The Effect of Climate Change on Respiratory Diseases

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Respiratory diseases include, but are not limited to, chronic bronchitis, emphysema, asthma, and chronic obstructive pulmonary disorder (COPD) (Figure 2).

Data

- All studies point towards an increase in the prevalence and severity of respiratory issues as the climate changes.
- Urban communities experience a greater respiratory illness burden than do rural communities (2).
- Increased concentrations of NO₂ will result in more emergency room visits, increased allergic responses, and shortness of breath (2).
- Increased particulate matter (PM) will spark an increase in both cardiovascular disease and respiratory diseases including asthma and lung cancer (3).
- In a study by Lin et al., rising temperatures in New York State could lead to increased respiratory issues (4).
- Related hospitalizations could rise up to 160% from 2046-2065, and up to 510% from 2080-2099.
- This will also increase the economic burden of disease in NY.
- A 1 degree Celsius temperature increase along a temperature health-effect curve found a 2.7-3.1% increase in that day’s hospital admissions.

Future Research and Action

- Because there is no set standard for measuring health effects, and climate change is unpredictable, a method of how best to analyze potential negative impacts on respiratory due to climate change needs to be implemented (10).
- Ensembles of models that take into account multiple possible future climate scenarios will be most beneficial.
- Physicians will need to adapt to patients experiencing different environmental conditions and having increased illness burdens due to climate change (11).
- The current regulations and standards set in place in the United States and across the globe to combat climate change are not sufficient. As population size and temperature continue to grow, so does energy consumption.
- The best way to fix this issue is to create higher standards and devote more time and money to renewable energy sources. President Obama’s Action Plan on Climate Change also outlines many steps that need to be taken in the coming decades, including doubling the generation of wind and solar energy by 2020, and reducing fuel consumption by heavy-duty vehicles (9).
- The US, along with other nations, must work to cut energy waste, remove subsidies that encourage wasteful consumption of fossil fuels, reduce emissions from deforestation, and finance cleaner energy. Without removing these harmful practices, respiratory disease will continue to affect lives both nationally and globally (Tables 1 and 2).