

Global Consortium on Climate and Health Education (GCCHE)

Core Climate & Health Competencies for Health Professionals

This set of core competencies was developed by the GCCHE Advisory Council and Coordinating Committee.

Overarching Goals: This list identifies climate and health core competencies for health professional students. These core competencies reflect foundational climate and health understanding and skills across five areas of practice, which are recommended for all health professionals (see **Appendix** below for an outline).

Area of Practice #1: Climate and health knowledge and analytical skills; **Goal:** Demonstrate an understanding of the complex relationships between climate change and health.

Unit of Competency	Elements of Competence
Applies fundamental knowledge of ecology, biology, and complex systems in environmental science.	<ul style="list-style-type: none"> Understands feedbacks, loopings, and cascades of effects phenomena.
Applies knowledge of climate drivers, weather, climate change, and climate variability.	<ul style="list-style-type: none"> Describe the measurement and evidence base of climate drivers. Describe the difference between “climate” and “weather,” and between climate change and climate variability. Explain the general mechanism of the greenhouse effect. Explain the social dimensions of climate drivers, including population growth and economic growth.
Applies knowledge of the health impacts of climate change relevant to adapting health services.	<ul style="list-style-type: none"> Describe all of the major health effects of climate change, including both direct and indirect impacts, and their mechanisms. Impacts include: asthma and cardiovascular disease from air pollution from increasing levels of CO₂; spread of viruses and infectious diseases; increases in respiratory allergies and asthma due to increasing allergens; water quality impacts; impacts to water and food supplies; environmental degradation (forced migration; exacerbation of socioeconomic, demographic, political, cultural or conflict-related threats to health security; heightening of existing health and economic inequities and their effects on the delivery of health care; consequences for mental health); impacts of extreme heat including heat-related illness and death, and cardiovascular failure; and injuries, death, and mental health impacts from severe weather. Explain how the human health impacts of climate variability/change will vary within and among

	different communities and regions, and give examples of how climate change may interact with other environmental changes to affect health.
Applies knowledge of climate mitigation and adaptation, and health co-benefits of actions.	<ul style="list-style-type: none"> • Distinguish between climate mitigation and adaptation. • Describe the near-term health co-benefits (e.g. improved air quality) that arise because of climate mitigation at the individual, local, and global scales and contribute to the reduction of longer-term climate impacts, and give examples of sectoral policies that can reduce greenhouse gas emissions and improve health.
Applies knowledge of health security, vulnerability, and resilience.	<ul style="list-style-type: none"> • Define health security, climate-health vulnerability, and climate resilience. • Distinguish between (environmental) hazards, exposures, and vulnerabilities, and describe the opportunity areas in which public health can act to reduce harm. • Identify vulnerabilities and risks of critical health and related infrastructure to climate change and extreme weather events.
Knows how to access and interpret the relevance of local, national, and international information about climate change effects on health to specific regions.	<ul style="list-style-type: none"> • Be able to access the resources available to health professionals for information on local environmental conditions. • Use this information to analyze the relationship between climate and health data, deliver and improve local health services, and support health impact assessment and political engagement.
Applies knowledge of the ethical, professional, and legal obligations relevant to climate and health.	<ul style="list-style-type: none"> • Demonstrate how to supplement theories of collective ethics, transgenerational ethics, and ethical obligations to the natural world to more individual-oriented, present-oriented, and human-centered frameworks of climate and health ethics. • Understand the professional and legal obligations of health professionals related to climate and health.

Area of Practice #2: Climate change and public health practice; **Goal:** Demonstrate competence in recognizing population-based hazards and designing and implementing public health interventions.

Unit of Competency	Elements of Competence
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Applies climate and health knowledge to improve decisions about public health services, and adapt and improve population health.	<ul style="list-style-type: none"> Identify measures that can be taken to provide health security and foster climate resilience at the individual, local, and global scales. Provide examples of how climate-health impacts in one location can affect health impacts, including through contagion, economic repercussions, and psychosocial well-being, in another, considering impacts across regions and scales.
Applies knowledge of emergency planning skills.	<ul style="list-style-type: none"> Use emergency planning skills to respond to climate change-related extreme weather events and disasters, and understand the roles of and interactions between agencies involved in emergency care.

Area of Practice #3: Climate change and clinical practice; **Goal:** Demonstrate competence in diagnosis and management of climate-sensitive and climate-induced illness and management of health care facilities.

Unit of Competency	Elements of Competence
Shows how health care professionals and facilities can respond to health risks of climate change.	<ul style="list-style-type: none"> Describe the roles and responsibilities of health providers in relation to the health impacts of climate change. Identify ways in which health care facilities can become more resilient in the face of ongoing climate change threats as well as increasingly severe weather extremes. Identify vulnerabilities in health care facilities size and purpose in preparing for population needs in the event of severe weather events and/or disasters. Describe strategies for reducing the carbon footprint of health care delivery, from the hospital setting to the outpatient setting, based on “green health care” principles.
Applies knowledge of emergency planning skills.	<ul style="list-style-type: none"> Describe emergency response to climate change-related extreme weather events and disasters, applying knowledge of roles of different health professionals. Identify and plan for workforce surge needs to adequately respond to extreme weather events and disasters.

Applies knowledge to clinical care of patients.	<ul style="list-style-type: none"> • Identify medical diagnoses and other health determinants that make patients more vulnerable to climate change related health threats. • Explain how medication use might aggravate climate change-related exposures, such as extreme heat. • Identify and describe patient presentations and triage considerations as manifestations of direct and indirect climate change related conditions. • Identify vulnerabilities in the patient care coordination process between hospital and community services that can be impacted by severe weather events and/or disasters. • Implement appropriate communications or changes in care for patients to reduce health risks from climate change related exposures. • Promote healthy and more sustainable behaviors in the clinical settings.
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Area of Practice #4: Policy aspects of climate change and health; **Goal:** Demonstrate familiarity with international and domestic policies relevant to climate change and health.

Unit of Competency	Elements of Competence
Understanding of the role of international, national, and subnational policy frameworks in addressing health risks of climate change.	<ul style="list-style-type: none"> • Explain the role of past and current frameworks for understanding and responding to climate-health challenges, such as the United Nations Millennium Development Goals and Sustainable Development Goals and Paris Agreement. • Describe the relationship between international disaster risk reduction policies (e.g., Sendai Framework) and climate change policies. • Describe the role of governance as it relates to health policy and climate change (e.g. different systems of governance in the world today and how they respond differently to climate change threats to health).
Understanding of the climate-health activism and policy engagement roles of health professionals, as well as the limitations.	<ul style="list-style-type: none"> • Describe how to act on climate and health policy solutions, including health co-benefits. • Describe how health professionals can partner with health care institutions to reduce health care sector greenhouse gas footprint.

Area of Practice #5: Communication; **Goal:** Demonstrate competence on how to communicate health and climate information to different audiences.

Unit of Competency	Elements of Competence
Shows how to communicate, share, and work collaboratively on climate and health issues.	<ul style="list-style-type: none"> Identify opportunities for information-sharing, collegial cooperation, and collective action amongst health professions that can promote health profession-specific expertise around climate change. Practice and refine existing recommendations for effective communication strategies and tools in disseminating climate and health information to key stakeholders, including information on the health co-benefits of climate actions. Identify different methods and approaches for communicating (e.g. social media, journalism, TV, and film). Identify challenges to climate communication (e.g. temporal and spatial distancing, climate skepticism, and lobbying).
Address Scientific and Climate Uncertainties	<ul style="list-style-type: none"> Understand the uncertainties inherent in estimating the environmental impacts (current and future) that will result from climate change, and give examples of interactions between environmental changes which may affect health risks.

Sources:

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Appendix: Outline of Key Themes within the Core Competencies' Five Areas of Practice:

1. Climate and health knowledge and analytic skills
 - a. Fundamentals of Ecology, Biology, and Complex Systems
 - i. Feedbacks, Loopings, and Cascades of Effects Phenomena
 - b. Climate Drivers
 - i. Measurement and Evidence Base
 - ii. Climate Variability and Change
 - iii. The Greenhouse Effect
 - iv. Social Dimensions
 - c. Health Impacts of Climate Change/Environmental Determinants of Human Health
 - d. Health Security, Vulnerability, and Resilience
 - e. Mitigation and Adaptation
 - i. Health Co-Benefits
 - f. Resources and Health Services
 - g. Ethical, Professional, and Legal Obligations
2. Climate change and public health practice
 - a. Climate and Health Information Application for Public Health
 - b. Regional Variation and Interconnectivity of Impacts
 - c. Emergency Planning
3. Climate change and clinical practice
 - a. Climate and Health Information Application for Clinical Practice
 - b. Healthcare Delivery
 - c. Emergency Response
4. Policy aspects of climate change and health
 - a. Governance and Politics
 - b. Activism
5. Communication
 - a. Information Sharing and Collaboration
 - b. Strategies and Tools
 - c. Methods and Approaches
 - d. Challenges to Climate Communication
 - e. Climate Uncertainty