



The Medical
Society Consortium
ON CLIMATE & HEALTH

ANNUAL MEETING

May 22, 2021

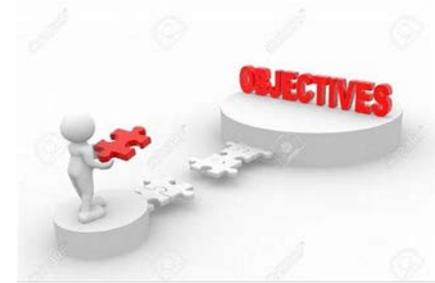
Wildfires, Asthma and Beyond: Our journey incorporating climate change education into medical curriculum

Holly Rosencranz MD

Japhia Ramkumar MD



Objectives



- 1. **Identify** challenges to incorporating climate change education into medical school curriculum*
- 2. **Develop** and apply strategies to incorporate climate change education into curriculum at your institutions*
- 3. **Assess** impact and efficacy of curricular innovations*

Imperative To Train Climate Aware and Active Physicians



“Supports educating the medical community on the potential adverse public health effects of global climate change and **incorporating the health implications of climate change into the spectrum of medical education.**” (2016)



“Physicians are encouraged to become **educated about climate change**, its effect on human health, and how to respond to future challenges. Medical schools and continuing medical education providers should **incorporate climate change–related coursework into curricula.**” (2016)

THE WALL STREET JOURNAL.

U.S.

Medical Schools Are Pushed to Train Doctors for Climate Change

Movement backed by American Medical Association starts to grow, though content can be hard to fit into an already-packed curriculum

By *Brianna Abbott*
Aug. 7, 2019 5:30 am ET



At the University of Minnesota, medical, nursing and pharmacy schools have added content and tweaked existing classes to incorporate climate-related topics.





The Medical
Society Consortium
ON CLIMATE & HEALTH



Medical societies endorse
collaboration with and education
of patients, businesses,
communities, and governments to
mitigate this public health crisis.



American
Heart
Association®

American Academy
of Pediatrics



DEDICATED TO THE HEALTH OF ALL CHILDREN®



FIGO®

International Federation of
Gynecology and Obstetrics

the global voice for women's health

The Reality...

E&ENEWS

PUBLIC HEALTH

Despite Climate Change Health Threats, Few Medical Schools Teach It

Heat, mosquito-borne diseases and air pollution are medical issues that should be viewed through a climate lens, advocates say

By Maya Earls. E&E News on December 27, 2019

**SCIENTIFIC
AMERICAN®**



Some Medical Schools Are Incorporating Climate Change in Various Ways

- Inquiry course exploring the link between climate change and health
- Development of climate-related content/health problems incorporated into several M1 and M2 courses
- Climate Crisis and Clinical Medicine M3 & M4 Elective
- Graduate medical education fellowship: Climate and Health Science Policy
- Health Impacts of Climate Change for public health and medical students



Challenges



**Scheduling &
Resource
Constraints**



Competing Priorities



Politicization



Leadership and Faculty Commitment

The Beginning



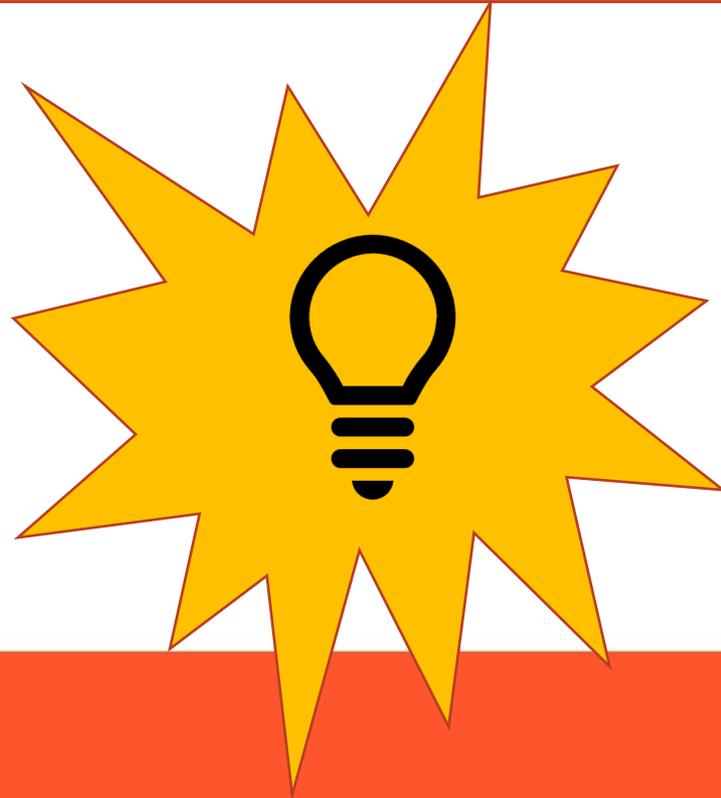
Warming Up Lectures:
**Helping Medical Students
See the Health Impacts of
Climate Change**

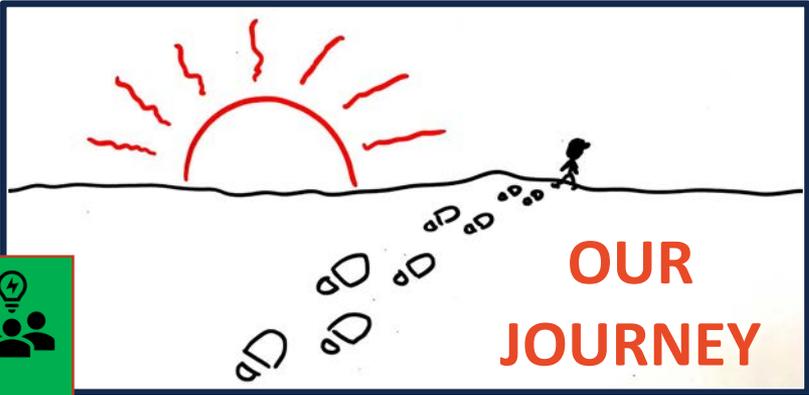
Monday
11.7. 2016
Noon - 1:00 pm

Medical associations and experts across the globe are urging action by health care providers to mitigate the negative impacts of climate change on disease incidence, access to care, and quality of life.



ADD CONTENT TO *EXISTING*
CURRICULUM THROUGH
ACTIVE LEARNING





Evaluate our own institution

Trial of simulation exercises with medical students

Developed SP case and faculty materials

Internal Medicine Standardized Patient Encounter: Wildfire and Asthma

- Beta test
- AAIM workshop

Published case

- Syndemic Workshop
- Climate policy workshop
- Colloquium presentation



Simulation Based Education



Graham Clinical Performance Center, University of Illinois, Chicago

“One of the most important steps in curriculum development is the introduction of simulation-based medical teaching and learning.” (Al-EIq AH, 2010)



MI-M2 Workshop

Developing SP Case Scenarios for Patients Affected by Climate Change

1. List three types of climate related health threats for your patient
2. Select one of the threats you identified for your case.
3. Create a case scenario for portrayal by a standardized patient. Include:
 - A. Patient's age, gender, and geographic location
 - B. Patient's description of chief complaint/symptoms
 - C. History including
 - i. **Exposure** to climate related conditions
 - ii. **Vulnerability** to climate related conditions including patients medical and socio-economic condition as well as community characteristics.
 - D. Physical exam, including vital signs and other key points.
4. Consider how a student will approach the clinical exam of the patient.
 - a. What additional source of information would you consult on the patient's climate related health effects?
 - b. Possible recommendation for the patient to reduce the climate-related risks



Cases Developed By Students From Workshop:

Adult Case

65-year-old in Illinois experiencing worsening cough and shortness of breath; history of smoking and COPD controlled by medication; Recent travel to a music festival in California -exposed to dust, wildfire smoke, and smog.

Pediatric Case

5-year-old in Michigan experiencing sneezing, runny nose, coughing, wheezing, watery eyes, skin irritation; family lives in a basement apartment that was flooded by a heavy storm and developed mold.

Mental Health Case

43-year-old single mother living in Houston area suffering from anxiety and insomnia; living in disaster relief structure months after home destroyed by Hurricane Harvey; had no flood insurance because her house was outside of the area designated as floodplain



M1-M2 Workshop With More Structure

Group 1 Excess Heat

Group 2 Poor Air Quality

Group 3 Vector Borne Disease

Group 4 Water Borne Disease

Group 5 Extreme Weather Events



1. Work in small groups
2. Use worksheet as a mini-template to develop your case
3. Reconvene in 20 minutes
4. Share and present your case with large group

Case Development Worksheet

Developing simulation training material to incorporate health impacts of climate change into medical education.

Case Scenario Development Instructions

You have been given a mini- template to develop a standardized patient case scenario. The scenario will connect climate related health risks to a chief complaint on one of the displayed exposure risks and health impacts.

Instructions:

Conceptualize a case scenario and its connection to climate change and develop specifics of a unique backstory related to climate including:

- Exposure to the environmental health risk
- The vulnerability to environmental health in relation to your patient's socioeconomic status.
- Interventions customized to address the individual patient and the climate risk.



Case Development Worksheet cont.

Chief Complaint/Concern: (description of physical or mental health concern)

History of the present illness:

- **Demographics:** (age, gender, family structure, geographic location)
- **Vulnerabilities/ Exposure history:** (e.g. underlying asthma or cardiovascular disease, proximity to sources of air or water pollution)

Past Medical History: (e.g. intermittent asthma, hypertension)

Social History/Occupation/Employment/Home: (e.g. own or rent/homeless)

Lifestyle/Behavioral Risk: (e.g. Tobacco/ Alcohol/Illicit drugs)

Other Relevant History: (e.g. medications, allergies, physical limitations, family history)

ROS:

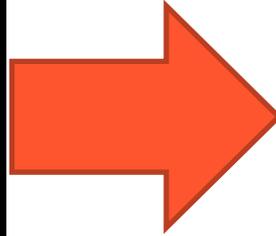
Relevant Physical Exam:

Impression & Plan: Including mitigation and/or adaptation strategy

Determine 1-2 key climate and health impact takeaways



Inspired By Our Students -Taking Our Own Advice...



***Asthma exacerbation
from exposure to
wildfire smoke in the
context of climate
change***

A Case Scenario
developed for a
standardized patient
student simulation
training exercise



Dr. Allan L. and Mary L. Graham Clinical Performance Center

College of Medicine, Department of Medical Education (MC 591)
828 South Wood Street, 686 CME, Chicago, IL 60607-7000

CONFIDENTIAL - Not to be duplicated without written permission of the author and the Director of the University of Illinois at Chicago Graham Clinical Performance Center (312) 996-5707.

CASE CHIEF COMPLAINT: <i>(does not include actual diagnosis)</i>	Difficulty breathing and chest tightness
CASE NAME:	asthma exacerbation- Ms Baker
PRESENTING SITUATION: <i>(write a few sentences about the patients' presenting problem)</i>	65-year-old woman with a history of intermittent asthma presents with worsening difficulty breathing and chest tightness and dry cough which began 2 weeks ago while working outdoors in her garden. She lives in Sacramento (Ca) about 200 miles from the recent raging wildfires. She is now forced to stay indoors and use her inhaler more often.
KEYWORD DESCRIPTIONS: <i>(describe the patient's problem, patient disciplines, focus of the case, e.g. health risk appraisal, and other key words that characterize the case and the assessment challenge)</i>	worsening difficulty breathing nocturnal difficulty breathing dry cough wheezing wild fire, smoke poor air quality
DIFFERENTIAL DIAGNOSIS: <i>(list competing diagnostic possibilities)</i>	COPD Bronchitis Pneumonia
ACTUAL DIAGNOSIS:	Acute asthma exacerbation of moderate severity due to poor air quality from wildfire/air pollution

Faculty Development:

- Providing feedback to learners
- Develop cases tailored to specialty and learner needs



Faculty Development Workshop AAIM

A Convenient Truth

It's Easy to Integrate Climate Change Into
Medical Simulation

Holly A Rosencranz, MD, FACP
Japhia Ramkumar, MD, FACP

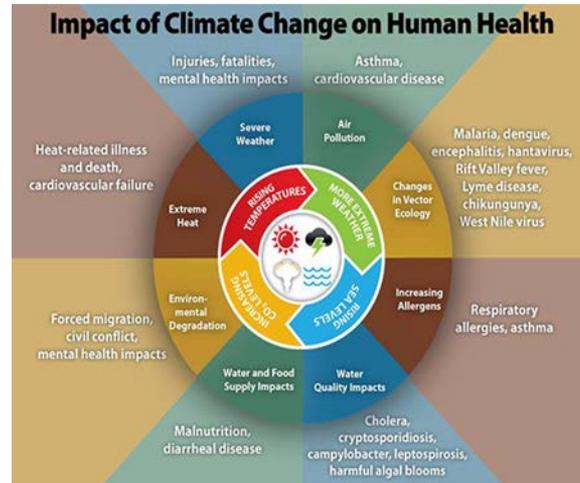
AAIM
April 2019



Faculty Development Workshop AAIM

Common Chief Complaints

- Allergy
- Anxiety
- Cough
- Chest pain
- Depression
- Diarrhea
- Dizziness
- Shortness of breath
- Skin rash



Climate Exposure Risks

Heat

- Lack of cooling centers
- Outdoor workers
- Urban heat island

Poor Air Quality

- Ozone
- Particulates
- Pollen & Mold
- Wildfire

Vector Borne Diseases

- Lyme & others

Water Borne Illness

- Algal Blooms
- Sewage contaminated water

- Flooding

Mental Health Risks

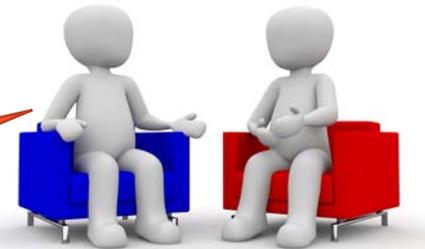
- Property damage & loss
- Displacement

Deployment of SP Case Scenario Encounter



Group
Setting

One on One



Survey

Likert Pre-Survey for Didactic Session

1. Indicate your awareness of the CONNECTION between climate change and health impacts.

Not informed Well informed

1 2 3 4 5

2. Indicate your knowledge of the health RISKS of climate change.

Not informed Well informed

1 2 3 4 5

3. Indicate your knowledge of the health IMPACTS of climate change.

Not informed Well informed

1 2 3 4 5

4. Indicate your awareness of social determinants of health that increase patients' risk of adverse health impacts of climate change.

Not informed Well informed

1 2 3 4 5

5. Indicate your ability to educate patients on ways to address and mitigate health impacts of climate change.

No ability Very able

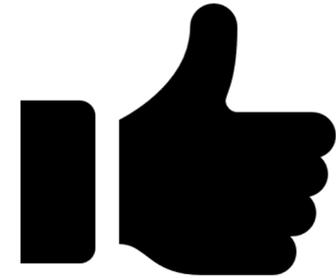
1 2 3 4 5

**Pre and Post
survey used
same questions
and offered a
text box for
comments**



Describe how this session will impact your future behavior with respect to patient care, patient education and climate advocacy.

Survey Results



- Simulation encounters increased the participants' recognition of the impacts of climate change on patient health and potential for them to consider proactive measures.
- Students recognized that the information they gathered from medical history helped them focus on exposures and risks and recognize the health impacts of climate change.
- Students demonstrated awareness of the importance of being climate-aware providers who could include patient education in their management plans.
- Students expressed appreciation of the exercise.



AAMC Association of
American Medical Colleges

Asthma Exacerbation Triggered by Wildfire: A Standardized Patient Case to Integrate Climate Change Into Medical Curricula

Published: January 4, 2021

Japhia Ramkumar, MD, Holly Rosencranz, MD, MPP, Leslie Herzog, MBA, MEd

[Preview Abstract](#) ^



Ongoing M1-M2 Workshops

Developing Simulated Case Scenarios to Reflect a Climate Risk and Health Impacts

Holly A Rosencranz, MD, FACP
Japhia Ramkumar, MD, FACP

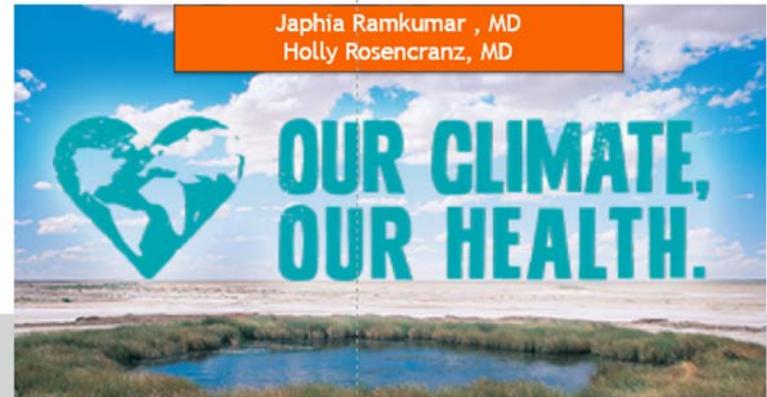
AUA GLOBAL MD PROGRAM
July 2019

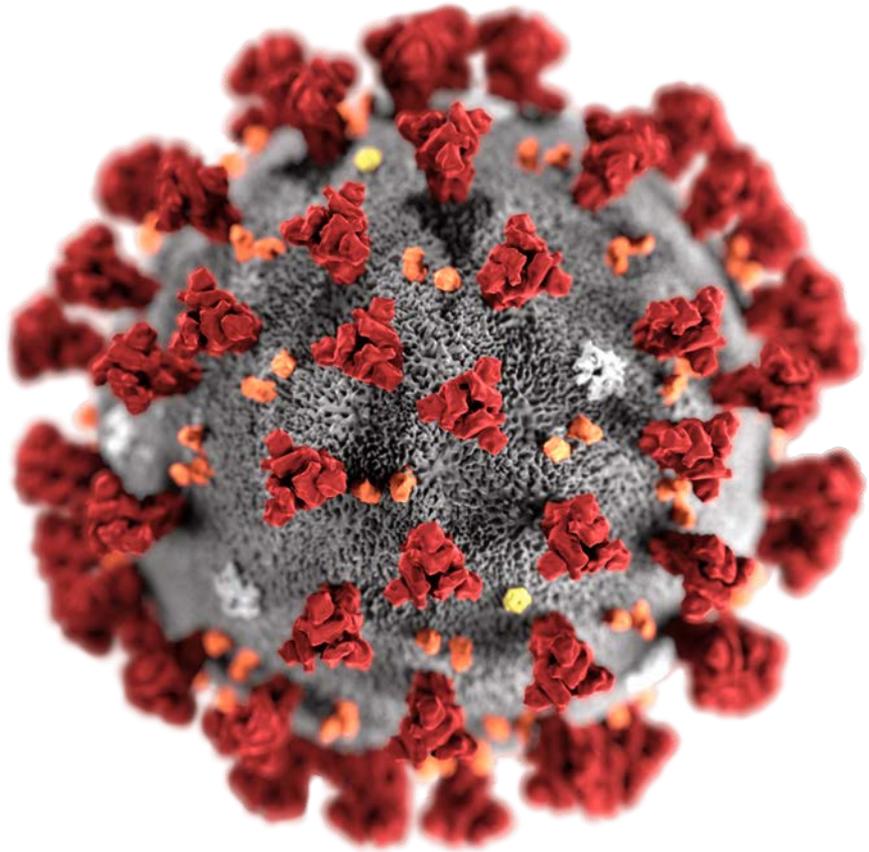


On Becoming a Climate Aware Physician

AUA Global MD Program
January 2020

Japhia Ramkumar, MD
Holly Rosencranz, MD





I

Post-Covid M1-M2 Workshop

**Students
Address
Syndemic**

COVID19 and Climate Change Health Impacts: *A Syndemic*



Global Threats
and
Opportunities

AUA GLOBAL MD
WORKSHOP
July 2020
Japhia Ramkumar, MD
Holly Rosencranz, MD

Syndemic Workshop Worksheet

 Group 1 Heat	<p>Conceptualize a Patient.</p> <p>Describe:</p> <ul style="list-style-type: none">• Demographic• Vulnerability to climate change and COVID19• Describe the personal ad health impact of both threats. <p>How would you approach mitigation and adaptation on an individual level?</p> <p>How would you approach mitigation and adaptation on the community level?</p> <p> </p>
 Group 2 Air pollution	
 Group 3 Deforestation and agriculture disruption	
 Group 4 Extreme weather and disruption of infrastructure	

Likert Survey

Survey to follow presentation and workshop

Climate Change and COVID-19 Syndemic

1. *How aware were/are you of the connection between COVID-19 and climate change?*

Before not at all 1 2 3 4 5 a lot

After not at all 1 2 3 4 5 a lot

2. *How aware were/are that the same population groups are highly vulnerable to the health risks of both COVID-19 and climate change?*

Before not at all 1 2 3 4 5 a lot

After not at all 1 2 3 4 5 a lot

3. *How aware were/are you that climate change increases the vulnerability of some population groups to COVID-19?*

Before not at all 1 2 3 4 5 a lot

After not at all 1 2 3 4 5 a lot

4. *How much do you believe that economic recovery from COVID-19 should prioritize actions which address climate change and sustainability?*

Before not at all 1 2 3 4 5 a lot

After not at all 1 2 3 4 5 a lot

Survey Results

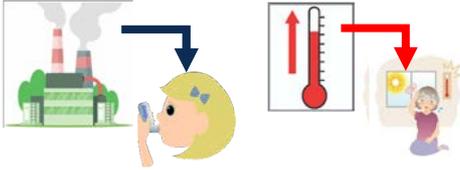


The results indicated that the workshop significantly increased the participants' awareness of the connection between COVID-19 and climate change, shared vulnerabilities and the need to prioritize actions that address both elements of the syndemic. The improvements were statistically significant

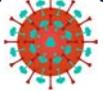


1. Overview

Issue: Climate change is negatively impacting individuals' physical and mental health. Yet, medical trainees are generally not trained to consider its impacts in patient encounters. Compounding this, COVID-19 presents personal and planetary health challenges, with many common risks and vulnerabilities to climate change, thereby creating more dire situations.



Climate change and COVID-19 have created a **syndemic**. A syndemic occurs when two or more *concurrent* epidemic-level diseases with shared drivers cluster in a population. The social and biological interactions worsen the prognosis and impact of each disease. Therefore, treatment and mitigation involves addressing the shared *forces* and drivers.



Objectives:

- **Review** basic climate science
- **Understand** its human health impacts
- **Recognize** the pathology, transmission and clinical presentation of COVID-19
- **Identify** common vulnerabilities for climate change and COVID-19
- **Inspire actions** to mitigate the impact of both climate change and COVID-19

How: We created a virtual workshop for medical students to consider the public health impact of the shared drivers of climate change and COVID19 as well as strategies for mitigation and adaptation.

2. Methodology

Didactic: Facilitators reviewed health impacts of climate change and alignment with COVID-19

Assignment: Students were placed in breakout rooms, identified by a climate change threat: **heat, air pollution, extreme weather, or environmental degradation**. Students then conceptualized a patient vulnerable to both the threat and COVID-19.

Deliverable: Students presented their hypothetical patient (demographics, vulnerabilities, and health impacts of the syndemic). They then identified both individual-level therapies for their patient *as well as* community-level mitigation and adaptation strategies

3. Data

Data Collection: Each student completed a 3-question survey before and after the workshop. The survey compared the student's *pre-workshop* and *post-workshop* awareness and opinions of the impact of climate change on patients' health risks in the context of the COVID-19 pandemic.

- **#1 | #4:** *How aware were you of the connection between COVID-19 and climate change [before/after] the session?*
- **#2 | #5:** *How aware were you that the same populations groups are highly vulnerable to the health risks of both COVID-19 and climate change [before/after] the session?*
- **#3 | #6:** *Please indicate your opinion of the following statement [before/after] the session: "Efforts for economic recovery from COVID-19 should prioritize actions which also address climate change and sustainability."*

4. Results

Pre-workshop and post-workshop results were compared using a **paired samples t-test**.

	Pre-workshop	Post-workshop
N	19	19
Mean	9.84	14.42
Std. Dev.	2.87	1.02
Std. Error	0.66	0.23

Paired Differences

Mean	Std Dev	t	df	p
4.58	2.89	6.90	18	.000***

5. Conclusion

Data: The results indicated that the workshop *significantly increased the participants' awareness of the connection between COVID-19 and climate change, shared vulnerabilities and the need to prioritize actions that address both elements of the syndemic*. The improvements were statistically significant.

Next Steps:

Train providers to be effective educators and advocates on personal and planetary health in the context of both climate change and COVID-19 :

References:

Earls M. *Despite Climate Change Health Threats, Few Medical Schools Teach It*. Scientific American. Published nger, M. (2009). *Introduction to syndemics: A critical systems approach to public* (2019)
Finkel ML. A call for action: integrating climate change into the medical school curriculum. *Perspect Med Educ*. Sack T. AMA Adopts Sweeping Climate Change Education Policy. Physicians for Social Responsibility. Published July 31, 2019. Accessed May 4, 2020. <https://www.psr.org/blog/2019/07/31/ama-adopts-sweeping-climate-change-education-policy/>

Special thanks to Leslie Walwyn, MD Director Global MD Program, American University of Antigua

Assessing Our Impact And Further Innovation



Other Workshop Formats

**Students
Consider
Actions Beyond
Clinical Skills**



Patient Case Studies



Community Health Case Studies



Case Studies *Given To Medical Students:*

o 29-year-old woman , migrated from Puerto Rico to New York City following Hurricane Maria. The patient complains of wheezing, coughing, a rash, and a runny nose. Also, she states that she is experiencing **anxiety and difficulty sleeping**.

o 9-year-old boy seen at a clinic in Chicago. He complains of coughing and shortness of breath during outdoor physical activity. His chart reveals **his sensitivity to pollen and past asthmatic symptoms**.



**Students
Consider
Climate Change
Risks &
Vulnerabilities**

Community Involvement Case Study *Given* to Medical Students

You and your colleagues want to help improve the Climate Action Plan and decide to testify at the public hearing.

- What research would you want to do before writing your testimony?
- Describe why as medical students you are interested in the Climate Action Plan.
- Develop the key points in your testimony on the Climate Action Plan (consider facts presented, recommendations, and benefits).
- In seeking support for your points, what stakeholders in the community should you contact about collaboration?
- How will you advocate for your positions with these stakeholders?
- Which groups in the community would likely oppose your recommendations?
- How will you try to convince them to support your positions?



Policy Workshop

Students
Propose
Policy



Climate Change Harms Your Patients and Community

Suppose that you see a news article about an upcoming vote on the bill in your state senate and decide to recommend that your state senator vote in favor of passage. You arrange to meet with your state senator and invite a few medical students to join you.

- **What points would you make in your meetings?**
- **What graphics and text would you include in a factsheet for the meetings?**



ACTIVITY

[Breakout Room 1](#)

Hawaii Senate Bill 2077 (2020) Tree Planting Program

[Breakout Room 2](#)

New Mexico House Bill 217 (2020) Electric Vehicle Income Tax Credit

[Breakout Room 3](#)

South Carolina Senate Bill 259 (2020) Disaster Relief and Resilience Act

[Breakout Room 4](#)

Illinois Senate Bill 2132/House Bill 3624 (2020) Clean Energy Jobs Act



ACTIVITY

- Describe the bill and why you are interested

Examples

1. Who we are
2. Highlights of bill
3. Opportunity

- Help the legislators connect the bill to improving health in your state

Examples

1. Current illnesses
2. Worsening conditions
3. Vulnerable communities
4. Personal stories

- Respond to possible objections to the bill

Examples

1. Exaggerated concerns
2. Costs
3. Insignificant impacts

- **Summarize and call for passage of the bill to promote health for your patients and community**

Worksheet: Developing a Policy Statement

1. [Intro] Describe the bill (provided in the email) and why you are interested in it

- Introduce yourself and why you are in front of them today (consider: Who are we? What are the highlights of the bill? Why is this an important opportunity?)

2. Help the legislators connect the bill to improving public health in your state

- Address the issue as a public health professional (*consider* current illness rates, worsening conditions, vulnerable communities, etc.)

3. Respond to possible objections to the bill

- Acknowledge and respond to opposing arguments (*consider* exaggerated cost estimates, public concerns, opposition down of potential impacts)

4. [Conclusion] Summarize your strongest point and call for passage of the bill to promote health for your patients and community

Looking Ahead

Another Program Innovation on the Horizon

- 1. Medical students should learn how to practice medicine in the context of the current health impacts of climate change.** Throughout the U.S. and globally, climate change contributes to increasing morbidity and mortality, including heat illness, respiratory and cardiovascular disease from air pollution, vector and water borne diseases, food and water insecurity, mental stress, and injuries. We highlight health threats, policies, and actions for physicians, engineering/medical researchers, and medical students. Students will (1) improve their ability to diagnose and treat patients in the context of changing climate/environmental determinants of health; (2) learn how to fulfill their professional responsibilities for community health by contributing to sustainable healthcare systems, community resilience, and policy advocacy; and (3) engage in problem solving and design exercises using engineering and data analytics perspectives to address sustainability challenges.
- 2. Learning Objectives**
 - Improve learners' medical knowledge and clinical skills regarding the health impacts of climate change
 - Encourage learners to analyze planetary health systems and propose actions for healthcare professionals to strengthen climate resilience!
 - Apply PBL for learners to outline innovative engineering and data analytics approaches to the climate/health nexus

Climate Change,
Health and Policy
Medical Student
Elective



Delivering a 'Net Zero' National Health Service

Teaching on climate change, health and sustainable healthcare is being introduced to a range of medicine and allied courses in the UK

Oct. 2020



CSH Networks



HOI

- Jump to a network -

Site

[Networks](#) » [Education for Sustainable Healthcare](#)

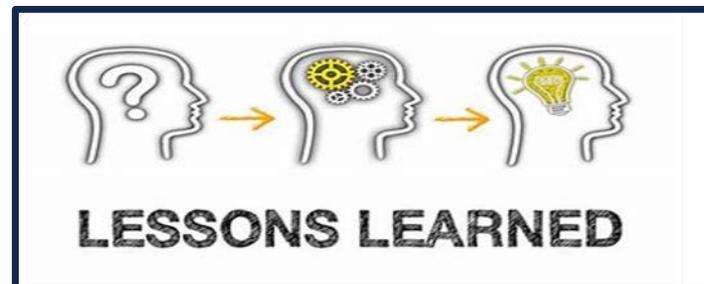
Simulation Exercises Teaching Clinical Skills and Knowledge of the Health Effects of Climate Change

Post date: Sat, 2018-09-01 19:36



Take home lessons

1. **Core curriculum clinical simulation exercises can be enhanced by incorporating a backstory that includes climate change related risks and vulnerabilities.**
2. **Such exercises can be modified to address emerging threats and risks and to highlight hot-button issues such as climate justice, the pandemic, and shared drivers that impact public health.**
3. **Exercises can be used as a springboard for discussions of policy and advocacy strategies to improve community health.**
4. **Students will continue to inspire your journey as educators**



Questions and Comments



References

1. Abbott B. Medical schools are pushed to train doctors for climate change. Wall Street Journal. August 7, 2019. Accessed May 4, 2020. <https://www.wsj.com/articles/medical-schools-are-pushed-to-train-doctors-for-climate-change-11565170205>
2. [Asthma Exacerbation Triggered by Wildfire: A Standardized Patient Case to Integrate Climate Change Into Medical Curricula](https://www.mededportal.org/doi/full/10.15766/mep_2374-8265.11063) Japhia Ramkumar, MD, Holly Rosencranz, MD, MPP and Leslie Herzog, MBA, MEd https://www.mededportal.org/doi/full/10.15766/mep_2374-8265.11063
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