RACGP

# Curriculum and syllabus for Australian general practice (7th edition)

## Climate and environmental medicine

RACGP Curriculum and syllabus for Australian general practice (7th edition): Climate and environmental medicine.

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We acknowledge the Traditional Custodians of the lands and seas on which we work and live, and pay our respects to Elders, past, present and future.

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# Climate and environmental medicine

## Context

Understanding how the environment affects patients' health is fundamental to providing effective general practice care.[1] For example, initiating heatwave precautions can avert hospitalisations and deaths for older patients and others at risk.[2] It has been suggested that there should be an evolution towards a biology–society–environment model of disease.[3]

Human health depends on natural environmental systems, and those systems are shaped by human behaviour.[4,5] The World Health Organisation recognises 'Climate change is the biggest health threat facing humanity.'[6] Fossil fuel usage releases emissions that drive climate change and air pollution – accounting for one in five deaths globally.[7] Many other pollution sources are harmful. Biodiversity loss exacerbates climate change and increases pandemic risk.[8]

More frequent and severe extreme weather events (including heatwaves, bushfires, floods, and droughts), expanded transmission of mosquito-borne diseases such as Japanese encephalitis, and widespread eco-anxiety are among the many ways climate change is already impacting health in Australia. Altered environmental conditions are displacing communities and threatening the security of food, water, and shelter.[9] Climate change also disrupts the health system, by increasing demand, displacing workforce, disrupting supply chains, and damaging infrastructure.[10]

Climate change exacerbates inequities. Those experiencing poorer health and with less resources to adapt are disproportionately affected.[11] Many rural communities have greater exposure to climate impacts and less access to healthcare.[12] For Aboriginal and Torres Strait Islander communities, loss of and displacement from culturally significant sites and practices can disrupt connection to Country and have profound consequences for wellbeing.[13]

GPs need to promote resilience to climate and environmental health impacts, reduce healthcare-related emissions and advocate for broader sustainable transformation.[1] Healthcare accounts for 7% of Australia's emissions.[14] Effective preventative care keeps people healthy and avoids emissions-intensive interventions. Indigenous models of health and healthcare can guide more holistic and sustainable practices.[13] Avoiding low-value and harmful care, which accounts for 40% of healthcare, reduces emissions and iatrogenic harms.[15] Promoting active transport, plant-rich diets, and spending time in nature has health and environmental co-benefits.[16–18] Respiratory metred-dose inhalers are a 'carbon-hotspot.' Their usage can be minimised through best practice asthma and COPD management that reduces emissions and improves outcomes.[19]

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## Learning outcomes

The GP is able to:

- recognise, assess, and manage climate and environmental risks and impacts
- Recognise and address, risk factors and social determinants that may result in patients being disproportionately affected by climate and environmental risks and impacts
- identify environmental determinants of health, including climate change, pollution, and biodiversity loss
- implement strategies that ensure environmentally sustainable resource use in the delivery of general practice care, including low-carbon and low-environmental impact alternatives when appropriate
- promote patient-centred behaviour change that is beneficial to health and the environment
- identify how traditional Aboriginal and Torres Strait Islander knowledge, including caring for Country, can inform healthcare practice that promotes environmentally sustainable practice and resilience to climate and environmental risks and impacts
- advocate for the needs of patients and their community relating to climate and environmental health risks and impacts
- integrate measures and indicators of climate and environmental risks and impacts into quality improvement systems
- discuss how the duty of health professionals to protect and promote health is impacted by the interdependence of health and the environment, and identify the implications for health professionals' personal and professional lives
- evaluate and apply new and emerging evidence related to climate and environmental impacts on patient health and the delivery of high-quality, environmentally sustainable healthcare.

## Key areas of learning

Recognise, assess and manage climate and environmental risks and impacts, including:

- heat stress, heat exhaustion, heat stroke and heat-related exacerbation of chronic mental and physical health conditions
- aeroallergens and thunderstorm asthma
- eco-anxiety, climate distress, and exacerbation of pre-existing mental health conditions
- climate-sensitive infections (eg diarrhoeal disease, mosquito-borne diseases)
- air pollution, plastic pollution, and local pollution events
- extreme weather events.

Recognise and address risk factors and social determinants that may result in patients being disproportionately affected by climate and environmental risks and impacts, including:

- life stages: infants, pregnant women, and older patients
- outdoor workers
- pre-existing chronic disease
- pre-existing mental illness
- socio-economic disadvantage, poverty and homelessness
- rurality
- Aboriginal and Torres Strait Islander communities
- culturally and linguistically diverse communities.

Identify environmental and ecological determinants of health, including climate change, pollution, and biodiversity loss

Implement strategies that ensure environmentally sustainable resource use in the delivery of general practice care, using low-carbon and low-environmental impact alternatives when appropriate, including:

- avoid low-value and harmful care
- implement effective preventative care
- identify low-emissions therapeutic alternatives
- provide best practice, sustainable asthma and COPD care
- address non-clinical sources of waste and emissions, including energy, water, and transport.

Promote patient-centred behaviour change that is beneficial to health and the environment, including:

- active transport
- plant-forward diets
- social prescribing and nature-based social prescribing.

Identify how traditional Aboriginal and Torres Strait Islander knowledge, including caring for Country, can inform healthcare practice that promotes resilience to climate and environmental risks and impacts and environmentally sustainable practice.

Advocate for the needs of patients and their community relating to climate and environmental health risks and impacts.

Integrate measures and indicators of climate and environmental risks and impacts into quality improvement systems.

Discuss how the duty of health professionals to protect and promote health is impacted by the interdependence of health and the environment and identify the implications for health professionals' personal and professional lives.

Reflect on your personal carbon and environmental footprint.

Reflect on your professional carbon and environmental footprint.

Reflect on the role of GPs in advocating for social policy changes to advance climate resilience and environmental sustainability to safeguard individual, community, and population health.

Evaluate and apply new and emerging evidence related to climate and environmental impacts on patient health and the delivery of high-quality, environmentally sustainable healthcare.

## Opportunities for learning

### Words of wisdom

- Climate and environmental health risks are increasing and changing. Keep up to date with health information and alerts relevant to your local community (eg thunderstorm asthma warmings, infectious disease outbreaks, and disaster response alerts for extreme weather events).

- Individuals may be disproportionately affected by climate and environmental health risks due to increased physical susceptibility, lack of access to resources to adapt to environmental stressors or experiences of cultural, social, and economic marginalisation. This includes children, older patients, Aboriginal and Torres Strait Islander individuals and communities, culturally and linguistically diverse communities, individuals experiencing pre-existing physical and mental health problems, and those experiencing poverty or homelessness. We need to move from a bio–psycho–social model of medicine to a bio–psycho–socio–ecological to ensure we are holistically responding to patient care needs and addressing health risks related to escalating climate and environmental crises.

- Climate distress and eco-anxiety are considered a rational response to observed climate change and environmental degradation, and the relative lack of societal response. Addressing the thoughts and feelings associated with climate change, promoting environmentally oriented behavioural responses to climate change, and exploring values that may hold regardless of the environmental outcome (eg trust and hope) are all potentially effective management strategies.

- Improving environmental sustainability in general practice involves strengthening primary and preventative care, avoiding low-value and harmful care, and adopting measures to reduce the emissions from providing care.

- Aboriginal and Torres Strait Islander communities have lived sustainably in Australia for tens of thousands of years prior to colonisation. There is a great deal we can learn from traditional Indigenous Knowledges in seeking to develop more sustainable models of health and healthcare.

### Learning strategies

#### On your own

Think of a patient with complex care needs that you have seen during the last week. In addition to biological, psychological, and social factors, are you able to identify environmental or ecological factors that might influence their health?

- *What advice could you provide to address the environmental risks or protective factors you have identified?*
- *Where could you access resources to guide your management?*

Discuss how you would manage a patient concerned about experiencing thunderstorm asthma?

- *What is your knowledge of who can experience thunderstorm asthma?*
- *What preventative advice would you provide to patients with and without a history of asthma who are concerned about their risk during thunderstorm asthma events?*

Greater use of reliever therapy is associated with poorer asthma control and worse patient outcomes. In Australia, reliever therapy is most commonly respiratory MDIs, which are an especially high source of carbon emissions, due to the propellent they contain.

- *Where would you find information on the carbon footprint of different respiratory inhalers?*
- *Which elements of best practice asthma and COPD management could also reduce reliance on MDI reliever therapy, and therefore the carbon footprint of care?*
- *Which patients might be appropriate to change to dry powder inhalers? How would you determine this through shared decision making, while also ensuring safe and high-quality asthma and COPD management?*

### With a supervisor

What environmental health alerts have been issued in your local area?

- *How did you respond to these alerts? Were there particular patient groups that were particularly affected? What did you learn from your experience of these events?*
- *What other services might be involved in supporting patients during environmental health alerts?*
- *Where can you go to make sure you are subscribed to receive future environmental health alerts?*

Air pollution can trigger acute presentations and is a leading cause of non-communicable diseases.

- *What acute and chronic presentations and conditions are associated with air pollution?*
- *Which patients are most at risk from exposure to air pollution (consider life stages including pregnancy, as well as pre-existing conditions)?*
- *What tools are available for patients to monitor air quality and pollution? What can patients do to stay safe on days of poor air quality?*
- *What are the potential sources of air pollution in your local area? What role might GPs have in educating patients about these?*

What are the major sources of carbon emissions for individuals in Australia? What about in general practice?

- *What changes could you implement to reduce your personal carbon footprint?*
- *What changes could you implement to reduce the carbon and environmental footprint of your practice?*
- *What resources did you use to identify these strategies?*

### In a small group

Have each member of the group identify an example of low-value or harmful care (hint: Choosing Wisely Australia has a range of examples). Share your examples and work through the following questions as a group.

- *How do you define high-value, low-value and harmful care? How do you evaluate investigations and management interventions that represent high value care?*
- *What harms can be caused to patients through the provision of low-value or harmful care? What harm is caused to the environment through the provision of low-value and harmful care?*
- *What strategies do you use to limit over investigation, over diagnosis and over treatment in general practice? How do you manage this in settings of clinical uncertainty?*
- *What are some examples of evidenced based non-drug interventions? (Hint: Review the RACGP Handbook of Non-Drug Interventions)*

In 2022 widespread local transmission of Japanese encephalitis was detected in Australia for the first time in the setting of hotter and wetter conditions. Previously only a handful of cases had been detected in the far north of Australia and in returned travellers. Have each member of your group prepare a 5-minute presentation on a climate-sensitive infectious disease. Consider mosquito-borne and other infectious diseases.

- *How is the epidemiology of these conditions expected to be affected by climate change?*
- *What is your knowledge of the presentation, diagnosis, management, and prevention of each of these conditions?*

What is your understanding of the ways that climate change can impact mental health? Divide the following questions to answer between your group.

- *What are the potential short and long-term mental health impacts of extreme weather events?*
- *How would you define eco-anxiety and climate distress? How common are eco-anxiety and climate distress in Australia? Which patient groups are most likely to experience eco-anxiety and climate-distress?*
- *How would you manage a patient presenting with eco-anxiety and climate distress?*
- *What might be the specific risks for Aboriginal and Torres Strait Islander people whose totems become extinct from their local area due to biodiversity loss, or who are forced to relocate from their traditional homeland due to climate-related water insecurity or coastal inundation?*

### With a friend or family member

Ask a friend or family member about their home, work, and leisure environments and if they can think of any environmental hazards: What is the hazard? What are the risks? What prevention mechanisms are available?

- *What are the environmental health hazards? What actions can they take to reduce these hazards?*
- *How does understanding preventive mechanisms in environmental health help you with your clinical practice?*

Many preventive health activities have benefits for both health and the environment.

- *Discuss with a friend or family member their understanding of the health and environmental benefits of increasing active transport, plant-rich diets, and spending time in nature?*
- *How do you target healthy lifestyle advice in your practice to ensure that it is responsive to an individual patient's health needs?*

### Case example

Charlie is a usually independent 77-year-old man who presents with his daughter, Jude, after being discharged from hospital. Prior to his admission, temperatures were >35ºC for several days in his community. Charlie had stayed at home but could only afford to use air conditioning for part of the day. His past history includes hypertension, mild congestive cardiac failure, T2DM, and osteoarthritis. Before his admission, his medications were perindopril, spironolactone, metoprolol, metformin, and occasional diclofenac. After several days of heat, he felt unwell with light-headedness and mild chest discomfort and was taken to hospital. He was found to be hypotensive and diagnosed with an acute myocardial infarction and acute kidney injury.

Jude, a 35-year-old outdoor construction worker, also asks to be seen. During the heatwave she has been experiencing exhaustion, muscle cramps, and headache at work. Initially her symptoms resolved at night with rest and fluids. However, over the last 24 hours her symptoms have persisted.

In a case-based discussion, questions relating to each role could be:

#### Communicator

- Jude relates that she is worried about her children's future in their community, and more broadly, because of climate change. How would you respond to her concern?

#### Clinician

- What bio–psycho–socio–ecological factors might have contributed to Charlie and Jude's presentations?
- What is your differential diagnosis for Jude's presentation? What are the potential complications of heat-related illness? What investigations, if any, would you perform for Jude?
- What changes will you need to make to Charlie's medications and ongoing management following his admission?
- How would you have managed Charlie if he had presented to your clinic initially, instead of hospital? Are you able to independently perform and interpret an ECG? Are your IV cannulation skills up to date?
- How will you assess and manage Jude's presentation? How do you determine which patients with heat-related illness need to be referred to hospital? What is the mortality of patients experiencing heatstroke?
- What strategies could you put in place to reduce the likelihood of Charlie and Jude experiencing a recurrence of heat-related illness in the future?

#### Health advocate and leader

- Which patient groups are most at risk during extreme heat events? What systems could you put in place to identify and communicate with at-risk patients during a heat-related public health alert?
- What community and public health programs are you aware of that aim to reduce the burden of heat-related illness?
- What changes could you make to reduce the clinical and non-clinical environmental footprint of your general practice clinic?

#### Professional

- Providing care to Charlie and Jude has made you reflect on your own anxiety and distress about the risks from climate change and other ecological crises. What self-care strategies could you implement to support your own wellbeing in relation to eco-anxiety and climate distress?

#### Scientist, educator and researcher

- How could you access and apply clinical guidelines and research evidence to minimise heat-health risks for Charlie and Jude, including evaluating living conditions, managing underlying illness and implementing cooling and medication management strategies?

## Learning resources

The curriculum website includes learning resources within each unit.

## Assessment

Content in this unit will be assessed in a variety of ways.

**Workplace based assessments**

| Mini-CEX | RCA | MSF | CBD | Reflective exercise | Audit | Mid and end term assessment |
|---|---|---|---|---|---|---|

**Fellowship examinations**

| AKT | KFP | CCE |
|---|---|---|

KEY

- Expected to be assessed here always
- Often assessed here but not in every example / case / assessment
- May at times be here or contribute to the assessment

**ABBREVIATIONS**

**Mini-CEX** – Mini-clinical evaluation exercise
**RCA** – Random case analysis
**MSF** – Multi source feedback
**CBD** – Case-based discussion
**AKT** – Applied knowledge test
**KFP** – Key feature problem
**CCE** – Clinical competency exam