

The Asthma Epidemic:
Decreasing Incidence and Increasing Resiliency
among Low-Income Children

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My sister is an asthmatic. For her, growing up with a chronic illness was not simply an inconvenience: it was devastating. She spent many nights awake, gasping for air, while my mother rubbed her back. She never joined in our games of tag or Hide-and-Seek because wheezing prevented her from participating in physical games. At school, she would frequently have to leave class to retrieve her inhaler from the nurse's office, missing valuable lessons and time with peers. Her battle with breathing made her shy and anxious, and she withdrew from boisterous peers who attempted to involve her in traditional play. My sister's identity was partly formed by her continual fight against asthma; she remains reserved and slightly timid to this day.

While my sister's illness was a tremendous burden, she was also fortunate. She benefited from supportive parents, excellent health care, limited allergen exposure, and a pollution-free rural environment. She rarely suffers from asthma today and lives a perfectly healthy life. What if she had not had these family, health, and environmental protective factors? For low-income families, they are rarely available. Poor parents face low-self efficacy in dealing with asthma, possess inadequate health insurance, and frequently live in areas that are heavily burdened with respiratory irritants. Low-income asthmatics growing up without important resiliency factors are hindered by asthma's physical and psychological effects, resulting in negative outcomes.

I. Incidence: The Disproportionate Burden of Asthma

Asthma is one of society's most pernicious chronic illnesses. Over 6 million American children are denied an active and carefree childhood due to asthma's physical and psychological consequences (American Lung Association). This high number of asthma sufferers is of great concern due to the illness's negative effects on children's

lives. Some asthmatic children never join in a neighborhood basketball game because it triggers wheezing; others have trouble concentrating in school for fear of an attack; and many spend countless nights awake, wondering when the next full breath will come.

There are more asthmatics under 18 than in any other age range, and the number has risen dramatically in recent decades. Between 1980 and 1994, the percentage of children ages 5 to 14 with asthma increased 74 percent; for children aged four and under, there was a 160 percent increase (National Heart Lung and Blood Institute). According to the Centers for Disease Control and Prevention (CDC), child mortality due to asthma has increased threefold from 1979 to 1996 (Asthma's Impact). These figures are decidedly disturbing. More children are suffering and dying from asthma than ever before. Asthma is quickly becoming an epidemic among our youngest citizens.

While asthma preys on children of all socioeconomic groups, the illness is most prevalent among low-income children. Approximately 30 percent of poor and near poor children suffer from asthma compared with 12 percent of non-poor children (Bloom, Dey, and Freeman 8). For disadvantaged inner-city youth, asthma is simply another factor that sets them apart from their more privileged peers, and widens the achievement gap. Low-income children are far more likely to experience asthma due to a complex interaction of risk factors: increased likelihood of poor health, differential exposure to respiratory irritants, and psychosocial factors within the family and neighborhood. Beginning *in utero*, impoverished children face a variety of threats that can potentially result in a life-long battle with asthma.

In addition to high asthma incidence rates, low-income children are less resilient. Resources that contribute to effective illness management are often unavailable to poor

families, resulting in diminished asthma control. Access to adequate primary care and the support of highly educated parents shield non-poor children from asthma's most devastating effects. In contrast, low-income children do not receive the consistent primary care from which their wealthy peers benefit. A reported 13 percent of child asthmatics had inconsistent or no insurance coverage in 2007, putting them at a severe disadvantage for receiving dependable, high-quality care (Groch). In New York City in 2000, low-income children under the age of four were four times more likely than high-income children to be hospitalized for asthma (Garg et al. 13). In addition to inadequate insurance and health care, low-income families may not adhere to proposed treatment regimens. Lack of compliance prevents children from controlling the illness: "the underuse of controller medication is widespread, reaching as high as 73 percent" (Staunton and Dougherty, 1). For low-income children, the inability to control asthma has dramatic results in psychosocial development and educational achievement.

II. Outcomes: The Devastating Effects of Asthma on Low-Income Children

Psychosocial Development

Asthmatic children express feelings of denial, fear, and anger at their inability to be 'regular kids.' If frequent wheezing or inhaler use prevents a child from participating in normal activities, she may face damaging social ostracism. Embarrassment can cause children to compromise their health to prevent exclusion. One adolescent's desire to fit in was so strong that he consistently sprinted home after football practice to reach his inhaler (Rich, Taylor, and Chalfen 247). While this risky behavior put his health in danger, he opted for greater suffering in order to maintain normalcy at school. In childhood and adolescence, "uniqueness" is an undesired trait. For many asthmatic

children, it is difficult to hide their atypical health requirements and inability to participate in everyday youth activities. Feeling “different” may cause children to withdraw from social experiences. One asthmatic teenager reportedly, “spent many hours playing video games at home, deferring a normal social life with his peers for fear that going to public places would place him at unnecessary risk” (Rich, Taylor, and Chalfen 247). Fear of asthma exacerbations and perceived isolation reduce child functioning during important stages of psychosocial development.

Low-income asthmatic children have higher rates of antisocial behavior than their peers. In social interactions, children with asthma exhibit increased internalizing (anxiety, depression, and withdrawal) and externalizing (acting out, fighting, and aggression) behaviors (Halterman et al. 194). Anxiety caused by uncontrolled asthma can greatly decrease a child’s self-efficacy and self-esteem (Katon et al. 352). Children who feel they cannot effectively manage their illness may doubt their ability to control other areas of their lives, such as with friends or teachers. For children with increased illness severity, the world may appear so chaotic that even simple tasks seem impossible (McQuaid, Kopel, and Nassau 435). The unpredictable and intermittent nature of asthma can disturb a child’s internal locus of control, resulting in decreased confidence and maladjustment.

A number of studies have refuted the finding that internalizing behaviors are elevated in asthmatic children. Some researchers have suggested that if low-income children are more likely to have behavioral issues overall, perhaps asthma is not an independent predictor of reduced functioning in poor asthmatic children (Berz, Murdock, and Mitchell 194). Additionally, asthma and internalizing behaviors may not be directly

correlated. Rather, the relationship may depend on the severity of the individual's asthma; those with mild to moderate asthma may not experience altered behavior (Bender et al 710). However, higher rates of depression in low-income asthmatics compared with symptom-free low-income children suggest that asthmatics do internalize more than their peers, regardless of severity or socioeconomic status. A reported 32 percent of asthmatic children experience moderate to high levels of depression compared with 8 percent of non-asthmatics (Gillaspy et al. 368). While poverty may significantly decrease asthmatic children's functioning, asthma in itself disturbs feelings of competence and control.

Educational Outcomes

Higher rates of internalizing behaviors in asthmatic children may result in decreased school performance. Depression and anxiety limit achievement through withdrawal from classroom activities (Arnold and Doctoroff 530). If a child is unable to successfully control her asthma attacks, she may also doubt her ability to succeed in the classroom. Moreover, the fear of having an attack in class may disengage students due to compromised concentration. Questions such as, "what if I have to leave the room to use my inhaler?" or "what if I become nervous answering a question and an attack starts?" could cause an asthmatic child to retreat in order to make herself less noticeable.

Teachers may also contribute to academic failure by confusing lack of participation due to asthma anxiety with reduced cognitive skills. By not engaging them or correcting issues that breed nervousness, the teacher continues a cycle of internalizing behaviors for the asthmatic child.

In addition to internalizing symptoms, the academic performance of asthmatic children is reduced by frequent school absences. Asthma alone accounts for 10 million

missed school days each year (President's Task Force, 5). Studies consistently show that for asthmatic children, time out of the classroom results in reduced educational achievement (Bender et al. 710; Diette et al. 924). Asthmatic children are three times more likely to repeat a grade (Fowler, Davenport, and Garg 940), and are 60 percent more likely to be placed in special education programs (Stigone and Claudio 1597). While day-time asthma attacks most certainly disrupt a child's performance, nocturnal attacks are a major cause of school absences. A study lead by physician Gregory Diette found that 40 percent of asthmatic participants were awakened by asthma symptoms at least once during a four week period, and 35 percent missed at least one day of school (Diette et al. 924-5). If a child spends a large portion of the night wheezing, her ability to perform the next day is greatly compromised. Many parents choose to keep sleep-deprived children home resulting in missed school and work days. Uncontrolled asthma disrupts parents' lives through work absences, and undermines child academic performance through reduced time in the classroom.

III. Causes of Incidence and Low Resilience

High prevalence rates and low resiliency intensify asthma's negative effects in the low-income population. The reduced outcomes of poor children necessitate the identification of asthma's causes. By isolating factors that place poor children at a disadvantage with respect to asthma, we can actively work to reduce these problems in the environment, the home, and the child. There are a number of risk factors that increase susceptibility and prevent illness control for disadvantaged youths: 1) greater likelihood of poor health; 2) differential exposure to respiratory irritants; and 3) negative family and neighborhood psychosocial factors.

Health factors

While many factors external to the individual can alter health outcomes, the greatest predictor of asthma susceptibility is genetic predisposition (Garg et al. 6). Within all socioeconomic groups, there are individuals who are more likely to be asthmatics simply because of their internal makeup. Without altering the unique arrangement of nucleotide bases within genes, there is little hope of intervening at this level. However, genetic determinants are not the major concern in attacking the current asthma epidemic. Illness prevalence has increased so rapidly in recent years that variation in individuals cannot completely explain high asthma levels. Factors of an individual's experience are becoming increasingly important in determining who becomes an asthmatic and who suffers most from the illness.

One factor that increases a child's chances of developing asthma is low birth weight (LBW). LBW is a designation given to children born 5 pounds 8 ounces or less at birth (Child Trends DataBank). Impoverished children are more likely to be born too small than middle-class and wealthy children due to a variety of maternal and environmental factors (Paneth 20). Children who are born LBW are at significant risk for health problems and disabilities that may last a lifetime. Poor pulmonary development and respiratory complications makes asthma the most common medical problem among LBW children (Hack, Klein, and Taylor 188). Among three-year-olds, those born at normal weight had an asthma prevalence of 6 percent, compared with 11 percent of LBW children, and 21 percent of "very LBW" children (Brooks et al. 403). Further research is essential to identifying the causal factors of LBW and its connection to asthma.

Obesity has also been associated with higher child asthma rates. This condition is quickly becoming epidemic in the United States, and poor children are carrying the most extra weight. Lack of nutrition education and the lower cost of foods high in fat and sugar may result in poor eating habits in disadvantaged families (Drewnowski and Specter, 6, 10). These diets may lead to increased adolescent weight gain. Many factors of being overweight may be important in the etiology of asthma, including under-expanded lungs, smaller breaths, systemic inflammation, and altered hormone levels (Myron). Additionally, reduced physical activity and sedentary lifestyles among asthmatic children may lead to higher obesity rates. It must be noted that the connection between these two factors is largely speculative. Further studies on these two rapidly growing epidemics may enlighten the relationship between weight and respiratory disease.

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Low-income asthmatic children have reduced access to quality primary care which greatly decreases their ability to combat the illness. Children from economically-deprived areas are more likely to experience interrupted health insurance than wealthier children (Groch). Without insurance, children are denied a consistent physician who can provide a tailored treatment plan. Instead, many low-income families rely on emergency departments for asthmatic care (Crain et al. 334). If an asthmatic child's only interaction with health professionals is during extreme asthma attacks, it is unlikely that she will receive adequate preventative care or an appropriate prescription. For those fortunate enough to have insurance, there are many barriers to attending visits regularly: few caregivers for other children, long waits, lack of transportation, inconvenient hours, inconsistent physicians, and infrequent telephone access to make appointments (Crain et

al. 335). With a concerned and well-trained primary care physician, low-income children can receive appropriate prescriptions, gain valuable information on how to prevent attacks, and learn how to adhere to a treatment plan.

Environmental Factors

Environmental risk factors for asthma contraction and aggravation are not unique to the low-income environment. Pollution, common allergens, and other respiratory irritants are a part of our everyday experience. What makes members of low-income neighborhoods more likely to develop persistent asthma is the concentration of irritants to which they are exposed. Low-cost urban apartments contain high levels of respiratory disease risk factors that are not as prevalent in more hospitable neighborhoods (Weiss, Gergen, and Crain 365). Environmental risk factors faced daily by low-income urban children¹ include indoor allergens such as cockroaches and tobacco smoke; and outdoor irritants such as pollution.

As children spend an increasing amount of time indoors, they are continually exposed to home respiratory irritants. A particular respiratory nuisance, the cockroach, is a likely culprit for increasing asthma rates in low-income urban environments. Their ubiquity in inner-city apartments and highly allergenic nature make this insect an important cause of asthma provocation in young children. Cockroach sensitivity and asthma hospitalization rates are highly correlated; a recent study showed that children who were sensitive to cockroach allergen and had bedrooms with high levels of the insect were approximately three times more likely to be hospitalized for asthma (Rosenstreich et

¹ Rural low-income children also face increased risk of asthma diagnosis, but this paper focuses specifically on the risk factors facing urban children. Typically, researchers have ignored the problem of asthma in rural communities with claims that urban areas contain more environmental irritants. Establishing the common and unique risk factors of both environments is potentially important for environmental interventions.

al. 1359-60). In addition, children allergic to cockroaches often had asthma severe enough to disrupt daily life with increased asthma-related doctor visits, school absences, and nights of interrupted sleep. Indoor allergen sensitivity dramatically affects asthma onset and successful symptom control. Cockroaches are only one of many possible asthma-inducing irritants in the home².

Smoking has traditionally been marketed as a stress reliever, as a pleasurable escape from the trials of everyday experience. For low-income adolescents and adults, cigarette use may present an opportunity for relaxation among persistent challenges: “Americans below the poverty line are 40 percent more likely to smoke than those at or above the poverty line” (Anderson et al. 1). This means that low-income children are exposed to secondhand smoke more frequently than their affluent peers. Environmental tobacco smoke (ETS) is a significant contributing factor to the development of asthma. Children who are around cigarettes on a regular basis are far more likely to wheeze and present asthma symptoms. For young children exposed to ETS, between 40 and 60 percent of asthma cases and other respiratory problems are attributable to smoking (Gergen et al. 3). Unfortunately, child ETS exposure is largely due to maternal smoking. The mother is often seen as the protector of her child; if she is willing to smoke in the child’s presence, others will be more likely to smoke as well. By smoking indoors, mothers increase the likelihood that their children will be diagnosed with asthma, and that the illness will persist.

² Cockroach allergen serves as only one example of the many indoor respiratory irritants low-income children commonly encounter; dust mites, mold, dampness, pet allergies, etc. in inner city, low-income homes have been shown to increase child asthma rates. The prevalence of these irritators is mediated not only by landlord control, but by family efforts to decrease exposure to indoor allergens. While these factors are important to the etiology of asthma, there is insufficient space to address them all in this paper.

The outdoor environment also significantly impacts the respiratory health of urban children. The U.S. Environmental Protection Agency (EPA) suggests that children with asthma may show increased sensitivity to ozone, particulate matter, and sulfur dioxide (EPA), all of which are found in metro-area smog. A concerned East Harlem teenager writing for the *Gotham Gazette* blamed ambient pollution as the major cause of high asthma rates in her neighborhood. East Harlem, with the highest asthma rate in New York City, faces the same issues with polluting factories and sewage facilities as many other urban neighborhoods (Olivero). While we may consider these industries necessary for the proper maintenance of the city, low-income areas are overburdened with industries that contaminate the air. Some believe that city planners build these air-poisoning facilities in poor areas because “they assume the community will not protest as much as a rich, white community might...Historically minority communities have been less politically active, less likely to vote, and have had less money to sue” (Olivero). Not only does smog reduce the aesthetics of urban environments, it chokes young children and robs them of their next breath. The disregard of government and industry for healthy surroundings is to blame for asthma-inducing conditions in inner-city neighborhoods.

Psychosocial Factors

Family and neighborhood factors are important in determining both illness onset and child resiliency. High stress levels and family dysfunction are important predictors of early asthma symptoms in low-income children. A child who is at genetic risk for developing asthma may experience symptoms earlier than expected based on family functioning (Kaugars, Klinnert, and Bender 478). Lack of support from family, physicians, and self may result in reduced resiliency. Important psychosocial factors

influencing the course of asthma include the parent-child relationship, social support, and treatment compliance.

A secure relationship between parent and child is an important predictor of child health. From a very early age, a child's success is partly tied to the ability of a mother or father to parent effectively. For low-income parents faced with significant job insecurity or low wages, there are many difficult challenges to tackle every day. These families exhibit decreased ability to offer direct support to the child and attention to the treatment plan. An encouraging parent who maintains an attitude of control over the disease will have a more resilient child and evade poor outcomes (Bender et al. 711). Families with reported parenting difficulties in infancy faced earlier asthma onset (by age three) than families with strong parent-child attachment (Kaugars, Klinnert, and Bender 478). A strong sense of security and control is essential for a healthy childhood.

Parents also play an important role in the instruction of emotional regulation. By teaching appropriate response methods, parents help children to prevent physiological arousal that may lead to respiratory distress and decreased resiliency (Kaugars, Klinnert, and Bender 479). For low-income families, economic-induced stress makes asthma more of a disruption to everyday life. High anxiety levels may render many parents incapable of handling their own responses much less provide instruction on emotional control to their children. Additionally, parents' failure to regulate moods can predict child outcomes: maternal depression and child asthma are highly correlated (Bartlett et al. 350; Kaugars, Klinnert, and Bender 477). While strong parenting skills, effective instruction, and a positive attitude are desirable in preventing asthma and improving resiliency, these

skills are not always easy to acquire in high stress low-income environments without significant support.

Social support can have a demonstrable effect on the outcomes of low-income children with asthma. This support may include additional child caregivers, friends with sympathetic ears who help to decrease parental depression, and encouraging relatives who increase family self-efficacy. This support may act as a protective factor to decrease stress and anxiety in families, leading to improved success in handling the needs of an asthmatic child (Berz et al. 161). Families that provide firm, confident foundations decrease anxiety, improve health, and increase self-efficacy in asthmatic children (Bender et al. 711). In low-income families, perception of the availability of social support may be decreased. Few respites from economic stress may cause asthma to be a larger disruption in family life. Increasing the amount of social support available for poor families may improve illness maintenance and control.

An additional family characteristic that contributes to resiliency is enforcement of medication use. For low-income children with health insurance and a prescription to alleviate symptoms, compliance is low. While corticosteroids have been shown to be largely effective in improving long-term outcomes, low-income children are unlikely to use them (Staunton and Dougherty 2). Reasons for poor prescription usage among low-income families may include poor communication with physicians, and stigma.

For many poor and minority families, the fast-pace of emergency room physicians can be highly intimidating. A brief description of the medication, its purpose, and its appropriate use is unlikely to sink in while the terror of an attack is still salient. On returning home, the parents may not have retained enough information to enforce the

treatment plan. If caregivers do not have a complete understanding of how to prevent and control attacks, the child is unlikely to benefit from the physician's recommendations to improve asthma maintenance. Immigrant and minority families are especially likely to feel that they cannot speak up with a physician about misunderstandings, or discuss barriers to treatment implementation (Weiss, Gergen, and Crain 364). Embarrassed about the cultural divide that evokes misunderstanding and unwilling to sacrifice pride, many parents hope to discover appropriate techniques on their own. Without full comprehension of the medication's importance and an understanding of appropriate usage, many families feel hopelessly lost in enforcing at-home treatment.

Compliance is also low due to the stigma attached to medication use. One self-conscious teenager claimed: "It was very embarrassing for me to take my inhaler...I used to hide and stuff...I hated when people looked at me" (Rich, Taylor, and Chalfen 247). While using medication is a highly private act, many asthmatic children are forced to receive treatment publicly. The shame of using an inhaler may cause embarrassed children to abandon treatment all together. By making treatment free of possible judgment and accompanied by significant explanation and instruction, low-income asthmatic children's resilience can be improved.

It must be noted that the causes of incidence and resilience outlined above are largely speculative. For a number of risk factors considered, we have significant information documenting their effects on respiratory health and the negative outcomes associated with their presence in a child's life. Unfortunately, many risk factors discussed in this paper are considered plausible mediators of asthma incidence, but there is a scarcity of firm data to solidify those claims. Much of what we know about asthma

in low-income families is from anecdotal accounts rather than from cold, hard numbers. Further research concerning the relative importance of different factors in determining asthma susceptibility is essential to proposing effective interventions.

IV. Remedies: Changing Asthma Outcomes for Low-Income Children

High asthma rates in low-income communities are admittedly discouraging. The countless possible risk factors we know about are daunting to address, and there are certainly many asthma-causing agents about which we are still unaware. Our naïveté has allowed asthma to become the most common chronic illness among children in the United States (American Lung Association). While it is easy to view the situation as beyond our control, there are three major reasons why we cannot abandon the effort. First, asthma's effects on children are long-lasting and pernicious. Asthmatic children may be woefully disadvantaged compared to healthy peers and require substantial assistance in competing academically and socially. Second is our sense of justice. In our society, we value assisting deprived persons who have come to their position through no fault of their own. Knowing even some of the causes of child asthma is enough to convince even the most paternalistic individual that these children are not responsible for the acquisition of the illness. Third, attempted interventions have increased the resiliency of low-income children.

While the interventions proposed in this paper have shown considerable promise in lab and field studies, we must recommend cautiously. Programs that have worked with relatively small sample sizes may not have a dramatic impact in large scale trials. Through continued research on the causes, outcomes, and personal experiences of low-income asthmatics, we can increase our confidence in what may or may not work to slow

this growing epidemic. Drawing from our current knowledge, remedies for environmental conditions, access to care, and family awareness have demonstrated considerable success in decreasing the burden of asthma in low-income communities. Responsibility for preventing and treating asthma in disadvantaged children can be divided between society and the families themselves.

Society's Obligations

What the Health Industry Can Do

Significant effort by physicians and public health officials is vital to increasing quality care and education for low-income asthmatics. Families can gain control of a child's asthma if they are given the tools and motivation to do so. Without the help of asthma experts, anxious families lack knowledge for improving child outcomes. By providing families with the resources to succeed and fostering appropriate home behaviors, health care workers may improve the resiliency of low-income children. Increasing the availability of individualized care programs, education, and professional development for improving pediatricians' skills, physicians and child health non-profits can prevent negative outcomes in asthmatic children and their families.

A study by Wayne J. Morgan et al. determined that individualized treatment plans can have a dramatic effect on child outcomes. Morgan, a pulmonary specialist at the University of Arizona College of Medicine, has conducted seminal work in the area of pediatric asthma in inner-city environments. This 2004 study enrolled 937 children with presumed allergen-caused asthma in seven major U.S. cities (1069). Morgan's use of individualized treatment plans is quite unique; much of the effort to reduce the impact of environmental allergens on asthma has focused on decreasing the amount of a single risk

factor, such as dust mite allergen, in children's homes. While this single-risk strategy has had some success in reducing medication use and emergency department visits (Dust Mite Intervention), we are still unsure of which particular allergens are most important in illness etiology. The environmental causes of asthma may vary significantly between children; efforts aimed to decrease cockroaches may not improve asthma symptoms for a child who does not have a cockroach allergy. It makes intuitive sense to tailor the intervention to each child's needs.

Noting that there are many varied risk factors that determine a child's respiratory health, Morgan and his team performed a skin test and home evaluation for each child participant to determine a personalized environmental risk profile (1069). This helps determine which allergens affect each child. Families were then provided with the supplies, equipment, and skills to improve the indoor environment for that child's particular needs. Many children received allergen-impermeable covers, air filtration systems, specialized vacuums, and pest control services free of charge (1070). Reducing the amount of home allergens had a significant impact on asthma control. Children who experienced individualized intervention experienced significant positive outcomes: fewer asthma symptoms; decreased disruption in caretaker plans; improved sleep patterns for child and caretaker; fewer missed school days; and decreases in unscheduled clinic and emergency department visits (1074).

The cost of the two-year intervention program was approximately equal to a one year's supply of asthma medication (1077). Since positive outcomes lasted beyond the intervention time period, it may be cost effective to implement programs focused on individualized care. By decreasing child exposure to their specific home allergies,

individualized intervention may dramatically alter the quality of life for asthmatic children. We must be critical of applying this method universally as the researchers did not consider asthma caused by health factors (LBW, obesity) or psychosocial conditions (anxiety, parental factors). Additional research on individualized care's effects on health will elucidate the potential benefits of funding this program on a large scale.

A key component of Morgan's individualized intervention program was parental education. The study program consisted of five to seven home visits with trained counselors who made every effort to educate and assist parents in implementing the intervention successfully (1070). For each identified respiratory irritant, the family was educated about the importance of decreasing child exposure, the effects of that irritant on the child's respiratory health, how effective their efforts would be, and what behaviors were necessary for removing the allergen. The counselors demonstrated appropriate removal behaviors to parents, and then parents repeated the activity with counselor encouragement. Following each home visit, the counselor telephoned the family to ensure that they were continuing allergen removal, and that no barriers existed to implementing the child's specialized plan.

The education strategies employed in the Morgan study were highly successful in encouraging compliance because all barriers to successful execution were removed. Parents fully understood the allergen removal activities and their importance to their child's health. For these families, home visits and training helped them to develop greater self-efficacy and confidence in gaining control of their child's asthma. With the knowledge that their efforts could have a significant effect on child success, caregivers became motivated to make large changes in family behaviors. By offering complete,

individualized education programs, public health and social workers may help families learn to manage asthma through their own efforts.

A variety of other education programs have been successful in increasing parent self-efficacy and maintenance skills. Instructive lessons that focus on parental needs in addition to those of the child may have considerable impact on the care that the child receives (Trollvik and Severinsson 162-3). For many low-income families coping with asthma, clinic appointments rarely instill a sense of empowerment in treating the illness. When an expert physician presents a diagnosis and highly-involved treatment plan, stressed caregivers are likely to feel that they have little control over their child's fate. An education program that included group discussions, peer-led instruction, repetition techniques, and hands-on training in a supportive environment greatly increased parents' self-efficacy (Trollvik and Severinsson 159). After the education session, parents reported an improved understanding of their child's illness, behaviors, and techniques for better support. The opportunity to discuss strategies and experiences with peers decreased feelings of isolation while increasing self-efficacy. High quality parent education programs may be difficult to enact due to limited resources and funding in clinics willing to support such a venture. Nevertheless, this approach should be considered. Education programs designed to improve caregivers' psychological health may improve their ability to offer support to the child and implement treatment plans effectively.

In addition to educating families, professional development programs for physicians may improve the quality of care children receive. At a possible \$150 per participant, seminars are a cost effective way to increase physician knowledge of asthma

prevention and treatment strategies (Brown, Randall et al. 370). In a recent study, children who saw a physician with professional asthma training were more likely to receive a prescription for inhaled anti-inflammatory therapy than their peers (Brown, Randall et al. 371). Seminars may also include training in patient communication strategies, particularly with minority and low-income groups. These programs have resulted in fewer missed school days, fewer hospital and emergency department visits, and a higher likelihood of receiving a written asthma plan with detailed implementation instructions (Brown, Randall et al. 372). If parents and physicians are able to communicate effectively concerning asthma, compliance may increase among low-income asthmatics. Improving the knowledge of physicians concerning asthma specific treatment and family communication may lead to higher child resiliency.

What the Government Can Do

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Improvements in family management skills through public health and physician strategies are vital to increasing asthma resiliency in low-income communities, but significant structural changes are required to decrease incidence rates. Federal and state legislators can play a considerable role in improving impoverished children's health. Creating policies aimed at preventing asthma in at-risk youth may have a dramatic impact on the educational and psychological outcomes of low-income children. By increasing child access to health care; ensuring affordable, environmentally-friendly housing; providing child allowances to decrease economic stress; and mandating school health programs, the government may significantly decrease the amount of children experiencing respiratory distress.

Increasing child access to affordable primary care is essential to preventing asthma and increasing resiliency. The number of children without health insurance is appalling: in 2005, 8.3 million children lacked coverage (DeNavas-Walt, Proctor, and Lee 21). Without health insurance, children have limited access to appropriate prevention care and effective treatment plans. Significant efforts have been made to increase health insurance access among low-income children through the State Children's Health Insurance Program (SCHIP). Enacted in 1997, SCHIP has reduced the number of uninsured children in families that earn too much to qualify for Medicaid but are unable to afford private health insurance. While the program has certainly increased the number of American children with health insurance, two-thirds of children eligible for either Medicaid or SCHIP are not enrolled due to poor funding (The Kaiser Commission on Medicaid and the Uninsured). Congressional Republicans and Presidential vetoes have prevented increased appropriations for the program, which means that many asthmatic children will lack the treatment they need. Bipartisan efforts to increase funding for the SCHIP program would be a valuable step toward helping low-income children breathe without fear.

Environmental risk factors may be significantly reduced by efforts of non-profits, social workers, and public health officials, but the support of government legislation can help to ensure safe homes and neighborhoods. Many low-income children live on polluted urban streets in apartments high in respiratory allergens. Concern for environmental justice among governmental officials may help to improve air and housing quality. In 1994, President Clinton established access to a "healthy and safe environment" as a right of all Americans (NEAHIN). In 2008, inner-city youth live in

dilapidated buildings. Cockroaches scamper across the floor as they wake up wheezing at night. Each morning, they are greeted with black smog on their way to school. Legislation focused on improving quality standards in apartments and strictly enforcing them through fines may encourage landlords to offer environmentally safe housing. Weighty penalties for polluting factories might improve air quality in urban neighborhoods. Legislation can be a powerful tool for decreasing the adverse conditions low-income children face.

Difficult economic circumstances make addressing child asthma needs highly challenging for low-income families. The stress associated with poverty prevents parents from providing the needed support and vigilance for asthmatic children. New legislation that increases family economic stability could make a significant impact in removing parental anxiety and unsuccessful illness management. Many industrialized nations have been successful at guaranteeing income to protect the economic viability of low-income families through child allowance programs (Lindsey 319). By providing direct payments to families for each child, child allowance programs provide for the well-being of future generations. If these programs were available in the United States, they would not discriminate based on wealth, but rather would provide for all America's children. For low-income families, improved finances would decrease parental stress and allow them to offer support and care to children with asthma. This program operates on the understanding that children acquire asthma through no fault of their own, and by ensuring the well-being of the entire family, at-risk children will greatly benefit.

While programs that directly impact the child's home environment, economic stability, and physician-patient relationship are highly valuable, there is an additional

location where intervention can be fruitful: the school. Many of asthma's negative outcomes appear in the school environment, making it an excellent location to implement intervention strategies. Schools can serve as an additional care provider when physicians and families are unavailable. An Asthma Action Plan created by a well-trained school nurse, the child's physician, and the family can inform administrators and teachers about the child's specific needs and what is required during an asthma attack (National Asthma Education and Prevention Program 5). School faculty should be fully aware of which children are diagnosed with asthma, receive in-depth training on how to assist children with medication, and the specific educational and psychological requirements of asthmatic children. School nurses can also serve to identify early asthma symptoms in at-risk children and make important recommendations to the family about seeking professional care. If all staff members are fully educated about asthma, they can play a much-needed role in fostering development and positive outcomes in the classroom.

Policy mandates to increase asthma programs in public schools may encourage administrators to take an active position in providing for children with asthma.

Family Obligations

While society has important obligations in helping asthmatic children to succeed, the family is indispensable to improving child outcomes. Promising interventions and government programs may have large effects on the number of low-income children with asthma, but family support can enhance positive results. Programs that improve child conditions and asthma management might encourage families to maintain treatment behaviors and adhere to counselor suggestions. When educational opportunities are offered, parents can be persuaded to take advantage of them and make honest efforts to

change family behaviors. Although adverse conditions may make asthma control difficult, families can provide a warm, loving, and supportive environment if offered appropriate resources.

Intervention programs can have a significant impact on child outcomes through the efforts of social workers, public health workers, and physicians, but to be most successful, parents must be encouraged to comply with program expectations. If parents did not make reasonable efforts to control allergen exposure in the Morgan study discussed above (see page 18), intervention outcomes would likely not be so pronounced. Achieving the benefits of educational and environmental training requires researchers to assist parents in implementing suggested home strategies. If counselors suggest decreasing ETS exposure or removing pets, they must give families the appropriate tools and encouragement to following the plan.

It must be noted that there are limitations to this strategy. Many families do not follow physician and counselor guidelines because they are unwilling to alter their lifestyles for the vague possibility of health rewards. One asthmatic teenager explained that she continued to experience frequent asthma attacks while on a treatment regimen because her mother was unwilling to quit smoking in her presence or remove her cats (Rich, Taylor, and Chalfen 248). While parting with a beloved pet, quitting an addictive habit, or spending significant time cleaning may cause strife for family members adjusting to a child's asthma needs, these actions are essential to ensure children have the best opportunity to achieve illness management.

Although educational seminars have helped parents cope with child illness and achieve efficacy, many parents do not take advantage of available opportunities.

Education programs targeting low-income families often fail due to low attendance (Brown, Josephine et al. 678). There may be many reasons why parents are unable to attend programs including: transportation, lack of affordable and available caregivers, and work obligations. It is crucial to seminar success that clinics and community centers offering these services make every effort to alleviate barriers preventing parents from attending. In return, parent involvement in enrolling in education programs and attending regularly is important. Families who do so will be more successful in increasing resiliency and preventing long-term adverse outcomes.

The demanding treatment regimens and anxiety associated with asthma care is difficult for low-income families, but appropriate encouragement can help to create a stress-free, loving environment. Highly supportive and expressive families are far less likely to have a child diagnosed with asthma. Conversely, families reporting higher levels of anxiety, depression, parental distress, and sub-optimal parent-child interactions are more likely to include an asthmatic child (Berz et al. 161). It is important that low-income families provide children with security and self-esteem leading to greater self-efficacy. If children have supportive adults who demonstrate care for their illness needs, they will feel more in control of their asthma and successfully adhere to a treatment plan. Families can create positive environments that foster healthy development and good social outcomes when assisted by social workers, government programs, and the child's physician.

V. Conclusion

Dedicated non-profits, social workers, and physicians have made tremendous effort to slow rising asthma rates in low-income areas. Unfortunately, their noble work

alone cannot eliminate the multitude of barriers to resiliency. Increased knowledge and care among physicians can help children gain control of the illness. Government officials can enact legislation in favor of low-income children and the multitude of illness risk factors they experience. The American public must be educated about the disproportionate burden of asthma for children in struggling families, and then do something to change it.

Additionally, current research must be expanded. Information concerning the relative importance of causes and resiliency in predicting susceptibility is woefully inadequate. By determining which environmental, health, and social risk factors are significant in asthma onset, we can create better programs to increase resiliency and prevent its occurrence. Increasing the number and variety of studies on asthmatic children's educational and psychosocial outcomes will allow interventions to target the illness' most dramatic effects. With more conclusive research, we can better address the needs of asthmatic children with well-informed, directed interventions.

As a society, we support the belief that children experience poverty and decreased health through no fault of their own. The adverse conditions poor children experience are a result of structural barriers, decreased opportunities, and perhaps parental behaviors – all of which children cannot change without our help. If we truly believe that children are not to blame for their socioeconomic status and debilitating asthma symptoms, then it is our moral duty to improve the hostile circumstances that prevent optimal functioning. We must commit ourselves to increasing asthma resiliency while decreasing the number of respiratory disorders. If we do so, all children, rich or poor, may achieve more positive psychosocial and educational outcomes. As it stands, we are allowing a possible

future generation of leaders to wheeze, miss out on traditional youth activities, and fail to attend school on a regular basis. This prevents children who may have been valuable assets to society from reaching their full potential. If we are committed to raising a generation of Americans who will prosper, succeed, and be fruitful, we must decrease asthma rates in our youngest citizens. A legacy of asthma is a legacy we do not want to leave.

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