

## **Background:**

The Osher Center for Integrative Health at UVM has established a Planetary Health arm, to explore the deepening understanding of the myriad ways our health, healthcare system, and planet's health are intricately linked. We are aligning with the Planetary Health Alliance (PHA)'s emergent tools, which support integration of policies at institutional, state, and federal levels that promote human well-being and planetary health.

This panel of UVM Health Network experts will discuss:

- climate-related health needs
- how to talk about the climate with patients
- healthcare options that are better for the planet

# Laura Mann Integrative Healthcare Lecture Series: Planetary Health Panel

- Christine Vatovec, PhD, Planetary Health Lead, Osher Center for Integrative Health
- Kim Dittus, MD, PhD, Director, Integrative Oncology Clinical Services, Associate Professor, Medicine-Hematology Oncology
- Megan Malgeri, MD, Assistant Professor, Family Medicine
- David A. Rand, DO, Assistant Professor, Internal Medicine
- Andrew Rosenfeld, MD, Associate Professor, Psychiatry and Pediatrics

## Planetary Health and Healthcare: What are the connections?

1. Climate-related health needs in Vermont
2. What role does healthcare play in climate change?

## Planetary Health and Healthcare: What are the connections?

- 1. Climate-related health needs in Vermont**
2. What role does healthcare play in climate change?

Climate change in Vermont is resulting in hotter summers, shorter winters, and more frequent storms.



Vermont's climate will continue to change.

Vermont will continue to get **warmer** and experience **more frequent heavy precipitation events**.

<https://www.healthvermont.gov/environment/climate/climate-change>

# Climate Change & Health in Vermont



Climate change is increasing health risks in Vermont:

- Extreme heat
- Extreme weather
- Vector-borne diseases
- Air quality
- Foodborne and waterborne pathogens
- Cyanobacteria (blue-green algae)

October 2017

Prepared for the 2017  
Agency of Natural Resources  
White Paper Series on Climate Change





## Extreme heat in Vermont

- Temperatures at or above 87°F = Vermonters are 8 times more likely to visit the emergency room for a heat-related illness
- In Vermont, maximum temperatures reach 87°F:
  - Currently about six times per year
  - By 2100 between 20 and 34 times per year

## Extreme weather in Vermont



Precipitation events of three inches or more

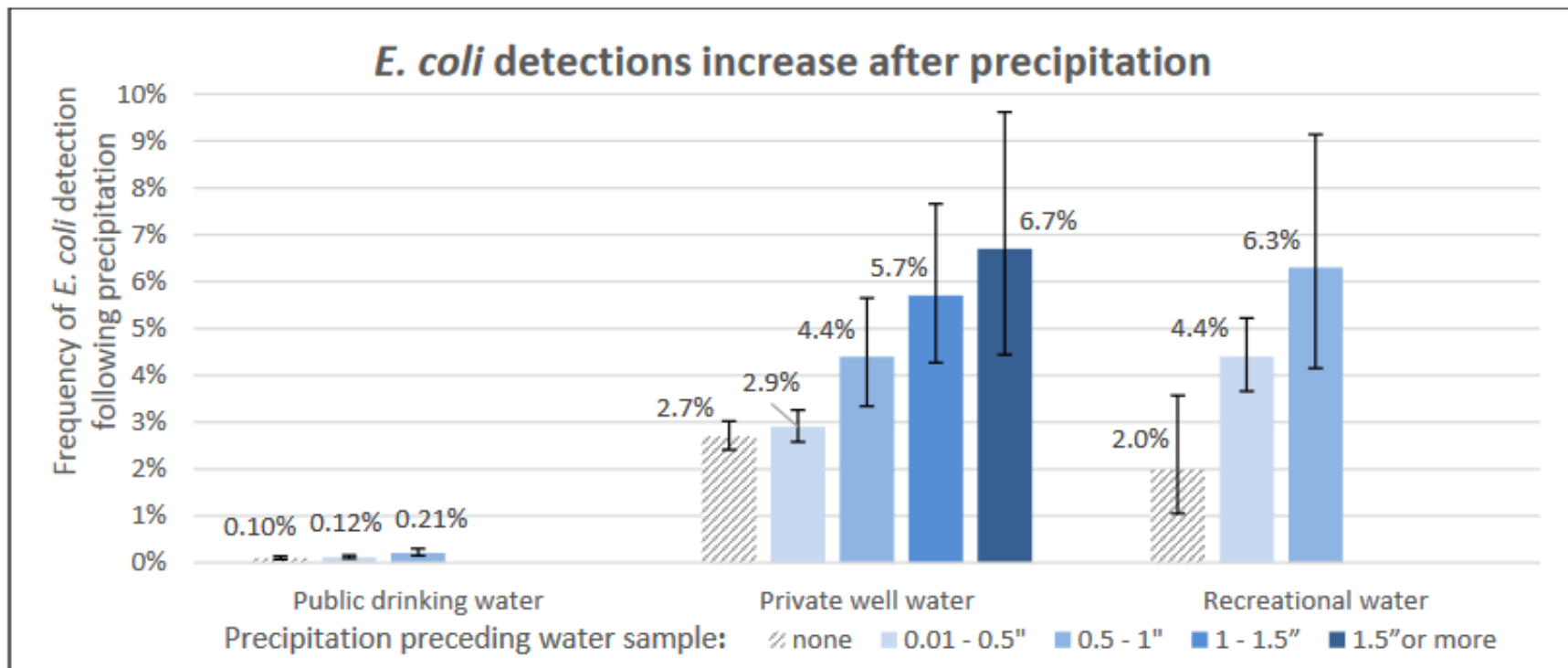
- Currently less than once per decade
- By 2100 twice every three years
- Health-related impacts
  - Injuries
  - Exposure to contaminated water and debris
  - Exposure to mold





## Foodborne and waterborne pathogens in Vermont

- Warmer temperatures + more frequent rain events = Combined Sewer Overflows and agricultural run-off
- Contamination of:
  - Drinking water
  - Recreational water
  - Irrigation water (crop contamination)



**Figure 7:** Percent of samples with *E. coli* detected in drinking water or *E. coli* above 235cfu/100 ml in recreational water following precipitation. \*Few samples were available for public drinking water and recreational water for precipitation over 1 inch. These samples were combined with those from the 0.5 – 1" category.



## Cyanobacteria in Vermont

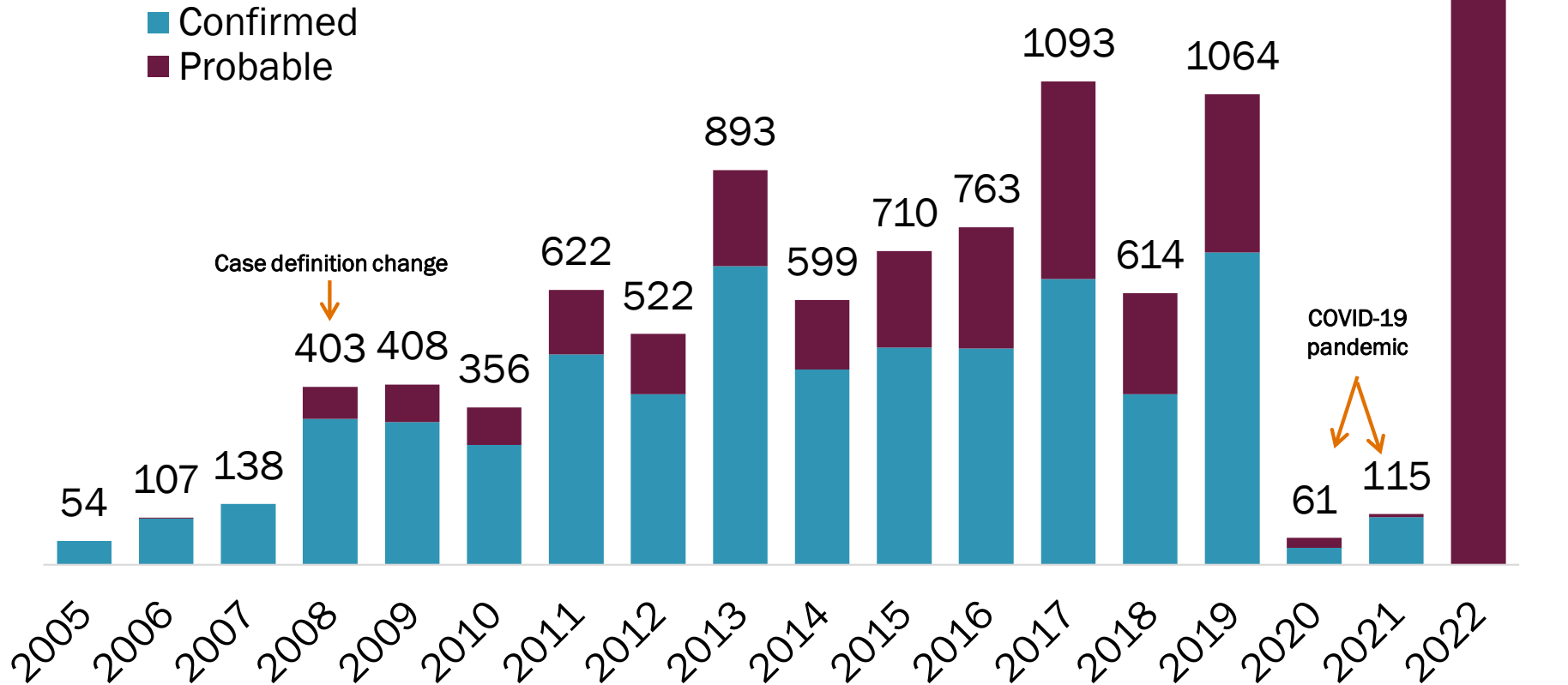
- Warmer temperatures + more frequent rain events (agricultural run-off of nutrients) = more favorable conditions for cyanobacterial blooms

## Vector-borne diseases in Vermont

- Warmer temperatures + shorter winter season = increased distribution and abundance of black-legged ticks
  - Lyme disease
  - Anaplasmosis
  - Babesiosis
  
- Warmer and wetter conditions = more mosquitoes
  - West Nile Virus
  - Eastern Equine Encephalitis



# Reported Lyme disease cases by year – Vermont

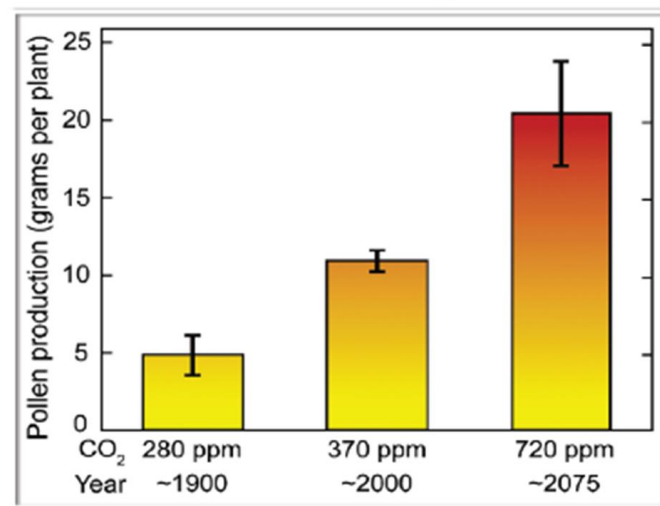


## Air quality in Vermont

- Wildfire smoke
  - Air pollution and respiratory health
  
- Longer growing season + higher levels of carbon dioxide = increased plant growth and pollen
  - Allergies and respiratory health



Pollen Counts Rise with Increasing Carbon Dioxide



**Figure 9:** Pollen production in ragweed grown in chambers at carbon dioxide levels simulating past, current and projected atmospheric levels. (from Ziska and Caufield 2000, as cited in Luber et al. 2013).

## Mental health impacts of climate change

- Stress
- Anxiety
- Depression
- Trauma and grief following flooding events



## Planetary Health and Healthcare: What are the connections?

1. Climate-related health needs in Vermont
- 2. What role does healthcare play in climate change?**



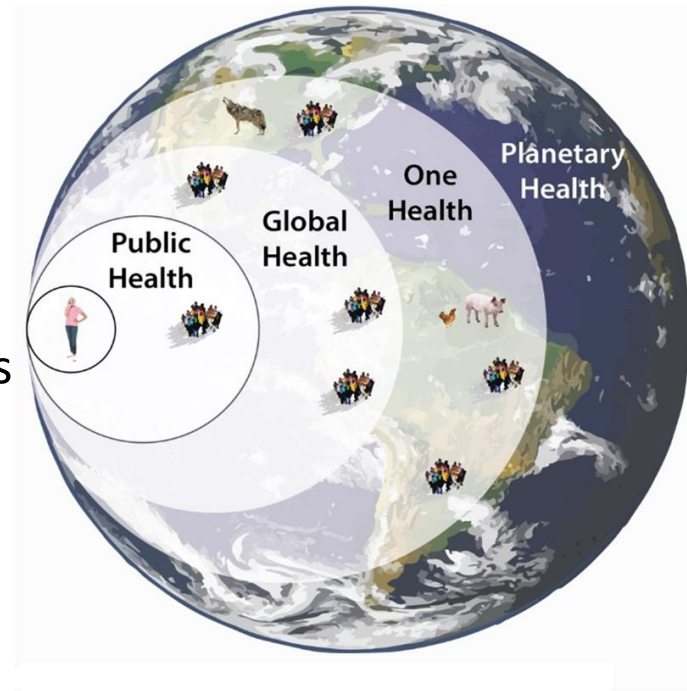
# Healthcare impacts planetary health

## Climate change

- Global health care sector = 5% of global emissions
- U.S. health care sector = 8.5% of national emissions
  - 82% of emissions result from supply chains (e.g. medical supplies, pharmaceuticals, medical devices, food, etc.)

## Pharmaceuticals

- Account for 10% of sector GHG emissions
- U.S. uses more than any other country, but we are not healthier



There is a critical need to integrate evidence-based approaches into healthcare that improve planetary health outcomes.

- Keep people healthy to decrease healthcare utilization.
- Integrate evidence-based therapies that decrease hospitalization and reduce reliance on pharmaceuticals.



# Integrative Health: health promotion

## Lifestyle tools

- Nutrition
- Movement/physical activity
- Sleep
- Stress management
- Nature connection

## Better planetary health outcomes through health promotion and disease prevention

- ✓ Lower rates of cardiovascular disease, cancer, obesity, diabetes (3:4:50 campaign)
- ✓ Co-benefits of plant-based diets, active transportation
- ✓ Decreased demand for health care services and pharmaceuticals

# Integrative Health: **supportive care for illness**

## **Supportive care**

- Lifestyle tools
- Mind-body therapies (e.g. yoga, meditation, nature therapy)
- Biochemical therapies (e.g. probiotics, functional foods)
- Biomechanical therapies (e.g. physical therapy, therapeutic massage)
- Bioenergetic therapies (e.g. acupuncture)

## **Better outcomes through supportive care**

- ✓ Decreased demand for health care services and pharmaceuticals
- ✓ Decreased length-of-stay in health care facilities
  - Lower resource use (facilities, medical supplies)
  - Decreased waste generation and disposal

## Panelists:

1. What climate-related health needs are you seeing?
2. What role do you see healthcare playing to improve outcomes for both patients and the planet?
3. How are you talking about climate change with patients?

- Andrew Rosenfeld, MD, Psychiatry and Pediatrics
- David A. Rand, DO, Internal Medicine
- Megan Malgeri, MD, Family Medicine
- Kim Dittus, MD, PhD, Oncology

## Panelists:

1. What climate-related health needs are you seeing?
2. What role do you see healthcare playing to improve outcomes for both patients and the planet?
3. How are you talking about climate change with patients?

- **Andrew Rosenfeld, MD, Psychiatry and Pediatrics**
- David A. Rand, DO, Internal Medicine
- Megan Malgeri, MD, Family Medicine
- Kim Dittus, MD, PhD, Oncology



# Is this even my job?

- What is climate anxiety?
  - “Distress about climate change and its impacts on the landscape and human existence” (Lowe, 2023)
  - Shows up in the typical ways of anxiety: intrusive thoughts, physical stress, avoidance behaviors
- Be the change you wish to see in the world
  1. Awareness
  2. Empowerment
  3. Action



"If we would just slow down, happiness would catch up to us." Richard Carlson PhD  
*(Don't Sweat the Small Stuff)*

- Mindful prescribing & deprescribing
- Integrative approaches
- Climate Anxiety ROS
- Telehealth
- [MyGreenDoctor.org](https://www.mygreendoctor.org)



Wellness Area	Current Activity: what I'm doing	Priority for Change 1-10 (1=very low, 10 = very high)
Movement/Nature		
Parenting/Family Warmth		
Kindness/Gratitude		
Music/Arts/Dance		
Sleep		
Nutrition/Hydration		
Contemplative Practice		
Digital Health		
Mentorship/Community		
Reading/Learning		
Other		

Wellness Area	Current Activity: Effect Size	Reference
Movement/Nature	0.64	CAP & Mental Health, 2022
Parenting/Family Warmth		
Kindness/Gratitude	0.5	Reducing depression by self-compassion, pooled effect size (Egan 2022)
Music/Arts/Dance		
Sleep	Shorter sleep → 2x risk <i>decreased</i> positive affect, 1.83x risk of anger, 1.62x depression	Gradisar 2022, <i>Nat Rev Psychology</i> Short 2020, "Relationship between sleep duration & mood"
Nutrition/Hydration	0.5	<i>Br J Nutr</i> 2016 (116:12)
Contemplative Practice	0.46 (adjunctive mindfulness + therapy), 0.76 (MBCT), 0.47 (vs active control)	Dunning 2019; <i>J Child Psychol Psychiatry</i>
Digital Health		
Psychotherapy	0.55 adolescents 0.35 pre-adolescents	2023 Cuijpers et al. <i>J of Affective Disorders</i>
Reading/Learning		
Antidepressant Med	0.12 overall 0.19 in studies with low placebo response	<i>J Affect Disord.</i> 2022 May 15;305:55-64.

## Panelists:

1. What climate-related health needs are you seeing?
2. What role do you see healthcare playing to improve outcomes for both patients and the planet?
3. How are you talking about climate change with patients?

- Andrew Rosenfeld, MD, Psychiatry and Pediatrics
- **David A. Rand, DO, Internal Medicine**
- Megan Malgeri, MD, Family Medicine
- Kim Dittus, MD, PhD, Oncology

## Audience Q & A:

1. What questions do you have for our panel?
2. What climate-related health needs are you seeing?
3. What role do you see healthcare playing to improve outcomes for both patients and the planet?
4. How are you talking about climate change with patients?



Christine Vatovec, PhD  
[cvatovec@uvm.edu](mailto:cvatovec@uvm.edu)

Join us on the  
Osher Center Planetary Health working group!