

Protecting Public Health in a Changing Climate: A Primer for City, Local, and Regional Action

Course Description

About this course- This course is an introduction to the multiple ways our changing climate affects global population health, and to promising policy and practice responses. More intense storms heat waves, and rising seas mean many particularly the most vulnerable, now face growing risks of weather-related injury. Illness mental stress and even death. Because people care deeply about health outcomes, public health has great potential to convey the urgency of reducing greenhouse gas emissions and adapting to a warmer more unpredictable climate. The main message of the course is that public health must therefore “learn in” and become a more central player in climate change mitigation and adaptation because climate related health risks happen mainly at the local level, the courses on cities – increasingly key players in climate change policy. Starting with an overview of the science consensus suggesting we have 10-20 years to prevent risks associated with exceeding 1.5*c of global warming and put in place adaptive policies, the course provide interactive lectures, expert interviews and case studies that build practical knowledge. In the final assignment participants apply course tools and strategies to a city of their choice, preparing them to contribute to climate mitigation and building health resiliency in their own local context.

Objective of the course

1. Describe core climate change concepts and definitions, and how the climate has changed and is projected to continue changing over the medium term.
2. Critically evaluate basic climate science data at the local level and understand its relevance to successful climate mitigation and adaptation.
3. Identify the current best estimates of global warming increase over time and needed actions to reduce risks to human populations.
4. Recognize the epidemiological evidence for the direct adverse of human health impacts associated with climate change.
5. Identify characteristics that make same population particularly vulnerable to different health impacts.
6. Identify features that make some regions and contexts such as cities and urban agglomerations, vulnerable to climate hazards.
7. Apply the core elements of a public health climate change risk and vulnerability assessment frameworks, including development of climate adaptation planning and estimation of co-benefits to health from migration strategies.
8. Recognize the sectorally inter- connected nature of climate- related impacts on public health and wellbeing.

9. Identify ways public health can contribute proactively to developing climate adaptation and climate action plans.
10. Recognize and critically evaluate promising policies and practices roll of public health in climate change mitigation.
11. Compare and contrast how policy tools are implemented in practice in different local contexts internationally, including adaptation financing arrangements.
12. Identify methods and strategies for consultation with stakeholders and communication on climate change and health topics with key audiences.
13. Identify key health- related elements of climate adoption plans.
14. Evaluate the health-related elements of an actual city climate adoption plan.
15. Recommend improvements to the health dimension of an actual city climate adaptation plan.

Course contents

Module I introduce learners to the basic definitions, principles and findings of climate change science, relying on reports of the UN-affiliated Intergovernmental Panel on Climate Change (IPCC), as well as the US National Climate Assessment, NASA, NOAA, and other science agencies. Following a brief course overview, sessions cover how the climate has changed and may change in the future, including the recent IPCC report on global warming of 1.5 degrees C. An interview with former EPA Administrator Gina McCarthy addresses why public health departments globally need to prepare for a changing climate, and an interview with Dr. Rufus Ewing, former Premier of Turks and Caicos, provides a perspective on the impacts of extreme storms and sea-level rise on vulnerable small island states. A ten-question multiple-choice quiz provides an opportunity to take stock of module learning.

Module II details the health impacts of climate change on human populations, and why a changing climate provides both a challenge but also an opportunity for public health. Direct impacts of climate change on human well-being are covered (including illness, injuries and death from extreme heat, precipitation, and worsening air quality) and indirect impacts (such as increased risk of vector-borne disease, risks to water quality and quantity, food security and safety, mental health, and climate-related relocation). Emphasized points include the vulnerability of specific populations; the complex, interlinked and multi-scale nature of climate health challenges; and the hazards faced by cities – on the climate frontline due to their concentrated populations, the urban heat island effect and other factors. An interview with Dr. Thomas Matte, former Assistant Health Commissioner for New York City, provides perspectives on Hurricane Sandy and its impacts; while an interview with former World Bank Institute Urban Director Dr. Mila Freire provides insights into how urban planning and public health can collaborate to enhance climate health outcomes in cities. A ten-question quiz provides an opportunity to review and consolidate learning.

Module III introduces learners to climate and health analytical tools and assessment methods they can use in their own local contexts, illustrating application of these tools through examples including a case study for the city of Barcelona presented by Dr. Joan Ramon Villalbi of the Barcelona Public Health Agency. Among the assessment methods highlighted are the EU Climate Adapt framework, Health Impact Assessment (HIA), and innovative approaches such as “multisolving.” Special focus is placed on the US Centers for Disease Control and Prevention (CDC) five-step adaptive-learning framework called “Building Resilience Against Climate Effects” (BRACE), with the US state of Maryland’s application of BRACE provided as an example illustrated through an interview with Dr. Clifford Mitchell, Director in the State Public Health Department's Environment Bureau. A ten-question multiple-choice quiz provides an opportunity to verify learning, and the analytical tools discussed in this module provide guidance for completion of the final course assignment.

Module IV provides concrete examples of promising climate health adaptive policies and practices, covering information-driven practices such as surveillance as well as early warning systems (including an assignment to identify/evaluate a real-life early warning system). Collaboration across non-health sectors -- particularly the physical infrastructure sectors including water, transport and electricity essential to city functioning -- is also covered, including an interview on financing of adaptive urban infrastructure with Bernard Sheahan, former Director of Infrastructure for the International Finance Corporation. Sessions on communicating on climate change and health (including a “how-to” tutorial) help build concrete skills. The course concludes with an interview with Dean Emeritus of JHSPH, Dr. Al Sommer, providing a forward-looking perspective on how public health can “speak up” on the challenges of climate change.

The final assignment is structured around application of concepts learned in the course to evaluation of the climate adaptation/action plan of a city or locality of the learner’s choice, which will be peer-graded based on a defined rubric.

Learning methodology used in the course

(Lectures/PPT/Video/Cases/Webinar/Assignments/Reading Material)

Lectures, PPT, Video, Cases, Quiz’s, Assignments, reading material and expert talk/interviews are used in this course. These are very helpful methods for us because sometimes we stuck in course and many times, we understood through the PPT and videos. Every student has their own IQ power and some students understand by audio and some understand by video. These types of methodologies are very useful. In this course we solve some online quizzes which are very interesting, and we got knowledge from it. For solve this type of quiz we read course material again and again which helps to build basic knowledge of course. I did one assignment which is related to Climate Adaptation Plan this is another tool to sows the seeds of curiosity. There are

many experts who gave their views and described the topic in a summarized way. If a problem occurs during learning, then we can solve our problem by going to online discussion. And finally, we also reviewed the assignments of peers which was very interesting, we got to know and see a lot of new things.

Key learnings from the course

Following is my key learning of this course- the first week of this course I learned that how climate impact on health and how can we define climate change? Climate change is a big issue and its affecting communities all over the globe. How we can define the term climate and weather? weather describes atmospheric conditions over a short period of hours, days or weeks. Whereas climate on other hand, denotes trends usually over several decades. The IPPC defines climate change as a detectable, measurable change in the mean and/or variability of major climate properties, like temperature and precipitation. Also learned about direct and indirect effects of climate change on human health. Direct effects like it includes injuries and health stress. Indirect effects mediated thoughts both ecological and social systems, such as increased vector borne disease and mental health issues. There are some words which are used frequently but we should to understand that meaning which are- Mitigation, adaptation, benefit and multisolving. If we talk about climate change then mitigation refers action that reduce green house gas emissions (or create sinks for emissions) thereby reducing global warming. Adaptation- A action that adjust to a warming and more extreme climate by reducing harm (or exploiting benefits). Co-Benefit- when we take action to prevent and prepare for climate change, we can also have positive influences on other public health problems, and these are called co-benefits. Multisolving- leveraging cross sectional collaboration it is possible to design and implement projects that improve local health, produce financial savings and advance long-term climate goals all at once. I also learned about the five steps of BRACE (Building Resilience Against Climate Effects)-

- Forecasting climate impacts and assessing vulnerabilities
- Projecting the disease burden
- Assessing Public health intervention
- Developing and implementing a climate and health adaptation plan
- Evaluating impact and improving quality of activities

The lesson is, climate change is a public health issue. Its not just about polar bears or losing the glaciers. Its not a war about cold its not a war about carbon the real war is the war to protect public health. The impacts are real, they are accruing now in every community around the globe. We have a real responsibility to understand the range of impacts to use our unique public health

lens to understand who vulnerable and work together to adopt to change and protect public health.

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