Providers, Patients, and the Public: Climate change affects us all

Perry Sheffield, MD, MPH

Delaware Climate and Health Conference, June 6, 2017
What to know about climate change

1. It’s real.

2. It impacts people’s health, and children’s health will be the most affected.

3. Its health effects can be prevented.
Climate change is real:
The public
Climate change impacts people’s health, and children’s will be the most affected:

The patients
THE IMPACTS OF CLIMATE CHANGE ON HUMAN HEALTH IN THE UNITED STATES: A SCIENTIFIC ASSESSMENT

Report released Spring 2016
“Climate change is the biggest global health threat of the 21st century.”

“Tackling climate change could be the greatest global health opportunity of the 21st century.”
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Temperature and precipitation extremes (like flooding) can increase pathogen load.

Climate can also alter weed, insect, and fungal populations and increase pesticide use.

Rising carbon dioxide can directly influence nutritional content of foods.

Warmer temperatures can result in greater food spoilage.

Extreme climate events can disrupt food distribution.
LETTER

Increasing CO₂ threatens human nutrition

• All C₃ crops show significant reductions in iron and zinc
• C₃ grains show significant reductions in protein
• C₄ crops less affected
• Roughly 2.75 billion people living in 50 countries receive at least 70% of their dietary zinc and/or iron from C₃ crops and will be placed at significant risk
• Baseline of 2 billion deficient 63 million LY lost
MENTAL HEALTH AND WELL-BEING

Impact of Climate Change on Physical, Mental, and Community Health

Medical and Physical Health
- Changes in fitness and activity level
- Heat-related illness
- Allergies
- Increased exposure to waterborne and vector-borne illness

Mental Health
- Stress, anxiety, depression, grief, sense of loss
- Strains on social relationships
- Substance abuse
- Post-traumatic stress disorder

Community Health
- Increased interpersonal aggression
- Increased violence and crime
- Increased social instability
- Decreased community cohesion
MENTAL HEALTH AND OUR CHANGING CLIMATE:
IMPACTS, IMPLICATIONS, AND GUIDANCE
March 2017
The health effects of climate change can be prevented:

The providers
Connections between the global energy system and health impacts

Source: The Lancet 2015
Resilience

For public health, it's not just the best we can do, it's the best there is.
### Disability-Adjusted Life-Year Ranks for the Top 30 Diseases and Injuries in the U.S.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Disease</th>
<th>Mean Rank (95% UI)</th>
<th>Median Change, % (95% UI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ischemic heart disease</td>
<td>1.0 (1-1)</td>
<td>-19 (-23 to -7)</td>
</tr>
<tr>
<td>2</td>
<td>Chronic obstructive pulmonary disease</td>
<td>2.5 (2-4)</td>
<td>34 (19 to 52)</td>
</tr>
<tr>
<td>3</td>
<td>Low back pain</td>
<td>4.4 (2-10)</td>
<td>25 (14 to 38)</td>
</tr>
<tr>
<td>4</td>
<td>Lung cancer</td>
<td>4.4 (2-8)</td>
<td>4 (-6 to 18)</td>
</tr>
<tr>
<td>5</td>
<td>Major depressive disorder</td>
<td>4.9 (2-10)</td>
<td>43 (9 to 83)</td>
</tr>
<tr>
<td>6</td>
<td>Other musculoskeletal</td>
<td>5.5 (3-8)</td>
<td>34 (24 to 45)</td>
</tr>
<tr>
<td>7</td>
<td>Stroke</td>
<td>7.3 (5-10)</td>
<td>0 (-8 to 7)</td>
</tr>
<tr>
<td>8</td>
<td>Diabetes</td>
<td>7.4 (4-10)</td>
<td>58 (43 to 71)</td>
</tr>
<tr>
<td>9</td>
<td>Road injury</td>
<td>9.8 (7-13)</td>
<td>-16 (-24 to -1)</td>
</tr>
<tr>
<td>10</td>
<td>Breast cancer</td>
<td>10.4 (6-13)</td>
<td>85 (37 to 129)</td>
</tr>
<tr>
<td>11</td>
<td>Cancer</td>
<td>10.5 (6-14)</td>
<td>29 (17 to 41)</td>
</tr>
<tr>
<td>12</td>
<td>Lung cancer</td>
<td>11.3 (8-14)</td>
<td>159 (84 to 229)</td>
</tr>
<tr>
<td>13</td>
<td>Other musculoskeletal</td>
<td>12.1 (8-15)</td>
<td>21 (5 to 40)</td>
</tr>
<tr>
<td>14</td>
<td>Stroke</td>
<td>14.6 (12-21)</td>
<td>6 (-13 to 18)</td>
</tr>
<tr>
<td>15</td>
<td>Diabetes</td>
<td>17.0 (14-24)</td>
<td>58 (29 to 84)</td>
</tr>
<tr>
<td>16</td>
<td>Other musculoskeletal</td>
<td>17.0 (14-25)</td>
<td>38 (10 to 50)</td>
</tr>
<tr>
<td>17</td>
<td>Breast cancer</td>
<td>18.0 (15-23)</td>
<td>69 (45 to 86)</td>
</tr>
<tr>
<td>18</td>
<td>Other musculoskeletal</td>
<td>19.3 (14-24)</td>
<td>3 (-6 to 42)</td>
</tr>
<tr>
<td>19</td>
<td>Lung cancer</td>
<td>20.0 (14-27)</td>
<td>26 (-1 to 59)</td>
</tr>
<tr>
<td>20</td>
<td>Other musculoskeletal</td>
<td>20.7 (15-25)</td>
<td>-13 (-24 to 9)</td>
</tr>
<tr>
<td>21</td>
<td>Breast cancer</td>
<td>21.9 (18-26)</td>
<td>-2 (-9 to 7)</td>
</tr>
<tr>
<td>22</td>
<td>Other musculoskeletal</td>
<td>22.0 (14-28)</td>
<td>-26 (-35 to 3)</td>
</tr>
<tr>
<td>23</td>
<td>Other musculoskeletal</td>
<td>22.7 (16-27)</td>
<td>-25 (-40 to -2)</td>
</tr>
<tr>
<td>24</td>
<td>Other musculoskeletal</td>
<td>22.7 (14-34)</td>
<td>14 (6 to 24)</td>
</tr>
<tr>
<td>25</td>
<td>Other musculoskeletal</td>
<td>23.9 (15-34)</td>
<td>56 (28 to 88)</td>
</tr>
<tr>
<td>26</td>
<td>Other musculoskeletal</td>
<td>24.2 (19-28)</td>
<td>27 (16 to 40)</td>
</tr>
<tr>
<td>27</td>
<td>Other musculoskeletal</td>
<td>27.0 (19-37)</td>
<td>32 (15 to 55)</td>
</tr>
<tr>
<td>28</td>
<td>Other musculoskeletal</td>
<td>28.0 (20-38)</td>
<td>48 (25 to 71)</td>
</tr>
<tr>
<td>29</td>
<td>Other musculoskeletal</td>
<td>29.2 (22-38)</td>
<td>63 (39 to 87)</td>
</tr>
</tbody>
</table>

Source: JAMA. 2013;310(6):591-606
Disability-Adjusted Life-Years Related to the Leading Risk Factors in the United States

Source: JAMA. 2013;310(6):591-606
Modifiable risk factors for depression

- Chronic illness
- Lack of social support
- Elevated BMI
- Substance abuse
- Traumatic events
- Unemployment

Source: mayoclinic.org; Batterham et al 2009
Climate change interventions with potential impacts on childhood obesity at different levels

Sheffield and Galvez, Env. Just. 2009.
Climate change interventions with potential impacts on childhood obesity at different levels
U.S. Population Age Structure: 1960 - 2020

Source: U.S. Bureau of the Census
What to know about climate change

1. It’s real.

2. It impacts people’s health, and children’s will be the most affected.

3. Its health effects can be prevented.
Resources and meetings

4. American College of Physicians – Climate Change and Health.
5. American Public Health Association Annual Meeting “Creating the Healthiest Nation: Climate Changes Health” in Atlanta, Nov 4-8, 2017
6. U.S. 4th National Climate Assessment – 2018
Thank you.
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