in service use patterns for those who refused treatment (Dunford JV et al. *Ann Emerg Med.* 2006;47:328-336).

"Society had given up on these people," said Dunford, who is also professor of clinical medicine and surgery at the University of California-San Diego Medical Center. "But something can be done."

Dunford's research builds on the work of Dennis Culhane, PhD, codirector of the Cartographic Modeling Laboratory and professor of social welfare policy at the University of Pennsylvania in Philadelphia, who was among the first to conduct rigorous research on longitudinal shelter-tracking databases. In the 1990s, Culhane realized that providing shelter for the approximately 2500 chronic homeless individuals in New York City was costing the city about $25 000 a year each—and that did not include the many thousands of dollars in emergency medical care and other services (Kuhn R et al. *Am J Community Psychol.* 1998;17:23-43).

"The fact is in any community you can find homeless people costing $60 000 to $70 000 in services every year for whom putting them into stable housing will offset those costs," Culhane said.

Culhane's work served as an inspiration for Philip F. Mangano, executive director of the United States Interagency Council on Homelessness, which is the federal government's response to the problem. Mangano has been crossing the country to persuade communities, more than 200 so far, to sign onto the council's 10-year plans that call for elimination of homelessness based on addressing chronic homelessness (http://www.ich.gov). Mangano said the work of Culhane, Dunford, and others has brought rigor to discussions about homelessness.

"What has plagued homeless policy in the past was its nonscientific basis and its reliance on conjecture, hearsay, and feelings," Mangano said. "What we've done is unearthed evidence-based research that allows us to make policy and provide investment in these projects.

BAROMETER OF SUCCESS?

But focusing on cost savings as a barometer of success has drawn criticism from various quarters. Some citizens argue that it is unfair to give subsidized housing and special treatment to "those people" when others are working three jobs to pay for an apartment. And advocacy groups for the homeless worry that targeting resources to help the chronic homeless will take money away from helping the vast majority of homeless people.

Mangano says such arguments fail to take into account the net benefits such an approach will yield to society. "These are disabled people who are very expensive to the public purse," he said. "We can move them to supported housing, help in their recovery, and get them stable. Some people may feel 'they' don't 'deserve' this help, but the taxpayers deserve other solutions."

As for leaving the majority of the homeless without access to federal dollars, critics have not done their homework, Mangano said.

The initiative to target the chronic homeless is a priority, but not to the exclusion of helping those who experience transient homelessness, Mangano said, noting that about half of the $1.3 billion of the Department of Housing and Urban Development's funds for the homeless went for helping homeless families.

"If you're really trying to make a difference, you take your modest resources and invest it in intelligent action," explained Mangano, who said his ultimate goal is the elimination of all homelessness. "What you do is create change in often the most intractable problem. And when you do, you remoralize people into knowing that change is possible on the big social issues—if we can change the lives of the chronic homeless, then we can help anyone who is homeless." □

Genome Provides Clues on Addiction

Bridget M. Kuehn

SCIENTISTS SCOURING THE HUMAN genome for addiction-related genes have identified new links between an individual's genetic makeup and their risk of becoming dependant on opioids.

While epidemiological studies have provided strong evidence of a genetic component to an individual's risk of becoming dependent on opioids, finding the precise genetic roots of the addiction has proved difficult. Some scientists are seeking an answer by using information about the disorder's molecular basis to identify candidate genes. But this approach is unlikely to provide an exhaustive list of genes related to the disorder, so scientists also are scanning the entire genome in the hopes of finding genes that may play a less obvious role in opioid dependence.

A team of scientists from 7 institutions in New England and 1 in South Carolina has used this technique to find clues to genes playing a role in opioid dependence by searching the genomes of nearly 400 families with at least one individual who was dependent on opioids (Gelernter J et al. *Am J Hum Genet.* 2006;78:759-769). Their findings point to a few regions in the genome that appear to modulate an individual's risk of developing opioid dependence.

"We knew based on genetic epidemiology studies like twin studies that the genes had to be there, but a strong genetic linkage provides additional support for the importance of genetic defects [in opioid dependence]," said Joel Gelernter, MD, professor in the department of psychiatry at Yale University School of Medicine in New Haven, Conn.

One of the team's strongest indications of a genetic influence on opioid dependence came from analysis of a subgroup of individuals who used opioids heavily, which pointed to a link between this trait and a region on chromosome 17. Although the same region was linked to addiction in all individuals in the study who had been diagnosed with the problem, these results were not as statistically strong. But preliminary evidence from a second team of researchers bolsters this linkage. The second team, led by Ming T. Tsuang, MD, PhD, who recently became the director of the Institute of Behavioral Genomics at the University of California, San Diego, after leaving his post as director of the Harvard Institute of Psychiatric Epidemiology and Genetics, did a linkage study of about 1000 sibling pairs identified by the Yunnan Institute for Drug Abuse in the Yunnan Province of China. Their analysis identified the same region on chromosome 17. These as yet unpublished results were presented at Massachusetts General Hospital grand rounds in April. Tsuang said the fact that two independent teams of researchers have identified the same linkage in distinct ethnic groups makes the findings promising.

Other results from Gelernter and colleagues found genetic linkages unique to particular ethnic groups. In one subgroup of individuals who were dependent on drugs other than opioids, the researchers identified a genetic link to another region on chromosome 17, but only in US individuals with European ancestry. The researchers hypothesize that a gene in this region may somehow protect an individual who is otherwise at risk of for addiction from developing opioid dependence. They also identified a link between a genetic marker on chromosome 2 and opioid dependence in black individuals.

Gelernter said the next step for the researchers will be identifying the specific genes within those regions that are associated with opioid dependence.

"Once you are successful at identifying the genes that influence risk you are on the road to understanding the biology of the disorder and possibly identifying targets for [therapeutics]," he said. □