

BURNING HEARTS: How Climate Change is a Heart Attack



AS A MEDICAL PROFESSIONAL, IF YOU WERE ASKED WHAT THE MAJOR RISK FACTORS FOR CARDIOVASCULAR DISEASE (CVD) WERE, YOU WOULD PROBABLY SAY "HYPERTENSION, HYPERLIPIDAEMIA, DIABETES, OBESITY, SMOKING, FAMILY HISTORY ...". WHAT MAY SURPRISE YOU IS THAT THE ENVIRONMENT IS A SIGNIFICANT MODIFIABLE RISK FACTOR FOR CVD. IN FACT, AIR POLLUTION IS THE 4TH HIGHEST MODIFIABLE CVD RISK FACTOR (AFTER HYPERTENSION, DIETARY RISKS AND HIGH CHOLESTEROL) AND CONTRIBUTES MORE TO CVD BURDEN THAN OBESITY, SMOKING, DIABETES AND PHYSICAL INACTIVITY. NON-OPTIMAL TEMPERATURE RANKED 9TH.

There is an abundance of evidence on how climate change adversely affects health. Some of the more recent reports are referenced below. Climate change, through its effects on extreme weather events (particularly heat) and air pollution, increases CVD morbidity and mortality. CVD is already the leading cause of death in Australia, and this will increase even further as the climate crisis continues to unfold.

(For more detail, see my article published a year ago: [HTT Environmental Change and Cardiovascular Disease](#) and [AusDoc Cardiology](#) post on air pollution and CVD).

Heat is the greatest weather-related cause of death, with the number one cause of death during heatwaves being a cardiovascular event. Extreme heat increases all CVD deaths, ischaemic heart disease (IHD), CVD hospitalisations and out-of-hospital cardiac arrest (OHCA). With increasing temperatures and worsening heatwaves, deaths from CVD will increase further.

In 2018, WHO Director-General Dr T.A. Ghebreyesus declared: "No one, rich or poor, can escape air pollution. It is a silent public health emergency." Air pollution is considered an 'invisible killer'. The WHO estimates around 7 million deaths are attributable to outdoor and indoor air pollution, with some recent estimates up to 9 million from outdoor pollution alone. More than half of these deaths were due to CVD, including Myocardial Infarctions (MIs) and strokes. More than 20% of global cardiovascular deaths are due to air pollution.

Both short and long-term exposure to air pollution (especially PM2.5) increases CVD incidence and deaths – including MIs, strokes and heart failure. Like extreme heat, air pollution also increases CVD hospital admissions and OHCA. Acute exposure

to air pollution is an important trigger for an MI, accounting for nearly 5% of all MIs worldwide. Worrying too is that the risk of CVD and mortality with long-term exposure to air pollution is increased even at levels considered to be 'safe.' The WHO recently revised its 'safe levels' downwards.

In particular, air pollution from burning coal and traffic exhaust is more toxic to the heart than air pollution from other sources. In fact, traffic exhaust is considered one of the most preventable triggers of an acute MI.

In Australia, we may not consider that we live in a polluted environment, but we do. Our motor vehicle emissions standards are poor by international standards (particulates and CO₂). We have a lack of policy settings to increase conversion to Electric Vehicles (EVs) on our roads. We have air pollution standards behind those of WHO guidelines and many other nations. Annually, anthropogenic PM2.5 air pollution is associated with 2616 deaths in Australia (95% CI 1712-3455), and the 'low' levels of air pollution in Sydney are associated with increased mortality. 279 people die prematurely each year in NSW as a result of toxic air pollution from the state's five coal-fired power stations (Environmental Justice Australia).

We are also exposed to regular and worsening bushfire and backburning smoke. The smoke from the 2019/2020 bushfires caused air pollution in Canberra to be at levels 22 times more hazardous than those set by the WHO, 10 times in suburbs in NSW. In August 2021, The Air Quality Index in Sydney from backburning was 3rd highest in the world; and several times throughout last year, some suburbs were recording air quality at the severe HAZARDOUS rating. Bushfire smoke is also associated with increased cardiovascular deaths, MIs, heart

failure and OHCA. In addition, the risks of bushfire smoke are further amplified when combined with high temperatures.

To add to the burden, climate change has a number of mental health impacts, such as depression, PTSD and anxiety. Mental health disorders such as these increase CVD risk.

But there are an enormous number of actions we can all take to address this situation. Below are just a few:

Co-benefits:

Here are 5 measures that have climate change and cardiovascular co-benefits (i.e. helping both your heart and the planet):

1. **Have a plant-based diet.** Ruminant livestock (cows, sheep) account for the majority of agriculture's greenhouse gas emissions (GHGs), and use more land, water and energy than producing other foods. Red meat and processed meats also increase CVD. A more plant-based diet (high in vegetables, fruit, wholegrains, legumes, nuts and seeds, and lower in animal food, such as proposed in the Mediterranean diet), not only reduces CVD, but has less environmental impact.
2. **Increase active transport.** This is self-transport that involves more activity than using a car. Walking or cycling to work reduces risk of CVD (including MIs) and obesity, whilst also reducing air pollution and GHG emissions. If you have to drive, consider an EV, avoid driving in peak hour and don't idle your car (especially around schools – it's comparable to lighting up a cigarette beside a non-smoker). In addition, next time you order food delivery, think of the carbon footprint including packaging and emissions.

3. **Stop smoking.** Smoking increases CVD and MIs. Tobacco also has significant negative environmental impacts from farming, manufacturing, consumption, waste, pollution and litter.
4. **Change to renewable energy sources (such as solar/wind) instead of fossil fuel combustion.** This will reduce GHGs, improve air quality and reduce CVD. If you can't install solar panels, change your energy provider to one that only obtains energy from renewable sources, and change from gas to electric appliances.
5. **Increase green spaces.** This lowers CVD and has multiple other health benefits. Green spaces help mitigate climate change by reducing heat and heat-related illness, and air pollution. Grow your own food and plant more trees, which help remove excessive CO₂.

Reduce your Personal Carbon footprint:

- Take the 1 tonne challenge – (watch [Fight for Planet A](#)).
- Make dietary, transport and energy changes (above).
- Reduce waste – know the waste pyramid (first Avoid, then Reduce, Reuse and Recycle, with dispose last).
- Conserve water and energy.
- Compost your food; Food organics & garden organics (FOGO) bins..
- Reduce your fashion footprint.
- Reduce airplane travel and carbon offset your air travel.

- Financial divestment – change your bank/superannuation/investments into companies that do not invest in fossil fuels. [marketforces.org](#)
- Join and support organisations that are fighting climate change – such as [Doctors for the Environment](#), [Climate Council](#), [Australian Conservation Foundation](#)

Healthcare sustainability

As health professionals, we need to 'get our own house in order.' The healthcare sector accounts for nearly 7% of Australia's carbon footprint. A Net zero carbon emissions report for the Australian Health care sector has been published, as well as a proposal for a National Sustainable Healthcare Unit. If we want inspiration – Dr Nick Watts (an Australian) has led the way in the NHS – the world's first national health system to commit to 'carbon net zero'. In 12 months, they have an annualised reduction of approximately 1260ktCO₂e, equivalent to 1.7million flights from London to New York.

Closer to home – one of the San's Cath lab nurses, Yvette Vicary, is a clinical consultant for [EcoAid](#), Australia's first company solely dedicated to innovating sustainable medical solutions. [ecoaid.net.au](#)

As a medical professional – consider environmental sustainability in all clinical decisions. Simple measures such as avoiding unnecessary pathology and other testing, using neb/powder inhalers rather than MDI, and using telehealth reduce your carbon footprint. Keep patients out of hospitals by good preventative medicine. Hospitals account for nearly 50% of the healthcare sector's carbon footprint.



A lot more can be done

Australia has the highest GHG emissions from coal in the world (per capita) and Australia/New Zealand have the 5th highest carbon emissions per capita in the world (behind the Middle East, Canada, Saudi Arabia and the United States). Australia was awarded the 'colossal fossil' prize for its 'appalling performance' at COP26 last year and has received widespread criticism for its ongoing embrace of fossil fuels. Australia is considered the villain in the world with regards to GHGs and Climate Policy. Last year, Australia had more than 100 fossil fuel developments at various stages of development. This could result in nearly 1.7bn tonnes of GHGs a year, equivalent to about 5% of global industrial emissions, if they all went ahead.

To quote Professor Lesley Hughes (Climate Council spokesperson and Professor of Biology Macquarie University), we need to "Electrify everything and power it all from renewables; remove all fossil fuel subsidies and use this money to transform the grid; allow no new coal/oil/gas exploration or infrastructure."

Analyse your state and federal representatives' climate policy. Write to your representative regarding the health implications of climate and energy policy; support climate legislation at ClimateActNow.com.au; email a letter to your local federal minister at voteearthnow.com

We need action now:

The IPCC 2021 report signals climate change as a CODE RED for humanity. The world is not on track to limit warming to 1.5°C. All emission scenarios expect 1.5°C to be breached by the early-mid 2030s. The Emissions Gap Report 2021 shows that

new climate pledges combined with other mitigation measures put the world on track for a global temperature rise of 2.7°C by the end of the century. To keep global warming below 1.5°C this century, (the goal of the Paris Agreement), the world needs to halve annual greenhouse gas emissions in the next eight years. This means "It is time to go into emergency mode — or our chance of reaching net zero will itself be zero" (Antonio Guterres, UN Secretary General).

Our hearts are 'burning' but heart disease is only one of the many health effects of climate change. It is estimated that climate change will cost Australia 3.4 trillion dollars by 2070; however, the costs to health are immeasurable.

We have one heart, and one planet. There is NO Planet B. Let's be proactive, positive and extinguish the flames together.

"I will protect the environment which sustains us, in the knowledge that the continuing health of ourselves and our societies is dependent on a healthy planet."

(Some modern versions of the Hippocratic oath)

Link to editorial published in ACM newspapers:

canberratimes.com.au/story/7487695/climate-change-is-a-danger-to-our-hearts/

Link to Heart Health and Climate Change talk for Eco Living Festival:

youtube.com/watch?v=O9aVVP3aZ9M



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GOLD STANDARD

How the San Foundation contributes to excellence

GENEROUS DONORS TO THE SAN FOUNDATION MAKE MANY THINGS POSSIBLE, WITH CANCER CARE ONE OF THEIR STRONGEST AREAS OF SUPPORT.

One of the San Foundation's most recent and significant contributions was in the order of \$1million to the Hospital's upgraded breast cancer screening service. The support was made possible by a former patient who wanted to express gratitude for the cancer care they received.

Karen Gair, former Managing Director of the Foundation, says that this feeling amongst donors is common.

"Most of our donors have had a good experience at the Hospital, lost someone or spent time here supporting a family member," she said.

"People feel so grateful for the support they received that they want to contribute in some way, and in so they turn to the Foundation. We are incredibly grateful for their support. They are the reason that we can provide equipment, resources and education that lifts the San from being a very good hospital to a great hospital."

The recent cancer funding supported the upgrade of the existing breast imaging space to enhance how women (and men) are cared for at a time when a cancer diagnosis is often made. New state-of-the art contrast-enhanced mammography along with the immediate response by a team of people in a friendly and caring environment has led to a best practice bespoke service.

Many aspects of the Hospital's outstanding cancer centre are a product of Foundation's work. The amazing MDT room, the database for MDT management and elements of the clinical trials unit, for example, were all supported by the Foundation.

"To augment the brilliant clinical work, specialists and technology, we have supported Jacaranda Lodge and counselling services," said Ms Gair. "Patient navigators, based on the McGrath Foundation model, are also funded by the Foundation and we know that they provide an invaluable role in supporting patients.

"Especially for cancer care, the Foundation makes the difference between just fixing someone and actually looking after them mind and body. This strategy pays off. The San was listed amongst the world's top hospitals in oncology in the Newsweek 2021 survey, and our Integrated Cancer Centre has achieved some of the highest ratings in the Bureau of Health Information patient survey for three years in a row."

In other projects, to address the current shortage of nurses, the Foundation is supporting nursing scholarships. Seven full and two partial scholarships for staff in ICU, CCU and EC have just been awarded. The San is expecting approximately 100 nurses from Avondale University, and the Foundation will fund extra nurses to shadow and educate their early-career colleagues.

"A wonderful supporter has donated half a million dollars, and we are complementing this with a broader campaign for the scholarships," Ms Gair explained. "Just in the last few weeks, we have seen an incredible response from the broader community. In fact, the fundraising appeal is one of strongest we have ever had."

A new spyglass cholangioscope is also about to arrive, making The San the only NSW private hospital to have this advanced scope that can visualise hard to access areas and assist with early detection of upper GI tumours in the bile and pancreatic ducts.

Supporters also gave generously to an appeal last year for surgical laser equipment to perform delicate middle ear procedure that can treat loss of hearing. The investment, like others, ensures that the San remains at the forefront of technological advances. One of the most wide-reaching hospital needs the San Foundation is supporting this year is the new patient monitoring telemetry system, which will be rolled out progressively across the hospital – thanks to the generosity of our grateful patients and community.