

Asthma		Synopsis
Title	The Economic Burden of Asthma in the US 2008-2013	A sample of 213,994 people were taken, 4% of which had asthma. Overall, asthma was responsible for the loss of \$3 billion due to missed school or work, \$29 billion for asthma related mortality, and \$50.3 billion in medical costs. In total, asthma placed a significant economic burden on the US totaling to \$81.9 billion in 2013 alone.
Author(s)	Annals of the American Thoracic Society	
AA Location	8-K	
Web address		
Title	CDC Vital Signs Asthma	In the US, 1 in every 12 people have asthma, or 25 million people. The estimated cost of asthma in 2007 was \$56 billion dollars when considering lost school and work days and early deaths. The costs of asthma and number of people being diagnosed with asthma continues to rise each year. In 2007 alone, 3,447 people died from their asthma. It also affects different people disproportionately, with black children having the highest rate of diagnosed asthma. To better control and prevent asthma, it is recommended to improve indoor air quality in homes, offices, and schools, as well as creating asthma action plans in regards to education, medicine, and avoidance of triggers. These triggers include mold, pet dander, smoke, and dust mites.
Author(s)	CDC	
AA Location	Physician Form	
Web address		
Title	Trends in asthma prevalence, health care use, and mortality in the United States, 2001-2010	From 2001 to 2010, asthma prevalence increased by 1.1%. Primary care visits for asthma decreased but emergency department visits remained the same. Black people had higher rates for ED visits and asthma related deaths when compared to white people. Asthma prevalence also increased in lower income households, children, females, people of mixed races, and Peurto Ricans.
Author(s)	CDC	
AA Location	Physician Form	
Web address	https://www.cdc.gov/nchs/product	
Title	Association between indoor mold and asthma among children in Buffalo, NY	Asthma is the leading chronic illness of children in the US and is the suspected cause of activity limitation and missed school. Children exposed to mold or dampness in their homes are at a higher risk of lower respiratory symptoms and development of asthma. In this particular study in Buffalo, NY, a sixfold increase in odds was seen for exposure to Aspergillus and asthmatic children with no prior family history. There was also a threefold increase in risk of asthma in children when at least four species of Aspergillus were present. The measured humidity in the homes was also positively associated with the total count of fungi present.
Author(s)	Indoor Air	
AA Location	7-42	
Web address		

Asthma		Synopsis
Title	Every school should be asthma friendly	<p>Diane Rhodes' presentation on asthma awareness in the school environment for the North East Independent School District, whom have received the 2013 EPA National Environmental Leadership Award in Asthma Management. A Green Cleaning Program was proposed to reduce absenteeism in custodial staff which would save an estimated total of \$955,000. The total revenue lost due absenteeism in asthmatic children was also calculated to be \$2,063,616 per year by multiplying the number of students in the NEISD with asthma by the average number of school days missed by asthmatics and the daily rate of attendance. In Fulton country, this number is \$4,479,740. Across the US, 10.5 million school days are missed due to asthma and studies have also shown that the asthmatic students have lower graduation rates and struggle to learn basic learning principles early on in their academic career. In one study, after employing "Tips for a healthy classroom," inhaler usage decreased 40%. Schools have a particular challenge in maintaining proper indoor air quality due to lack of funding for maintenance and renovation, 4x the occupancy of a normal office space, pollutant sources like art supplies and science labs, improper ventilation, and increased concentration of fine particulate, mold, microorganisms, and excess moisture, which are all known to exacerbate asthma symptoms. According to the Journal of Allergy Clinical Immunology, 38-58% of people with allergic rhinitis also have asthma and 90% of people with asthma have other allergies. With children spending a significant portion of their time indoors and in the classroom (90% of our time indoors), it is important to pay attention to indoor air quality to reduce asthma attacks which lead to decreased performance and concentration. This can be done by identifying triggers and assessing the environment, improving awareness with children, parents, and staff, reduce healthcare barriers, and to further educate and plan for asthma management.</p>
Author(s)	Dianes Rhodes BBA, RRT, AS-C, RCP	
AA Location	8-E	
Web address	www.neisd.net/env_health	
Title	In five years, we could stop asthma from happening	<p>A Cardiff researcher predicts that asthma could possibly be preventable after research had discovered that calcilytics could be a potential drug used to treat asthma. Typically asthma is treated with steroids or albuterol, though 8% of asthma patients do not respond to this treatment. This 8% of asthmatic patients account for 90% of asthma healthcare costs.</p>
Author(s)	Discovery.com	
AA Location	8-F	
Web address		

Asthma		Synopsis
Title	Asthma no longer considered great coronavirus risk factor but doctors warn to stay vigilant	Across NY state, 5% of COVID related deaths also had asthma. Though the statistics on the link between asthma and COVID look safe and promising, doctors warn to stay vigilant as asthma can increase the risk of having a more severe case of COVID, leading to asthma attacks, pneumonia, and acute respiratory disease. 10 people a day die from asthma in the US alone , even without COVID as an added risk factor. Doctors recommend stocking on emergency supply of inhalers and other related medication.
Author(s)	People	
AA Location	8-F	
Web address	https://people.com/health/asthma	
Title	Asthma attacks on the decline in US kids	Asthma attacks in children have decreased from 62% in 2001 to 54% in 2016. This decrease is most likely due to better education and awareness in asthmatic children and parents. However, asthma still affects 6 million children and is the most common respiratory disease in children. Children under four are the most at risk for asthma attacks. 1 in 6 children with asthma end up in the ER and 1 in 20 are hospitalized due to their asthma every year. Avoiding triggers like tobacco smoke, air pollution, mold, and pet dander, as well as having action plans and medication are some ways to reduce the prevalence of asthma attacks in children.
Author(s)	CBS News	
AA Location	8-F	
Web address	https://www.cbsnews.com/news/a	
Title	Parents of young asthmatic girls plead w/ apt manager to fix A/C	An East Point resident of Georgia has been without air conditioning in her apartment for over a week and after several requests to apartment management, maintenance office, and corporate, the problem was still not fixed. The family of the residence has two asthmatic children, whom they fear will have asthma attacks during the night due to the 90 degree conditions.
Author(s)	WBSTV	
AA Location	8-F	
Web address	https://www.wsbtv.com/news/loc	

Asthma		Synopsis
Title	Asthma: Home-Based Multi-Trigger, Multicomponent Env. Interventions - Children and Adolescents with Asthma	The Community Preventative Services Task Force analyzed 23 studies that focused on home-based multi-trigger and multicomponent interventions of asthma with a primary focus on children with asthma. It was found that asthma symptom days decreased by 21 days/year, missed school days decreased by 12 days/year, acute healthcare visits decreased 0.57 visits/year, hospitalizations decreased 0.4/year, and ER visits decreased 0.2/year. Minor to moderate remediation combined with education provided a positive value for money invested. Interventions with major remediation saved between \$3,796-14,858, interventions with minor to moderate remediation combined with education saved between \$231-1,720. Overall, the cost-benefit for each dollar invested was \$5.3-14.0 and cost-effectiveness was between \$12-57 per symptom free day. Of the 23 studies analyzed, most were in urban minority homes primarily focused on children. Most of the literature strongly suggested that secondhand smoke was a considerable trigger and it was beneficial to hire and train healthcare workers to implement intervention in the community. However, it was also noted that major remediation was expensive and often increased triggers that worsened asthma or allergies.
Author(s)	The Community Guide	
AA Location	8-G	
Web address	https://www.thecommunityguide.org/	
Title	Asthma Awareness Education Program	The North East Independent School District proposes an asthma awareness program addressing indoor air quality. Poor indoor air quality impacts both students and staff and has a detrimental effect on concentration, attendance, and student performance . Asthma is the number one reason students miss school which accounts for a total of 14 million missed school days across the U.S. Infectious microbes, invisible particles, and irritant gases all have a negative impact on indoor air quality. These include high aerosol levels that can induce allergic reactions like skin irritation, coughing, sneezing, respiratory difficulties, and circulatory system problems. Volatile Organic Compounds (VOCs) like formaldehyde and viral and bacterial infections can exacerbate asthma symptoms. Some ways to reduce these indoor pollutants is upgraded filtration devices and increased ventilation as well as the use of green cleaning products that do not contain harmful chemicals.
Author(s)	NEISD	
AA Location	8-H	
Web address	http://www.neisd.net/env_health/	

Asthma		Synopsis
Title	WAEC Radio Interview	<p>This is a WAEC radio interview with Ms. Nazeera Dawood and Richard Johnson. Asthma affects approximately 8% of the US population, though in Atlanta it affects 11% of the population. Asthma has increased by nearly 400% in the last fifty years, following the trend of people spending 90% of their time indoors compared to 60% in the 1950's. Asthma attacks can be triggered by multiple things like stress or environmental factors such as pollen, mold spores, and particulate matter. In Fulton County alone, the cost to asthmatic people is between 60 and 160 million dollars, the latter number depending on if lost work and school is accounted for. Asthma triggers are more efficiently controlled if a HEPA filter with a MERV rating of at least 8 is implemented, along with identifying surface triggers, humidity control, and better education for asthmatics. One study in Cleveland showed a 58% reduction in hospitalizations and 30% reduction in ER visits after addressing indoor air quality in the home of asthmatics. The Cincinnati's Children's Hospital and New York had similar studies that came to the same conclusions. One important study also revealed that children exposed to mold spores in their first year of age had twice the chance of developing asthma before age 7.</p>
Author(s)	Nazeera Dawood and Richard Johnson	
AA Location	8-I	
Web address		
Title	About Asthma	<p>About 1 in every 15, or 20 million Americans suffer from asthma and 62% of these people have allergic asthma. Nearly 5 million of these people are under the age of 18 and is the most common chronic condition in children. Children living in urban, crowded, and/or unclean conditions are the most at risk for developing asthma. There are several asthma triggers, including dust and dust mites, cockroaches, mold, pet dander, rodents, tobacco smoke, and air fresheners. To avoid and prevent attacks, it is important to keep a clean home by using HEPA vacuum filters, ensure there is no dust or mold in the home, and to quit smoking or to smoke outdoors only.</p>
Author(s)	HUD	
AA Location	8-J	
Web address	https://www.hud.gov/program_off	

Asthma		Synopsis
Title	Respiratory Diseases	Both asthma and chronic obstructive pulmonary disease are significant health burdens, with 23 million people suffering from asthma and 13.6 million people suffering from COPD in the US. COPD is the fourth leading cause of death and 8 in every 10 COPD cases are smokers or exposed to secondhand smoke. Not only is it a public health burden but an economic one as well, with asthma costing an estimated \$20.7 billion per year.
Author(s)	Healthy People	
AA Location	8-H	
Web address	https://www.healthypeople.gov/20	
Title	Clark Seif Clark Environmental Newsletter	Perfumes in fragrances are common in a variety of cleaning and cosmetic products, though just the smell of a strong fragrance can trigger an asthma attack. Other common workplace exposures that can induce asthma attacks is dust, mold, animal/insect allergens, plants, various chemicals, and fragrances (i.e. air fresheners). The California Work-Related Asthma Prevention Program suggests having a fragrance-free policy, not using air fresheners, and bringing in adequate fresh air from the outside.
Author(s)		
AA Location	8-M	
Web address		
Title	Asthma Survey Results	Out of 50 people, the following results: Only 30% had an asthma action plan. 56% had visited the ER at least once due to their asthma in the last four months. 22% had missed at least one day of school from asthma. Out of 48 individuals surveyed, 72% had a spacer but only 16% had a peak flow meter.
Author(s)		
AA Location	8-M	
Web address		
Title	Asthma: How much do you really know?	In Fulton County, children miss approximately 2.5 more days of school due to their asthma. 55,000 adults and 25,000 children have asthma and 51,000 ER visits and 32,000 hospitalizations occur due to asthma in Fulton County. Triggers of asthma include cold air, flu/cold, exercise, tobacco smoke, and allergens such as dust mites, pet dander, cockroaches, mold spores, pollen, and food. These triggers can be reduced by addressing indoor air quality of the home or office. This includes removing any allergens, reducing the humidity, using a HEPA MERV 8+ filter, and good housekeeping practices. The FAIR Coalition is addressing the problems of asthma in Fulton County by implementing these strategies.
Author(s)	Fulton County Health & Wellness Department of Health Promotion, FAIR Coalition	
AA Location	8-N	
Web address		

Asthma		Synopsis
Title	Georgia Asthma Advisory Coalition	The report includes federal action plan strategies to reduce racial and ethnic asthma disparities. These four strategies were to 1. "reduce barrier to the implementation of guidelines based asthma management", 2. "enhance capacity to deliver asthma care to children in communities with racial and ethnic asthma disparities", 3. "improve capacity to identify the children most impacted", 4. "accelerate efforts to identify and test interventions that may prevent the onset of asthma among ethnic and racial minority children."
Author(s)	Georgia Department of Public Health	
AA Location	8-O	
Web address		
Title	Resolution directing the development of asthma control action plan	This is a "resolution directing the development of an asthma control action plan, including efforts to reduce asthma-related health disparities in Fulton County." 1 out of ever 12 people in Fulton county has asthma, and African-Americans under 4 years old are most at risk for ER visits related to asthma. The disparity is clear as there is a five-fold difference in asthma-related deaths between the highest and lowest commission districts. This action plan should address healthcare for patients with asthma, self-management, and developing programs and policies that improve the health and quality of life of people with asthma to further remove the disparity present.
Author(s)	HHS, HUD, EPA	
AA Location	8-P	
Web address		

Asthma		Synopsis
Title	Environmental Improvements brought by the legal intervention in the homes of poorly controlled inner-city adult asthmatics patients	<p>A retrospective study was done of 12 patients who were diagnosed for poorly controlled asthma. Of these patients, they all reported exposures to mold, cockroaches, mice/rats, and dust in their apartment homes and needed legal assistance in the removal of these allergens in the home. The burden of responsibility of remediating mold, rodents, leaks, and other poor conditions of the home legally lies with the landlord. Despite this legal requirement, of the 12 patients studied, 75% reported cockroaches, 66.7% reported mold, and 50% reported dust. One patient who suffered from severe persistent level asthma showed significant improvement to mild intermittent level after leaks and rodents were removed in the home. However, nine months later when both allergens returned, the patient declined back into severe persistent level asthma. After legal intervention and proper remediation, the ED visits and hospital admissions decreased by 91% and 91.7% of people dropping at least two classes in severity of their asthma, as well as 73% of patients no longer having to take steroids. Overall, legal intervention for cases of inhospitable conditions in apartment homes proved to show a beneficial service to those suffering from asthma.</p>
Author(s)	Journal of Asthma	
AA Location	8-Q	
Web address		
Title	A simulation model of building intervention impacts on indoor environmental quality, pediatric asthma, and costs	<p>This study ran a simulation on a cohort of 1 million low-income multi-family housing complexes in Boston to assess the impacts on building intervention in regards to indoor air quality and asthma severity. It was found that interventions such as integrated pest management and repairing kitchen exhaust fans had a 7-12% reduction in the severity of asthma and a 1-3 year payback when comparing the cost of improvement and cost of asthma-related healthcare. It was also found that weatherization such as tightening the building envelope caused a 20% increase in the severity of asthma, though if paired with repairing kitchen exhaust fans and removing indoor pollutants, this percentage decreased. It can be concluded from this hypothetical simulation that building interventions in the home, particularly low income multi-family housing, provided a beneficial short payback period and reduction in severity of asthma.</p>
Author(s)	Journal of Allergy and Clinical Immunology	
AA Location	8-T	
Web address		

Asthma		Synopsis
Title	Low cost interventions improve IAQ and children's health	<p>A single-blind study was done to assess the effect of low-cost home improvement interventions on the health of children in the home, particularly children with asthma. These low cost interventions included dehumidification, air filtration, furnace servicing, HEPA filters, and fungi remediation when present. Asthma education was also provided. Reduction in asthma severity was seen in all followups. When dehumidification and HVAC service was implemented, a significant reduction in coughing was seen. General breathing problems also significantly improved when dehumidification, HVAC service, and air cleaners were implemented. Mold spore count was also reduced in 25% of the homes. Total dust allergen load was also decreased in 61% of the homes though there was no statistical significant change in allergen levels, likely due to some large deviations in the mean.</p> <p>Overall, it has been shown that low-cost intervention in the home decreases asthma severity in children.</p>
Author(s)	Allergy and Asthma Proceedings	
AA Location	8-U	
Web address		
Title	Important Asthma Triggers	<p>Some important, avoidable asthma triggers include: Secondhand smoke, dust mites, outdoor air pollution, cockroach allergen, pets, mold, wood smoke, infection, exercise, and more.</p>
Author(s)	CDC: Important Asthma Triggers	
AA Location		
Web address	https://www.cdc.gov/asthma/trigg	
Title	Asthma Coalition	<p>Mr. Richard Johnson speaks on the goals, needs, and strategies of the asthma coalition in Fulton County. It is explained that indoor air quality has progressively gotten worse over the years due to tighter building envelopes and the switch from plaster walls and hardwood to drywall and carpets. To improve indoor air quality and lessen the severity of asthma and its triggers, it is recommended to have better filtration, cleaner homes, use dehumidifiers, and have proper and timely medical treatment. This would not only improve the lives of asthmatics, but provides an economic benefit as well. 25% of ER visits in the US are due to asthma, which costs an estimated \$50 billion dollars per year. In Fulton county alone, the cost of medical treatment for asthmatics that cannot afford it costs \$25 million dollars per year.</p>
Author(s)	Richard Johnson	
AA Location	8-X	
Web address		

Asthma		Synopsis
Title	Allergic Asthma	Allergic asthma is asthma caused by allergen triggers such as dust mites, cockroaches, pet dander, pollen, mold, and more. Allergic asthma accounts for 60% of 25 million asthma sufferers, with 2.5 million of those people under the age of 18. This shows that control over environmental triggers is crucial for a large portion of the population. For general asthma, every day in the US: 44,000 have an asthma attack, 36,000 kids miss school, 27,000 adults miss work, 4,700 visit ER, 1,200 people are hospitalized, and 9 people die. 44% of hospitalizations are children and African Americans are 3x more likely to be hospitalized. Asthma prevalence is highly correlated with poverty, urban air quality, indoor allergens, and lack of patient education and care.
Author(s)	Asthma and Allergy Foundation of America	
AA Location	8-W	
Web address	https://www.aafa.org/allergic-asthma	
Title	Asthma Condition	The Georgia Society of Healthcare Risk Managers overviews the asthma condition with primary focus on treatment protocols in children. Asthma is classified into four categories: Intermittent asthma, mild persistent asthma, moderate persistent asthma, and severe persistent asthma. An estimated 10% of children in Georgia suffer from asthma and is the leading cause behind school absences due to a chronic illness. A sensitive and overactive airway is the cause of asthma, and can be triggered by molds, dust mites, pollens, smokes, air pollution, odors, exercise, and weather changes or cold air. The guide classifies the early warning signs and more severe symptoms to advise patients, parents, and school staff on the proper protocol when a child is experiencing asthma symptoms. It is recommended to have proper asthma education in patients, family, and school members. It is suggested to remove allergen triggers, avoid pets, and promote indoor air quality in the classroom, as well as other reasonable accommodations (i.e. missed school makeup).
Author(s)	GA Society of Healthcare Risk Managers	
AA Location	8-Z	
Web address		

Asthma		Synopsis
Title	Asthma, allergies and the new hope of immunotherapy	Asthma is often missed or misdiagnosed and approximately 1 in every 4 people with asthma have never been officially diagnosed with asthma. It can often be mistaken for allergies - runny nose, itchy eyes, coughing, clearing throat, congestion, and fatigue - though chronic cough is the most common symptom of asthma. Intermittent wheezing, chest tightness, and shortness of breath are also common symptoms of asthma. It can be induced by a variety of triggers such as air pollutants, allergies, or viral infections. Though asthma is an incurable chronic condition, immunotherapy has shown promising results. Immunotherapy is exposing controlled amounts of allergens to the patient to desensitize the patient to said allergen. In Allison Feeny's case, immunotherapy relieved her asthma symptoms almost completely. Immunotherapy has also shown to be cheaper than the use of other allergy and asthma medications.
Author(s)	Chicago Tribune	
AA Location	9-1	
Web address	https://www.chicagotribune.com/t	
Title	Asthma reduced in Boston public housing	The Boston Housing Authority created Integrated Pest Management, which defined a strategy to rid and prevent housing of pests in the public housing. It combined the prompt removal of trash and clutter from the home and fixing/preventing water leaks as opposed to the previous strong pesticide use. After this strategy integration, asthma symptoms decreased from 23.6% to 13% from 2006-2010 as compared to other low-income housing that received no change in pest management.
Author(s)	Boston Globe	
AA Location	9-2	
Web address	https://www.bostonglobe.com/life	
Title	Tracking Environmental Public Health Indicators of Asthma	Typically, inpatient hospitalization (IP) has been used by the National Environmental Public Health Tracking and CDC to determine how common asthma is among the population. However, it was found that tracking Emergency Department (ED) visits was an acceptable indicator of asthma encounters in a given population, except for those 65 and older.
Author(s)	Department of Health and Human Services	
AA Location	9-3	
Web address		

Asthma		Synopsis
Title	Link between fungi and severe asthma: A summary of the evidence	<p>There are several studies showing a strong link between fungi exposure and asthma severity. There have been several instances in history where a sensitivity to certain fungi were positive in asthmatic patients. In one study requiring specialist referral of the asthmatic patients, 20-25% had a positive skin test to several fungi. Another cross-sectional study found that sensitivity to <i>Alternaria alternata</i> or <i>Cladosporium herbarum</i> significantly increased the risk of having severe asthma, though no sensitivity was found in pollen or dust mites. Although several more examples of studies like these exist, it still cannot be completely confirmed if severe asthma is correlated with or caused by exposure to fungi. Despite this inconclusive determination, many specific fungi exposure have been attributed to the worsening of asthma and chronic allergic rhinitis.</p>
Author(s)	European Respiratory Journal	
AA Location	9-4	
Web address		
Title	Asthma Encounters by ZIP code	<p>Contains a list of asthma encounters by zip code organized by ED, inpatient, and observation. According to a related study, the most accurate data for asthma encounters is ED numbers.</p>
Author(s)		
AA Location	9-5	
Web address		
Title	Asthma Control: Improving Quality of Life, and Reducing Deaths and Costs	<p>The fast facts about asthma in the US between 2002-2006 per year: nearly 4,000 deaths, 38.4 million diagnosed with asthma in 2008 and 23.3 million still had asthma, 12.7 million had experienced an attack in the past year, 10.6 million doctor visits, 1.1 million non-emergency hospital visits, 1.6 million ER visits, 440,000 hospitalizations. At time article written, asthma costed more than \$30 billion/ year but those estimates are now \$56 billion according to another CDC article.</p>
Author(s)	CDC	
AA Location	9-6	
Web address	https://www.cdc.gov/asthma/aag/	

Asthma		Synopsis
Title	A multicenter observational study of US adults with acute asthma: who are the frequent users of the emergency department	It is known that as of 2011, 26 million Americans have asthma and has an economic impact of \$56 billion dollars per year. Of particular interest of this study was the frequency of emergency department (ED) amongst asthma sufferers, as there are 440,000 hospitalizations and 1.8 million ED visits for asthma per year. Out of 1890 patients, it was found that 46% had at least one ED visit in the past year. Of these people only a small portion received outpatient care and there was a strong association with a higher frequency of ED visits among patients with public health insurance or no health insurance.
Author(s)	Journal of Allergy and Clinical Immunology	
AA Location	9-7	
Web address		
Title	Asthma	26 million people have asthma in the US, or 1 in every 11 children and 1 in every 12 adults. There are wide disparities among these numbers however, with African-Americans have 3x a higher risk of asthma-related hospitalizations and death. Children also 2x the risk of ER visits and hospitalizations compared to adults. Asthma costs \$56 billion per year, or \$3,300 per person per year. However, home visiting programs in an attempt to educate, prevent, and alleviate asthma shows a return of \$5.30-\$14.00 per dollar invested.
Author(s)		
AA Location	9-8	
Web address		
Title	Inner-City Environments and Mitigation of Cockroach Allergen	Cockroach allergen is considered a major risk factor for severe asthma. Between 59-81% of asthmatic children in the Inner City Asthma Study tested positive for cockroach allergy. Although previous studies have shown that a multicomponent, multi-trigger home-based intervention has been helpful in alleviating asthma symptoms and triggers, a single faceted approach for children with a severe allergy to cockroaches may be more effective. It has been found that integrated pest management (extensive cleaning, resident education, baiting) has been just as effective as simple insecticide baiting.
Author(s)	American Journal of Preventative Medicine	
AA Location	9-9	
Web address		

Asthma		Synopsis
Title	Decrease Asthma Morbidity through homebased, multitrigger, multicomponent interventions	Asthma and the conditions of the indoor environment are undoubtedly linked and it has been shown that individual steps alone to decrease asthma morbidity were not effective. A multi-trigger and multicomponent intervention are the most effective in decreasing asthma severity. These approaches focused on decreasing the exposure to indoor allergens and integrated pest management, as well as education for the asthmatic and their family. These approaches had much effectiveness on reducing symptom free days and lowering school absences in children. The same level of effectiveness were not seen in adults, although there were only a limited number of studies on adults with asthma and it received inconsistent results. Not only was asthma morbidity decreased in this multifaceted approach, but provided economic benefit as asthma costs were averted.
Author(s)	American Journal of Preventative Medicine	
AA Location	9-10	
Web address		
Title	Economic Value of home-based, multi-trigger, multicomponent interventions with an environmental focus for reducing asthma morbidity	This study focused on the economic benefit of applying home-based, multi-trigger, multicomponent interventions in homes of people suffering from asthma. These interventions included home visits by trained professionals, education of the patient and family, and minor to major remediation of the home to eliminate triggers. It was found that program costs ranged from \$231-\$14,858 dollars per participant and depended greatly on how minor/major the remediation work was, the number of home visits made, and the professional position of the home visitor. After calculating averted medical costs and productivity losses, it was found that for every dollar spent on the program, \$5.30-\$14.00 dollars was benefited.
Author(s)	American Journal of Preventative Medicine	
AA Location	9-11	
Web address		
Title	Asthma and Social Justice	There a multiple asthma disparities, as children living in poverty, particularly African-American children, experience higher rates of asthma when compared to higher income peers. Though the exact cause is not completely known, it is suspected that it is because low-income neighborhoods have more incidences of asthma triggers such as cockroaches, rodents, and mold. Housing codes make it law to provide healthy livable housing conditions for their tenants, though this is not always followed and low-income families are unaware of the legal action they could possibly take (or they cannot afford it). Thus, it is important to make legal services more available in order to ensure tenants rights are being protected and healthy housing is ensured, in particular for people with asthma.
Author(s)	American Journal of Preventative Medicine	
AA Location	9-11	
Web address		

Asthma		Synopsis
Title	Integrated Healthcare: An Asthma Model	A presentation written by Dan DiBacco PharmD, MBA, AC-E that highlights the need of integrated healthcare for asthma patients. This includes primary care, pharmacists, school nurses, rehab therapy, public health, and alternative medicine.
Author(s)	Dan DiBacco, PharmD, MBA, AC-E	
AA Location	9-12	
Web address		
Title	Asthma Statistics	Contained are the fast facts about asthma from all of the studies previously presented. Includes facts about prevalence, economic cost, solution, children with asthma, ER visits, etc. Of the most important: 24.6 million people have asthma in US as of 2009. Worldwide, 250,000 people die from asthma per year. 11% of asthma cases worldwide are due to workplace conditions. 13 million missed school days and 10.1 million missed work days are due to asthma. 271,000 ER visits and 10.5 million doctor visits per year are due to asthma. Asthma is the third cause of hospitalization of children under 15.
Author(s)		
AA Location	9-14	
Web address		
Title	Asthma Facts	The EPA summarizes that asthma is triggered by dust mites, molds, cockroaches, pet dander, and secondhand smoke. Exposure to secondhand smoke and dust mites in children can cause asthma. Of the 25.9 million Americans who have asthma, 7.1 million are children. 15 million doctor visits and 2 million ER visits are due to asthma. African Americans experience 330% higher ER visits, 220% higher for hospitalizations, and 180% higher death rate. The annual cost of asthma is estimated to be \$56 billion dollars.
Author(s)	EPA	
AA Location	9-14	
Web address	https://www.epa.gov/asthma	
Title	Americans with Disabilities Act	The ADA is a civil rights law that protects Americans with disabilities and gives Americans the right to ask for changes in policies or practices that disadvantages them. People suffering from asthma or allergies are protected by the ADA and have the right to ask employers, landlords, schools, etc to make accommodations for their allergies or triggers.
Author(s)		
AA Location	9-14	
Web address		

Asthma		Synopsis
Title	President's Task Force on Environmental Health Risks and Safety Risks to Children	<p>The President has created a task force that addresses the racial and ethnic asthma disparities present in the United States. The estimated cost for medical expenses associated with asthma are an estimated \$50 billion dollars annually. Asthma also affects disproportionately children, families below the poverty line, and minorities. Black children are twice as likely to be hospitalized for their asthma, more than twice as likely to have an ER visit, and four times more likely to die due to asthma when compared to white children. They are also less likely to be prescribed medication that controls their asthma. In just 2008, 10.5 million days of school were missed due to asthma, and children with asthma are more likely to suffer academically. Some factors that contribute to these disparities are barriers present in the healthcare system, physical and psychosocial environmental factors, and incapacity to identify and reach children most at risk. The Federal Action Plan addresses these issues through three strategies: 1. Reduce barriers to the implementation of guidelines-based asthma management. 2. Enhance capacity to deliver integrated, comprehensive asthma care to children in communities with racial and ethnic asthma disparities. 3. Improve capacity to identify the children most impacted by asthma disparities.</p>
Author(s)		
AA Location	9-15	
Web address		
Title	Healthy Environments: A Compilation of Substances Linked to Asthma	<p>The Perkins & Will firm created a guide to asthma triggers and their sources in the built environment on behalf of the National Institute of Health, Office of Research Facilities, Division of Environmental Protection. The issue is being addressed due to the fact that 11 Americans die from asthma every day and accounts for 14.7 million missed school days and 12 million missed work days. Asthma costs \$19.7 billion per year with \$10 billion from direct healthcare costs for asthma. Lower income areas suffer from asthma more so than higher income areas, likely due to the "dampness, mold, dirty carpeting, and pest infestations" that are more present in lower income neighborhoods. In an assessment of eight source lists, 374 asthma triggers were identified. Of these, most were present in 6 or more studies, thus verifying its validity as an asthma trigger. Many of these sources were man-made and ubiquitous in the indoor environment, as well as natural sources such as pollen. All of these sources range from building materials and furnishings, dust mites, cockroaches, household cleaning, combustion sources, HVAC systems, and volatile organic compounds.</p>
Author(s)	Perkins+Will Firm National Institute of Health	
AA Location	Asthma Binder	
Web address	http://www.research.perkinswill.co	

Asthma		Synopsis
Title	F.A.I.R Coalition - Nazeera	<p>Stated are the reasons why a coalition in Fulton County is needed and ideas/thoughts on solutions for indoor air quality as it relates to asthma. It states that in Fulton county, there were 1,052 asthma related hospitalizations and 7,166 asthma related ER visits in 2010 and 42% of those were children under 13. Approximately 24,657 children and 55,000 adults have asthma in Fulton County (American Lung Association). \$56 billion dollars was the total cost for asthma in 2007 and \$3.8 billion was lost in morbidity and productivity (American Academy of Allergy, Asthma, & Immunology). Based on this metric, between \$60-172 million dollars or \$750-\$2000 per year for each asthma patient in Fulton County. Some people such as allergists, healthcare providers, pharmacists, landlords, tobacco sellers, etc, would be affected negatively by lowered asthma rates. However, asthmatics and their families, insurance companies, taxpayers, manufacturers of filters, dehumidifiers, cleaning products, and HEPA vacuums, and HVAC contractors would benefit from lowering asthma rates. These things among education is the recommended route for lowering asthma rates by improving indoor air quality and the indoor environment in total.</p>
Author(s)		
AA Location	9-16	
Web address		
Title	Asthma: Strategies for addressing asthma within a coordinated school health program	<p>The CDC provides a guide on strategies for addressing asthma in the school environment. Among these suggestions is to prevent indoor air quality problems by preventing and reducing asthma triggers such as tobacco smoke, dust mites, molds, animals, and cockroaches.</p>
Author(s)	CDC	
AA Location	1-11	
Web address	https://www.cdc.gov/healthyschool	
Title	Indoor Environmental Control Practices and Asthma Management	<p>It has been found that individually tailored practices in reducing environmental triggers of asthma reduces symptoms and the worsening of asthma. Removing/treating triggers has been similar in effectiveness and cost of medication/healthcare. The most prevalent indoor environmental triggers include pets, dust mites, rodents, cockroaches, molds, particulate matter, secondhand smoke, and nitrogen dioxide. Strategies to control triggers include source removal, source control, and mitigation. One example is the use of portable HEPA air purifiers and dust mite proof bedding.</p>
Author(s)	Pediatrics	
AA Location	2-16	
Web address		

Asthma		Synopsis
Title	Household mold and dust allergens: exposure, sensitization and childhood asthma morbidity	This study focused on the levels of household allergens (dust mites, cat and dog allergens, mold, cockroaches, and nitrogen dioxide). It was found that low levels of penicillium, dust mite allergens, and cat and dog allergens significantly increased the risk of asthma morbidity in asthmatic children sensitized to those specific allergens. What was measured was days of wheeze, cough, and use of rescue medication. Specifically, penicillium exposure increased the risk of asthma symptoms and severity two times. Dust mite allergen exposure increased risk of rescue medication use and asthma severity score by 47%. Cat allergens increased risk of more symptoms by 39% and use of rescue medication by 32%. Dog allergens also increased risk of wheezing.
Author(s)	Environmental Research	
AA Location	2-17	
Web address		
Title	Exhale: Technical Package to Control Asthma	Exhale provides an outline for the control of asthma following the acronym: 1. Education, 2. x-extinguishing secondhand smoke, 3. home visits, 4. achievement of guideline-based medical treatment, 5. linkages of care across settings, 6. environmental policies/practices that reduces triggers. As of 2018 , 24 million Americans have asthma (1 in every 13 people). Half of asthmatic adults and 40% of asthmatic children do not have control of their asthma. Estimated cost of asthma every years is \$62.8 billion. Asthma accounts for 439,000 hospitalizations, 1.6 million ED visits, 10.5 million doctor visits, 13.8 million missed school days, 14.2 million missed work days. For number 6 strategy, reducing environmental triggers, it is recommended to improve insulation, ventilation, and moisture control. This improved asthma symptoms, reduced ED visits, and fewer missed school or work days.
Author(s)	CDC	
AA Location	2-22	
Web address		
Title	A shocking number of people in the UK are dying from asthma	In the U.S., 8.3% of adults have asthma and 1.1 per every 100,000 people have a fatal asthma attack. In the UK, 2.21 per every 100,000 people have a fatal asthma attack and has been increasing 20% every year since 2011.
Author(s)	Mental Floss	
AA Location		
Web address	https://www.mentalfloss.com/artic	

Asthma		Synopsis
Title	Clean Environments	<p>RAMP has identified and defined the importance of asthma management. 99% of California residents live in areas that do not meet federal guidelines for ozone and particulate matter and has cost \$28 billion per year. Air pollution is known to cause and exacerbate asthma, respiratory tract infections, and lung cancer. Particulate matter alone causes an estimated 3,500 premature deaths per year. However, outdoor pollution is not the only issue because people spend 90% of their time indoors. Sources of indoor air pollutants include tobacco smoke, gas stoves, space heaters, mold, dust mites, rodents, pets, cockroaches, and cleaning products. Improved ventilation and decreased humidity have been shown to reduce allergen levels, in particular dust mites and mold. Filtration has been shown to also reduce pet allergen and cockroach allergen levels.</p>
Author(s)	Ramp Asthma	
AA Location	2-25	
Web address	http://www.rampasthma.org/about	
Title	COPD and asthma: the emergency is clear, now is the time for action	<p>174 million people have COPD and 358 million people have asthma worldwide. Though more people have asthma, COPD has a mortality rate 8 times higher than asthma. Of people that have asthma or COPD symptoms, only 34% have consulted a doctor and contributed to the statistics of people worldwide who suffer from asthma or COPD. Only 21% of asthma sufferers worldwide have been diagnosed by a doctor. Thus, it is clear that asthma and possibly COPD are statistically underrepresented.</p>
Author(s)	The Lancet Respiratory Medicine	
AA Location	3-4	
Web address		
Title	Fulton County Health & Wellness Asthma Survey	<p>After in-home assessments and education workshops for asthmatics and their families, emergency department visits decreased from 82% to 9% in four months. In the followup, 91% of participants reported better controlled asthma and more understanding of the condition. The number of missed school days decreased from 4.6 to 1.9.</p>
Author(s)	Fulton County Asthma Improvement & Reduction Coalition	
AA Location	3-7	
Web address		

Asthma		Synopsis
Title	Reduce Exposure to your Allergic Triggers	Thermoscientific recommends addressing issues with dust mites, cockroaches, mold, rodents, and pet dander in the indoor environment. This can be done by using a dehumidifier, housekeeping, using HEPA filters and vacuums, and more. For outdoor allergens, it is also recommended to use HEPA filters and dehumidification in the home. 55% of people with asthma do not have their asthma under control. Through guideline-based care, for every one dollar spent, \$71 dollars are saved. There was also an 85% reduction in hospitalizations and 57% reduction in emergency department visits. After guideline-based care, there was also an observed 21.3 fewer symptom days, 43% reduction in need for medication, 4.4 fewer missed school days, and 2.1 few ED visits per year.
Author(s)	Thermofisher	
AA Location	3-8	
Web address	https://www.thermofisher.com/dia	
Title	Asthma in Pregnancy	Asthma is a common condition that complicates 4-8% of pregnancies. Well controlled asthma has good maternal outcomes, though poorly controlled asthma is associated with prematurity, cesarean sections, preeclampsia, growth restriction, and increased maternal morbidity and mortality. It was found that pregnant women with asthma were best to be treated with medication rather than to experience asthma symptoms and hypoxic events.
Author(s)	Obstetrics & Gynecology	
AA Location	4-1	
Web address		
Title	Asthma During Pregnancy	It was found that asthma was not associated with preterm delivery or other adverse health outcomes. It was found that neonatal sepsis and C-section delivery were highest among mothers who had moderate to severe asthma.
Author(s)	Obstetrics & Gynecology	
AA Location	4-2	
Web address		

Asthma		Synopsis
Title	Asthma Statistics	<p>About 25 million people in the US have asthma. More than half of those have had an attack in 2008, 3,262 adults and 185 children died from an asthma attack in 2007. 53% of people with asthma had an attack in 2008, the majority being children. In 2007, asthma cost the US \$56 billion dollars, a 6% increase from the previous year. It costs about 3,300 per person. About 70% of asthmatic worldwide also have allergies. Worldwide, it accounts for 250,000 deaths per year. In the US in 2010, 3,404 deaths were attributed to asthma. In 2008, children misses on average 4 days of school and adults missed 5 days of work due to their asthma.</p>
Author(s)	American Academy of Allergy, Asthma, and Immunology	
AA Location	4-9	
Web address	https://www.aaaai.org/about-aaaa	
Title	Asthma impacts on workplace productivity in employed patients who are symptomatic despite background therapy: a multinational survey	<p>A multinational study of 1,598 people who suffered from asthma was done to evaluate workplace productivity when suffering from asthma. It was found that nearly 75% of participants reported a loss in productivity at work, adding up to a total of 36% loss of productivity in the workplace. Respiratory symptoms, tiredness, weakness, and mental strain were all symptoms reported that affected their work productivity.</p>
Author(s)	Journal of Asthma and Allergy	
AA Location	4-16	
Web address		
Title	2013-2018 Strategic Plan for Addressing Asthma in Georgia: Final Report	<p>Georgia creates a plan that addresses asthma in Georgia by breaking it down into eight goals: 1. Decrease exposure to environmental triggers, 2. Promote/support self-management in children 0-17, 3. Increase access to services and sources, 4. Promote/increase National Asthma Education & Prevention Program guidelines, 5. Improve coverage and & reimbursement rates for comprehensive asthma care, 6. Improve asthma health information exchange, 7. Reduce impact of asthma of the development and academic success of GA's children, 8.Improve the integration of care management between healthcare, school, and childcare settings.</p>
Author(s)		
AA Location	4-32	
Web address		

Asthma		Synopsis
Title	Montana Asthma Home Visiting Program	<p>In Montana, 39% of children report missing at least one day of school due to their asthma. 50% of them limit their activities, and 1/3 of asthmatic children do not have their asthma under control. In 2015, 550 ED visits were due to asthma, with the average cost of 1 visit being \$1,000. Montana implemented a multi-component home-visiting strategy to reduce asthma mortality and morbidity guided by the outlines set by The Community Guide. After 12 months, asthma knowledge of participants increased from 29% to 73%. Inhaler technique increased from 30% to 93%. Action plans increased from 27% to 89%. The percentage of NO emergency department visits increased from 34% to 69%. Daily symptoms decreased from 17% to 4%. Missed school decreased from 60% to 31%. Activity limitation decreased from 74% to 41%.</p>
Author(s)	Jessie Fernandes, MPH	
AA Location	3-22	
Web address		
Title	Asthma Surveillance	<p>Georgia has created a surveillance report for asthma and addressed environmental risk factors, prevalence, symptoms, management, morbidity and mortality. The environmental risk factors for asthma include dust mites, cockroaches, rodents, mold, secondhand smoke, and volatile organic compounds or gasses. 81% of children in Georgia with asthma had been exposed to at least one of these environmental triggers. 63% of middle schoolers and 68% of high school students with asthma were exposed to secondhand smoke in the home. Some modifications of the indoor environment can be better housekeeping and allergen-proof bedding, dehumidifiers and exhaust fans, and ventilation.</p>
Author(s)		
AA Location	4-40	
Web address		
Title	Environmental burden of disease associated with inadequate housing	<p>12% of childhood asthma is due to preventable indoor mold exposure. This adds up to 55,842 avoidable DALYS and 83 deaths per year. 15% of childhood asthma is also due to indoor dampness, or 103 deaths per year and 69,462 avoidable DALYS. In England, there are 4.8 million (22%) classified unhealthy homes and the cost adds to be 17.6 billion euros.</p>
Author(s)	WHO	
AA Location	5-4	
Web address		

Asthma		Synopsis
Title	Fulton County ER statistics	In 2010-2014 in Fulton County, asthma was the 3rd leading cause of ER visits in children 1-14 years old. Asthma or COPD remained in the top 8th leading cause of ER visits in 35-54 and 65+ age groups and 10th in 25-34 and 55-64 age groups. Asthma was the 1st highest cause of hospitalization in age groups 1-9 and the 3rd leading cause in age group 10-14. COPD remained the 8th and 10th highest cause for age groups 65-74 (8th) and 55-64 and 75+ (10th).
Author(s)		
AA Location	5-9	
Web address		
Title	Asthma numbers grim - particularly fo rkids	In 2010, 8.4% of the US population suffered from asthma. It affects 25 million Americans and 7 million children and costs \$56 billion annually . Asthma symptoms include shortness of breath, coughing, trouble breathing, wheezing, and tightness in chest . Asthma does not affect all people evenly - African Americans are four times more likely to be hospitalized or have an emergency department visit due to asthma. This is likely due to them not receiving the proper medical care and control medication. Triggers for asthma include pollen, mold, animal dander, dust mites, exercise, tobacco smoke, airway infections, and air pollution.
Author(s)	Georgia Health News	
AA Location	5-19	
Web address	http://www.georgiahealthnews.com	

Asthma		Synopsis
Title	IOT and IAQ for a health lifestyle	<p>Kevin Ham, MD overviews the importance of indoor air quality. The major air pollutants are particulate matter, nitrogen dioxides, ozone, and benzene and polycyclic aromatic hydrocarbons (PAH). Exposure to these air pollutants can cause cardiovascular disease, lung cancer, asthma, reproduction cancer, infection, immune dysfunction, eye irritation, headache, and lung disease. The EPA classifies volatile organic compounds as the 5th highest health hazard. The WHO and EPA estimate that 50,000-350,000 deaths per year are due to exposure to outdoor and indoor air pollution. Children are particularly affected and exposure to air pollution early in life can increase the risk of asthma, cause impaired mental and motor development, childhood cancers, and increased risk of heart disease. In 2016, 543,000 deaths in children under the age of 5 were due to air pollution. In children 5-15 years old, air pollution accounted for 52,000 deaths. Though outdoor pollution poses a threat, IAQ is often times 2-10 times worse than outdoor air. Common pollutants in indoor air include tobacco smoke, formaldehyde, radon gas, and particulate matter. The less adverse, acute health effects of poor indoor air quality (known as sick building syndrome) is 48% due to inadequate ventilation, 18% from indoor pollutants, 10% outdoor pollutants, 4% humidity, 3% from building fabrics, and 2% from smoking indoors. Prevention and remediation of poor indoor air quality includes keeping the humidity below 50%, don't buy furniture with known toxic chemicals in them, ban indoor smoking, have well ventilated areas, and to monitor indoor air levels carefully.</p>
Author(s)	IAQA Annual	
AA Location	10-18	
Web address		
Title	Are Asthma and Allergies Disabilities?	<p>The ADA gives the right to people to ask for accommodations if they suffer from a disability. It also ensures that agencies, programs, and services cannot discriminate on the basis of a disability. People with asthma and allergies are protected by Section 504 of the ADA, which classifies a disability as a mental or physical impairment that limits major life activities. In 2008, the ADA was updated to include people with conditions that have intermittent</p>
Author(s)		
AA Location		
Web address		

Asthma		Synopsis
Title	Reasonable Accommodations and Housing Code Compliance	In 2008 asthma was specifically listed as a disability that significantly limits major life activity and thus is subject to ADA rules. Thus, landlords are expected to provide reasonable accommodation for their tenants that suffer from asthma. This can include pest management, water leakage remediation, and control of other indoor asthma triggers. If a tenant is experiencing non-compliance of the ADA by their landlord, they can file a Section 504 complaint.
Author(s)	National Center for Healthy Housing	
AA Location		
Web address		
Title	2020 Georgia Data Summary: Asthma	Adults: 8.9% have asthma, \$98.5 million is spent on hospitalizations, \$102.4 million is spent on ED visits. Children: 12.6% have asthma, \$41.6 million spent on hospitalizations, \$67.5 million spent on ED visits.
Author(s)	GA Dept of Public Health	
AA Location	11-4	
Web address		