

# **BETTY IRENE MOORE SCHOOL OF NURSING**

# Low Socioeconomic Status & Risk of Asthma Development in Children Ages 0-18

#### Background

- Asthma is the most common chronic illness in children, affecting 7.0% of people in the United States under age 18 (Centers for Disease Control and Prevention [CDC], 2021).
- In 2016 there were 9.8 million physician visits with asthma as a primary diagnosis and 1.6 million emergency room visits (CDC, 2021).
- The risk of developing asthma is multifactorial, this includes genetic components, exposure to smoke or other environmental irritants, premature birth, low birth weight, history of viral respiratory illness, concurrent allergies, obesity, and urbanization (WHO, 2021).
- The complications from asthma make it a leading cause of school absenteeism and the third leading cause of hospitalization in children (American Lung Association, 2020).
- The American Lung Association reported in 2018 the asthma rates were 11% higher in those whose income falls below the poverty line (American Lung Association, 2020).
- Some socioeconomic factors related to asthma development that have been researched include air pollution, exposure to allergens, income level, access to healthcare, exposure to smoke, and cultural factors.

Large Angle confidence intervals), United States, 2019



Percent

"Poor" children live in families defined as below the poverty threshold. "Near poor" children live in families with incomes of 100% to less than 200% of the poverty threshold. "Not poor" children live in families with incomes that are 200% of the poverty threshold or greater. National Center for Health Statistics. Percentage of current asthma for children under age 18 years (95% confidence intervals), United States, 2019. National Health Interview Survey.



## **Evidence Synthesis**

• There are no uniform indicators of socioeconomic status (SES) across studies of pediatric asthma development.

- Studies within the literature reviewed used various indicators for SES such as education, household, income, poverty, transportation, and unemployment. Other studies focused on crowding, sanitation, and air pollution as their criteria for SES.
- Asthma rates in patients younger than 18 years old are higher in communities below the poverty line compared to those living in higher SES areas.
- Asthma control is likely to be less controlled in children from low SES households compared to children from higher SES, resulting in increased exacerbation frequency and severity.
  - Rates of hospital admissions for pediatric asthma are higher in low SES zip codes than affluent SES areas.

### Implications/Recommendations

- There is a significant multifactorial association between low SES and the risk of pediatric asthma development.
- Numerous upstream risk factors will need to be addressed collaboratively from the governmental and private sectors to mobilize preventative measures.
- Upstream health determinant interventions will require local, state, and federal policies to reduce exposures to indoor and outdoor allergens that contribute to the development and exacerbation of asthma.
- Contributing environmental pollution can be curbed by the passing and implementation of public policy to reduce emissions and improve air quality. Consider programs that trial AQI monitor in at risk households.
- Behavior modification of pediatric patient's parents or guardians in instances of smoking, duration of breastfeeding, and diet composition can aid in reducing asthma development risk.
- Implementation of an asthma action plan for all asthmatic patients and their guardians recommended to exacerbations, hospitalizations, and morbidity. Ensuring that they have access to spirometers, nebulizers and supplies needed for at home exacerbation interventions.

For:	Doctor: Date:			HOW TO CONTROL THINGS THAT MAKE YOUR ASTHMA WORSE		
Doctor's Phone Number:Hospital/Emergency Department Phone Number:				This guide suggests things you can do to avoid your asthma triggers. Put a check next to the triggers that you know make your asthma worse and ask your doctor to help you find out if you have other triggers as well. Keep in mind that controlling any allergen usually requires a combination of approaches, and reducing allergens is just one		
POING WELL • No cough, wheeze, chest tightness, or shortness of breath during the day or night	Daily Medications Medicine	How much to take	When to take it	part of a comprehensive asthma management plan. Her care provider can help you decide which ones may be r ALLERGENS	e are some tips to get started. These tips tend to work bei ight for you.  Animal Dander Some people are allergis to the flakes of skip or	tter when you use several of them together. Your health
Can do usual activities     And, if a peak flow meter is used,     Peak flow: more than     (80 percent or more of my best peak flow)     My best peak flow is:		A second		These tiny bugs, too small to see, can be found in every home—in dust, mattresses, pillows, carpets, cloth furniture, sheets and blankets, clothes, stuffed toys, and other cloth-covered items. If you are sensitive:	<ul> <li>dried saliva from animals with fur or hair. If you are sensitive and have a pet:</li> <li>Consider keeping the pet outdoors.</li> <li>Try limiting to your pet to commonly used areas indoors.</li> </ul>	<ul> <li>If you smoke, visit smokefree.gov or ask your health care provider for ways to help you quit.</li> <li>Ask family members to quit smoking.</li> <li>Do not allow smoking in your home or car.</li> </ul>
Before exercise		2 or 4 puffs	5 minutes before exercise	<ul> <li>Mattress and pillow covers that prevent dust mites from going through them should be</li> </ul>	Indoor Mold	<ul> <li>Smoke, Strong Odors, and Sprays</li> <li>If possible, avoid using a wood-burning stove,</li> </ul>
<b>ASTHMA IS GETTING WORSE</b> <ul> <li>Cough, wheeze, chest tightness, or shortness of breath, or</li> <li>Waking at night due to asthma, or</li> <li>Can do some, but not all, usual activities</li> <li>-Or-</li> <li>Peak flow: to</li> <li>(50 to 79 percent of my best peak flow)</li> </ul>	Int       Add: quick-relief medicine—a         (quick-relief medicine)         2nd       If your symptoms (and peak for the sum -Or- -Or- If your symptoms (and peak for the sum -Or- If	Add: quick-relief medicine—and keep taking your GREEN ZONE medicine.			<ul> <li>If mold is a trigger for you, you may want to:</li> <li>Explore professional mold removal or cleaning to support complete removal.</li> <li>Wear gloves to avoid touching mold with your bare hands if you must remove it yourself.</li> <li>Always ventilate the area if you use a cleaner with bleach or a strong smell.</li> <li>Pollen and Outdoor Mold</li> <li>When pollen or mold spore counts are high you should try to:</li> <li>Keep your windows closed.</li> <li>If you can, stay indoors with windows closed from late morning to afternoon, when pollen and some mold spore counts are at their highest.</li> </ul>	<ul> <li>kerosene heater, or fireplace. Vent gas stoves to outside the house.</li> <li>Try to stay away from strong odors and sprays, such as perfume, talcum powder, hair spray, and paints.</li> <li>Vacuum Cleaning <ul> <li>Try to get someone else to vacuum for you once or twice a week, if you can. Stay out of rooms while they are being vacuumed and for a short while afterward.</li> <li>If you must vacuum yourself, using HEPA filtration vacuum cleaners may be helpful.</li> </ul> </li> <li>Other Things That Can Make Asthma Worse <ul> <li>Sulfites in foods and beverages: Do not divide been environeed and for it.</li> </ul> </li> </ul>
<ul> <li>MEDICAL ALERT!</li> <li>Very short of breath, or</li> <li>Quick-relief medicines have not helped.</li> <li>Cannot do usual activities, or</li> <li>Symptoms are same or get worse after 24 hours in Yellow Zone</li> <li>-Or-</li> <li>Peak flow: less than</li></ul>	Take this medicine: (quick-relief medicine) (oral steroid) Then call your doctor NOW. • You are still in the red zone after • You have not reached your door	Number of puffs <b>or</b> [ mg Go to the hospital or call an ambulance if: ar 15 minutes AND itor.	Nebulizer	<ul> <li>If you use a spray to kill roaches, stay out of the room until the odor goes away.</li> <li>U.S. Department of Health and Human Services National Institutes of Health</li> </ul>	<ul> <li>If you do go outside, change your clothes as soon as you get inside, and put dirty clothes in a covered hamper or container to avoid spreading allergens inside your home.</li> <li>Ask your health care provider if you need to take or increase your anti-inflammatory medicine before the allergy season starts.</li> </ul>	<ul> <li>arink beer or wine or eat aried fruit, processed potatoes, or shrimp if they cause asthma symptoms.</li> <li>Cold air: Cover your nose and mouth with a scarf on cold or windy days.</li> <li>Other medicines: Tell your doctor about all the medicines you take. Include cold medicines, aspirin, vitamins and other supplements, and nonselective beta-blockers (including those in eye drops).</li> </ul>
Lips or fingernalis a	re blue	Go to the hospital or call for an	ambulance (phone) NOW!	NIH Publication No. 20-HL-5251	For more information and resources on asthma, visit <i>nhlbi.nih.gov/BreatheBetter</i> .	

See the reverse side for things you can do to avoid your asthma triggers.

#### **Conclusions/Further Study**

- Further investigation needed to determine relative contributions of each social determinant of health factor in high asthma incidence populations to better guide preventative upstream and clinical intervention recommendations.
- Studies needed regarding utilization of e-health technology for prevention and trend tracking in at risk pediatric asthma populations.
- Study tracking pediatrics <5 years of age with diagnosed reactive</p> airway disease and whether they progress to an asthma diagnosis at or after age 5 that also looks at their SES and SDoH, as 5 is the age reserved for asthma diagnosis unless patient is <5 years with multiple hospitalizations or requires daily control pharmacotherapy.



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