

**Andrea J. Apter, MD, MSc**

*LDI Senior Fellow,*

*Professor of Medicine*

*University of Pennsylvania*

## ***Communities and Health: The Case of Inner-City Violence and Asthma***

Editor's note: The social forces that affect individual health are powerful and yet poorly understood. For example, the health burden of asthma is especially large for residents of low-income, inner-city neighborhoods. At the same time, many inner-city residents face health challenges associated with high levels of violence in their communities. Recent work has linked exposure to community violence with worsening asthma symptoms in children, but the link has not been studied in adults. This Issue Brief summarizes a new study that tracks adults with moderate to severe asthma and explores the association between exposure to community violence and subsequent asthma-related emergency department (ED) visits and hospitalizations.

***Living in areas of concentrated poverty is linked to poor asthma outcomes, although the reasons are unclear***

Living in concentrated disadvantage contributes to poor health, although the mechanisms are not completely known. For example, the existence of an "asthma alley" in Brooklyn was identified in 1978, and subsequent studies document large disparities in asthma prevalence, morbidity, and mortality by socioeconomic status, race, and inner-city location. Even as pharmacologic treatments for asthma have improved, these disparities have remained.

- One possibility is that people with asthma living in areas of concentrated poverty are exposed to physical or social conditions that contribute to the development of their disease, exacerbate their symptoms, and interfere with the successful management of their condition. These conditions may include substandard housing, exposure to environmental pollutants, or fewer pharmacies or other clinical services.
- Another possibility (not mutually exclusive) is that the psychological stress of living in these areas directly affects the health of people with asthma. One potential cause of psychosocial stress is exposure to community violence, either through direct victimization or observing violent fights or crimes.

- 
- In children, recent studies have found that exposure to violence is associated with poorer asthma outcomes. One limitation of these studies is that the asthma outcomes were self-reported or caretaker-reported symptoms. The study summarized below adds to our understanding by investigating the link between asthma and violence in adults, and by using ED visits and hospitalizations as outcomes.

---

### *Prospective study explores link between asthma and community violence*

As part of a larger clinical trial, Apter and colleagues tracked nearly 400 inner-city adults with moderate to severe asthma for 26 weeks. They measured exposure to community violence at baseline for each patient, and assessed the relationship between exposure and subsequent asthma-related outcomes, including ED visits, hospitalizations, and quality of life.

- Patients were recruited from practice sites in Philadelphia that serve neighborhoods with high rates of asthma morbidity. Clinical sites included outpatient primary care and asthma specialty practices of the University of Pennsylvania Health System, Woodland Avenue Health Center, the Comprehensive Health Center at Episcopal Hospital, and the Philadelphia Veterans Affairs Medical Center.
- Exposure to community violence was measured by using a question: “In the past six months, did you witness any violence in your neighborhood?” Patients answering yes were asked about the kinds of violence they witnessed: “a fight in which a weapon was used, a violent argument between neighbors, a gang fight, a sexual assault or rape, a robbery or mugging.”
- Participants were seen monthly for the parent trial. Investigators assessed pulmonary function, and collected data on ED visits and hospitalizations. They assessed asthma-related quality of life at baseline and weeks 14 and 26.
- The investigators also collected information on sociodemographics, depressive symptoms, and social support to determine if these factors moderated the effect of exposure to violence on asthma-related outcomes.

---

### *Exposure to community violence is common*

The 397 participants were mostly women, African American, and from households earning less than \$30,000 per year. Average baseline scores on a validated scale for depression were high, consistent with depressive symptoms seen in poor urban populations.

- The patients had significant severity of asthma, as indicated by baseline pulmonary function tests. More than half had an asthma-related ED visit in the year before enrollment, and about a third had been hospitalized for asthma in that interval.
-

- 
- Almost one-quarter of the participants reported exposure to community violence in the previous six months, and 43% of them reported exposures to at least two types. Younger age, African American race/ethnicity, and lower household income were associated with an increased risk of exposure to violence.
  - Exposure to violence was associated with greater depressive symptoms and less social support at baseline.

---

***Exposure to community violence is associated with greater rates of asthma-specific and all-cause emergency department visits and hospitalizations***

The results suggest that exposure to community violence is associated with worse asthma outcomes and even higher rates of ED visits and hospitalizations in this patient population with high baseline rates.

- Controlling for sociodemographic factors, those exposed to community violence in the previous year had 2.3 times more asthma-related ED visits per month, and 2.5 times more asthma-related hospitalizations per month over the 26-week period compared with those unexposed.
- Violence-exposed participants had 1.7 times more overall ED visits per month and 1.7 times more overall hospitalizations for any cause.
- Asthma-related quality of life at the 26<sup>th</sup> week visit was significantly lower in violence-exposed participants.
- Baseline depressive symptoms and social support were unrelated to the effects of exposure to violence on outcomes. This suggests that poorer outcomes were not simply related to an individual's subjective perceptions of stress, but that the exposed group was, in fact, sicker.
- These results do not mean that exposure to violence worsens asthma. These results are also consistent with the view that those exposed to violence are exposed to other social, environmental, or physical ills that worsen their disease.

---

***POLICY IMPLICATIONS***

This study contributes to the growing body of information about the link between community characteristics and health, and in particular, the growing understanding of the connections between community violence and individual health. These findings suggest that exposure to violence is associated with health effects that include and go beyond asthma exacerbations.

- Questions remain about whether exposure to violence exacerbates asthma or whether it is a marker for conditions that exacerbate asthma. It could affect asthma through generation of psychosocial stress and the physical consequences of that stress; stress may also act on other factors related to asthma outcomes, such as adherence to medications and lifestyle.

---

*Continued on back.*

---

## **POLICY IMPLICATIONS** *(continued)*

- It is also possible that exposure to community violence does not exacerbate asthma at all, but is instead a marker for increased exposure to pollutants, substandard housing conditions, and limited access to healthy foods, health care, social services, and outdoor exercise. Exposure could be both a trigger and a marker, and unraveling the two has proven difficult.
- What is certain is that these results reflect the tangled web of health and social environment, and how violence can be seen as an issue of health in broad and perhaps unanticipated ways. The findings also highlight the need for clinicians to consider the environment in which the patient lives in order to recommend and implement the most effective treatment plan for many chronic conditions, including asthma.

---

*This Issue Brief is based on the following article: A.J. Apter, L.A. Garcia, R.C. Boyd, X. Wang, D.K. Bogen, T. Ten Have. Exposure to community violence is associated with asthma hospitalizations and emergency department visits. Journal of Allergy and Clinical Immunology, September 2010, vol. 126, pp. 552-557.*

---

*Published by the Leonard Davis Institute of Health Economics, University of Pennsylvania, 3641 Locust Walk, Philadelphia, PA 19104.*

*Janet Weiner, MPH, Associate Director for Health Policy, Editor*

*David A. Asch, MD, MBA, Executive Director*

Visit us on the web at [www.upenn.edu/ldi](http://www.upenn.edu/ldi)

---

*Issue Briefs synthesize the results of research by LDI's Senior Fellows, a consortium of Penn scholars studying medical, economic, and social and ethical issues that influence how health care is organized, financed, managed, and delivered in the United States and internationally. The LDI is a cooperative venture among Penn schools including Medicine, Nursing, Dental Medicine, Communication, and Wharton, and the Children's Hospital of Philadelphia. For additional information on this or other Issue Briefs, contact Janet Weiner (e-mail: [weinerja@mail.med.upenn.edu](mailto:weinerja@mail.med.upenn.edu); 215-573-9374).*

---

© 2010 Leonard Davis Institute

*Published by the  
Leonard Davis Institute  
of Health Economics  
University of Pennsylvania*

## **Issue Brief**



**3641 Locust Walk  
Philadelphia, PA 19104-6218  
215.898.5611  
fax 215.898.0222  
ADDRESS CORRECTION REQUESTED**

**Nonprofit Organization  
U.S. Postage  
PAID  
Permit No. 2563  
Philadelphia, PA 19104**