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Childhood Asthma Policy and Housing

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Abstract

The author discusses the health disparities associated with the treatment of asthma between African Americans, Hispanics, and white Children. Environmental pollution may contribute to the development of asthma. Substandard housing (which includes poor ventilation and infestation with coach roaches) in poor communities is linked to asthma. The author argues that there is a need for the United States to develop comprehensive and coordinated network to track and monitor asthma which is linked to environmental pollutants.

Introduction

There are a wealth of scientific studies providing evidence of obvious health disparities between African and American, Hispanic and white children in the incidence, prevalence and treatment of asthma. While asthma is the leading reason for school absenteeism in the United States, and the fourth leading cause of disabilities among children, the rates of related morbidity and mortality are at an all time high among African American and Hispanic children.

Rates of childhood asthma have increased since the early 1980's but that increase has been highest among African American and Hispanic children. A similar pattern exists for emergency room visits and hospitalizations. Reasons for this are not entirely clear. There is a genetic predisposition to develop asthma. If your parents have asthma you are more likely to have it. Asthma is also more common among poor children. That does not entirely explain the differences between rates of asthma among whites and rates of asthma among children of color.

African Americans children are five times more likely to die from asthma than white American children. African Americans have the highest asthma attack rates and are three times more likely than whites to be hospitalized for asthma. A recently study suggest that the high prevalence of asthma among black children in the Untied States is not attributable to race, but to urban living.[1] Hispanic populations are also at increased risk. The rates of hospitalizations, emergency room visits and asthma attacks are higher in Hispanics than in whites, although their rates are lower than those of African American children.

Environmental pollution may be a factor. Ozone and particulate matter have been linked to the development of asthma. The levels of these air pollutants are higher in poor communities of color. Ozone forms when stagnant air polluted with vehicle emissions is subjected to heat and sunlight. Ozone can form and when it is inhaled it can directly damage the lung and aggravate respiratory conditions like asthma. Particulate matter is believed to behave in a similar manner in the body. These chemicals and other chemicals in the environment can cause lung passageways to become narrower and to fill with mucus.

The New England Journal of Medicine tested the validity of a hypothesis that fine particulate air pollution in cities increases mortality and morbidity rates. This study concluded that there is an association with death from all causes, as well as cardiovascular and respiratory illnesses.[2] These finding strengthen the rationale for doing a better job at controlling the levels of particulate matter in outdoor air. Increasing minimal air quality standards would be a small step in the right direction, however in addition to implementation of stricter standards we need to increase surveillance and monitoring to provide the link to the impact of these stricter regulations on public health.

The evidence for causation is important to provide a scientific basis for the regulatory response to particulate air pollution. We do not understand fully the mechanism for how particulate matter affects respiratory function. An aggressive research program to identify the harmful components of PM 2.5 (particles with a diameter of less than 2.5 micrometers), other pollutants which have an adverse effect on human health, their sources, and the mechanisms of their effects offers the best hope for developing more focused regulatory strategies that will simultaneously protect human health.[3] Without this policymakers will not have the information they need to adequately protect the public's health with an adequate margin of safety.

Good data on the numbers of children with asthma is lacking. The National Health Interview Survey, conducted by the Centers for Disease Control and Prevention, provides what data we have on the incidence and prevalence of childhood asthma. This survey is conducted by interviewing a selected of sample of people in the United States and asking them questions about asthma attacks in the past 12 months or a diagnosis of asthma by a health care provider. Then, projections are made for the entire U.S. population based on this survey sample.

The National Hospital Discharge Survey provides information on diagnoses made of people who have been hospitalized. The National Ambulatory Survey collects information from emergency room visit records and analyzes them by diagnosis. All of this data relies upon accurate and complete recording by health care providers. Everyone recognizes that this information is incomplete.

State level surveillance systems that require that asthma be reported might help to fill in gaps in our knowledge. We could then look at information from communities where pollution is greatest and begin to see any relationships that might exist between pollution and levels of disease. With the current national data we cannot do this.
Environmental health regulations typically base their standards on adults, overlooking the specific vulnerabilities and susceptibilities of children.

For example, the Air Quality Index, AQI, which forms the basis for issuing warnings on days when the air is dangerous to breathe, is based on adult exposure to the criteria pollutants. These criteria pollutants, nitrogen dioxide, sulfur dioxide, ozone, particulate matter, lead and carbon monoxide are weighted using a formula that takes into account the pollutant in greatest quantity on a particular day. This may underestimate the influence of those pollutants that are more closely linked to childhood respiratory conditions such as asthma.

It is an unfortunate intersection of events facing many communities with high rates of asthma. The data for specific communities that links pollution, race and substandard housing together is unavailable. That information could persuade policymakers to grant dollars directly to communities at highest risk for disease.
Within the last decade some policies have attempted to address asthma more comprehensively. The notion that children spend more time indoors and the need to focus on cleaning up the indoor environment is receiving more attention. Healthy Homes projects have been launched by various federal agencies, including the Department of Housing and Urban Development (HUD). Their initiative is funding some demonstration projects to address housing issues that pose health threats to children, with lead and asthma being two major areas of attention.

The advent of federal programs focusing on health housing has advantages and disadvantages. The advantages are that funds are currently being made available to address housing issues related to health outcomes like asthma and lead poisoning. The disadvantages are that these funds are awarded primarily to state and local health, environmental and housing agencies that have historically poor ties to the communities at highest risk for asthma. Community based organizations and others working affected communities have little access to these funds and little influence on how the funds are allocated.

Housing conditions in communities that contribute to asthma include poor ventilation, leaks, infestations with cockroaches and mice, high levels of dust mite antigen. In addition, outdoor air pollutants combine with indoor conditions to add to the burden of exposure for children of color living in low-income urban

environments. Chemicals used in the home environment for cleaning, deodorizing or to rid buildings of pests can all trigger attacks in sensitive individuals.

Moisture contributes to the growth of dust mites as well as molds and fungi. These organisms are among the most common allergens that children are exposed to in the home. Sensitization to these substances contributes to asthma attacks and may be linked to the development of asthma as well.

Cockroach antigen is a common antigen found in the blood of many asthmatic children. Ridding homes of cockroaches often results in exposure to toxic fumes from pesticides that itself is a trigger for attacks. Integrated pest management techniques such as baiting that are more effect and use less toxic chemicals are need to rid homes of pests that can make children sicker.

Poor ventilation exposes people to fumes from carpeting and other building components. It also prolongs exposure to chemicals that are used in the home environment. Wall to wall carpeting has been implicated as a trap for dust particles and for mites exposing young children over and over again to these antigens that become trapped in the carpeting.

Another disadvantage is the unwillingness of these new programs to address outdoor air quality as well as indoor air quality as a way of improving human health. In this era of policies that encourage businesses to continue to pollute, we need to recharacterize air pollution as hazardous to human health. We need to be able to correlate the kind of information that is currently being collected at a national level with the specific information on poor air quality that is collected locally and regionally.

The preponderance of scientific and medical literature linking exposures to particulate matter and ozone to respiratory disease should not be ignored any longer. We can no longer negotiate less stringent standards for motor vehicle emissions. This compromise endangers the health of the populations where asthma prevalence is highest, low-income communities of color.

The United States needs to develop a comprehensive and coordinated network to track and monitor chronic diseases and conditions, like birth defects, asthma and other environmental exposures that may be linked to these and other diseases. A 2001 report released by the Pew Charitable Trusts showed that 12 of the 20 states with the highest air pollutant levels do not track the disease at the state and community levels.

Nationwide, more than half of the states have no ongoing tracking and monitoring of asthma.[4] Public health officials believe the levels of three pollutants analyzed in this report are linked to asthma. The twelve states failing to track asthma are: Alabama, Georgia, Idaho, Indiana, Nevada, New Jersey, Ohio, Pennsylvania, Tennessee, Texas, Virginia and West Virginia. The remaining states that do not track asthma are: Alaska, Colorado, Delaware, Kansas, Kentucky, Louisiana, Maine, Maryland, Minnesota, Mississippi, Montana, New Hampshire, New Mexico, South Dakota and Wyoming.[5]

The National Asthma Education and Prevention Program (NAEPP) of the National Heart, Blood and Lung Institute (NHLBI), National Institutes of Health were created to improve the early detection and treatment of asthma. In 997 guidelines were released to assist the medical community with best diagnosis and management practices for asthma.[6] Follow-up studies have found minimal compliance in using these guidelines by emergency departments and in hospitals where asthmatic patients have been admitted. Health plans have poor compliance as well.[7] Primary care providers seem less likely to follow the guidelines as compared with specialists such as pulmonologists.[8] Since African American children are less likely to see a specialist and more likely to receive care in the emergency room, they are more likely to receive substandard care for their asthma.

This is an issue which gets to the heart of why we see more severe asthma in African American children and more severe outcomes such as death. African American children don't receive care that meets the standard agreed upon by scientists and medical professionals as often as their white asthmatic counterparts. They are more likely to be using medications that are deemed more harmful in terms of side effects and less effective at controlling symptoms. They are less likely to receive adequate counseling about reducing exposure to triggers and managing care properly. They are less likely to receive a treatment plan outlining

the care that is being recommended. These plans can be useful not only for the child's parents or guardians, but for teachers, day care providers and others who assume some responsibility for the child during the day.

Increase school and community based efforts are needed to promote healthy environments for all children. Prevention and education must always remain the top priority as we intervene to better manage the children who already have asthma and to prevent others from developing it.

Recommendations

- Better research into air pollutants and other factors implicated in the development and aggravation of asthma
- A tracking system which looks at local trends in pollution and links that to data on incidence, prevalence and severity of the disease
- Access to better health care that meets agreed upon standards to reduce attacks and prevent more severe disease
- Stricter regulation of emissions and other activities that contribute to air pollution
- Better educational programs to educate community members about factors that contribute to or aggravate respiratory disease
- Limits to siting additional polluting facilities in communities where asthma prevalence is high
- Link community based organizations to resources to equip them to improve conditions in their communities that contribute to asthma and respiratory disease
- Change building codes, better enforce existing codes and design healthier buildings and building components to enhance ventilation and reduce exposure to toxic chemicals that can impair respiration

Authors:

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Nsedu Obot Witherspoon, MPH currently serves as the Assistant Director for the Children's Environmental Health Network (CEHN), a national organization devoted to protecting all children from environmental health hazards through education, policy, and research initiatives. Overseeing the Network's entire education campaign, she works to educate leaders and residents within various communities on the Network's mission while leading outreach and networking opportunities. Nsedu is specifically focused on outreach to disempowered populations and those entities serving underrepresented communities. Nsedu is the Chair of the Environmental Committee for the DC Asthma Coalition and Environmental Policy Coordinator for the American Public Health Association. She is a member of the National Black Environmental Justice Network.

Endnotes

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