may predate their presentation where discussions happen, and families and the patient can weigh in on what should happen.

Choosing wisely also considers diagnostic options provided to patients. Many people suffer lower back pain. Does this need imaging? In the modern world patients expect to know what is wrong. Imaging might not identify the cause of pain instead identifying problems not causing the pain that will not change the outcome. This is a branch point where the patient can be sent down a pathway of more imaging and testing as opposed to counselling on their back pain that will improve over time.

One of the powerful components of choosing wisely is engaging consumers and adapting questions to multiple situations.

- Do I really need this test?
- What are the costs?
- What are the risks?
- Are there other options?
- What if I do nothing?

There are multiple costs attributed to a healthcare event and knowing these is useful when engaging in conversations. Choosing Wisely provides a framework for unnecessary tests, and support for clinicians to do reduced testing. In Queensland a dashboard has been developed providing real time feedback to departments showing how much testing is requested. Clinicians can observe trends and relate these to activity levels.

When considering Choosing Wisely, prescribing should not be forgotten. Opioids should be prescribed wisely in the same way as antibiotic stewardship. Patients should be given expectations for weaning and ceasing analgesics, an expected timeline for recovery and advise on non-pharmacological adjuncts.

Through a Choosing Wisely lens, ask these questions:

- What could be done better or more smoothly for the patient or for staff?
- What matters to your organisation or area?
- Are they high cost, risky for patients or something you do a lot of every day?
- Can they be measured?
- Can you change clinician or patient behaviour to help fair distribution of healthcare resources?

Consider something within the clinical area that can be standardised to improve practice. What you do every day matters more than what you do occasionally.

Senate Debate OpenSpace

Following a brief introduction to the OpenSpace concept, and a recap of the preceding webinars, Senators were asked to select the OpenSpace topic they were passionate about exploring. Each OpenSpace had an independent facilitator to scribe and guide the group and a self-nominated convener to lead and provide feedback.

Each OpenSpace was provided with a series of questions to consider (Figure 3) and a Driver Diagram to consolidate the intended outcome, primary drivers, secondary drivers and action items related to their topic (completed version - Appendix 4).

Questions for consideration during OpenSpace Debate

1. What is your task/topic framed as a question and short elaboration?
2. As a clinician, what do you want to do in order to achieve low carbon health care?
3. As a clinician, what innovations would you like to see happen (e.g. Support, research, education, networking, time, resources, and direct clinical care)?
4. As a clinician, what changes would allow you to action the solutions identified for Sustainable Clinical Health Care?
5. As a clinician, what are the barriers you face (in the above)?
6. What would you suggest is needed to unblock those barriers?
7. What are the “intended outcomes” “drivers” and “actions” (found in driver diagram)

Next Steps

The recommendations contained in this report will be presented to the Western Australian Health, Health Executive Committee for endorsement.

The Senate will seek updates on the progress of endorsed recommendations and proposed actions to keep members and other interested parties informed of progress and provide further input into bodies of work as appropriate.

The Senate will explore opportunities for follow-up meeting/s on this topic.

Speakers and Technical Support

Facilitators: Dr Christine Hogan, development consultant and author, and Mr Michael Cheffins

Dr Neil Keen, Director, Office of the Chief Health Officer

Dr Emma-Leigh Synnott, Medical Advisor, Sustainable Development Unit, Department of Health, WA

Dr Naomi Godden, Social Worker, Social Justice and Environmental activist

Ms Ronda Clark, Senior Project Officer, Community Health Aboriginal Health Team, Child and Adolescent Health Services

Dr Tony Capon, Director Monash Sustainable Development Institute

Dr Nick Watts, Chief Sustainability Officer, NHS

Dr Eugenie Kayak, Enterprise Professor Sustainable Healthcare, Department of Critical Care, Melbourne Medical School

Ms Ali Radomiljac, A/Lead Sustainable Development Officer, Sustainable Development Unit, Department of Health, WA

Ms Samantha Conner, President People with Disability Australia

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Mr Kieran Bindahneem, Technical Support, Tunablue

Special thanks

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Mrs Laura Depczynski, OpenSpace room facilitator

Ms Hannah Mackenzie, OpenSpace room facilitator

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Dr Christine Hogan, Facilitation

Mr Michael Cheffins, Facilitation

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WA Clinical Senate, Executive Committee members

Ms Kimberly Olson, Western Australian Clinical Senate Secretariat

Mrs Jill Law, Western Australian Clinical Senate Secretariat

Appendices

Appendix 1 – Pre-Reading

Essential:

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Also review:

- [Wiser Healthcare Research Hub](#)
- [ANZCA Environmental Sustainability Page](#)
- [NHS Greener Allied Health Hub](#)
- [Centre for Sustainable Clinical Care](#)
- [SusQI](#)
- [NSW Health Net Zero Climate Health Unit](#)

Appendix 2 – Glossary of Terms

Adaptation

Adaptation is a process of adjustment to actual or expected climate and its effects to reduce harm or gain benefits. In human systems the process may moderate harm or exploit beneficial opportunities

Adaptation addresses the *consequences* of climate change and reduces vulnerability to the impacts of climate change.

Most adaptation policy is national or state-wide. Most actions are local. Most benefits are local.^{25,26} Examples include:

- researching local risks and how to manage them
- managing new diseases as a result of hotter weather
- changing design and location of houses and hospitals
- developing new systems managing natural disasters; water and energy use.

“What’s the difference between climate change mitigation and adaptation? *WWF*²⁷

Anthropocene

The proposed name for a new geological epoch demarcated as the time when human activities began to have a substantial global effect on the Earth’s systems. The Anthropocene has to be yet formally recognised as a new geological epoch and several dates have been put forward to mark its beginning.

In the Anthropocene we must remember that there is this new set of determinants of health – the ecological determinants of health. We need to think integratively about social and ecological determinants and the often-unintended consequences from interventions.

Carbon footprint

A carbon footprint is measured in terms of the equivalent global warming potential of CO₂ over a 100-year period. (Malik 2018:e27)¹. The carbon footprint attributed to health care is 7% of Australia’s total (Malik 2018:e28)¹. Approx.

- Hospitals 50%
 - Pharmaceuticals 20%
 - Specialised medical service 6%
 - GPs 4%
-

Circular economy

A global economic model that decouples economic growth and development from the consumption of finite resources. Circular economy systems keep products in use for as long as possible, allow for the recycling of end products, and eliminate waste. (Whitmee 2015:1975)¹³

Climate emergency

Over time terms have changed from global warming to climate change to climate emergency to indicate the immediacy of the dangers of climate change. The best term that describes what is needed i.e. immediate action is required at all levels of society.

Climate justice

Climate justice is the intersection of climate change and social inequalities. It brings a human rights lens to climate change and is about understanding how climate change particularly affects vulnerable people in our communities and how we can ensure the way we respond to climate change benefits people in a way that is equitable and fair. An emerging area of climate justice is looking at multispecies justice from a stronger indigenous lens focusing on justice for all species beyond humans.

Consumptogenic systems

Consumptogenic systems promote the consumption of goods and services to the detriment of either population or environmental health. They are generally associated with developed capitalist economies. Excess consumption is arguably a product of societal pressures from cultural and economic actors encouraging market transactions to individual consumers that forge daily routines around consumption, trading money for goods and symbols to reflect their social status.

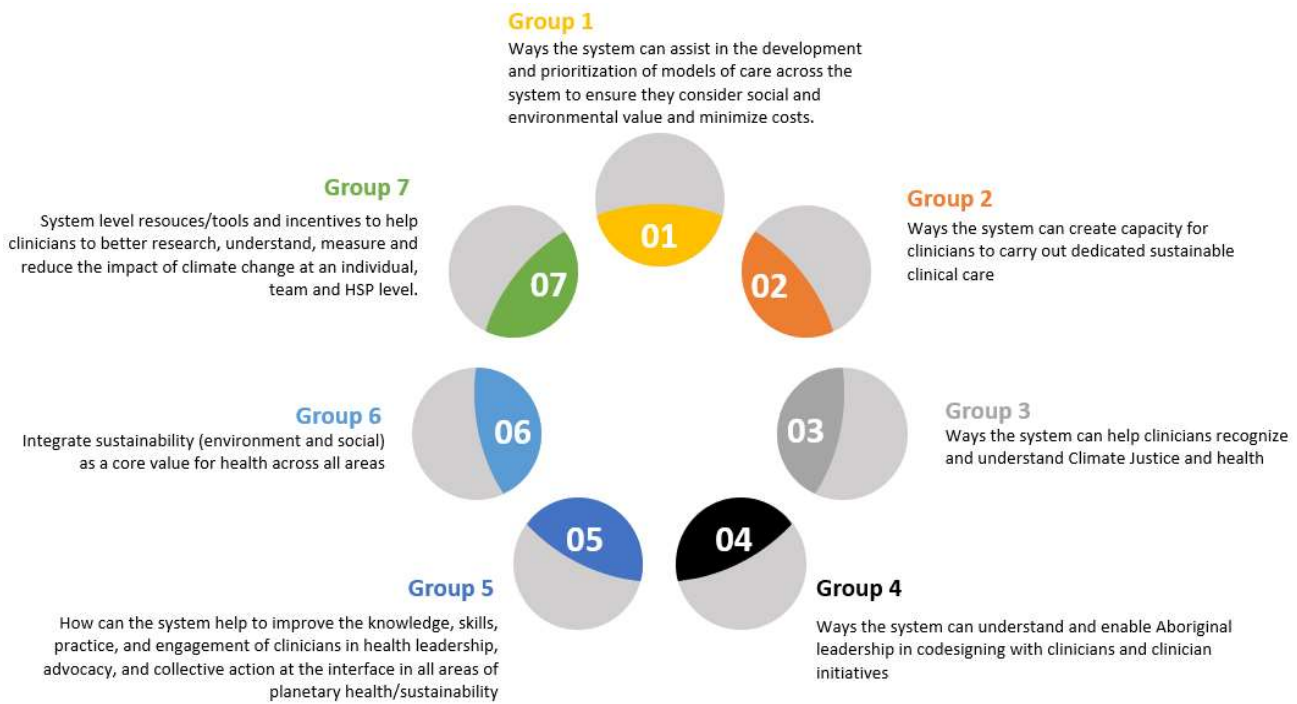
Consumption has been characterized as "the heroin of human happiness".²⁸

Determinants of planetary health from an indigenous perspective	Three levels of interconnected determinants and ten individual level determinants are integral to the health of Mother Earth (Redvers 2022) ²⁹
Eco-social approach	An eco-social approach, recognises ecological, economic and social determinants of health.
Green Champions	People conducting voluntary action and research into the environment and climate change issues
Greenhouse gas (GHG) emissions	Earth's greenhouse gases trap heat in the atmosphere and warm the planet. The main gases responsible for the greenhouse effect include carbon dioxide, methane, nitrous oxide, and water vapour (occur naturally), and fluorinated gases (synthetic).
Green space	Land that is partly or completely covered with grass, trees, shrubs, or other vegetation and includes parks, community gardens, cemeteries and hospital grounds.
Grey space	Concrete dominated space; buildings, roads.
Gross national happiness	Gross National Happiness (GNH), sometimes called Gross Domestic Happiness (GDH), is a philosophy that guides the government of Bhutan. It includes an index which is used to measure the collective happiness and well-being of a population using 9 headings. Gross National Happiness Index is instituted as the goal of the government of Bhutan in the Constitution of Bhutan enacted on 18 July 2008. The department of Planning in Bhutan is called the Department of Gross National Happiness. (See Gross national product).
Health	Health is 'a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity'. WHO definition (Whitmee 2015:1978) ¹¹ The Friends of the Earth expanded the WHO definition of health stating "personal health involves planetary health". Health is wellness. See "planetary health"
Indigenous traditional knowledge (epistemology)	Indigenous traditional knowledge systems are based on a deep understanding of Indigenous Natural or First Law (Redvers 2020) ³⁰ .
inVIVO Planetary health	inVIVO Planetary health is an international research cooperative originating from the World Universities Network formed in 2021 with a multidisciplinary, multidimensional agenda that has drawn together a broad range of expertise aimed at better understanding the causes, consequences and potential solutions related to the grand challenges of our time (Prescott 2018) ³¹ .
Intergovernmental Panel on Climate Change (IPCC)	The Intergovernmental Panel on Climate Change (IPCC) ²⁶ is the United Nations body for assessing the science related to climate change. It was created to provide policymakers (governments) with regular scientific updates about climate change; highlight the impact climate change will have on the planet in the future; and, offer some ideas about how to tackle the challenges of climate change's potential effects on the planet.

Mitigation	<p>Mitigation is a human intervention to reduce greenhouse gas emissions. It addresses the <i>causes</i> of climate change and will lead to a reduction in the future severity of climate change. Most mitigation policy is national. Most actions are local. Most benefits are global.^{23,24} Examples include:</p> <ul style="list-style-type: none"> • reducing use of fossil fuels e.g. coal, oil, gas, petrol; use of solar, wind etc • reducing deforestation i.e. cutting down large forests and burning off • geo-sequestration of greenhouse gases by storing underground (though this is under question re viability. • sequestration of greenhouse gases by planting trees. <p>See Weeramanthri (2020)⁴</p>
Natural or first law	<p>Indigenous Peoples associate their own laws with the laws of the natural world, which are formally known as or translated as Natural or First Law. These laws come from the Creator and the Land through ancestral stories and therefore are sacred. All aspects of life and existence depend on living and following these natural First Laws. Since colonization, Indigenous Peoples' Natural Laws have been forcibly replaced by modern-day laws that do not consider the sacred relationship between the Earth and all of her inhabitants. The force of societies who live outside of Natural Law has ensured the modern-day consequences of not living in balance with nature. Pandemics and global environmental change, including climate change, are all consequences of not following the Natural Laws that are encapsulated by the interconnected nature of the universe. It is the body of laws responsible for maintaining respectful and reciprocal relations between and within First Nations and between the human and non-human family Redvers (2020)²⁸.</p>
Planetary health	<p>Planetary health is the achievement of the highest attainable standard of health, wellbeing, and equity worldwide through judicious attention to the human systems—political, economic, and social—that shape the future of humanity and the Earth's natural systems that define the safe environmental limits within which humanity can flourish. Put simply, planetary health is the health of human civilisation and the state of the natural systems on which it depends Whitmee et al (2015)¹⁵.</p>
Post qualitative research	<p>Post qualitative research sees researchers questioning why knowledge should be the point of departure in inquiry, decentres knowledge and embraces the inseparability of ethics, ontology and knowledge, as depicted in Barad's (2007, 409) coinage, “ethico-onto-epistemology” (St. Pierre).³²</p>
Resilience	<p>The capacity of any entity – an individual, a community, an organization, or a natural system – to prepare for disruptions, to recover from shocks and stresses, and to adapt and grow from a disruptive experience Whitmee et al (2015)¹⁵</p>
Social prescribing	<p>When health professionals refer patients to support activities in the community, in order to improve their health and wellbeing. It is a more holistic way of providing care and puts more responsibility on the patient and community for health and wellbeing.</p>
Structural Path Analysis	<p>Structural path analysis (SPA) is a technology based on consumer accounts that breaks analysis indicators into the sum of an unlimited number of production chains (or paths) and can be used to analyse the contribution rate of different paths. (Wikipedia)³³</p>

Sustainable clinical practice Principles	<p>The Centre for Sustainable Healthcare (CSH) has defined four principles of sustainable clinical practice, aiming to first minimise the need for healthcare activity and then reduce the environmental impact of activity that is retained, while maintaining or improving health outcomes.</p> <p>The principles are numbered in descending order of importance:</p> <ol style="list-style-type: none"> 1) prevention, 2) patient empowerment and self-care, 3) lean systems and pathways, and 4) preferential use of technologies and interventions with lower environmental impact. <p>A fifth, non-clinical principle calls for improved operational resource use, for example, reduced packaging or water consumption for a given procedure. Applying these principles systematically to the design of a quality improvement project should help to direct teams towards highest value improvements (Mortimer et al 2018)³⁴.</p>
Sustainable Development Goals	<p>A collection of 17 interlinked global goals designed to be a "shared blueprint for peace and prosperity for people and the planet, now and into the future". The SDGs were set in 2015 by the United Nations General Assembly and are intended to be achieved by 2030.</p>
Sustainable health care	<p>A sustainable health care system is broader than financial sustainability alone. It takes what is known as a 'triple bottom line' approach to decision-making; that is, it explicitly considers financial, social and environmental return on investment simultaneously. (Weeramanthri TS 2020:92)¹³</p> <p>A sustainability perspective extends thinking on value in two ways. Firstly, it broadens the scope of 'cost' or 'resources', considering patient and population outcomes against a 'triple bottom line' of environmental, social and economic costs or impacts. This is important, as it provides a consistent framework for measuring and driving sustainable improvements in care. Secondly, it requires limits on resource use in all three categories to be set at sustainable levels since even an otherwise high-value service will not be sustainable if available resources are exceeded over time. Determining a sustainable level of resource use may need to be done at a macro level (e.g.national and international targets for carbon reduction), but to be meaningful will also need to be translated to the level at which services are managed. Such pathway-level limits have not yet been defined for environmental and social resources, but people engaged in improving services can nonetheless consider the current level of resource use and the impact of proposed changes. (Mortimer 2018)³⁴</p>
Sustainability	<p>Sustainability is a complex, multifaceted concept that continues to evolve depending on the perspectives of different sectors and professions and their respective expertise and interests. Fundamental in all conceptualisations, though, is the challenge to shift thinking away from humans and nature being separate in the world, and their activities and effects being compartmentalised (Hoban 2021)³⁵.</p>
Value in health care and the value equation	<p>Value in healthcare is 'the measured improvement in a patient's health outcomes for the cost of achieving that improvement' (Teisberg, et al. 2020)³⁴ and may be conceptualised in terms of the value equation. It is an often-misunderstood concept, confused with quality improvement, process compliance, patient satisfaction and cost reduction, all of which may be important, but do not connect clinicians to their purpose as healers (Teisberg, et al. 2020)³⁶. Value has a primary focus on patient health outcomes, with costs only considered in this context so efforts to reduce costs do not lead to false savings or limit the effectiveness of care provided (Porter 2010)³⁷.</p>

Appendix 3 - Open Space Topics for discussion



Appendix 4 – Driver Diagrams

Room 1

INTENDED OUTCOME	PRIMARY DRIVERS	SECONDARY DRIVERS	ACTIONS
Acceptable quality of life for all consumers (as determined by the consumer) in a lowest carbon care model	Reduce demand for healthcare	Invest in preventative health care, health promotion and self-empowerment initiatives	<ul style="list-style-type: none"> Reallocate resources to Local Governments in partnership with local health services to implement local Public Health plans, with preventative, promotional and self-empowerment processes Develop a pilot funding scheme for partnerships between acute care facilities and local government to enhance sustainable public health programs Treat addiction as a health issue (rather than a crime)
		Invest in initiatives that target the social determinants of health	<ul style="list-style-type: none"> Develop a reporting system (eg dashboard) to enhance communication between government agencies Regular high-level meetings between key government departments (e.g. Treasury, Health, Education, Communities) to collectively prioritise preventative health and health promotion activities Investment in place-based care model that includes multiple organisations (eg housing, education, health, etc) to improve services to enhance consumer quality of life
	Reduce incentives to produce wasteful, low value healthcare	Develop low carbon partnerships in the supply chain	
		Prioritise outcome-based not activity-based funding model	<ul style="list-style-type: none"> Measure and report Quality of Life metrics, ensuring this data is widely accessible across relevant government agencies Identify key factors influencing 'quality of life' and identify actions to address these factors
	Reduce duplication and replication of work	Improve communication between siloes	<ul style="list-style-type: none"> Improve uptake of existing electronic record systems Invest in secure, centralised electronic record system Meeting with data custodians and consumer advocates within WA health with the aim of improving data custodian culture to be consumer-owned and led Legislate health data ownership to the consumer
		Invest in place-based care	<ul style="list-style-type: none"> Locate place-based health services in local government facilities (with adequate resourcing)

Room 2

INTENDED OUTCOME	PRIMARY DRIVERS	SECONDARY DRIVERS	ACTIONS
Create capacity for clinicians to carry out dedicated sustainable clinical care	Integration of sustainability into BAU	Policy and guidelines	<ul style="list-style-type: none"> Development of clear KPIs for low carbon care (with accountability for outcomes) Engineer the clinical environment to reduce waste (making sustainable option easy option)
		Culture and awareness	<ul style="list-style-type: none"> Add sustainability as an organisational Value Including sustainability as a core commitment within JDF
	Empowerment of clinicians to act	Dedicated time/FTE	<ul style="list-style-type: none"> Clinical lead / sustainability officer at all HSPs (Champions) Enabling resourcing for staff to participate in projects (grants/time) Chief Sustainability Officer at the system level (clinical chiefs forum) Special interest groups, networking, knowledge translation
		Endorsed sustainable care pathways (AHCD, etc)	<ul style="list-style-type: none"> Develop policy to support palliative care as a standard model of care
	Improve knowledge and skills	Education/training programs	<ul style="list-style-type: none"> Creation of fellowships Educating consumers/carers on LEAN pathways Mandating professional development on sustainability Educating clinicians to better advocate for people re alternate pathways (shared decision making)
		Monitoring and reporting data	<ul style="list-style-type: none"> Dashboards / newsletter Sharing of information between HSPs
	Intersectoral partnerships	Relationship building with key sectors/agencies/universities	<ul style="list-style-type: none"> Education in the tertiary sector Mentoring staff at all levels from national and global sources (information sharing)

Room 3

INTENDED OUTCOME	PRIMARY DRIVERS	SECONDARY DRIVERS	ACTIONS
Improved patient centred care, which focuses on preventative health or primary care (cheaper, proactive, more sustainable)	Acknowledging that climate justice is inequitable	Education and awareness	<ul style="list-style-type: none"> CPD training on social justice and the interaction between health and climate WA Health wide slogan around climate justice
		Reduce stigma about preventative health measures	<ul style="list-style-type: none"> Promotion on the impacts of climate change and health using easy to understand language
		More research into what our local risks are and who is affected	<ul style="list-style-type: none"> Quantify risks in the local setting
	Build and improve access to primary health care	Discharge care coordinators	<ul style="list-style-type: none"> Universal role which places care properly back into the community Assess the environment the person is returning to and ensuring it is suitable Understand the NDIS plan and how it impacts an individual's ongoing care Improve access to housing
		Alternative access to care	<ul style="list-style-type: none"> Improved access to telehealth if wanted and suitable Continuing to use existing support services while in tertiary care Alternative support options within tertiary care settings Designing facilities which support alternative access to support
	Better engagement with all tiers of government	Better engagement with local government	<ul style="list-style-type: none"> Local public health plans which look at climate resilience

Room 4

INTENDED OUTCOME	PRIMARY DRIVERS	SECONDARY DRIVERS	ACTIONS
Co-design and Co-production	Patient Driven KPIs	Listening to patient's voice, ideas, concerns and expectations and patient's family	<ul style="list-style-type: none"> Let patient tell you what's wrong, what has happened, what has led them here Take the time to listen to patients Look at the whole patient journey Acknowledge where people come from
	Improve knowledge and skill within workforce	Education	<ul style="list-style-type: none"> Clinicians listening to the narrative behind the patient's presenting complaint WA Health remunerating staff for the value they bring
			<ul style="list-style-type: none"> Encourage younger generations to be involved in supporting positive system changes Aboriginal leaders embedded across the system Health literacy
	United healthcare		
	Prevention and early intervention	Break the silos in healthcare	<ul style="list-style-type: none"> Better connect hospital and community care; integrate care better UKs "Nothing about me without me" Change funding to look at whole system rather than split into different systems
		Patient-centred holistic care	<ul style="list-style-type: none"> Providing clinicians with better understanding of how to deliver patient-centred holistic care Healthcare professionals invested in their patients, putting patients first Providing culturally and linguistically appropriate patient information/education, co-developed with those using it – use visuals to support explanations/information
Change from acute funding to focus on primary care		<ul style="list-style-type: none"> Primary care needs to be at the forefront of funding, look at NHS and Norway care 	
Value based funding		<ul style="list-style-type: none"> Ensuring primary care is available after hours 	

Room 5

INTENDED OUTCOME	PRIMARY DRIVERS	SECONDARY DRIVERS	ACTIONS
Empowering clinicians to play a part in change that promotes planetary health and sustainability both in influencing system changes and changing their own practice.	Clinical leadership		<ul style="list-style-type: none"> Leadership education Sustainability/planetary health education Raising awareness of the impact an individual can have Guidance on how to translate the big picture into small actions
	Empowerment		
	Opportunities for clinical leadership to drive frontline and system change		<ul style="list-style-type: none"> Regular meetings with senior leadership, clinicians, non-clinicians and consumers sitting at the same table Involving frontline clinicians in system-level decisions about sustainability factors, i.e. investing in solar panels on all country sites; use of electric vehicles; procurement of clinical items
	Reduce clinical waste	Replace products with sustainable alternatives	<ul style="list-style-type: none"> The Oracle procurement system to include "sustainability ratings" to enable frontline clinicians to include that in their decision making when purchasing new services. Development of a reporting system that allows issues relating to sustainability to be escalated. Acknowledgement at most senior levels that planetary sustainability may not = financial savings
How to turn this from a catchphrase, to real action on the clinical floor? From a poster on the wall, into action. Empowering clinicians to play their part in being part of systems change - both in influencing the changes that other parts of the systems need to do, to enable clinicians to play their part.		Clinical guidelines that incorporate sustainability	<ul style="list-style-type: none"> Leadership/management education Sustainability/planetary health education Raising awareness of the impact an individual can have Translate the big picture into small actions - i.e. what is everyone's personal carbon budget and what are practical ways that they can contribute to reducing that
	Reduce clinical waste	Replace products with more sustainable alternatives	<ul style="list-style-type: none"> The Oracle procurement system to include "sustainability ratings" to enable frontline clinicians to include that in their decision making when purchasing new services. Something like clinical incident reporting that would enable issues, ideas and initiatives relating to sustainability to be escalated and shared across health. Involving frontline clinicians in system-level decisions about sustainability factors, i.e. investing in solar panels on all country sites; use of electric vehicles; procurement of clinical items

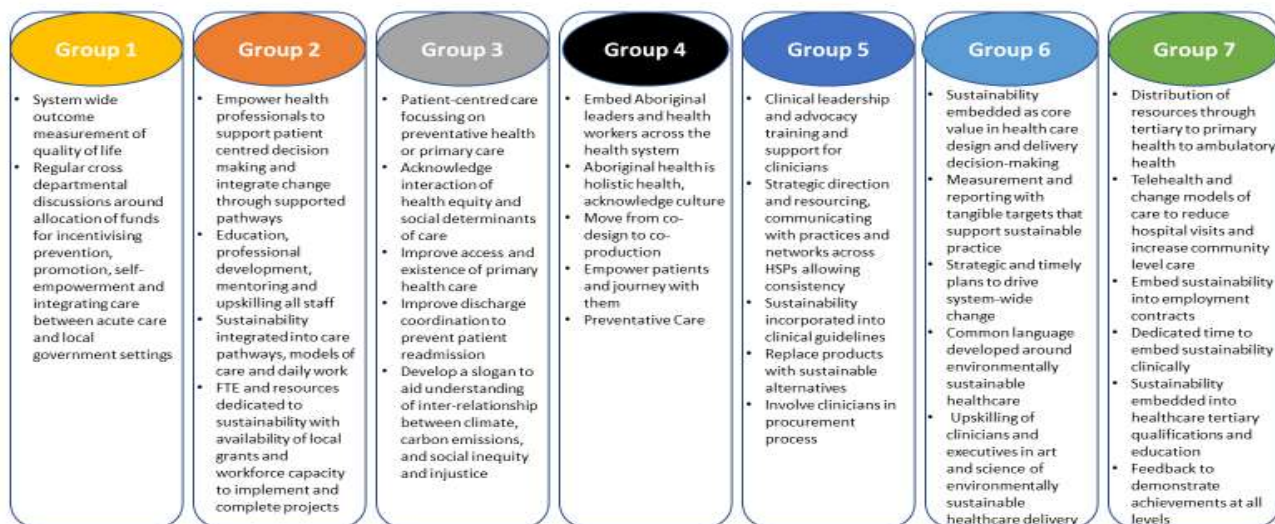
Room 6

INTENDED OUTCOME	PRIMARY DRIVERS	SECONDARY DRIVERS	ACTIONS
Embedding sustainability as a core value in healthcare design and delivery decision-making.	Measurement and reporting of tangible targets that support sustainable practice	Adopt evidence based sustainable healthcare targets that can be benchmarked	<ul style="list-style-type: none"> Identify existing targets from other healthcare systems Set strategic timelines for the implementation of change
		Create a system wide mandate for system manager and HSP wide routine reporting in real time	<ul style="list-style-type: none"> Real time data collection and reporting Policy direction to mandate environmental reporting
	Maximise efficiency and reduce waste		
	Communicating the gravity and importance of sustainable decision making in healthcare		Frameworks to improve accessibility at the interface between clinicians and executive
Bidirectional information flows that align the intent of clinicians and executive			<ul style="list-style-type: none"> Develop and embed a common language for environmentally sustainable healthcare Collective upskilling of clinicians and executives in the art and science of environmentally sustainable healthcare delivery

Room 7

INTENDED OUTCOME	PRIMARY DRIVERS	SECONDARY DRIVERS	ACTIONS
<p>Create and distribute system level resources/tools and incentives to help clinicians to better research, understand, measure, and reduce the impact of climate change at an individual, team and HSP level</p>	<p>Knowledge and understanding</p>	<p>Innovation and Research</p>	<ul style="list-style-type: none"> Develop partnerships with universities, research labs to drive innovation.
		<p>Clinical guidelines for HSPs to get traction for sustainability</p> <p>E.g. https://www.thelancet.com/journals/lanph/article/PIIS2542-5196(22)00041-9/fulltext</p>	<ul style="list-style-type: none"> Develop orientation packages that establish climate and sustainability as core business Developing clinical care tools E.g. After Hours: Climate Action: addressing emissions from clinical practice. Dedicated FTE and resourcing to improve knowledge and understanding
	<p>Incentives</p>	<p>Funding</p>	<ul style="list-style-type: none"> Sustainability grants Development of an outcome based rather than activity-based funding model Quarantining resources for climate and sustainability
		<p>Showcasing</p>	<ul style="list-style-type: none"> Grant opportunities Inclusion in public annual reports, social media, website, portal
	<p>Redistributing system resources from tertiary into primary care</p>	<p>Changing models of care</p>	<ul style="list-style-type: none"> Integrating primary health into State Gov Prioritise preventative health care
		<p>Reduce duplication of work</p>	<ul style="list-style-type: none"> Strengthening local capabilities of local health services Creation and implementation of a state-wide electronic medical record Better infrastructure across the WA (housing, education, social services, mental health)

Appendix 5 - OpenSpace final discussion points



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