Caring for the Climate Changed

Health, Environment, and Policy for the Common Good

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2

Opening Reflections

- We live in dynamic relationship with the Earth.
- Each of us is a strand, interconnected with the global web of life.
- Our actions matter- as communities and as individual inhabitants of the planet.
- A call for action: Think globally- Care locally.

3

Overview

- **Climate does not operate within political or geographic borders.**
- **Climate impacts local environments and the local environment impacts human health**
- **Climate change has a disproportionate impact on persons with less financial and social power.**

4

Presentation Outline

- A Case Study
- The Nursing Process
- Major Climate Change Impacts
- Mitigating Climate Change
- What can we do?

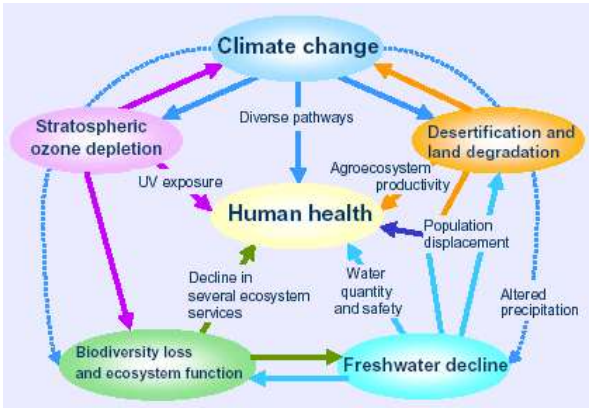
5

Disclaimer

- Evidence for climate change is well-established
  - However, specific local effects are not predictable.
- This presentation will look at the impact of a changing climate on health
  - It is not designed to discuss the validation of climate change.

6

A Model Showing Complexity of Climate Change & Human Health



http://www.who.int/globalchange/en/index.html

7

Case Studies

- In healthcare, case studies help illustrate the "reality" of health disorders and how they present in real people
- So let's start with a unique type of case study* relevant to our topic….

* **Laustsen, G.** (2001). Mother Earth: Case study. *Newsletter for Nurse Practitioners in Emergency Care, 3*(4).

8

A Case Study of Our Patient: Mother Earth

A Case Study: Mother Earth

- **Chief Complaint:** "I'm not feeling like myself"
- **History of Present Illness:** Mother Earth, AKA Gaia, a 4.6 billion-year old patient complains of:
  - ✓ trouble keeping life organized
  - ✓ increasing body odor
  - ✓ expanding dry skin
  - ✓ "bad" blood
  - ✓ difficulty breathing
  - ✓ trouble eliminating wastes.
- Symptoms have been worsening over the past 100 years; worse in specific areas.
- Patient denies changes in daily routine, although she feels she may be "slowing down a little bit."

10

A Case Study: Mother Earth

Past Medical History:

- Patient describes having the usual childhood difficulties: molten surface, cooling rains, ocean formation, and the emergence of landforms in late childhood.
- She feels like her adolescence was typical- trying to "find herself" and tried out many different life-styles including unicellular, multicellular, aquatic, terrestrial, and aeolian.
- During young adulthood she was "full of life", she felt that nothing could stop her: not floods, fire, plate tectonics, meteor impacts, or glaciation. Each challenge was just an opportunity to start new life.

11

A Case Study: Mother Earth

Family History:

- Pt's family originated in a nebulous gas cloud.
- She is part of a single parent household, has 8 other siblings, all have had a pretty dull existence without much life.
- Currently, Gaia's single parent, Sol, is still healthy but described as "an old gas-bag, full of hot air."
- All family members are healthy and stable- except for the youngest, Pluto, who suffers from an identity crisis and keeps his distance from the others.

12

A Case Study: Mother Earth

Review of Systems: General

- No significant weight change, stable at about 5,973,600,000,000,000,000,000,000 kg and waist-line of 40,075 km.
- Keeps a 24-hour daily cycle with roughly half spent "in the dark".
- Diet was very diverse, but in last few millennia has become more refined and limited.
- Does not take medications and uses only "natural" products such as herbs and spring water.
- Exercise: once daily rotation and a yearly revolution.

13

A Case Study: Mother Earth

Review of Systems

- **Skin:** Significant drying out in some areas due to vegetative thinning. Multiple, non-healing open scars from sub-surface explorations.
- **Respiratory:** Feels it is increasingly difficult to get a full, clean breath of air. Suffering from hypercapnia (excess CO_2), causing "hot-flashes." Especially feels her upper airway is depleted.
- **Cardiovascular:** Pt feels as if her life blood is "tainted" and sluggish. Molten core still circulating well.
- **GI/GU:** Pt describes an increase in foul smelling waste.
- **Musculoskeletal:** Typical pattern of building and wasting away.

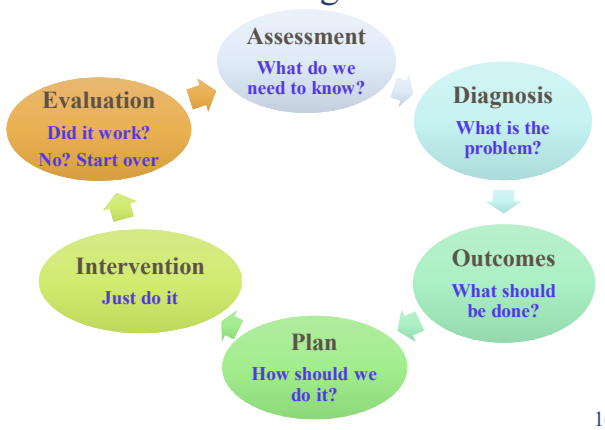
14

A Case Study: Mother Earth

- **Assignment:** Using the Nursing Process conduct a thorough assessment, identify significant problems, list/diagnoses relevant to this patient's case, and develop a plan of care!

15

The Nursing Process



16

Assessment & Diagnosis

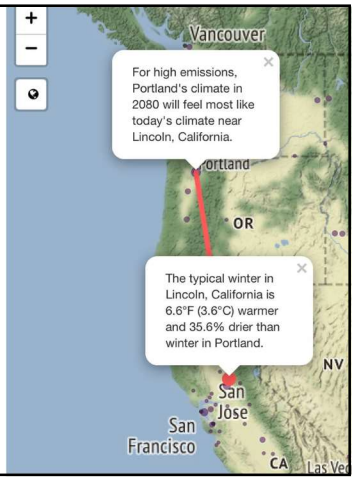
- "Climate change is a significant threat to the health of the American people. While all Americans are at risk, some populations are disproportionately vulnerable:
  - low income
  - some communities of color
  - immigrant groups (those with limited English proficiency)
  - Indigenous peoples
  - children and pregnant women, older adults
  - vulnerable occupational group
  - persons with preexisting or chronic medical conditions." (*p.4)

*Crimmins, A., et al.(2016). *Executive Summary. The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment.*

17

Extreme Heat

- **Tired of Portland weather?**
- **Maybe you'd prefer "Extreme Heat"?**
- **Just wait 60 years and Portland may be like Sacramento, CA**



University of Maryland Center for Environmental Science

Health & Extreme Heat

- *"The most immediate and direct impact of a changing global climate on human health is seen in the steady increase in global average temperature, and the increased frequency, intensity, and duration of extremes of heat."* (*p. 1841)

Assessment & Diagnosis

- What's changing? more frequent, severe, prolonged extreme heat events
- Health Outcomes: Body has difficulty regulating temperature→
  - Hyperthermia: Heat cramps/exhaustion/stroke
  - Worsening of cardiovascular, respiratory, kidney, diseases
  - Worsening of diabetes
  - Worsening of interpersonal and collective violence

*Watts, et al. (2019) Countdown on health and climate change

19

Health & Extreme Heat

- Who's vulnerable?
  - Elderly and children
  - People with chronic illnesses
  - Outdoor workers: agricultural, construction
  - Economically disadvantaged: lack of insulated housing (or no housing), lack of air conditioning

Outcomes, Plan & Interventions

- What can we do? Reduce exposures & effects:
  - alter schedules to minimize work in hottest part of day
  - provide public cooling locations
  - improve housing insulation
  - provide air conditioning units and AC credits for low income

20

Health & Extreme Weather

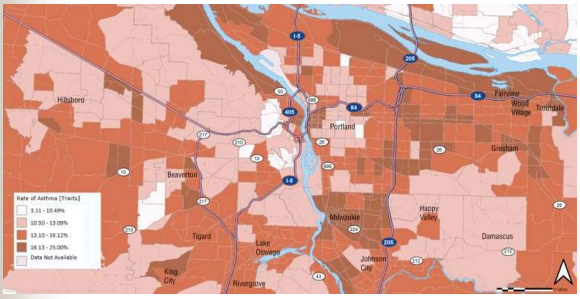
Assessment & Diagnosis

- What's changing? Increasing temperatures and changing precipitation patterns→
  - ↑ozone & airborne allergens (more pollen & longer growing season)
  - ↑wildfire pollutants
  - ↑ flooding & droughts
- Health Outcomes:
  - Exacerbation of acute (e.g. asthma) and chronic (e.g. COPD) respiratory conditions
  - Exacerbation of allergies (pollen, mold)
  - Cardiovascular and respiratory impacts of wildfire smoke

21

Health & Social Justice: **Place Matters**

Promote awareness of inequities in health vs where a person lives.



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Health & Extreme Weather

- Who's vulnerable? Exposure can be distant from event
  - Children with asthma
  - Elderly with chronic lung or heart disease
  - Outdoor workers
  - Those living in flood-prone areas

Outcomes, Plan & Interventions

- What can we do? Reduce exposure & effects:
  - Restrict vehicle use and increase public transportation
  - Provide home air filters for vulnerable
  - Better manage forests/wildlands to reduce wildfires
  - Land zoning to restrict building in flood plains & near highways

Health & Climate-sensitive Diseases

Climate change affects the distribution and risk of many infectious disease.

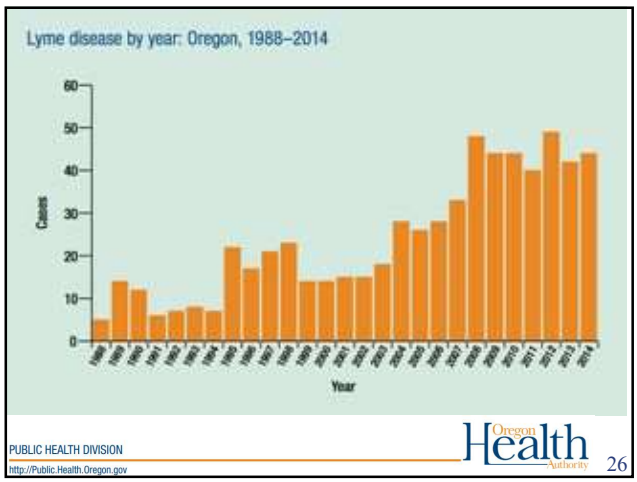
Assessment & Diagnosis

- What's changing? Temperature extremes and seasonal weather patterns alter conditions for disease vectors (e.g. Ticks, mosquitoes, viruses)
- Health Outcomes: Increased risk for
  - Lyme Disease (US)
  - West Nile virus (US)
  - Dengue Fever (US & Global)
  - Malaria (Global)
  - Cholera (Global)
  - New emerging vector diseases (Global)

Emerging Disease: Example

- In the summer and fall of 2019, nine U.S. states have reported 36 human cases (14 of them fatal) of one of the deadliest of these diseases: eastern equine encephalitis (EEE), an arthropod-borne viral (arboviral) disease transmitted by mosquitoes…"arboviruses constitute a real and present danger…this year's spike in [EEE] cases exposed our inadequate preparation for emergent disease threats."*

* Morens, D., Folkers, G., & Fauci, A. (2019) Eastern Equine Encephalitis Virus — Another Emergent Arbovirus in the United States. *New England Journal of Medicine.*



Health & Climate-sensitive Diseases

- Who's vulnerable?
  - Outdoor workers
  - Rural populations
  - Those living in areas of ↑vector levels
  - Children & those with compromised immune systems

Outcomes, Plan & Interventions

- What can we do? Reduce exposure & effects:
  - Reduce habitat of disease vectors (e.g. stagnant water)
  - Protective clothing
  - Avoid outdoors during peak times of vector activity
  - Fund surveillance & vaccination programs

27

Health & Food Insecurity

Assessment & Diagnosis

- What's changing?
  - ↓global crop yields from ↑pests, water scarcity, & extreme weather events.
  - ↓ fisheries from ↑water temps, ocean acidification, extreme weather events
  - ↑CO2 lowers plant proteins
  - ↑foodborne illness & chemical contamination
  - ↓food access and distribution from extreme weather events
- Health Outcomes:
  - Undernutrition
  - GI and neurological disorders from contaminated food

29

Health & Food Insecurity

- Who's vulnerable?
  - Children under 5 years
  - Those living in "food deserts"
  - Economically disadvantaged
  - People who grow or harvest their own food sources

Outcomes, Plan & Interventions

- Support urban gardens
- Expand small-scale fish farming
- Improve monitoring of food for contamination

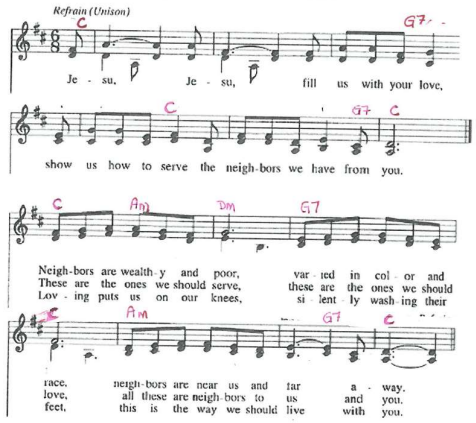
30

What can we do?
Primum non nocere

First: Love and serve your neighbor

31

Jesu, Jesu, Fill Us with Your Love



32

Mitigating Climate Change

- Reduce emissions from energy systems
- Expand access and use of clean energy
- Reduce air pollution
- Promote sustainable and healthy transport
- Reduce emissions from livestock & crop production
- Improve environmental literacy

33

What can we do?

Reduce emissions from energy systems & Expand access and use of clean energy

- Reduce your electricity consumption- examples
- Advocate for policies that promote renewable energy sources (wind, hydro, solar):
  - Oregon's Renewable Portfolio Standard: by 2040 50% of the electricity Oregonians use come from renewable resources
- Opt in to programs that allow consumers to choose electricity powered by renewable resources (https://energyinfo.oregon.gov/blog/2019/5/22/opt-in-to-green-power)
- Promote global projects that provide access to affordable, sustainable cooking technologies

34

China's mercury flushes into Oregon's rivers- A fifth of the poisonous metal found in the Willamette is from outside North America

Friday, November 24, 2006
The Oregonian

The inky smoke belched by chimneys in Chinese cities such as Linfen and Datong contains mercury, a metal linked to fetal and child development problems. Trace amounts of the poison can take less than a week to reach Oregon, where research suggests that about one-fifth of the mercury entering the Willamette River comes from abroad -- increasingly from China.

35

What can we do?

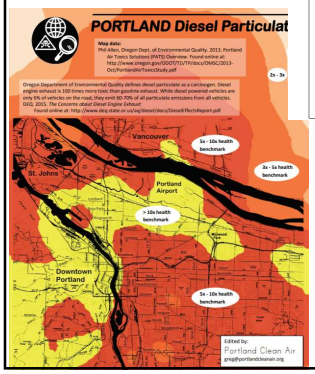
Reduce air pollution & Promote sustainable and healthy transport

- "Active Travel". Drive less- walk more.
- Encourage walking & cycling friendly roadways
- Drive hybrid or electric vehicles
- Use public transportation
- Reduce online purchasing with home deliveries
- Advocate for policies to reduce diesel emissions (e.g. HB 2007 Diesel Clean-up Bill)

36

Table 1 Diesel Fine Particle Annual Health Impacts - Oregon 2005

Adults	
176	Premature Deaths
145	Non-Fatal Heart Attacks
25,910	Work Loss Days
151,520	Minor Restricted Activity Days
Children	
119	Asthma Emergency Room Visits
250	Acute Bronchitis
3,203	Lower Respiratory Symptoms
2,449	Upper Respiratory Symptoms
5,376	Asthma Exacerbation



37

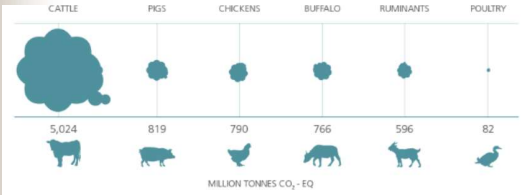
What can we do?

Reduce emissions from livestock & crop production

- Grow your own= better food, healthy activity, less pollution
- Eat organic
- Eat locally
- Reduce food waste
- Join a CSA (Community Supported Agriculture)
- Eat lower on food chain and reduce consumption of meat (esp. red meat)

38

Belching bovines are a primary culprit when it comes to greenhouse gas emissions. Farmed livestock are responsible for 14.5% of all emissions related to human activity, and cows make up by far the largest proportion of that.*



***Global estimates of emissions by species**. It includes emissions attributed to edible products and to other goods and services, such as draught power and wool. Beef cattle produce meat and non-edible outputs. Dairy cattle produce milk and meat as well as non-edible outputs.*

* https://www.weforum.org/agenda/2019/07/methane-cow-beef-greenhouse-gas-prebiotic/

39

PACSA (http://www.portlandcsa.org/)

The Portland Area CSA Coalition connects you with your farmer through Community Supported Agriculture. We help people find local farms, and we help farmers create sustainable, thriving businesses. We believe a vibrant, environmentally sound local food system is created by building relationships between farmers and households through healthy, accessible, local food.

40

What can we do?

Improve environmental literacy

- ***"Environmental literacy seeks to change human behavior so that humanity can create a sustainable and environmentally friendly quality of life. To do that, people need a wide range of skills that can help them understand, assess, and use environmental health information."(*p.5)***
- Advance your own and the public's understanding of the relationship between environment and health
- Engage the community in addressing environmental justice and the uneven distribution of environmental health risks
- Develop "upstream" thinking that directs our efforts to a preventative, rather than reactive, paradigm for environmental action.

* Chepesiuk, R. in Valentine-Maher, S., Butterfield, P., & **Laustsen, G. (2017).** *Environmental health: Advancing emancipatory policies for the common good.*

41

What can Warner Pacific do?

- Have graduating students consider taking *The Graduation Pledge of Social & Environmental Responsibility**:
- **"I pledge to explore and take into account the social and environmental consequences of any job I consider and will try to improve these aspects of any organizations for which I work."**

* http://www.graduationpledge.org

42

How Do We Care for Climate Changed?

- We become informed
  - -and be informative
- We become inspired
  - -and be inspirational
- We become involved
  - -and involve others

43

A Time for Discussion

Thank you for the opportunity to share this presentation!

44

References & Resources

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45