Innovative Climate & Health Education Strategies – Let's...

Deborah Simpson PhD[2]; Aaron A Levy DO, FAAP[1]; Suzette S Caudle, MD[1], Eric Anderson, EdD, Jacob Bidwell, MD[2]

Thursday, March 20, 2025 | AIAMC Annual Meeting – New Orleans

AiAMC Alliance of Independent Academic Medical Centers
National Initiative
Atrium Health[1]
Aurora Health Care[2]
Now part of ADVOCATE HEALTH

OBJECTIVES

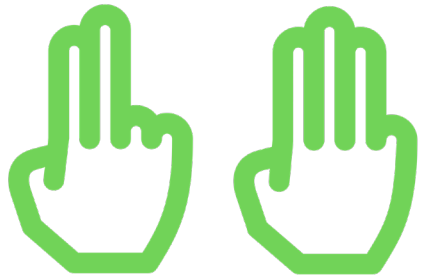
- To recognize the need for educating clinicians across the continuum re: impacts of climate on patients' health and role of health care systems on global warming
- To develop (and present) a feasible, engaging, and informative educational session/strategy related to climate education
- To identity one strategy to adopt/adapt that could be feasibly implemented at home organization
- To have a little "fun"…

Our Plan

- Overview re: importance of climate related education for clinicians
- 3 Ex of Innovative Educational Strategies (5 min each)
- Small Grp Task
  - Brainstorm feasible, engaging and evidence-based strategies to educate clinicians about climate change
  - Identify "best" idea and be prepared to describe in shark-tank fashion to the large group
- Shark Tank Presentations (3 min per grp)
- Debrief and Resources

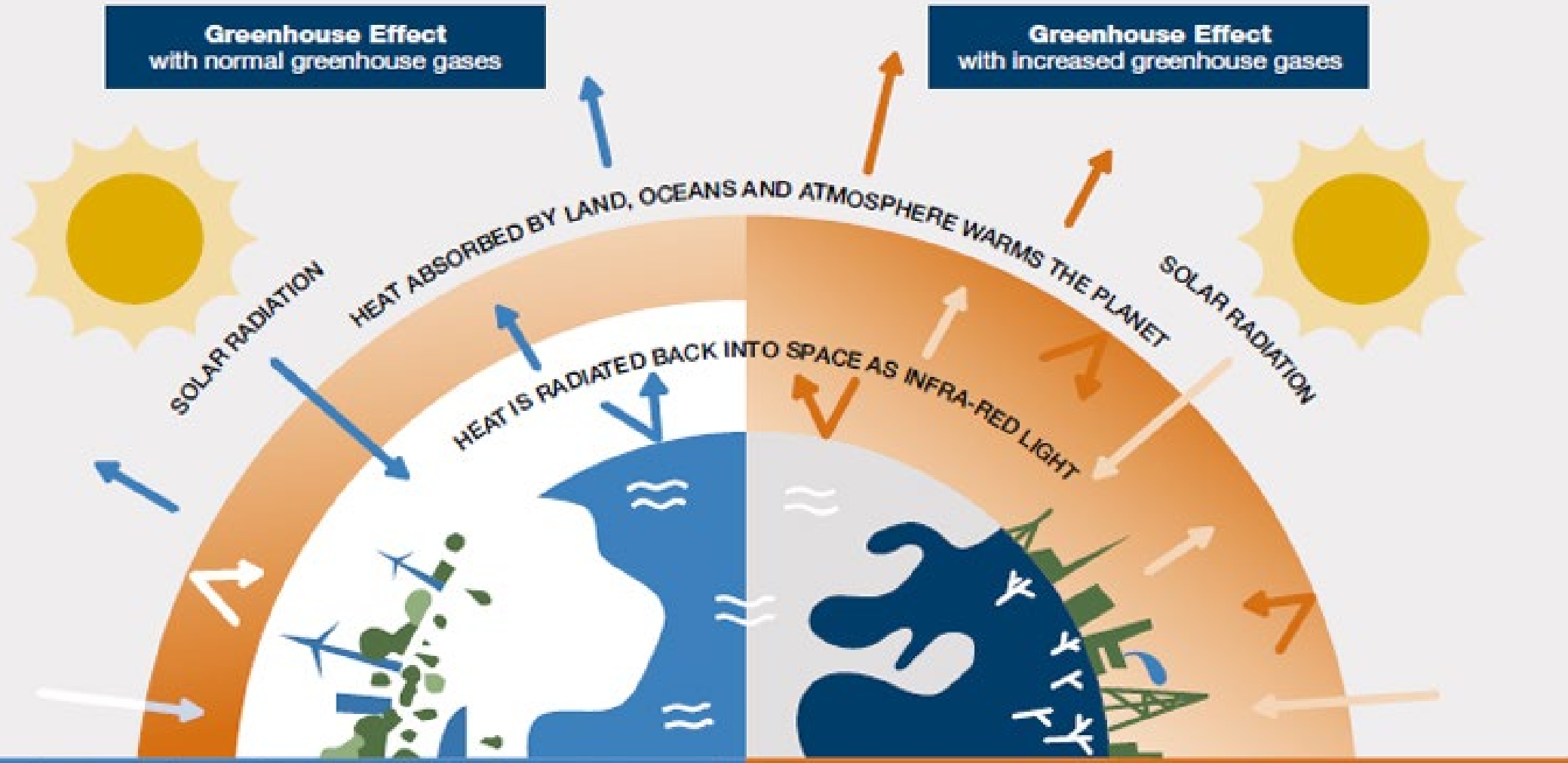
Overview – Climate & Health

1. What % of greenhouse gas emissions (e.g., C02, CH4- Methane, O3) does our health care industry contribute in the U.S.?
   1) Less 4.6%
   2) 6.5%
   3) 8.5%
   4) Don’t Know



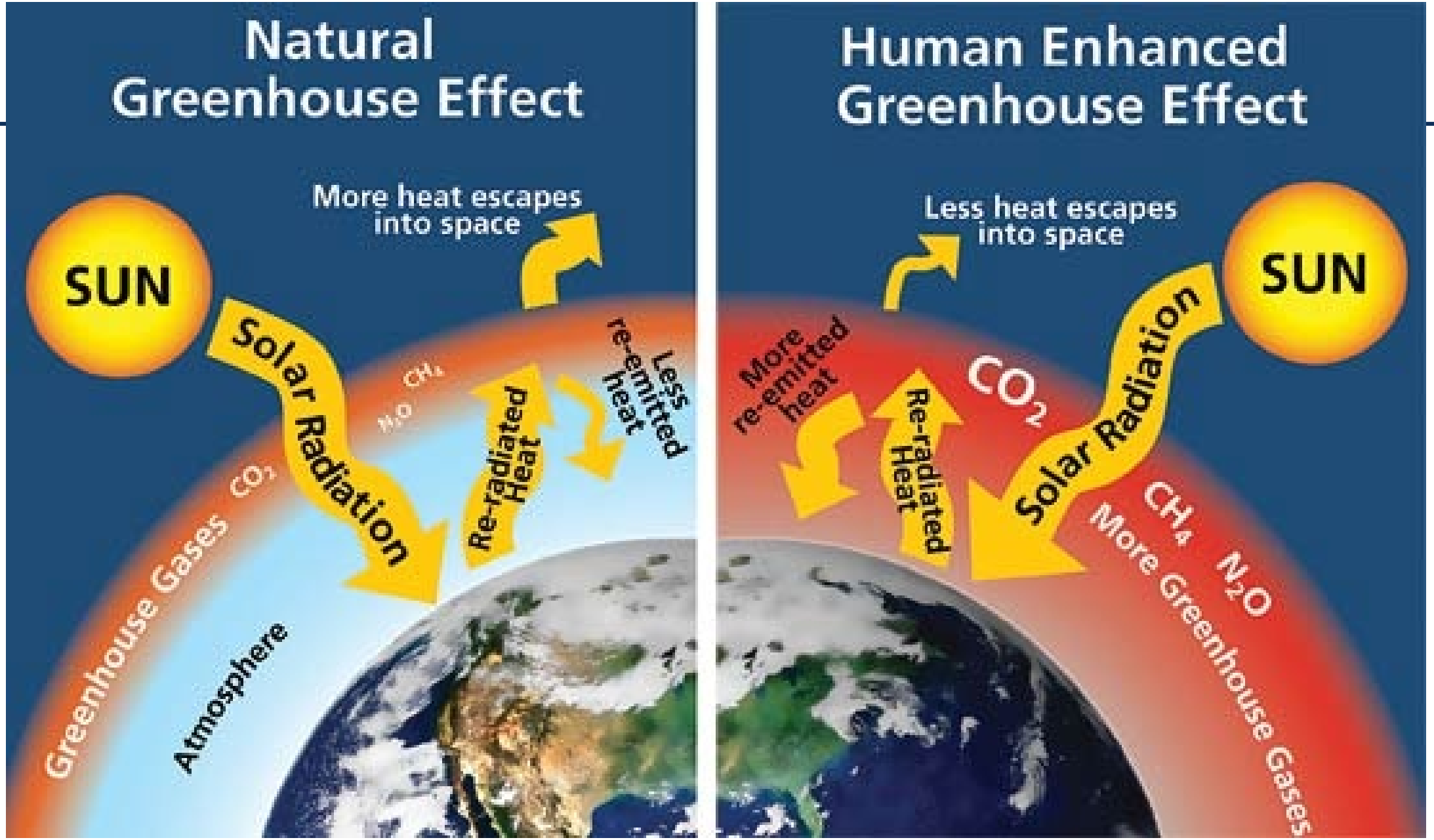
Simpson D et al, J Patient-Centered Research and Reviews. 2024 Oct 15;11(3):231.

In the last century, human activities such as burning fossil fuel and deforestation have caused a jump in the concentration of greenhouse gases in the atmosphere. The result: extra trapped heat and higher global temperature.



Alliance of Nurses for Healthy Environments

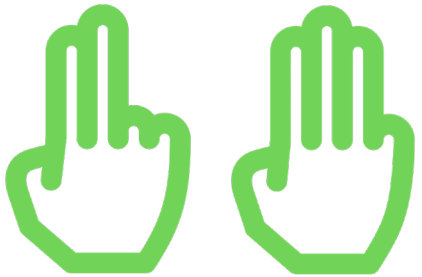
https://envirn.org/climate-change/



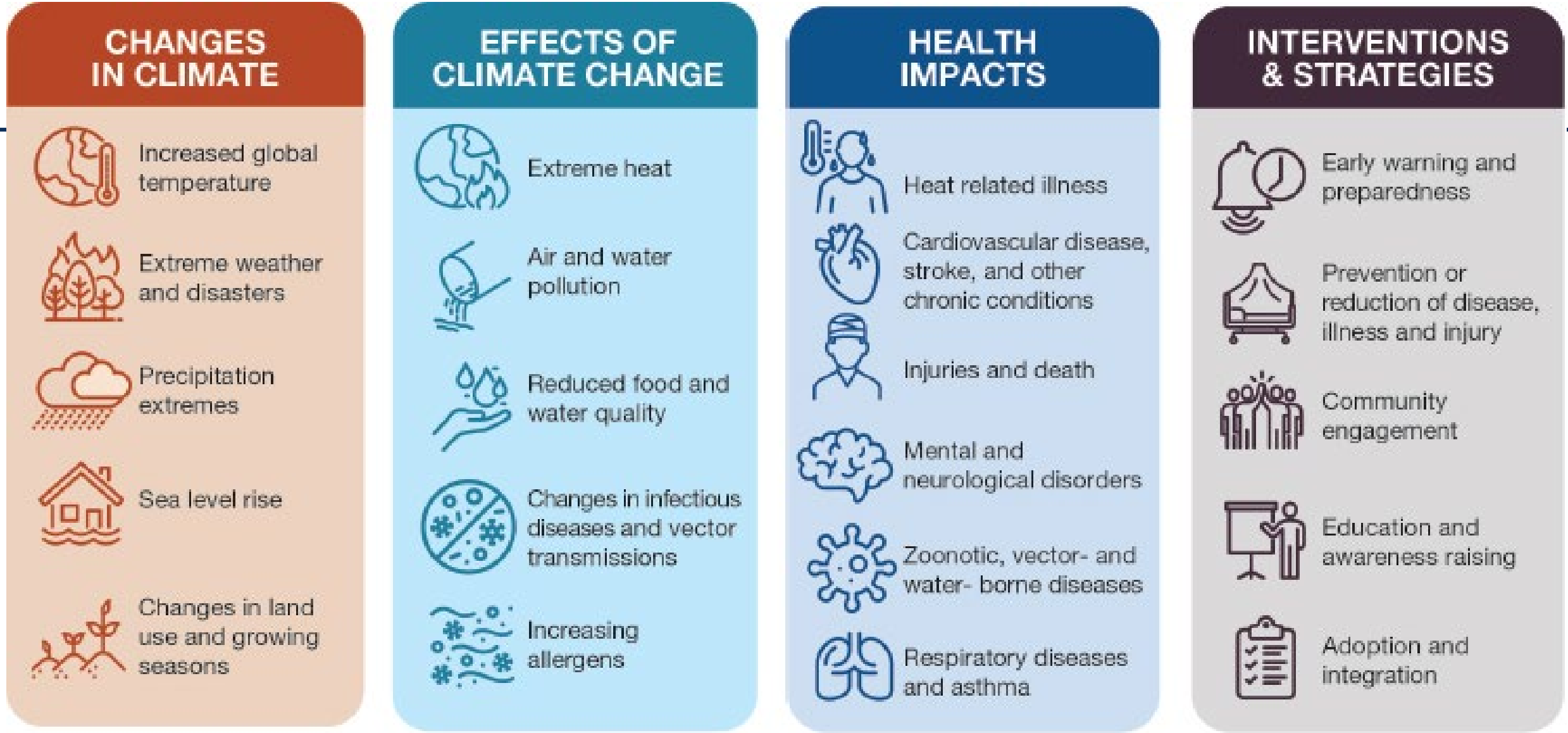
https://mrgeogwagg.wordpress.com/2015/06/24/greenhouse-effect-and-anthropogenic-warming/

Overview – Climate & Health

2. Which form of extreme weather causes the most deaths across the U.S. each year?
   1) Blizzards
   2) Floods
   3) Heat waves
   4) Tornados
   5) Don’t Know



Simpson D et al, J Patient-Centered Research and Reviews. 2024 Oct 15;11(3):231.



NIH> National Institute of Environmental Health Sciences – Human Health Impacts

Overview – Climate & Health

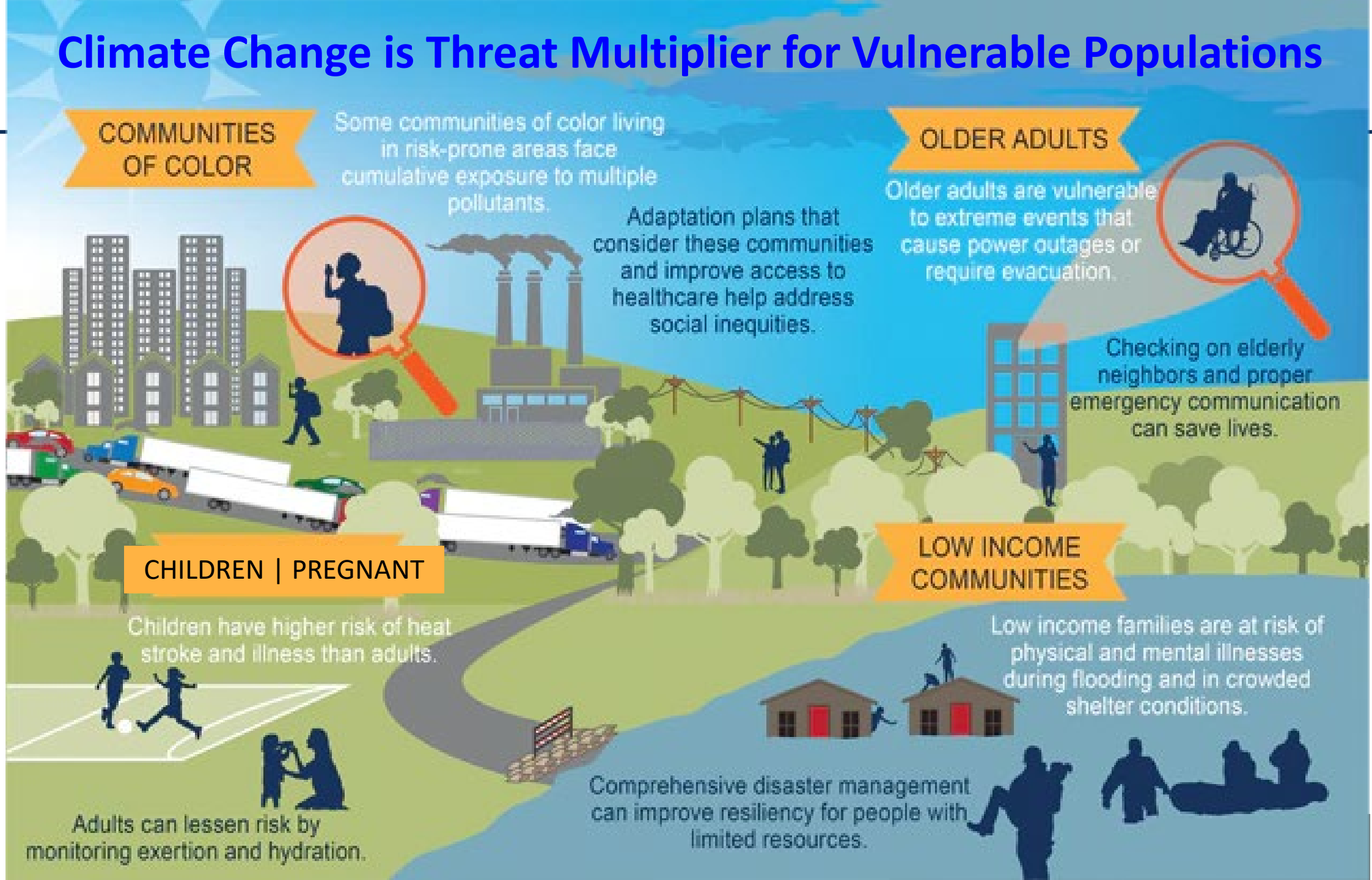
4. Poor air quality is known to increase risk for chronic acute upper and lower respiratory infections (pulmonary) in addition to worsening chronic lung diseases.

   Which other system(s) are impacted by air quality and must be considered by clinicians in caring for their patients independent of their other risk factors?

   1) Cardiovascular [1=T, 2=F, 3=DK]
   2) Digestive
   3) Neurologic
   4) Reproductive

Simpson D et al, JPCRR. 2024 Oct 15;11(3):231.

Climate Change is Threat Multiplier for Vulnerable Populations



U.S. Department of Health and Human Services

https://www.hhs.gov/climate-change-health-equity-environmental-justice/climate-change-health-equity/index.html

Our Plan

- ☑ Overview re: importance of climate related education for clinicians
- **3 Ex of Innovative Educational Strategies (5 min each)**
  - **Climate Quiz**
  - **Climate +1**
  - **Sustainability Shark Tank**
- Small Grp Task
- Shark Tank Presentations (3 min per grp)
- Debrief and Resources

#1: Climate Quiz

Online 20-point quiz completed in <10 min

Aurora Health Care

Atrium Health

Now part of ADVOCATE HEALTH

Climate Quiz

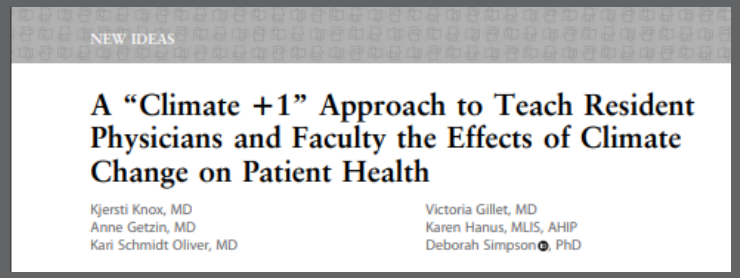
- Lit search of existing climate and health knowledge assessments revealed an array of tools
  - Most had limited applicability for physicians
- Systematically created a < 10 min GME climate and health baseline assessment
- Administered anonymously via Survey Monkey to GME leaders at 3 Advocate Health Sponsoring Institutions (SI)
  - Milwaukee
  - Charlotte
  - Chicago

Results

- **74% estimated response rate** [115/155]
  - **59%** (68) program leaders (PD, or assistant, associate PD]
  - **16.5%** (19) program or GME staff
  - **13.9%** (16) were residents/fellows serving on GME committees,
  - **8.7%** faculty
  - **1.7%** (2) academic system/hospital leaders (e.g., quality, safety, incident reporting).
- **Average 62% correct** (standard deviation = 16%)
- **Score range of 10%-90%**
- **Tool reliability α =0.67** Cronbach's alpha standardized

Identifying Gaps & Strategies

- 6 items were answered correctly <50% including
  - % of green house gas emissions from health care industry
  - AH's carbon sustainability goals (2 Q's)
  - Level of research evidence supporting the interaction between health and climate change
- PD's were the least knowledgeable of the respondent groups, answering 40% (8/20) of the items correctly
- Data used to:
  - Identify target areas for education
  - ABFM MOC Part IV



#2: Climate +1

Add 1 slide, Q, Case Example to an existing clinical talk re: climate impacts on topic [HTN, CV, OB]

"Climate +1" - Flexible in ALL Settings

UME-GME-CME

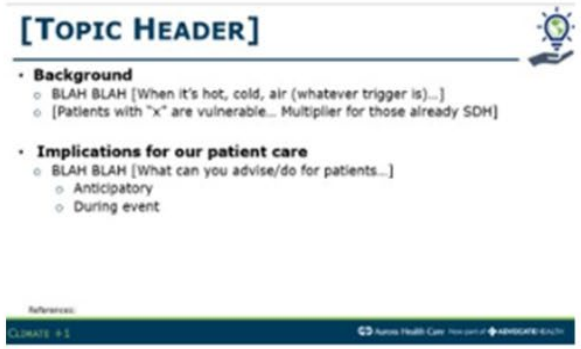
Existing learning structures:

- Lecture
- Pre-Reading
- Discussion Question
- Case
- M&M
- Journal Club Article
- Seminar
- Block Experience or Project
- MOC IV/Faculty Development
- CME Series/Course

Library If Needed Resource

Climate +1 Slide Examples & Template

View Climate +1 Slide Example



Download Climate +1 Slide Template

Advocate Health Midwest Library Resources

NI-IX Plus One Slide for Climate Change Request

"Plus 1" for Getting Climate Smart – Request for literature search

Teachers may use this form to request assistance from the Library to find key climate impact related articles (if available) for session topics. For imme
for relevant articles on our Climate Change and Health guide. (Data input in this form will be shared with the NI-IX Climate Change project team.)

What is the topic of your session? (required)

What aspect of climate do you expect to link your topic to? (check all that apply) (required)

- ☐ Air Quality Impacts
- ☐ Equity
- ☐ Extreme Weather
- ☐ Rising Temperatures
- ☐ Sustainable Health Care Delivery
- ☐ Vector-Borne Diseases
- ☐ Don't Know
- ☐ Other (please explain)

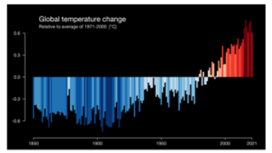
Anything else we need to know?

We are AdvocateAuroraHealth 11

Aurora Health Care · Atrium Health · Now part of ADVOCATEHEALTH

CLIMATE + CHF

- **Temps are rising *AND…***
  - Hot temps increase heart failure related mortality[3]
  - Extreme heat leads to 12% increase in heart failure related death[3]
- **What can you advise/do for patients…**
  - Anticipatory pre-planning/awareness of increased risk
    - Review medications that impair physiological response to heat
    - Note diuretics risk for acute kidney
  - During event
    - Communicate cooling locations
    - Check on socially isolated



PLEASE Take 1 Min eval

More Info? https://library.aah.org/guides/climate

CLIMATE +1

"PREGNANT WOMEN HAVE A GREATER SUSCEPTIBILITY TO VECTOR-BORNE DISEASES BECAUSE OF HORMONALLY INDUCED CHANGES THAT RESULT IN INCREASED PERIPHERAL BLOOD FLOW, HEAT PRODUCTION, AND CHEMO-ATTRACTANTS (CO2) THAT RESULT IN HIGHER RATES OF INFECTION, AND A REDUCED IMMUNE RESPONSE WITH OVERALL INCREASES IN VIREMIA AND PARASITEMIA—ALL LEADING TO POOR FETAL OUTCOMES."

Chapter 12 Women's Health and Climate Change: The Impact of Gender. Global Climate Change and Human Health: From Science to Practice, 2nd ed. 2021.

Climate Change and GDM

- Seasonal trends – higher prevalence in summer months (also for DM1)
- Why?:
  - Cold temp induced thermogenesis improves insulin sensitivity?
  - Low + high vitamin D? (U shape curve)
- Extreme/poor weather = barrier to activity
- Endocrine disrupting chemicals + air pollution

CLIMATE +1 SURVEY

CLIMATE +1

DENGUE IN PREGNANCY IS ASSOCIATED WITH AN INCREASED RISK OF PRE-ECLAMPSIA, OBSTETRICAL HEMORRHAGE, MISCARRIAGE AND PRETERM DELIVERY, MATERNAL AND NEONATAL DEATH.

O'Kelly B, Lambert JS. Vector-borne diseases in pregnancy. Ther Adv Infect Dis. 2020 Sep 1;7:2049936120941725, PMID: 32944240

RESULTS (N=81) [1.16.25]

- **77%** moderately or significantly increased their ability to discuss the effects of my patients as a result of today's Climate +1
- **85%** would recommend the Climate +1 approach to learning about impacts of climate change on patient's health and clinical care

#3: Sustainability Shark Tank

Levy A, Courtlandt C, Caudle S, Anderson E. Shark Tanking Climate Positive Innovations During Resident Orientation. Accepted JGME 2025; 17(3)

What we Decided

- Resident orientation Atrium Health Carolinas Medical Ctr
- Focused on 3 foundational knowledge areas that:
  - Climate change affects patient care
  - Care delivery is contributing to emissions and waste that is harmful to health;
  - These health impacts are disproportionately experienced by already vulnerable groups (eg, young, pregnant, people of color)

What we did in 45 min

- Residents divided into teams of 4-6
- **Tasked** to propose how the displayed non-infectious hospital plastic waste (previously collected mostly from operating rooms) could be repurposed into something useful for their patients
- Each team then presented their best idea in a "Shark Tank" style format to judges
  - Creating pill boxes to dinnerware for the hospital cafeteria
  - Plastic prosthetic socket for younger patients with limb loss

ENVISION CHARLOTTE

INNOVATION BARN

Aurora Health Care

Atrium Health

Now part of ADVOCATEHEALTH

Stuck – Here's CoPilot Top 20

1.Interactive Workshops
- Conduct hands-on workshops where clinicians can learn about climate change impacts on health through simulations and role-playing scenarios.

2.Case Studies
- Use real-life case studies to illustrate the health effects of climate change and discuss potential interventions.

3.Webinars and Online Courses
- Offer accredited online courses and webinars featuring experts in climate change and health.

4.Climate Rounds
- Integrate climate change topics into regular clinical rounds, discussing relevant patient cases and mitigation strategies.

5.Gamification
- Develop educational games or apps that challenge clinicians to solve climate-related health problems
- Climate change: Pictionary; Kahoot Quiz! Jeopardy; Scavenger Hunt; Bingo
- Create visually appealing, interactive infographics and posters that summarize key points about climate change and health.

7.Guest Speakers
- Invite experts in environmental health and climate science to give talks and answer questions.

8.Simulation Training
- Use simulation labs to practice responding to climate-related health emergencies, such as heatwaves or natural disasters.

9.Peer Learning Groups
- Form small groups where clinicians can discuss climate change topics and share knowledge and experiences.

10.Climate Change Grand Rounds
- Host grand rounds focused on the intersection of climate change and health, featuring multidisciplinary panels.

11.Field Trips
- Organize visits to local environmental health sites, such as renewable energy facilities or conservation projects.

12.Climate and Health Journal Club
- Start a journal club where clinicians can review and discuss recent research on climate change and health.

13.Patient Education Materials
- Develop brochures and handouts that clinicians can use to educate patients about the health impacts of climate change.

14.Sustainability Projects
- Encourage clinicians to participate in or lead sustainability initiatives within their healthcare facilities.

15.Climate Change Competitions
- Host competitions for the best ideas or projects related to climate change and health, with prizes for winners.

16.Social Media Campaigns
- Use social media platforms to share educational content and engage clinicians in discussions about climate change.

17.Continuing Medical Education (CME) Credits
- Offer CME credits for completing climate change education modules or attending related events.

18.Collaborative Research Projects [Or QI Projects]
- Involve clinicians in research projects that investigate the health impacts of climate change and potential solutions.

19.Climate Change Advocacy Training
- Provide training on how to advocate for policies that address climate change and protect public health.

20.Storytelling
- Use storytelling to convey the human side of climate change, sharing patient stories and personal experiences of clinicians.

Shark Tank Pitches

- <3 min per group to make your pitch
- Criteria: feasible, engaging and evidence-based strategies – “Sell It”!
- $$$ awarded to winner(s)

Debrief & Resources

- **Our Goal?** One strategy that's feasible, engaging and evidence-based strategies to implement at home

References & Resources

- JGME Special Issue on Climate Change and Graduate Medical Education. 2024;16(6s) – 2 Scoping Reviews
- Google: Federal Agencies
  - CDC: Ex - Building Resilience Against Climate Effects (BRACE) framework https://www.cdc.gov/climate-health/index.html
  - EPA: extensive information on climate change, its impacts on health, and strategies for mitigation and adaptation + tools and resources for communities and health professionals
  - National Institute of Environmental Health Sciences (NIEHS)
  - NOAA climate data, research, and tools to help understand and address the impacts of climate change on health w resources for health professionals and policymakers.
- WHO. Climate Change. Impacts on Health.

Some of Our Resources

- Fay B. Supporting Clinician Education and Action Around Climate Health. Poster presented at: Midwest Chapter Medical Library Association Annual Meeting; October 12, 2023
- Getzin A, Simpson D, Ouweneel K, et al. Inequitable Impacts of Climate Change on Our Patients: Getting Climate Smart. J Patient Cent Res Rev. 2023;10:262-63. doi: 10.17294/2330-0698.2070
- Getzin A. How my job as a family doctor allows me to help my community face the climate crisis. News & Features. October 29, 2024. Climate.gov
- Knox KM, Getzin A, et al. A "Climate +1" Approach to Teach the Effects of Climate Change on Patient Health to Resident Physicians and Faculty. JGME. Dec 2024; 16(5):152-3S.
- Levy A. State of the Air 2024 Report. American Lung Association. Storyteller. Pg 33.
- Levy A, Courtlandt C, Caudle S, Anderson E. Shark Tanking Climate Positive Innovations During Resident Orientation. New Idea. J Grad Med Educ.2025;17(3):In Press.
- Simpson D, Getzin A, Caudle SS, et al. Key Stakeholder Perspectives on Valued Outcomes from GME Sponsored Climate Education Initiatives. [Peer Reviewed Abstract | Poster]. AAMC Learn, Serve, Lead; 11.8-122024; Atlanta
- Simpson D, Getzin A, Levy AA, et al. Assessing the climate readiness of physician education leaders in graduate medical education. J Patient Cent Res Rev. 2024;11:231-6.
- Simpson D, Getzin A, Levy A, et al. Core Climate & Health Competencies for Physicians Across the Continuum in an Ever-Warming World. AAMC CGEA |CGSA |COSR April 9-11, 2025. Detroit, MI (under review)