Asthma Disparities in Low Socioeconomic Status Urban Latino Children in the United States

by

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ABSTRACT
This paper examines health disparities among low income urban Latino children with asthma in the United States and evaluates the role of community asthma management programs in decreasing those disparities. Potential barriers to effective public health policy changes in reducing asthma morbidity and mortality among Latino children in urban environments are also considered. Specific recommendations are made to address these issues. These recommendations span short term specific solutions directed at reducing asthma and longer term recommendations that include addressing educational needs and the development of health policy. It is shown that a multi-factorial approach is needed to address the complex chronic condition of asthma in this population. At the community level, programs involving key stakeholders will be most likely to succeed. The disparity in asthma treatment and outcomes in Hispanic children compared with non-Hispanic children is not only an ethical problem, but also an economic and societal problem. Latinos have now become the largest ethnic minority group in America, surpassing African-Americans, according to the United States Census Bureau. Asthma is the most common chronic childhood disease in the United States and continues to disproportionately affect minority and low-income groups. Latino children living in low socioeconomic status urban environments experience higher asthma prevalence, morbidity and mortality than non-Hispanic Caucasian children (Bryant-Stephens, 2009). Accurate research data on the health status of the diverse Latino population is lacking in comparison to data on non-Hispanic Caucasian children with asthma. Many factors, including health care inequities, environmental issues and social issues, converge to make asthma worse for underrepresented racial and ethnic minority children. Inadequate health care access and poor quality of available health care are factors to be addressed at the national, state, community and neighborhood levels. Exposure to indoor and outdoor pollutants and allergens affect asthma morbidity. Social stressors including discrimination, living in disadvantaged neighborhoods, and exposure to violence contribute to poor outcomes among urban Latino children with asthma.
Introduction:

Asthma is the most common chronic childhood disease in the United States and continues to disproportionately affect minority and low-income groups. Latino children living in low socioeconomic status urban environments experience higher asthma prevalence, morbidity and mortality than non-Hispanic Caucasian children (Bryant-Stephens, 2009). Many factors have contributed to these disparities, including health care inequities, environmental issues and social stressors. There continues to be a lack of accurate research data available on the health status of the diverse Latino population in comparison to non-Hispanic Caucasian children with asthma.

Asthma is a potentially life threatening chronic inflammatory disease of the airways that affects nearly 23 million Americans, including nearly 7 million children. Although there is no cure, asthma can be managed with medications and by avoidance of common trigger factors. Students with asthma miss nearly 14 million school days every year due to illness (NHLBI, 2010). While the exact cause of asthma is not known, it is a complex disease that is believed to depend on the interplay of two major factors – genetic predisposition and environmental exposures that occur at a crucial time in immune system development. Two major environmental factors – airborne allergens and viral respiratory infections – are important in the development, persistence and severity of asthma (NHLBI Asthma Guidelines, 2009). Multiple social and healthcare factors also contribute to the overall burden of asthma in this population.

The most common asthma triggers include: respiratory infections; allergens such as pollen, mold, dust, dust mites, cockroaches, animal droppings, and dander from animals with fur or feathers; irritants including perfumes, cleaning fluids, cigarette smoke, air pollution, wood smoke and kerosene heaters; exercise; strong emotions which evoke crying, yelling or laughing; stress; chemicals including sulfur dioxide and sulfites and the off-gassing of new products or
furniture; and seasonal/time triggers (night time, cold weather, and times when pollen levels are highest) (American Lung Association, 2010).

In 2003, Latinos became the largest ethnic minority group in America, surpassing African Americans, according to the United States Census Bureau. In 2000, 35.7% of Latinos were less than 18 years of age, and the number of Latino youth is projected to continue to rise (Therrien et al, 2001). The Latino population is the fastest growing and largest population subgroup in the United States (Greico, 2001). By 2004, there were more than 41 million Latinos in the United States, representing 14.1% of the total population. Given current trends, Latinos will make up 28.6 percent of the United States population by 2070. By 2020, the majority of children entering high school, the majority of workers entering the work force, and the majority of newly-eligible voters will be Latino (Valdez, 2006).

Latinos are disproportionately affected by some of the most serious health problems, including asthma. The disparity in asthma morbidity is greater than the disparity in asthma prevalence, suggesting that once asthma is established many factors converge to make the condition worse for underrepresented racial and ethnic minority children. In other words, of all children diagnosed with asthma in the United States Latino and other minority children suffer worse symptoms and have poorer outcomes than non-Hispanic children. The disparity in asthma treatment and outcomes in Hispanic children compared with non-Hispanic children is not only an ethical problem, but also an economic and societal problem. Annual expenditures for health and lost productivity due to asthma were $14 billion in 2002. The estimated cost of treating asthma in those under 18 is $3.2 billion per year (Weiss et al, 2002). Indirect costs as a result of asthma, such as school days lost, decreased performance in school, loss of work, and mortality, are
estimated to have annual costs of about $6 billion in the United States (Weiss et al, 2002). In 2006, asthma was responsible for 443,600 hospitalizations nationwide (DeFrances et al, 2008).

Meeting the needs of the Latino population requires targeted, culturally appropriate intervention at the individual, institutional and community levels. Lack of health insurance prevents many Latinos from attaining the benefits of preventive care services. As a result Latino children with asthma often suffer from complications due to uncontrolled symptoms from chronic disease states (Valdez et al, 2006). While eligible children may be enrolled in Medicaid and State Children's Health Insurance Program (SCHIP), many Latinos are hindered by financial, nonfinancial, and social policy barriers. Disparities in insurance and access indicators show that lack of parental employment-linked health care benefits, procedural barriers to Medicaid enrollment, and lack of clarification on eligibility for children of noncitizen parents are associated with low levels of insurance coverage among Latino children (Zambrana et al, 2004).

Latino children of lower socioeconomic position living in urban settings are disproportionately affected by factors leading to higher rates of asthma-related morbidity and mortality, as evidenced by higher rates of hospital emergency room visits, increased school absenteeism, and decreased ability to perform usual activities due to asthma symptoms. This paper explores research related to the various interrelated factors (including differences in health care, environmental factors, and social factors) affecting asthma disparities in urban Latino children. The paper concludes with a review of current community asthma management programs and recommendations for public health improvements to further address this disparity.

Healthcare Access and Quality Disparities:

Asthma health disparities may be due to differences in health care as well as complex cultural factors. Both limitations in access to health care and the delivery of lower quality care
result in health care disparities in disadvantaged urban areas. Differences in communication across cultures and language barriers encountered by primarily Spanish-speaking persons may also account for some of the health disparities in Latino children compared with non-Hispanic children.

Access to care can be defined as an individual’s ability to obtain appropriate health care services. Barriers to access can be financial, geographic, organizational and sociological. Predisposing factors to limited access may include race and ethnicity, lower education level, and low family income. Recognition of the need for and actions to seek preventive health care depend on health status, attitudes, and cultural beliefs and perceptions. Enabling characteristics for access to care include having health insurance, living within close proximity to health providers, and having available culturally appropriate providers within the community. The National Cooperative Inner-City Asthma Study (NCICAS) showed that lack of access to care and adherence to treatment contributed to increased morbidity related to asthma in urban children (Gold et al, 2005).

Latinos in the United States experience lower overall mortality rates but higher morbidity rates compared with the general United States population (Kaiser Permanente, 2001). As a result, morbidity and chronic disease management are areas of significant concern for health care providers working with Latino clients. Studies have shown that low-income Latinos and those with limited English proficiency (particularly noncitizens) are much more likely to be uninsured and less likely to utilize health care services compared to non-Hispanic whites and their English-speaking peers (Ku, 2003). Latino parents often have difficulty navigating the insurance system and may be unfamiliar with insurance terminology. Geographic nativity of foreign-born Latinos also affects access to health care. Latinos are of many racial, ethnic, cultural, and national
Asthma Disparities in Low Socioeconomic Urban Latino Children

origins. One study showed reported rates of asthma prevalence were 5.3% among Dominican Latinos while rates were as high as 13.2% among Puerto Rican Latinos (Gold et al, 2005). In a study using National Health Interview Survey (NHIS) data from 1999 to 2007 (N = 33,908), Latinos of Mexican ancestry consistently demonstrated lower health care access and utilization patterns than non-Mexican Latinos.

Despite their strong presence in the workforce, Latinos are disproportionately concentrated in low-wage, service-industry jobs where employers are less likely to offer health insurance and other employee benefits. Only one in four Latino workers has the benefit of employer-sponsored insurance (Bustamante et al, 2009). Latinos (35%) are more likely to report being without health insurance than non-Hispanic whites (14%) or African Americans (21%). About three in ten (29%) Latinos report having difficulty communicating with their health care providers due to language barriers (Pew Hispanic Center/Kaiser Foundation, 2002).

Report of having a “usual source of health care” is considered an indicator for good primary health care and is essential to ensuring adequate follow-up care needed by children with a chronic condition such as asthma. In a national survey conducted between 1996 and 2000, it was found that non-Hispanic whites (96%) were most likely to have a usual source of care, with blacks (92%) and non-English-speaking Hispanics (89%) least likely. Similarly, non-Hispanic whites (52%) were more likely to identify a specific health care provider, followed by blacks (44%) and Spanish-speaking Latinos (40%) (Bryant-Stephens, 2009).

Quality of health care is one of the most important factors leading to asthma disparities among Latino children. Urban non-Hispanic blacks and Hispanics are more likely to receive substandard outpatient care and less likely to receive treatment recommended by evidence-based guidelines compared to non-Hispanic whites (Cabana, 2007). Patients with asthma who have
adequate access to primary care may still experience substandard care because of deficiencies in both physician monitoring and patient comprehension of medical recommendations.

Unfortunately, among Latino children undiagnosed and under-treated asthma remains a serious problem. Minorities are less likely than non-Hispanic whites to experience optimized asthma management because they are more likely to receive treatment for asthma symptoms in emergency departments, to use inhaled bronchodilator medications instead of the recommended controller medicines, and to receive irregular follow-up care in poorer facilities with fewer resources. In a study of children insured by Medicaid, fewer than half (45.8%) used National Institutes of Health-recommended controller medications, and instead, a majority (70.8%) managed their asthma symptoms with “rescue” beta-agonist inhalers (Riekert et al, 2003).

Racial and ethnic minorities are more likely to be seen by general practitioners rather than by asthma specialists (Bryant-Stephens, 2009).

Discordance in race and ethnicity between patients and their providers can represent important cultural barriers to effective communication, affecting asthma outcomes (Bryant-Stephens, 2009). In addition to language barriers of low-income Spanish-speaking patients, low health literacy levels and subsequent lowered sense of self-efficacy significantly influence the quality of care these patients receive. Poor provider-patient interactions lead to degradation of patient trust and decreased compliance with medical recommendations (Bryant-Stephens, 2009).

Health care providers are at times actually unknowingly biased in their care of racial and ethnic minorities and may underestimate asthma symptom severity. Misunderstanding of patients’ educational level may contribute to the ineffective care delivered by physicians. Different communication styles between providers and patients may affect patients’ abilities to adhere to recommended asthma treatment regimens and lifestyle changes. There can be
misperceptions due to cultural behaviors. For example, the concept of “respeto” (respect) is particularly important in Latino culture, making the explanation of health conditions and treatment plans without condescension vital. Health providers are seen as authority figures with respect conferred on them by many Hispanic patients. Cultural differences, such as diminished eye contact representing respect in many Latinos, may be incorrectly interpreted as a sign of disinterest on the part of patients. Some Spanish-speaking parents and caregivers may defer to an acculturated child or non-family member to act as the spokesperson in clinical interactions, creating potential miscommunication (Management Sciences for Health, 2010).

Environmental Disparities:

According to the United States Environmental Protection Agency (EPA), environmental justice is “the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.” Urban environments tend to have high levels of outdoor air pollution and poor housing conditions that are frequently associated with increased levels of indoor pollution. Disproportionate numbers of people of color and people from low income households live in urban settings, and thus may be exposed to higher than average levels of asthma triggers in the form of air pollution, both indoors and outside (NRDC, 2010).

While pollen and outdoor air pollution receive greater media attention, EPA studies have shown that pollutant levels inside homes and buildings are two to five times higher than outside (EPA, 2010). On average, Americans spend up to 90 percent of their time indoors, making clean indoor air a high priority. Exposures to common inhalants, such as airborne particles of pet dander, tobacco smoke, mold, dust mites, cockroaches, pollen and other pollutants at home, work, school and play, have been shown to cause airway inflammation (AANMA, 2009).
Indoor environmental exposures are a known risk factor for increasing asthma morbidity and mortality rates among low socioeconomic status children in urban settings. Over-crowding, housing density and older dilapidated housing conditions become breeding grounds for indoor allergens and asthma triggers. Excessive moisture and water damage allows dust mites, mold and cockroaches to multiply. Breaks in walls allow rodents and cockroaches to enter. Deteriorated carpeting is a reservoir for house dust mites and cockroach antigens. Early sensitization to cockroach antigen has been associated with increased asthma morbidity. Exposure to cockroach allergen has been shown to have a significant inverse association with household income (Bryant-Stephens, 2009).

Exposure to environmental tobacco smoke, whether prenatal or postnatal, has been associated with increased asthma prevalence and morbidity (Strachnan et al, 1999). Other common household exposures for children living in disadvantaged urban settings include gas stoves and space heaters, often used with poor ventilation. These heat sources may contain excessive levels of nitrous dioxide, an industrial pollutant generated as a byproduct of combustion. Poor ventilation leads to higher environmental tobacco smoke exposure, as well as increased nitrous oxide and allergen levels indoors.

From a public health perspective, the built environment includes factors such as housing characteristics, land-use patterns, transportation options, and architectural or urban-design decisions which potentially create health hazards. Lack of safe recreational options for low-income children in urban environments may lead to higher rates of overweight and obesity in inner-city children, who are more likely to be overweight compared to the general population. Children with asthma were almost 1.5 times more likely to be overweight compared with
children without asthma. Obesity is a risk factor for asthma morbidity in these children (Hasan et al, 2006).

The EPA monitors local air quality across the country through daily Air Quality Index reports. Some outdoor air pollutants that trigger asthma include: ground level ozone (a toxic component of smog); sulfur dioxide (produced when coal and crude oil are burned); particulate matter (suspended particles of dust, soot, fly ash, diesel exhaust, wood smoke and sulfate aerosols); and nitrogen oxide emissions (NRDC, 2010).

The President’s Task Force on Environmental Health Risks and Safety Risks to Children (2008) reports that many common air pollutants, such as ozone, sulfur dioxide, and particulate matter are respiratory irritants that can exacerbate asthma. However, air pollution may also act synergistically with other environmental factors to worsen asthma. Some evidence suggests that exposure to ozone can enhance a person’s responsiveness to other inhaled allergens. Whether long term exposure to air pollutants actually contributes to the development of asthma is not yet known. Children with asthma are believed to be particularly sensitive to outdoor air pollution. As many as 25 percent of children in America live in areas that regularly exceed the EPA’s limits for ozone, more than a quarter of which comes from auto emissions. Asthma rates among children in the United States more than doubled from 1980 through 1995, correlating with increases in air pollution rates. Reducing children’s exposure to environmental pollutants such as ozone will reduce the frequency and severity of asthma attacks, reduce dependence on medications, and improve overall lung function (Jackson et al, 2009).

Motor vehicle traffic is the main source of ground-level urban concentrations of air pollutants with recognized hazardous properties. There is significant evidence linking traffic-related pollution exposure to respiratory illness. When the 1996 Atlanta Olympic Games
brought about a reduction in automobile use by 22.5%, asthma-related hospital admissions also decreased by 41.6% (Jackson et al, 2010). Less driving, better public transportation systems, and well designed landscaping and residential density will improve air quality more than will additional roadways. Chronic exposure to traffic-related and particulate air pollution among adults has been linked to upper respiratory tract inflammation (Hiltermann et al. 1997), chronic obstructive pulmonary disease (COPD) (Schikowski et al. 2005), lung cancer (Vineis et al. 2007), and premature mortality (Dockery 1993; Pope et al. 1995). In children, traffic-related pollution exposures, often indicated by residential proximity to major roads, has been associated with airway hyper-responsiveness (Jang et al. 2003), wheeze (Ryan et al. 2007), asthma (McConnell et al. 2006), reduced lung function (Pekkanen et al. 1997), and asthma-related hospitalizations (Lin et al. 2002; Moore et al. 2008).

**Socio-cultural Disparities:**

Although environmental factors and differences in health care access and quality affect the appropriate management of asthma in poor urban Latino children, these factors do not fully account for the disproportionate distribution of childhood asthma in this minority population. Many urban Latino families are subject to living under social conditions that create barriers to health-promoting activities for their children with asthma. Stressors associated with poverty, family dysfunction and disadvantaged neighborhoods have been associated with pediatric asthma symptoms (Bloomberg et al, 2005).

Unemployment and underemployment of minorities leads to increasing financial strains that affect the overall family dynamic. Jobs held by lower socioeconomic Latinos in the service industry do not usually offer health insurance. Economic hardship events (such as inability to pay rent, termination of utility or phone service and eviction from apartments) contribute to the
stressors affecting urban Latino families. Community-wide economic depression with disproportionate job loss by minorities adds to the poverty burden among Latinos (Williams et al, 2009).

In the United States, persons of color have lower average incomes than whites and tend to have more severe asthma and a greater risk of fatal asthma. Poverty may be the most likely explanation for this disparity in its contribution to poorly managed asthma. Exposure to asthma triggers is believed to be greater in low income households. Cockroaches in inner city homes, air pollution in industrial neighborhoods, cigarette smoking and second-hand smoke exposure, gas and other chemical fumes, lack of air conditioning, and inability to modify the home environment (for example, inability to remove bedroom carpet or correct water leaks into a moldy basement) are some of the ways that poverty may predispose to worse asthma management. Poverty is also linked to lower education levels. Lack of understanding about asthma and its treatment causes further risk of severe, undertreated asthma. Childhood cough and wheeze may be accepted as part of “normal growing up” and medical care may not be sought because it is not considered necessary or is not readily accessible (Partners Asthma Center, 2010). Controlling contaminants with powerful household cleaners, rather than non-toxic “green” cleaning products, can actually worsen air quality and lead to increased asthma symptoms. Health equity is the primary issue and multiple factors layer to create the disparity.

One study of asthma hospitalization in New York City uncovered linkages between minority ethnicity and youth with a greater likelihood of asthma hospitalization. A huge disparity was found between neighborhoods with the lowest and highest asthma hospitalization rates. Comparing the top and bottom quintiles for asthma hospitalization, a 21-fold difference in admission rates was discovered. Further statistical analysis found a particularly strong positive
correlation between asthma hospitalization and the percentage of African Americans and Latinos living in the community. A positive correlation also emerged between asthma hospitalization and the percentage of residents younger than age 18 years with a strong inverse correlation between asthma admissions and median household income (Claudio et al, 1999).

Another study found a distinctly graded effect for asthma and other breathing problems among foreign-born Latinos, depending on community composition. Foreign-born Latinos embedded in a neighborhood that had a high percentage of foreign-born residents experienced a significantly lower prevalence of asthma and other breathing problems in what has been termed the “Latino Paradox.” However, those living in communities with a particularly low percentage of foreign-born residents had the highest prevalence of asthma overall (even when compared with African Americans). Researchers concluded that foreign-born Latinos may have a respiratory health advantage only in settings with a strong sense of cultural cohesiveness (Cagney et al, 2007).

Language barriers experienced by Spanish-speaking persons may decrease their ability to access health care and navigate the housing system. Social and cultural isolation lead to mistrust of authorities and health care practitioners, in turn leading to less compliance with health providers’ recommendations.

Lower socioeconomic status urban Latinos are more likely to live in disadvantaged neighborhoods than low-income white non-Latinos. These neighborhoods usually have fewer resources and provide less opportunity for health producing behaviors. Inner-city minorities tend to have greater levels of exposure to polluted water and air. As discussed earlier, higher rates of ozone and ambient particulate matter in the air can worsen asthma (Williams, 2009).
Greater physical deterioration is the hallmark of disadvantaged neighborhoods with sub-standard housing that is noisier, built to lower quality standards, and more crowded than other neighborhoods. Minority racial and ethnic populations, including Latinos, are more likely to live in dangerous, high crime neighborhoods and, therefore, be exposed to greater amounts of violence. Family turmoil and chaotic household situations that lead to family instability are factors in increased asthma morbidity. Psychological morbidity in caregivers, including depression and anxiety, may affect the health care and living conditions of their children with asthma. A general sense of lack of control over their lives and their living environments can lead to lower sense of self-efficacy, limiting the ability to take positive actions. Exposure to violence, especially associated with the use of ruminative coping strategies, is linked with asthma morbidity (Williams, 2009). Living in a climate of fear creates an environment where residents isolate themselves inside, leading to greater exposure to indoor allergen asthma triggers.

Residential segregation, as shown by a high dissimilarity index, has been found to be associated with asthma morbidity (Williams, 2009). Concentrated poverty and a compromised collective sense of well-being have been theorized to contribute to increased asthma morbidity among urban Latino children living in economically depressed neighborhoods. In addition, low-income Latinos typically have less political and economic clout needed to bring about positive community changes. City services and resources for social support are often absent or severely lacking and the schools and daycare centers are often inferior in these areas. One study of 338 Chicago neighborhoods found asthma levels to be highest in areas with a lack of cohesion and mutual support among residents. The link between asthma and neighborhood collective efficacy stood up even after researchers accounted for factors such as poverty, race, and health-related behaviors. Level of trust was believed to be a key factor in collective efficacy that influenced
asthma levels, suggesting that researchers should look beyond individual factors such as income and health behaviors to the broader social context (Grabmeier, 2004).

A lack of safe recreational options (playgrounds, swimming pools and recreation centers) may lead to higher overweight and obesity rates among residents of disadvantaged neighborhoods. Fewer grocery stores and less availability of fresh foods, along with increased numbers of tobacco, alcohol and fast food outlets, in these neighborhoods with acculturation to common American fast food diets contribute to obesity and poor health overall. Obesity has been associated with higher rates of asthma morbidity in children (Hasan et al, 2006).

Latino children with asthma living in disadvantaged inner-city neighborhoods are less likely to have adequate health care access and quality. Lower quality of medical care has been detected as measured by the low number of patients found to be using inhaled corticosteroid medications on admission to the hospital for asthma symptoms. Additionally, economically challenged neighborhoods showed evidence of higher rates of health practitioner non-compliance with National Asthma Education and Prevention Program (NAEPP) asthma treatment guidelines (Williams, 2009). Latinos who are new immigrants to the United States are more likely to experience difficulties navigating the unfamiliar health care system to obtain appropriate preventive and acute care for their children with asthma.

Discrimination and exposure to other social adversities chronically during childhood is believed to cause potential long-term serious adverse health effects, including increased asthma morbidity (Williams, 2009). Health illiteracy among many Latinos and a lack of understanding of the importance of primary preventive health care is often the reason for delayed seeking of care for asthma symptoms. In addition, there are currently low numbers of Latino primary care
providers available in the United States to serve the urban Latino community in a culturally appropriate manner.

Health illiteracy is the lack of basic knowledge about health conditions and recommendations. Much of the distributed asthma information materials is not currently written at the appropriate target level for low-literacy Latino populations. Lack of health literacy and low levels of social resources available to Latino families contribute to poorer asthma outcomes. Limited public transportation options create difficulty for working parents in taking children to preventive and follow up asthma care visits due to fear of missed time from work without pay.

In addition to environmental factors discussed earlier, an interaction between the environment and other factors has been found to impact asthma prevalence and severity. For example, stress has been proposed as a key component of socioeconomic factors that may increase susceptibility to asthma morbidity related to air pollution. Epidemiologic and toxicologic evidence of synergistic effects of stress and pollution have been identified. Several theoretical perspectives suggest that social, economic, and psychological disadvantage may cluster. Like air pollution, low socioeconomic status and other stressors (such as noise) may be elevated in urban settings along highways and industrial areas. Sophisticated methods are needed to disentangle the effects of clustered social and physical stressors and to investigate potential synergies. Research shows that repeated exposure to social stress before allergen inhalation enhances and prolongs airway inflammation and alters corticosteroid responsiveness (Bailey et al, 2009).

Researchers have studied possible pathways through which stress may influence pollution susceptibility in humans. Over time, chronic psychological stress and maladaptive behaviors (such as poor diet and sleep deprivation) (McEwen 2006) may impair the body’s ability to
maintain allostasis (the ability of a system to dynamically adopt varying states to accommodate changing demands), contributing to compromised immune function, enhancing general susceptibility (McEwen, 2006), and affecting biological responsiveness to environmental air pollution (Clougherty, 2009). Some community-level stressors are also physical hazards (such as poor housing quality), complicating the distinctions between effects of psychosocial and physical factors. The interrelated nature of the contributing factors leads to the need for integrative approaches toward understanding the combined health effects of social and physical exposures. As with the example of stress, a complex assortment of factors, including those related to environmental conditions, socio-cultural issues, and healthcare access and quality, interact to work together as well as separately to influence asthma outcomes. These factors adversely and disproportionately contribute to disparities in the prevention and treatment of asthma in Latino children.

**Current Asthma Guidelines:**

The National Asthma Education and Prevention Program (NAEPP) produces Guidelines for the Diagnosis and Management of Asthma. Seven key points for asthma diagnosis and management were identified by nine asthma specialists, including: (1) establishing an accurate diagnosis, (2) using a comprehensive approach, (3) assessing severity to determine initial therapy, (4) monitoring control to determine ongoing therapy, (5) using a stepwise approach for initial and ongoing therapy, (6) preparing for and managing special situations, and (7) managing asthma exacerbations (Urbano, 2008). The Guidelines include specific recommendations for: (1) **Assessment and Monitoring**: providing an approach to assessing and monitoring asthma by using multiple measures of the patient’s level of current impairment (frequency and intensity
of symptoms, low lung function, and limitations of daily activities) and future risk (risk of exacerbations, progressive loss of lung function, or adverse side effects from medications).

(2) **Patient Education**: emphasizing the importance of teaching patients skills to self-monitor and manage asthma and to use a written asthma action plan, which should include instructions for daily treatment and ways to recognize and handle worsening asthma. Recommendations encourage expanding educational opportunities to reach patients in a variety of settings, such as pharmacies, schools, community centers, and patients’ homes. The guidelines address the need for clinician education programs to improve communications with patients and to use system-wide approaches to integrate the guidelines into health care practice.

(3) **Control of environmental factors and other conditions that can affect asthma**: providing evidence for using multiple approaches to limit exposure to allergens and other substances that can worsen asthma. Research shows that single steps are rarely sufficient. The guidelines include a section on other common conditions that asthma patients can have and notes that treating chronic problems such as rhinitis and sinusitis, gastroesophageal reflux, overweight or obesity, obstructive sleep apnea, stress, and depression may help improve asthma control.

(4) **Medications**: recommending the use of a stepwise approach to control asthma, in which medication doses or types are stepped up as needed and stepped down when possible. Treatment is adjusted based on the level of asthma control. The NAEPP guidelines also include:

- Stepwise asthma management charts to specify evidence-based treatment regimens for various age groups
- Medication guidelines including both long-term control medications to control asthma and prevent exacerbations, as well as quick relief medications for symptoms as needed.
Inhaled corticosteroids are the most effective long-term control medication across all age groups. Recommendations on treatment options such as leukotriene receptor antagonists and cromolyn for long term control; long acting beta agonists as adjunct therapy with inhaled corticosteroids; omalizumab for severe asthma; and albuterol, levalbuterol, and corticosteroids for acute exacerbations.

- A description of current research to improve asthma management, monitoring asthma control, and tailoring treatment based on patient characteristics.
- Recommendations for regular follow-up contacts at one to six month intervals, depending on level of control
- The goal for therapy is to control asthma by: (1) reducing impairment, (2) reducing risk of recurrent exacerbations, and (3) prevention of progressive lung disease.

Because asthma is a chronic inflammatory disorder of the airway, persistent asthma is most effectively controlled with daily long-term control medication directed toward suppression of airway inflammation. Therapeutic strategies should be considered in concert with clinician-patient partnership strategies. The education of parents and caregivers is essential for achieving optimal pharmacologic therapy.

The NAEPP Guidelines also indicate that parents should attempt to control the child’s exposure to allergens, irritants, or co-morbid conditions that make asthma worse. A written asthma action plan detailing for the individual patient the daily management (medications and environmental control strategies) and how to recognize and handle worsening asthma is recommended for all patients, but especially for patients who have moderate or severe asthma, a history of severe exacerbations, or poorly controlled asthma. The plan can be either symptom or peak-flow based, as evidence shows similar benefits for each. Referral to an asthma specialist for consultation or co-management of the patient is recommended if there are difficulties achieving or maintaining control of asthma.
Examples of Community Asthma Programs:

There are many examples of community asthma management programs for high-risk populations – including some specifically targeted toward the Latino population. In the greater Washington DC/Maryland area, two such programs are the Montgomery County Department of Health and Human Services Latino Health Initiative (LHI) Asthma Management Program and the National Capital Asthma Coalition (NCAC). The following section of the paper will highlight these programs.

The Latino Health Initiative (LHI) of the Montgomery County Department of Health and Human Services (DHHS) in Maryland was established in 2000 with the mission of improving the quality of life of Latinos living in the County by contributing to the development and implementation of an integrated, coordinated, culturally and linguistically competent health wellness system that supports, values, and respects Latino families and communities (LHI, 2010). In Montgomery County Latinos have the lowest per capita income ($20,165) of all sub-populations, with average income below the self-sufficiency level of $25,961 (Community Action Board, 2005). 9.5% of Latinos in the County live in poverty compared to 4.5% of all Montgomery County residents (Community Action Board, 2005). The LHI is comprised of DHHS staff and volunteer professionals and community leaders. In 2000, the LHI Latino Health Steering Committee engaged in an intensive community participatory process to determine the major health priorities crucial to improving the health of Montgomery County Latinos. The *Blueprint for Latino Health in Montgomery County Maryland* (2008) was developed by the Steering Committee, and is updated every five years to reflect changes in the sociopolitical landscape and to demonstrate achievements made over time. The latest version for 2008 to 2012 was developed with input from experts and key stakeholders, including DHHS staff, the
Maryland Department of Health and Mental Hygiene, elected officials, community-based organizations, safety-net clinics, faith-based organizations, and community activists.

The Latino Health Steering Committee consists of community activists, public health specialists, and representatives of local universities, hospitals, and schools and other advocates of Latino Health in Montgomery County, Maryland. Some of the many other LHI community programs include the Program for Licensure of Foreign-Trained Health Professionals, a Health Promoters Program, and a System Navigator and Interpreter Program.

In 2005, the LHI conducted a literature review to identify asthma incidence and prevalence rates among Latino children and identify potential models of asthma strategies and interventions targeting Latinos in other parts of the country. In-depth interviews of health professionals were conducted to assess the prevalence of asthma and the need for an asthma management program. Focus groups with Latino parents of children with asthma and with Latino adolescents diagnosed with asthma were assembled to obtain information about knowledge, attitudes and practices regarding asthma management. Since 2005, the LHI has been implementing the Latino Asthma Management Program (LHI, 2010), tailored to Spanish-speaking, low-income Latino families. The overall project is designed to increase understanding of asthma management among low-income Latino parents of children with asthma and to develop a culturally and linguistically appropriate intervention program. The desired outcome is Latino families that are empowered to appropriately self-manage their children’s asthma with the goal of reducing emergency department visits and hospitalization rates among Latino children in the County. A Community Asthma Advisory Committee, composed of experts in Latino health and parents of children with asthma, provides guidance to program activities and carries out asthma advocacy efforts.
The LHI Latino Asthma Management Program consists of three culturally and linguistically competent intervention components: (1) asthma management educational group sessions, 2) social support, and (3) follow-up to program participants.

The asthma educational sessions are a series of eight two-hour long interactive group learning sessions specifically for parents and caregivers of children with asthma under the age of 11 years. The sessions are facilitated in Spanish by a bilingual, bicultural health professional using a detailed curriculum developed specifically for the Program in accordance with the NAEPP Guidelines. The sessions are offered at no cost and are designed to complement and reinforce asthma care provided by healthcare professionals. One of the key features in the sessions is the guidance provided to participants in developing individualized Asthma Action Plans to empower caregivers to take control of their children’s asthma.

The Program provides social support to participant families of children with asthma by utilizing a group of trained asthma management coaches (foreign-trained nurses known as “Consedus” – a combination of the words for counselor and educator in Spanish.) The Consedus help to reduce attrition by reminding participants of the next session and urging them to attend. Follow-up to program participants is provided by phone calls between educational sessions to reinforce the educational materials and encourage adherence to the Asthma Action Plan.

The LHI Asthma Management Program was evaluated for outcomes during 2006 to 2009. During this period, the Program offered 14 pilot Asthma Management courses with 173 parents/caregivers of 164 children with asthma completing all eight sessions. The pilot test of the asthma intervention resulted in increases in the asthma knowledge (before intervention 65%, after intervention 84.5%), the parents’ perceived ability to manage their children's asthma (before intervention 49%, after intervention 94%), and in possession of an asthma action plan (before
intervention 19%, after intervention 91%), as well as in a parents' report of decrease in the number of visits to the emergency department (before intervention 28.5%, after intervention 14%), school absences (before intervention 44%, after intervention 27%), and days of restricted physical activity due to asthma (before intervention 42%, after intervention 27%) (LHI, 2010).

Another community asthma management program for at-risk children, the National Capital Asthma Coalition (NCAC), was launched in 2001 in Washington DC (NCAC, 2010). The mission of the NCAC was to establish a sustainable system of care that would reduce asthma morbidity and mortality and improve quality of life for individuals with asthma, especially children and other vulnerable populations in the greater Washington DC metropolitan area to:

1. educate children, caregivers, professionals, and the community on best practices to manage asthma through trainings, home visits, health fairs, and targeted campaigns;
2. strengthen organizational collaboration, coordination, resource sharing, and policy; and
3. conduct a two-year Collaborative Case Management Demonstration Project to produce manageable and affordable intervention protocols for at-risk children and their families.

The educational component sought to provide practical strategies to manage asthma for diverse audiences, including children, adolescents, and adults. The Feria del Asma/Asthma Fair was an annual bilingual event designed to specifically reach out to Latino children and families. The NCAC used many approaches to provide both community and professional training seminars and workshops. The second component of the NCAC involved strengthening of collaboration and policy efforts, designed to complement and support other community efforts and goals. NCAC aimed to improve the practice and coordination of care delivery and to create a community-wide collaborative environment for analyzing and distribution surveillance information and expertise. The third NCAC component, the two-year Collaborative Case
Management Demonstration Project, involved a multidisciplinary project to produce manageable and affordable intervention protocols for at-risk children with asthma and their families and to develop an electronic data-sharing infrastructure that would sustain and enhance the collaborative care process.

NCAC was an alliance of more than 100 members representing over 65 health and human service, government, corporate, and community organizations. Partners in the Coalition included the American Lung Association of DC, Children’s National Medical Center, DC Chartered Health Plan, DC Department of Health, DC Public Schools, Far Southeast Family Strengthening Collaborative, Health Services for Children with Special Needs, Inc., Howard University Hospital, Mary’s Center for Maternal and Child Care, and the Medical Society of the District of Columbia (PediatricAsthma.org, 2010).

NCAC’s five committees on Interagency Policy and Strategy, Education, Health Services, Environment, and Data/Surveillance plan and implement activities in coordination with the NCAC’s full-time staff. The Interagency Policy and Strategy Committee focused on developing asthma-friendly schools and child care settings, including policies allowing students to carry and use lifesaving asthma medications and educational and environmental training and policies. The Data Surveillance Committee collected, analyzed, mapped and reported statistical and demographic data regarding asthma and contributed to the design and implementation of the electronic asthma patient tracking system. The Education Committee focused on informing children, youth, caregivers, health care professionals and the community on best practices for asthma management. Training sessions, workshops, conferences, home visits, individual and group counseling sessions, health fairs, media outreach and educational partnerships were some of the strategies implemented. The Environment Committee designed strategies tailored for the
inner-city population, including conducting environmental assessments to reduce asthma triggers in homes and other settings. This Committee focused on building bridges with government authorities, schools, housing, community and advocacy organizations, tenants, landlords, and homeowners, financial institutions and environmental experts to create asthma-friendly environments. The Health Services and Quality Assurance Committee focused on improving the system of health care and provision of services using a multidisciplinary approach to address the needs of children with asthma in the underserved urban community. In addition, this Committee sought to improve practitioners’ asthma management knowledge and enhance provider-patient/family communication concerning asthma care. NCAC provided educational resources and community programs specifically in linguistically and culturally appropriate formats for the many Latino patients with asthma in the District of Columbia.

After achieving key milestones, NCAC ceased operation at the end of 2007. However, many of the collaborative initiatives launched by NCAC have continued through the community partnerships developed. Its collaborative work continues through the DC Asthma Partnership, DC Department of Health’s DC Control Asthma Now Program, and a network of more than 300 professionals and volunteers dedicated to NCAC's mission of improving the system of care and outcomes for children and adults with asthma (NCAC, 2010). Improving Pediatric Asthma Care in the District of Columbia (IMPACT DC) was founded in the fall of 2001 with funding from the Robert Wood Johnson Foundation to perform surveillance of pediatric emergency department visits for acute asthma exacerbations and to design and implement an intervention to address the problem in the District of Columbia.

These efforts culminated in the creation of the IMPACT DC Asthma Clinic, a novel asthma follow-up care source physically located in the Emergency Department (ED) at National
Children’s Hospital. According to the United States Census Bureau in 2008, 8.6% of the District of Columbia population identified as being of either Hispanic or Latino origin. The 2002 rate of emergency department visits for asthma was nearly 12 times greater among children in DC’s most disadvantaged areas than among its most affluent. IMPACT DC serves this vulnerable, largely African American and Latino population (U.S. Census Bureau, 2010).

The Clinic sees children who are heavily dependent on EDs for episodic care, providing a comprehensive source of asthma education, medical care and care coordination designed to steer children towards healthier lives and more effective primary longitudinal asthma care. The clinic sees children within two weeks of ED visits for acute exacerbations for a 90-minute visit where they meet with an asthma educator and a physician. While highly individualized and based on a shared dialogue with the family and the patient, the clinic’s curriculum is well scripted and highly reproducible. Taking advantage of the “teachable moment” that naturally occurs after the crisis of an ED visit, clinic staff focus on the three key elements of consensus NIH guidelines for asthma care, including: education on the basic physiology of asthma with emphasis on its chronic nature; completion of an individualized medical action plan; and prescription of controller medications along with individual patient education on device use and self-monitoring.

IMPACT DC serves as one of ten sites of the Inner City Asthma Consortium (ICAC), which studies immune-based asthma therapies in children and young adults. ICAC serves disadvantaged inner city children, including many Latinos as well as African Americans. The team collaborates with the Center for Genetic Medicine Research on the AsthMap Project, which characterizes the genotypes and phenotypes of more than 1,000 asthmatic children in the Washington, DC metropolitan area. Finally, the program collaborates with local inner-city pharmacies to study the effect of enhanced asthma education by community pharmacists.
Environmental modification and asthma trigger control are addressed by providing: education on the role of the environment and triggers in asthma; specific education on the creation of a “safe sleep zone”; provision of pillow covers; and tailored education on tobacco smoke, dust, molds, pests, and pets. Follow-up care coordination efforts of the program include education on the role and importance of routine asthma care with a primary care provider.

Coordination with primary care physicians and others in the care continuum is among the most crucial linkage provided between the ED and caregivers, representing an expanded role for the ED within the context of broader systems of care for chronically ill children. To achieve such care coordination, the IMPACT DC program provides multiple services designed to improve and strengthen linkages between all those providing asthma care for the child. These activities include:

- the creation of an individualized patient report forwarded to the patient’s primary care physician, managed care asthma case manager, school nurse, and family
- direct phone communication with clinic physicians when required
- scheduling of a follow-up appointment within four weeks of the clinic visit
- scheduling follow-up with the primary care providers and sub-specialists
- completion of school forms sufficient to allow the child to receive reliever and controller medications in the school from the school nurse when appropriate

The IMPACT DC program facilitates care coordination by leveraging existing relationships. The program employs all public school nurses through the school nurse program and provides the school nurse of each IMPACT patient with an individualized asthma care plan for use while at school. For children without an identified primary care source, IMPACT works with financial counselors at National Children’s Hospital to facilitate enrollment in Medicaid Managed Care. The team identifies a primary care provider in the system, which provides more than 50 percent of the primary care to Medicaid recipients in the District of Colombia.
The IMPACT team studied this model of care to validate its efficacy in a prospective randomized clinical trial, which was accepted for publication in the Archives of Pediatrics and Adolescent Medicine. The study achieved several clinically and statistically significant outcomes including: (1) greater than 100 percent increase in the use of controller medications; (2) nearly 50 percent reduction in subsequent ED visits; and (3) sustained improvements in numerous measures of quality of life (IMPACT DC, 2010).

Recommendations:

The following section presents recommendations for changes to community asthma programs, public health policies, educational initiatives, and environmental programs. It also highlights intervention recommendations aimed at the community level, clinical practice level and the broader policy level.

Community Asthma Program Recommendations:

Community asthma programs develop interventions that target high risk urban Latino families. As a means of improving the quality of life for children with asthma, communities must organize to advocate for members. It is a right, not a privilege, to breathe clean air, to live in safe neighborhoods, and to have access to affordable quality healthcare. Given the complex nature of the chronic condition of asthma, a multi-factorial approach is needed involving key stakeholders using collaborative programs. Some key stakeholders include: parents and caregivers of children with asthma, schools and school-based programs, health departments, lay health professionals, physicians and other health care professionals, community leaders and community-based organizations, hospitals, public health officials and policy makers, housing advocates, lawyers and legal teams and health educators.
Parents and caregivers must be educated, through culturally and linguistically competent programs, and engaged in the process of bringing about change by developing an action plan for their children with asthma and ensuring that they avail themselves to all available preventive and follow-up health care providing the needed medications and adhering to the health recommendations. Parents often need community support to enable them to participate fully in the process of improving their child’s asthma care.

The role of schools in any effective community asthma management plan is crucial. Since children are in school away from parents during weekday hours, the schools must be apprised of the child’s condition and the recommended action plan as well as preventive and acute rescue medications used by the child. The school nurse and other staff must be involved for best outcomes.

Health departments are important in organizing other key stakeholders and forming the basic structure of community asthma programs. They provide health care as well as acting as a source of education and advocacy for Latino children with asthma. Lay health workers from the Latino community provide a trusted source of basic education and information about resources for children with asthma. Outreach to the Latino community will improve outcomes and can provide opportunities to educate people in their homes about home environment factors that can exacerbate asthma symptoms. The LHI Consedus component is a prime example of the success of culturally appropriate community outreach. Importantly, the Consedus team is made up of community volunteers who share the same culture as the Latino parents with whom they interact.

Physicians and other health care professionals must be educated about current evidence-based asthma diagnosis and treatment guidelines and receive training in cultural competency. Providers should be offered incentives for their routine compliance with recognized asthma
diagnosis, treatment and monitoring guidelines in their practices. Health care providers are trusted sources of information for their pediatric patients with asthma and their families. Bilingual health educators are uniquely qualified to promote improved knowledge about asthma among patients and caregivers of Latino children.

Local hospital emergency departments are often the primary source of care inappropriately rather than routine preventive health care with a medical home primary care provider teams. Therefore, hospital representatives can play a key role in community asthma management programs for the urban Latino population. Emergency department teams must be trained in cultural competency and educated about the importance of providing referrals to primary care providers and asthma specialists and how to offer primary education in a culturally appropriate manner.

**Public Health Policy Recommendations:**

Many barriers exist to implementing effective public health asthma interventions for urban Latino children. It is a daunting task to overcome the complex effects of longstanding broader interrelated societal constructs that affect asthma (such as discrimination and poverty). Lack of safe, available, affordable housing for Latino families in most urban settings creates an environment that perpetuates social, economic and health problems. Health illiteracy and common cultural beliefs leading to the lack of understanding of the importance of preventive health care for many conditions, including asthma, are challenges. Language barriers, social isolation, and other social stressors create additional potential barriers to implementing successful public health strategies which can be mitigated through policy changes.
Community leaders and organizations who are aware of the needs of Latinos in their areas can act as catalysts for agencies, public health policy reforms, housing reforms and other aspects of community life that affect children with asthma. Public health specialists and those who develop public health policy are important members of any asthma management program.

Housing advocates are needed to assist with housing and tenant rights issues to ensure that children with asthma are living in healthful conditions without undue environmental factors and neighborhood stressors that may increase asthma morbidity. Primarily Spanish-speaking Latinos are particularly vulnerable to hazards of living in disadvantaged neighborhood and have difficulty navigating the system to ensure their rights are not violated. Legal teams are valuable to an effective community asthma program because they can work as advocates to ensure the rights of Latinos in housing, neighborhood and health care.

Universal health care plans proposed must encompass a system-wide solution to these system-wide problems - access, cost and quality of healthcare are interrelated. Latino parents should be informed of ways to successfully navigate the health care system and to access benefits available to them. The federally funded community health center “safety net” system has been an important source of health care for many Latino patients and families of children with asthma. Unfortunately, with the current economy, the growth of the uninsured has outpaced the growth of community health centers and access to affordable health insurance is not currently available to many in the Latino community.

**Educational Recommendations:**

Increasing the proportion of underrepresented Latinos in health professions may be accomplished in part by creating greater incentives. In 2004, Latinos constituted only 7.1% of all applications to medical schools (Valdez, 2006). The National Health Service Corps program
is one means of assisting Latinos financially with costs of tuition for medical professional training through scholarships and school loan repayment programs. Other programs should be created to provide positive role models that encourage Latinos to enter medical professions and work with underserved predominately Spanish-speaking communities. Foreign medical provider programs can also recruit native Spanish-speaking physicians, nurses, and other health care professionals to work in the United States. Programs should be instituted with the goal of increasing the number of community lay health workers and expanding their roles. The LHI programs using trained lay health professionals and assisting with licensure of foreign medical professionals is an excellent example of positive community interventions.

Additionally, efforts should be increased to educate all health care providers to improve their cultural competency skills. Programs should be developed to provide incentives to health care providers for following best practice, evidence-based asthma diagnosis and treatment recommendation algorithms routinely. Community asthma programs that focus on the role of caregivers in managing children’s asthma help them to develop increased self-efficacy and result in “buy in” from family and community members.

**Environmental Recommendations:**

Environmental interventions should be created providing a multi-pronged strategy to reduce exposure to allergens and irritants that make patients’ asthma worse. The Environmental Protection Agency has developed regulatory guidelines for national air quality standards. The EPA uses available research data to justify setting up new air pollution monitors for fine particulate matter and other outdoor air pollutants. Monitors should be placed in neighborhoods identified as having had the highest hospital admissions for asthma symptoms. Community participation along with scientific research efforts will be necessary. Researchers should
investigate the possible role of new technological developments in improving both indoor and outdoor air quality to reduce environmental asthma triggers.

Although outdoor air quality has improved in many areas of the country over the past fifteen years, air pollution still poses a health risk for millions of Americans. Adopting stricter national air quality standards for particulate matter and ozone would help clear the air by giving states a stronger tool to force polluters to clean up. Industry should also be encouraged to switch to cleaner fuels as an alternative to diesel, since diesel exhaust has been linked to asthma. Requiring coal-fired power plants that operate without emission controls to install scrubbers to curb emissions would also help reduce health risks for asthma sufferers and people who live near polluting facilities (NRDC, 2009).

**Community Level Interventions:**

Increasing efforts to ensure adequate housing conditions (such as fair tenant laws) would create advocacy for rights of Latino families. Improving the built environment in resource-poor communities to provide adequate, safe recreation options will require the investment of money and resources. Policies must create increased incentives to business and industry to reduce environmental factors that cause or worsen asthma. Pollution from traffic in congested urban settings must be monitored and addressed by public health policies. Clean-running, fuel-efficient cars and trucks on the road can cut down toxic emissions that contribute to ozone formation. More effective public transportation and commuting solutions should be implemented to decrease harmful effects of outdoor pollution to asthma sufferers.

At the community level, educational interventions are vital to facilitating positive health change in the Latino population. Public health interventions must emphasis the provision of linguistically and culturally appropriate educational programs and materials. Key community
stakeholders must advocate for improved social support systems in urban Latino communities. Language and literacy level-appropriate health education materials must be driven by community focused efforts. The interventions should emphasize the importance of the written asthma action plan for parents and caregivers to ensure that prevention and treatment plans are in place for all children with asthma. The importance of preventive health care and adherence to recommended medical treatment for asthma should be a key focus.

Clinical Practice Level Interventions:

The National Institutes of Health National Asthma Education and Prevention Program Guidelines for the Diagnosis and Management of Asthma highlights priority recommendations for treating asthma. Strategies have been recommended to reduce patients’ exposure to allergens and irritants that make asthma worse. Clinical guidelines have been established for diagnosis, treatment and both acute and long-term management of persistent asthma. Individualized written asthma action plans enable caregivers to better provide children with routine treatment as well as recognizing and handling worsening symptoms. Planned follow-up visits are important for the chronic condition of asthma.

Public Health Policy Level Interventions:

Disparities among disadvantaged urban Latino children with asthma stem primarily from poverty and social conditions. Interventions should address poverty, disproportionate job loss and lack of opportunity, and inequitable housing conditions. Steps can be taken to improve the quality of neighborhoods in which urban Latinos live and to implement consequences to fight discrimination. Social systems that leave Latinos in a disadvantaged position with deteriorating neighborhoods and unacceptable housing conditions must be changed. Public health interventions should aim to provide resources to empower urban Latino families in navigating
the legal system, advocating for tenant rights, and negotiating fair housing and neighborhood conditions. Social stressors that aggravate asthma symptoms must be addressed using public health policy and community advocacy approaches.

**Conclusions:**

The importance of community based participatory approaches for interventions targeting low income urban Latino children with asthma cannot be underestimated. Addressing environmental justice and health disparity issues among this population should be a priority agenda for public health officials. Importantly, it must be understood that improvements in asthma outcomes can realistically be achieved. More health information about the Latino population and asthma in the United States is needed, since currently much research is focused on comparing black and white populations, excluding Latinos or grouping them into inappropriate categories. Data about the Latino population must be captured demographically in future public health research to fully assess needs and determine the most effective intervention approaches.

Low socioeconomic position is most likely interrelated with culture as a determinant of the health disparities seen in Latino children with asthma. The traditional pan-ethnic view of the Latino population as a foreign, homogenous cultural group may limit greater understanding of the differences between Latino subgroups and by nativity, which have been not been adequately examined in past public health studies. In addition, valid methods to assess community asthma program efficacy are needed.

One framework for public health action put forth by Frieden emphasizes a five-tier health impact pyramid (see Addendum 1), rating five intervention types on increasing population impact and increasing individual effort needed. This framework addresses the importance of
socioeconomic determinants as the base of the pyramid, with interventions addressing social determinants of health seen to have the greatest potential overall public health benefit (Frieden, 2010). While the other four intervention types (context changes that make individuals’ default decisions healthier, long-lasting protective interventions, clinical interventions, and counseling and educational interventions) are also important, comprehensive public health programs containing elements that work at each of the five levels will maximize synergy and increase the likelihood of long-term success. In addressing the disproportionate burden of asthma morbidity among urban Latino children, as with other public health issues, effective action at the socioeconomic level requires the support of government and civil society.

If we judge health disparities to be a moral wrong, then we as public health professionals are obligated to take action to address this wrong. Increasing public awareness of health disparities among those in the Latino population as a moral and ethical issue may contribute to addressing the problem. A complex tangle of factors has created and contributed to significant health disparities in the United States. Creative, broad-based approaches are needed to address health inequities, rather than continued attempts to address them narrowly. The 2008 National Institute of Health Summit, dedicated to the science of eliminating health disparities, emphasized the importance of finding ways to address health disparities within their social context, ultimately requiring fixing more than just the disparities themselves (Jones, 2010).
References:


Addendum 1:

**Frieden’s Health Impact Pyramid:**

1. **Increasing Population Impact**
   - Counseling and Education
2. **Clinical Interventions**
3. **Long-Lasting Protective Interventions**
4. **Changing the Context to Make Individuals’ Default Decisions Healthy**
5. **Socioeconomic Factors**

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