



**Children's Health Fund**

**LEGACY OF SHAME:**

**The On-Going Public Health Disaster of Children**

**Struggling in Post-Katrina Louisiana**

The Children's Health Fund and the National Center for Disaster Preparedness,  
Columbia University Mailman School of Public Health  
November 4, 2008

Revised January 12, 2009



**National Center for Disaster Preparedness**

**Contacts:**

**Irwin Redlener, MD**

President, Children's Health Fund

&

Professor of Population and Family Health

Columbia University Mailman School of Public Health

[ir2110@columbia.edu](mailto:ir2110@columbia.edu)

Office: (212) 535-9400

**Caroline DeRosa**

Senior Director of Policy and Advocacy, Children's Health Fund

[cderosa@chfund.org](mailto:cderosa@chfund.org)

Office: (212) 535-9400 x291

**Rebecca Hut**

[rhut@chfund.org](mailto:rhut@chfund.org)

Senior Director of Communications, Children's Health Fund

Office: (212) 535-9400 x244

Cell: (917) 613-2089

## **Executive Summary**

On August 29, 2005 Hurricane Katrina struck the Gulf coasts of Alabama, Mississippi, Louisiana and Texas, impacting an area spanning approximately 100,000 square miles. The brunt of the killer storm – soon followed by Hurricane Rita – destroyed communities and lives predominantly in Mississippi and Louisiana. But the subsequent failure of the New Orleans levees and the flooding of that city had particularly devastating consequences. Many observers were stunned to see the extraordinary failures in many aspects of the initial response.

The on-going recovery is continuing to fail in ways that are clearly harmful to the health and well-being of children and their families. At this point, many storm dislocated families have endured two and a half years of crowded, formaldehyde-laden travel trailers as shelter followed by lives in limbo scattered unmonitored in low-income housing and shelters from motels to travel trailers in still devastated communities.

Over time, only the poorest and highest risk families remained in the federally funded trailer parks until they were closed by officials in May 2008. It is clear from our review of the medical records of children being cared for in Children's Health Fund's project in Baton Rouge that these children are among the most medically needy child population in the United States. The children were a mix of those still homeless and in trailers, children formerly in trailer parks and subsequently relocated, and medically underserved children from the community. These are at the highest level of risk and quite likely the sickest of the 20,000 or more children still displaced in Mississippi and Louisiana. In essence, persistent neglect of the health and nutrition of highly vulnerable children and the lack of

a plan to ameliorate this reality is having a devastating on the health and well being of Katrina's youngest on-going victims.

### **Key Medical Findings**

Chart reviews from the Children's Health Fund (CHF)/ Louisiana State University (LSU) Baton Rouge Children's Health Project, a mobile medical unit program which served the largest Federal Emergency Management Agency (FEMA) village as well as other displaced and medically underserved Baton Rouge children, shows astonishingly grave health results:

- 55% of elementary school age children had a behavior, developmental, learning problem or hearing/vision problem that affected their education.
- 42% of children three years and older needed developmental or mental health services, including case management services for their family.
- 42% of children were diagnosed with allergic rhinitis and/or upper respiratory infection and 24% had a cluster of upper respiratory, allergic, and dermatological diagnoses. These high rates of diagnoses could reflect the harsh environmental conditions at shelter, such as exposure to formaldehyde which was found by independent experts to be present in the trailers.
- 41% of children under four years of age were diagnosed with iron deficiency anemia. This is twice the rate for homeless children in shelters in New York City and two and a half times the highest recorded by the CDC for high-risk minority populations.
- Nearly one-half of the children required at least one specialty medical visit and 12% required two or more specialists.

## **Key Recommendations**

1. Contact information for families that were living in the trailer parks must be provided by FEMA to Louisiana officials, so these children can be located and assessed for potential health issues, including: physical, mental, dental and nutritional concerns.
2. The Governor should appoint a “Louisiana child health task force” representing all provider systems in communities where displaced families are currently sheltered or housed. The purpose of the task force, which would include representation from major medical centers, hospitals, community health centers, medical societies, and the Louisiana Chapter of the American Academy of Pediatrics, should be to determine a process for establishing a “medical home” (comprehensive, coordinated health care) for each identified child.
3. Additionally, the Governor should require that an academic and developmental prescription be developed for each child, along with a delineation of relevant interventions to make sure children are academically rehabilitated. Fulfillment of these academic prescriptions should be monitored and accountable to the Governor.
4. Funding for case management must include serving those children and families that were transitioned from the FEMA villages so that appropriate social service agencies can assist in assuring that these displaced children are connected to

- health care providers, nutrition services, schools, and appropriate and stable housing.
5. Funding for this FEMA case management program is set to expire in March 2009. Since this program has yet to provide any services to thousands of families, the deadline must be extended to at least mid-2010.
  6. FEMA must coordinate all case management resources being funneled to Hurricane victims in the Gulf to ensure that the limited available resources are maximized to address the ongoing needs of *all* affected children and families.
  7. CHF will organize a national panel of child health and educational organizations and experts to monitor the progress being made by the federal government and local officials with respect to the health, developmental and academic status of these displaced children.

### **Background**

Hurricane Katrina, followed quickly by Hurricane Rita, was the costliest natural disaster in U.S. history, and one of the most deadly. Its impact on children was devastating, and this negative impact continues. The US Census Bureau estimates that 163,000 children were displaced by Hurricanes Katrina and Rita. More than half were from Louisiana (principally in and near Orleans Parish). Surveys done in shelters following Hurricane Katrina found that the displaced were disproportionately very poor and African-American. This population were also the least likely to return home as conditions improved.

As a result of the hurricanes, the health infrastructure in the affected region of Louisiana was essentially wiped out. The public health workforce in New Orleans was cut in half, medical records were lost, and many doctors in private practice had to evacuate and did not return. Nearly all safety net facilities, clinics and emergency rooms, for uninsured and low income people were closed. As they reopened, their service capacity was lower than before the hurricane. Community-based mental health facilities were also destroyed while the need for services increased dramatically. As many as one in five people who did not have a psychiatric disorder pre-Katrina met diagnostic criteria for one afterwards; hurricane-related stress was associated with this increased incidence of mental illness.

Before the storm, New Orleans' schools had been failing, with one in five twelfth graders dropping out prior to graduation. After Katrina, some 60,000 displaced Louisiana school children remained in the state. Many were moved from school to school, and by the end of the first post-Katrina school year about 10,000 were not enrolled at all.

The recovery from Hurricane Katrina was slow and remains incomplete. Two-and-a-half years after the hurricane, as many as about 20,000 children in the Gulf Region are still displaced and in need of intense case management services. In addition, between 46,000 and 64,000 children remain at-risk as a result of having been displaced and exhibiting the presence of at least one of the following risk factors predicted to negatively impact their life opportunities: decline in academic achievement, lost access to health care, or a new onset psychiatric disorder, principally depression, anxiety and behavior disorders.

For families who continued to be displaced and homeless, shelter was most often provided by FEMA. Our best estimate, which varies from published sources, is that

nearly 20,000 trailers had been arranged in congregate settings known as “FEMA villages” or placed at pre-existing private trailer parks or industrial sites. Many of these trailers were located in areas far from the services and facilities all families need: schools, safe play areas, health care, even grocery stores. Over time these FEMA villages became increasingly unsafe, with open drug dealing, prostitution and other crime. The largest of these FEMA villages were in Baton Rouge, and it was here that the last remaining Katrina-displaced families had been located.

### **The Children’s Health Fund response**

CHF became involved in post-Katrina relief efforts almost immediately after the hurricane. The CHF response was three-pronged, including 1) public health surveillance to determine, on a population basis, the extent of need and access to services among displaced children and families; 2) direct medical and mental health service delivery in partnership with Tulane University in New Orleans and Louisiana State University (LSU) in Baton Rouge in Louisiana, and a third clinical project was established in Biloxi-Gulfport, Mississippi; and 3) advocacy to help improve the immediate situation for affected children and families and to influence policy development to more effectively respond to future disasters.

### **A. Population-Based Surveillance**

The Gulf Coast Child and Family Health (CAFH) study is a longitudinal study of 1,082 randomly sampled Gulf Coast households displaced by Hurricane Katrina. It employed a socio-ecological model to examine factors associated with the mental health consequences of Hurricane Katrina and people’s sense of post-disaster recovery.

Key findings from the first phase of the study (six months after Hurricane Katrina)

include:

- One third of children living in FEMA-subsidized community settings had at least one diagnosed chronic medical health condition;
- These displaced children also showed significantly higher rates of developmental, behavioral and learning problems compared to children previously surveyed in Louisiana cities;
- Almost half of the children who had good health care – a “medical home,” meaning access to continuous, comprehensive and coordinated care – lost access to this crucial service;
- Almost half of parents reported that one or more of their children showed signs of new emotional or behavioral difficulties that did not exist prior to Hurricane Katrina;
- Symptoms of depression among mothers was high, and their children were two and a half times more likely to have an emotional or behavioral problem than children of mothers who did not show signs of depression;
- At least some of this emotional upheaval after the storm could be attributed to the way that shelter needs were handled: On average, households had moved 3.5 times since the hurricane. Some had to relocate as many as nine times sometimes in different states. Each move disrupts the child’s health care and education, and potentially exacerbates underlying post-storm anxiety, commonly manifested as behavioral and/or mental health problems;

- Parents were greatly concerned about their children's safety, whether they were living in trailer parks or back in the community. Nearly two-thirds of all residents are afraid to walk in their neighborhoods at night. Many people had little or no confidence in the police to protect them or in the criminal justice systems to help them should they be victims of a crime. Approximately one-quarter felt that their children were either never or only sometime safe in school;
- Parents and caregivers also reported significant drops in their children's academic performance, a nearly 20% fall-off since the hurricane;
- According to parents, rates of clinically-diagnosed asthma among their children increased from 18% to 26% since the hurricane, a nearly 50% increase in prevalence. Rates of clinically-diagnosed depression or anxiety among children jumped from 6% to 27%, a nearly four-fold increase. Two-thirds of parents reported that their children experienced emotional or behavioral problems since the hurricane, of whom nearly two-thirds were still experiencing such problems as being sad or depressed, nervous or afraid, having problems sleeping, or problems getting along with others even two years after the hurricane.

Two years after Katrina, it was clear that the poorest families were those remaining in FEMA trailer parks. Barely half had access to a bank account, and only 16% had a credit card. An even higher percentage of displaced Louisiana children were reported to have a new developmental, behavioral or emotional problem than six months post-Katrina. Sixty percent of these poor children did not have health insurance, and one of six children who needed health care did not even try to get it. Most recently, the CAFH study found that two years post-Katrina, social isolation was associated with

worse mental health outcomes. The children and families who remained in FEMA trailers were already at the highest risk, and this was compounded by their isolated shelter placement.

### **B. Health Care Delivery: The Baton Rouge Chart Review**

The problems found in the CAFH study were corroborated when we reviewed all 261 charts of pediatric patients seen from January 1 through September 30 2008 under the auspices of the Children's Health Fund/ LSU Baton Rouge Children's Health Project. This is an unusually intensive and comprehensive pediatric primary care model which includes integrated, co-located mental health services and intensive case management. The Project provided care with a mobile medical unit and a mental health unit parked at Renaissance Village, the largest FEMA village and the last to close, and to other displaced, formerly displaced, and medically underserved Baton Rouge children. The children whose charts were reviewed therefore included homeless children still in FEMA trailers, children who had been sheltered by FEMA and subsequently relocated within the community, and medically underserved community children seen primarily at school sites. The vast majority, 96%, was African-American; 3% were white and 1% Hispanic. All had income below the federal poverty level; for those that reported an income, it was generally about \$5,000 per year, indicating conditions considered "profound poverty". The average age of the children was nine years, (range, infancy to 21 years). More than a third, 35%, were infants and preschool aged children (under five years of age).

We know these children were medically underserved because so many were diagnosed with previously unidentified chronic conditions including congenital anomalies. More than three-fourths of well baby, well child and sports physical visits resulted in a medical diagnosis. Nearly half of the children required at least one specialist referral, and 12% needed to see two or more specialists. These findings underline the extent to which these children had significant unmet medical needs which pre-dated the hurricane and its impact.

Among young children under four years of age, the rate of iron deficiency anemia was by far the highest yet documented: 41%. This is twice the rate for homeless children in family shelters in New York City and two and a half times the highest recorded by the CDC for high-risk minority populations. In young children, anemia is often associated with developmental problems and, later, academic underachievement. Nutrition problems were also noted in the weight problems of older children. While only 12% were obese (body mass index or BMI at or above the 95<sup>th</sup> percentile), most of those that were obese had a BMI greater than 35, which is in the “morbid obesity” range for an adult. In addition, 29% of the obese children and adolescents were also diagnosed with anemia.

More than one-third of children under four, 36%, had otitis media (ear infections with effusion in the middle ear) or impacted cerumen (wax in the ear canal). These were generally not isolated episodes but protracted and recurrent conditions. Both conditions, especially when they do not resolve quickly and when they occur among children who are otherwise at risk for developmental delay, often affect speech-

language development and later school performance because of their impact on the child's hearing.

Additionally, 27% of children were diagnosed with a hearing or vision problem. While some were diagnosed with visual acuity problems easily corrected with eyeglasses, it is significant that these children did not have corrective lenses and were functioning in school and elsewhere with sub-optimal eyesight. Some of these conditions, however, were more serious, including strabismus, an eye muscle problem which if not corrected at an early age can result in permanent visual impairment. And six children (3%) were diagnosed with hearing loss.

For children three years and older, 42% needed either developmental or mental health services, including case management for the family. This indicates a need for a more intensive level of care than is typical in pediatric settings. More than half, 55%, of the elementary school age children (6-11 years old) had a medical, developmental or behavioral problem, including hearing and vision problems, that potentially affected their educational success. Signs of possible attention deficit disorder were observed, but mental health assessment often revealed an underlying depression, anxiety or stress disorder that required treatment.

While the asthma rate was fairly typical at 11%, the rate of other upper respiratory conditions was unusual. Forty two percent of these children were diagnosed with allergic rhinitis and/or upper respiratory infection. Most of the displaced children were still living in FEMA trailers; nearly one-fourth of them, 24%, had a cluster of

upper respiratory, allergic, and dermatological diagnoses that could reflect the harsh environmental conditions in their shelter. These shelter conditions include overcrowding associated with repeated exposure to infectious disease (as is typical for children in homeless shelters) and also exposure to formaldehyde which was found by independent experts to be present in these trailers used as shelter. While we cannot definitively attribute this degree of upper respiratory distress to the trailers as shelters, we note that the children who were displaced from their home were significantly more likely ( $p < 0.05$ ) than those who were not to have these related diagnoses.

### **The Bottom Line**

In May 2008, the process of emptying the FEMA trailer parks was completed and all of the children and families who had lived there were relocated. These were among the poorest and highest risk children displaced by Hurricane Katrina. They had experienced multiple disruptions of their living conditions and ended up in extremely harsh, potentially dangerous shelter environments. The chart review data we described above are consistent with the population level data for displaced children from the formal CAFH study. Whether they remained in FEMA shelters or remained medically underserved in the affected Baton Rouge community, the impression is the same. Not only has the health of these children not improved since the storm, over time it has declined to an alarming level. This is reflected in their multiple medical and mental health needs, developmental and school problems, and an unusually high rate of nutrition problems identified when the children began health care in the Baton Rouge Children's Health Project. Many of these medical and nutrition problems have

the potential to further compromise their development, learning and ultimately life success. Deterioration of these conditions is likely to happen without on-going assurance of a stable environment that provides appropriate housing, educational opportunities, nutrition and comprehensive medical care for each child.

### **Urgent Recommendations**

The data supporting our sense of urgency in addressing this ongoing public health crisis effecting Katrina displaced children is compelling. **We implore state leaders and other public officials to recognize this crisis as a priority and a matter for urgent action.** To meet the immediate medical needs of these children and address the challenge of reintegrating all displaced children and families in the Gulf region, the following actions must be taken:

1. It is critical that we locate and treat every child with immediate medical need. Our best hope to quickly identify and locate these children rests with FEMA. **Contact information for families that were living in the trailer parks must be provided by FEMA to Louisiana officials so these children can be located and their status and well-being tracked and monitored to guarantee that they are connected with critically needed services** –including: physical, mental, dental and nutritional services.
2. It is imperative that there is coordination among the providers of healthcare treating these kids. The complex medical needs of these children require that they receive comprehensive, continuous, coordinated care in a “medical home” model. **The Governor should appoint a “child health task force” representing all provider systems in communities where displaced families are currently**

- sheltered or housed. **The purpose of the task force should be to determine a process for establishing a “medical home” for each identified child and should include representation from major medical centers, hospitals, community health centers, medical societies, and the American Academy of Pediatrics.** Identified health care providers should have the capacity to rapidly assess and treat children with multiple medical problems who have been disconnected from a medical provider.
3. Once connected with a medical home, these children must have their developmental, behavioral and learning needs monitored regularly. Many of the medical problems we have identified are known to later affect speech-language and cognitive development for young children, and to lead to poor educational outcomes. It is imperative that the developmental progress and school performance of these children are continuously tracked and monitored. **The Governor should require that an academic and developmental prescription be developed for each child, along with a delineation of relevant interventions to make sure children are academically rehabilitated. Fulfillment of these academic prescriptions should be monitored and accountable to the Governor.**
  4. After a significant delay, FEMA recently signed off on a negotiated agreement that provides funding for case management services for Katrina families in need. **Funding for case management must include serving those children and families that were transitioned from the FEMA villages so that appropriate social service agencies can assist in assuring that these displaced children are connected to health care providers, nutrition services, schools and**

**appropriate and stable housing.** The expiration date of this FEMA case management program is currently set for March 2009. Since this program has yet to provide any services to thousands of families, **the deadline must be extended to at least mid-2010.**

5. In an effort to address the needs of victims of Hurricanes Gustav and Ike, the U.S. Department of Health and Human Services (HHS) has initiated a parallel case management program, mirroring the one created for victims of Hurricane Katrina. Bureaucratic barriers preclude coordination between these programs. This structure will foster competition rather than coordination among the limited number of qualified case management provider organizations. **FEMA must take a critical leadership role in coordinating case management resources to ensure that the limited available resources are maximized to address the ongoing needs of *all* affected children and families.**
6. The Children's Health Fund will organize a national panel of child health and educational organizations and experts to monitor the progress being made by the federal government and local officials with respect to the health, developmental and academic status of these displaced children.

## **References**

The following sources were consulted in preparing this white paper:

Abramson, D., Redlener, I., Stehling-Ariza, T., & Fuller, E. (2007, December 7). The legacy of Katrina's children: Estimating the numbers of at-risk children in the Gulf Coast states of Louisiana and Mississippi. National Center for Disaster Preparedness, Research Brief 2007:12. Mailman School of Public Health, Columbia University, New York.

Retrieved from

[http://www.ncdp.mailman.columbia.edu/files/legacy\\_katrina\\_children.pdf](http://www.ncdp.mailman.columbia.edu/files/legacy_katrina_children.pdf)

Galea, S., Brewin, C.R., Gruber, M., Jones R.T., King, D.W., McNally, R.J., Ursano, R.J., Petukhova, M., Kessler, R.C. Exposure to Hurricane-Related Stressors and Mental illness After Hurricane Katrina. *Archives of General Psychiatry*. 2007;64(12):1427-1434.

Louisiana Department of Education (2005). 12th grade enrollment and graduation counts 2004-2005. Retrieved from <http://www.doe.state.la.us/lde/pair/2396.html>

Madrid, P., Garfield, R., Jaber, P., Daly, M., Richard, G., & Grant, R. Mental health services in Louisiana school-based health centers post-hurricanes Katrina and Rita. *Professional Psychology: Research and Practice*. 2008;39(1), 45-51.

Madrid, P., Sinclair, H., Bankston, A., Overholt, S., Brito, A., Domnitz, R., Grant, R. Building Integrated Mental Health and Medical Programs for Vulnerable Populations Post-Disaster: Connecting Children and Families to a Medical Home. *Prehospital and Disaster Medicine*. 2008;23(4), 314-321.

Rudowitz, R., Rowland, D., & Shartz, A. Health care in New Orleans before and after Hurricane Katrina. *Health Affairs*. 2006;25(5), 393-406.

Sierra Club. "Toxic Trailers. Tests Reveal High Formaldehyde Levels in FEMA Trailers." Updated April 2008. Retrieved from [http://www.sierraclub.org/gulfcoast/downloads/formaldehyde\\_test.pdf](http://www.sierraclub.org/gulfcoast/downloads/formaldehyde_test.pdf)

Stoddard, E. (2007). Post-Katrina New Orleans death rate shoots up. Reuters Foundation. Retrieved from <http://www.alertnet.org/thenews/newsdesk/N21396585.htm>

United States Department of Education (2005). Testimony of Assistant Secretary Johnson on Hurricane Katrina and elementary and secondary education. Retrieved from <http://www.ed.gov/news/speeches/2005/09/09222005.html>

Wang, P., Gruber, M., Powers, R., Shoenbaum, M., Speier, A., Wells, K., et al. (2008). Disruption of existing mental health treatments and failure to initiate new treatment after Hurricane Katrina. *American Journal of Psychiatry*. 2008;165(1), 34-41.

Whoriskey, P. (2006, June 7). Katrina displaced 400,000, study says: New Orleans becomes whiter, Mississippi coast more diverse. *The Washington Post*, A12.

Zuckerman, S. & Coughlin, T. (2006). Initial health policy responses to Hurricane Katrina and possible next steps. The Urban Institute. Retrieved from <http://www.urban.org/publications/900929.html>

#### The Gulf Coast Children and Family Health Study

Abramson, D. & Garfield, R. (2006, April 17). "On the Edge: Children and Families Displaced by Hurricanes Katrina and Rita Face a Looming Medical and Mental Health Crisis." National Center for Disaster Preparedness, Mailman School of Public Health, Columbia University and Operation Assist, The Children's Health Fund. Retrieved from [http://www.ncdp.mailman.columbia.edu/files/On%20the%20Edge%20L-CAFH%20Final%20Report\\_Columbia%20University.pdf](http://www.ncdp.mailman.columbia.edu/files/On%20the%20Edge%20L-CAFH%20Final%20Report_Columbia%20University.pdf)

Abramson, D., Garfield, R., & Redlener, I. (2007, February 2). National Center for Disaster Preparedness, Mailman School of Public Health, Columbia University and The

Children's Health Fund. "The Recovery Divide: Poverty and the Widening Gap Among Mississippi Children and Families Affected by Hurricane Katrina." Retrieved from: [http://www.ncdp.mailman.columbia.edu/files/recovery\\_divide.pdf](http://www.ncdp.mailman.columbia.edu/files/recovery_divide.pdf)

Abramson, D., Stehling-Ariza, N.A., Garfield, R., & Redlener, I. (2008). The Prevalence and Predictors of Mental Health Distress Post-Katrina: Findings From the Gulf Coast Child and Family Health Study. *Disaster Medicine and Public Health Preparedness*. 2008; 2(1):77-86.