Sickle Cell Disease and Housing Conditions

What is Sickle Cell Disease (SCD)?
SCD refers to a group of genetic blood disorders, the most common of which is sickle cell anemia (HbSS). Individuals with SCD experience a number of symptoms, the most challenging of which are unpredictable episodes of debilitating pain. These pain episodes can lead to hospitalizations and have life-threatening consequences.

What causes the pain?
Under various circumstances, the blood cells of a person with SCD can deform from a flexible doughnut shape into a rigid sickle shape (hence the name). When enough cells have sickled, the deformed cells block small blood vessels and deprive the surrounding tissues of oxygen. This causes the tissues to die and leads to incapacitating pain. More information about the medical side of SCD can be found at the website of the New England Pediatric Sickle Cell Consortium (http://www.nepscc.org/index.html).

How are Pain Episodes Triggered?
Pain episodes are caused by a number of factors, including cold and hot temperatures, airway obstruction/irritation, overexertion, and dehydration. Any type of physical stress—whether it is caused by illness, injury, or the environment—or psychological stress can cause a pain crisis.

SCD and the Lungs
SCD causes inflammation throughout the body, including the lungs. When sickling occurs in the chest, individuals with SCD can experience something called Acute Chest Syndrome (ACS). Each episode of ACS damages the lungs and can increase airway sensitivity. This makes future episodes of ACS more severe, leading to potentially life threatening respiratory conditions.

Many common airway irritants that trigger asthma attacks can also trigger SCD pain episodes and lead to ACS. About one third of people with SCD also have asthma, which further increases their susceptibility to environmental triggers and the potential life-threatening respiratory conditions that may result. Even those with SCD who do not have a diagnosis of asthma have some degree of airway inflammatory disease, and so they too are at risk of severe consequences when exposed to environmental triggers.

The Housing Connection
There are several links between poor housing conditions and health outcomes for people with SCD. The best known of these are heating-related issues, as exposure to cold is a frequent pain episode trigger. Another common trigger is environmental exposures to irritants such as mold, dust, and infestations. These irritants prevent lungs from working properly, reducing the amount of oxygen in the blood. This lower level of oxygen leads to more frequent and more severe sickling and thus more pain episodes.

With proper support and environmental conditions, however, many pain episodes can be prevented or reduced in severity, and individuals with SCD can lead fuller and more productive lives.