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Patient Education: How Air Quality Can Impact Health

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Why Is This A Problem?

I. AHEC Focus Area: Emerging Health Issue

Smoke from the Canadian wildfires and other causes of air particle pollution have become increasingly significant in Vermont during the Summer of 2023.

Smoke and other causes of poor air quality impact the health of everyone and are especially dangerous to those who have pre-existing pulmonary and cardiovascular diseases such as asthma, COPD, heart disease and a history of stroke (Air Quality Alerts, Wildfires & Your Health, 2023).

Wildfire smoke contains particulate matter, carbon monoxide, nitrogen oxide and other volatile organic compounds that can drastically reduce air quality in areas directly impacted by wildfires and areas downwind of fires (Wildfires, 2020).

II. AHEC Focus Area: Social Determinants of Health

Certain groups who are more at risk of being impacted by air pollution include: children, older adults, pregnant people, outdoor workers, people who are unhoused, people with low-incomes and BIPOC individuals (Air Quality Alerts, Wildfires & Your Health, 2023).

In 2019, Vermont had the second highest rate of adult asthma (11.7%), second to Maine (11.8%), in the US (Asthma Data Pages, 2022).

Vermonters insured by Medicaid have higher asthma prevalence than Vermonters in general (19% compared to 12%) (Rutland County, Vermont: Quick Facts, 2022).

Median household income in Rutland County VT in 2021 was $59,751 vs $69,021 national average (Rutland County, Vermont: Quick Facts, 2022).
Public Health Cost Considerations

- In 2015 in Vermont, hospitalizations and ED visits for asthma cost $6.4 million (Asthma Data Pages, 2022)
- Costs attributable to COPD in the US in 2020 was $49 billion dollars (COPD Costs, 2021)
- To create a safe indoor environment with purified air free from smoke or other particulates, people can purchase air filters. However, indoor air purifiers with HEPA filters, which are most effective at filtering out smoke particles, can cost upward of $1,000. (Best Air Purifiers for Wildfire Smoke, 2023). This is an unfathomable amount for most people in low-income areas, like Rutland County, to spend in order to have clean air indoors.
Community Perspectives

• “Summer 2023 has been a demonstrably bad summer for wildfires and air pollution. 2-3 of 4 Canadian wildfires that have affected Vermont have caused air quality to be unhealthy for sensitive groups for multiple days and even unhealthy for all on an hourly basis in some VT locations” (David Grass, climate scientist at VT Dept of Health)

• “In Vermont, we have been seeing an increase in Emergency Department and Urgent Care visits for respiratory illnesses relating to wildfires and poor air quality. There is data suggestive of a correlation with this summer’s wildfires and COPD exacerbations” (David Grass, climate scientist at VT Dept of Health)

• “Attendance for some outdoor events has been diminished due to recent wildfire smoke and poor air quality. We anticipate more concern from the community if the wildfires continue into the Fall when youth sports begin” (Bill Moore, Director of Recreation for the Town of Brandon, VT)
Intervention and Methodology

• Research was conducted to find educational posters and brochures that were easily understandable, eye-catching, promoted conversation with health professionals and contained links to other vetted resources
  - EPA brochures were placed in the lobby and at the check-out desk
  - Effects of Particle Pollution poster was placed in each exam room and bathroom
Theoretical Results and Responses

• Widespread community awareness of the impact that wildfire smoke and other air particle pollution can have on one’s pulmonary and cardiovascular health

• For people in sensitive groups to habitually check air quality reports and feel comfortable making decisions to attend or miss outdoor events based on air quality measurements

• For Brandon, VT and other towns to have protocols in place for canceling outdoor events and sporting activities for children, older people and people with pulmonary and cardiac conditions who are particularly vulnerable to health effects from poor air quality
Theoretical Evaluation of Effectiveness and Limitations

• Theoretical evaluation of effectiveness:
  • A survey would be sent out randomly to patients at Brandon Primary Care who had been at the office within the last month
  • This survey would assess for patient understanding that brochures and posters on air pollution and air quality are available at the office
  • The survey would also ask if the patient had utilized the poster and pamphlet resources
  • Patients would be asked if they have made any changes to protect their own health from recent wildfire smoke and air particle pollution since viewing these resources

• Limitations:
  • Patients lost to follow-up
  • Patients who are not willing to respond to the survey
  • Patients who do not utilize the pamphlet and poster resources
Recommendations for Future Interventions

• A collaboration between the Vermont Department of Health and towns to make educational materials on air pollution easily accessible to schools and families involved in recreational sports would increase community awareness of the impacts of poor air quality on health.

• Educate local providers on how to effectively communicate the impact of poor air quality on pulmonary and cardiovascular health.

• Providers should screen patients who are especially vulnerable to the effects of wildfire smoke and air particle pollution, and make recommendations for staying safe and provide educational resources.
References


Poster source:

Pamphlet source: