SUMMER 2008

University of California, Berkeley
School of Public Health

Highlights

Extra cash from government program linked to better child development, new study says

Children in impoverished families that received an extra amount of cash from a government support program were taller, less likely to be overweight, and scored higher on cognitive, motor, and language tests, compared with kids in families that received less money, says a new study led by researchers at the UC Berkeley School of Public Health. The study, reported in the March 8 issue of the journal Lancet, *focused on low-income families enrolled in a conditional cash transfer program run by the Mexican government.*

In traditional welfare programs, families receive cash benefits based upon their income or residence in specific geographic areas. Conditional cash transfer programs, in contrast, provide money to low-income families if they fulfill specific requirements, such as getting their children vaccinated and making sure they attend school. Some programs also provide food and nutritional supplements as part of the intervention.

"Previous research has shown positive outcomes for child development from conditional cash transfer programs, but the general assumption, particularly from the public health perspective, was that the improvements were the result of the health and education components rather than the cash," said lead author **Lia Fernald,** assistant professor in public health nutrition. "This new study is the first to tease out the impact of the money from the other elements of the program."

While it was unclear exactly how the cash was being used, the researchers said the extra purchasing power could have allowed families to buy more food, medicine, toys, or household goods.

The Mexican government was the first to launch a conditional cash transfer program in 1997. The program now serves more than 5 million Mexican families and has been replicated in more than 20 developing countries, primarily in Latin America and Africa.

Last year, New York City **Mayor Michael Bloomberg** announced the creation of Opportunity NYC, heralding the first conditional cash transfer program in a developed nation. Modeled after Oportunidades in Mexico, the New York City pilot program has already disbursed $740,000 to more than 1,400 families who have completed specific activities related to education, health, and workforce participation and training.

Budget and logistic constraints kept the Mexican government from enrolling all eligible families at once in its conditional cash transfer program. A random selection of eligible villages began participating; then other villages were phased in over an 18-month period. That meant that families enrolled first received more money cumulatively than those enrolled later.

"Even the purchase of additional books or toys for the children—something we often take for granted in this country—could help stimulate cognitive development." —Lia Fernald

The researchers estimated the difference between families who over the past 3.5 to 5 years had received an average of $800—the median amount of cash disbursed to a household in the program—with those who had gotten twice that amount in the same time period.

They found that, compared with children in families who got less money, kids in families who got more cash were taller for their age group, were less likely to be overweight, and performed better on standardized tests for cognitive and motor development. The researchers did not analyze just how the extra cash influenced child development, but they suspect that the money may have allowed families to purchase more nutritious food or medicine, or perhaps to buy assets for the home such as a refrigerator or a covering for a dirt floor.

"Even the purchase of additional books or toys for the children—something we often take for granted in this country—could help stimulate cognitive development," said Fernald. "Also, the additional cash could have the psychological benefit of taking some of the pressure off of the mothers. These are families who are at the bottom 20th percentile in Mexico for household income. When relieved from the constant worry about not providing enough food for their children, mothers may feel less depressed and may be better able to interact with their children."

The researchers noted that despite these encouraging findings, the performance on child health and development measures for all the kids in the study remained poor relative to that for the country's broader population.

"This paper clearly says that increased cash is associated with better outcomes in kids, but we need to do better," said Fernald. "It may be hard to significantly increase the amount of cash given to each family, but as a major next step, it could be worth investigating whether tying the cash to more targeted child stimulation programs would help."

Paul Gertler, professor of economics and of health services finance, also coauthored the study.

The National Institutes of Child Health and Human Development, the Fogarty International Center at the National Institutes of Health, University of California Institute for Mexico and the United States, and the Mexican government helped support this study.

Dean's Message: On Science, Heroes, and the Public's Health

In an interview with Bill Moyers in 1989, Maxine Singer noted, "Science is one of the grand human activities. It uses the same kind of talent and creativity as painting pictures and making sculptures. It's not really very different, except that you do it from a base of technical knowledge. Science is not an inhuman or super human activity. It's something that humans invented, and it speaks to one of our great needs—to understand the world around us."

Heroes take science to the next step by using knowledge of the world to improve it. This past April, we celebrated four Public Health Heroes who have used science to improve the public's health. Our International Hero, Don Francis, used the development of the vaccine for smallpox to help eradicate it in the most impoverished countries of the world. David Kessler, our National Hero, used the accumulating evidence on the harmful effects of nicotine in his fight against the tobacco companies during his service as commissioner of the FDA. Barbara Staggers, our Regional Hero, has drawn on her medical and behavioral science knowledge in addressing the health and developmental needs of adolescents. Our Organizational Hero, International Medical Corps, has drawn on advances in emergency and trauma medicine combined with knowledge of logistical support in providing emergency health services in war-torn, and disaster-afflicted countries.

Our School's faculty joins these heroes in both developing and applying new knowledge to improve human health. In this issue of *Highlights,* you will read about three of them. Lia Fernald and colleagues demonstrate how conditional cash transfer programs can be used to improve child health in impoverished families. The demonstration, originating in Mexico, has now spread to more than 20 developing countries and has been adopted by Mayor Bloomberg in New York City. Research by Suzanne Young and colleagues suggests an association between low folic vitamin intake in males and a greater number of abnormal number of chromosomes associated with the risk of miscarriage and birth defects. This will lead to randomized clinical trials; the results of which may suggest the advantages of additional folate intake for males. Finally, research by Richard Scheffler and colleagues at the School's Petris Center are the first to demonstrate a link between community social capital and outcomes from heart disease. The findings suggest the importance of community connections in fostering better health outcomes.

The process of taking new knowledge generated by research to inform policy and practices that improve human health is called "translational" research. A priority in the School's new Strategic Plan is to expand our efforts in translational research. In doing so, we plan to broaden the impact of our research on improving health working with our local, national, and global partners. We will be proving further details in forthcoming issues of *Highlights* and other communications.

As Goethe reminds us: "Knowing is not enough; We must Apply. Willing is not enough; We must Do."

Sincerely,

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Public Health Heroes Honored at 12th Annual Awards Ceremony


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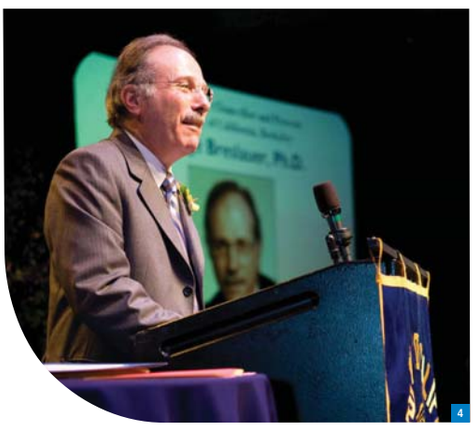
On April 2, 2008, the School of Public Health recognized three individuals and one organization as Public Health Heroes at an awards ceremony held at the Yerba Buena Center for the Arts in San Francisco.

1 2008 International Hero Donald Francis (left) with 2004 International Hero Larry Brilliant 2 (Left to right: Award presenter Mark Smolinski, Donald Francis, Nancy Aossey (representing Organizational Hero International Medical Corps), Regional Hero Barbara Staggers, award presenter Wilma Chan, National Hero David Kessler, award presenter William Foege 3 The Forum at Yerba Buena Center for the Arts 4 Executive Vice Chancellor & Provost George Breslauer 5 Mary Catherine Birgeneau, wife of Chancellor Robert Birgeneau (left), and Barbara Staggers 6 National Hero David Kessler (left) receives congratulations from Policy Advisory Council chair Kenneth Taymor. For more information, visit *www.publichealthheroes.org.*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Research Highlights

Folate intake linked to genetic abnormalities in sperm

Healthy men who report lower levels of the nutrient folate in their diets have higher rates of chromosomal abnormalities in their sperm, according to a new study by researchers at UC Berkeley and the Lawrence Berkeley National Laboratory.

Women of child-bearing age are encouraged to maintain adequate levels of folate in their diet, but the findings, published March 20 in the journal *Human Reproduction,* provide evidence that what men eat may also affect reproductive health.

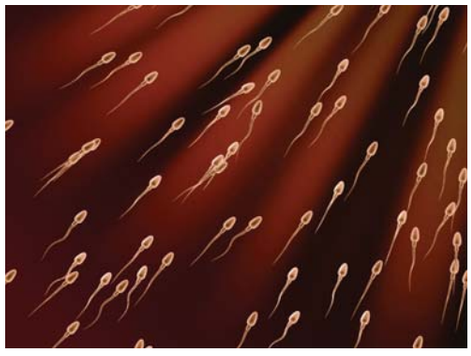
"Recent studies have suggested that paternal diet affects sperm count and motility, which is important for conception, but this new study takes it further to say that male diet may be important for healthy offspring as well," said study coordinator **Suzanne Young,** a researcher at the UC Berkeley School of Public Health. "Our study is the first to look at the effects of diet on chromosomal abnormalities in sperm. These abnormalities would cause either miscarriages or children with genetic syndromes if the sperm fertilized an egg."

Folate is a water-soluble B vitamin that occurs naturally in a wide range of foods. It is needed during the synthesis of DNA, RNA, and proteins, and it is necessary for the production of new cells. Folate also helps keep in check levels of homocysteine, an amino acid that, when elevated, is linked to heart disease. Studies have shown that adequate intake of folate by women just before and during pregnancy significantly reduces the risk of neural tube birth defects, such as spina bifida or anencephaly.

"The emphasis related to the birth of a healthy baby has been weighted towards the health and diet of women, not just during pregnancy, but before," said **Brenda Eskenazi,** professor of epidemiology and maternal and child health at the School of Public Health and co-principal investigator of the study. "What we're finding now is that a nutritious diet, specifically folate intake, may be beneficial for men as well when it comes to producing healthy offspring."

An estimated 1 to 4 percent of a healthy male's sperm have abnormal numbers of chromosomes, or aneuploidy, that are caused by errors during cell division (meiosis) in the testis. For this study, the researchers targeted three chromosomes—X, Y, and chromosome 21—because they are associated with common types of aneuploidy in live births. The researchers studied 97 men who were ages 22 to 80 and who worked at or had retired from a government research laboratory. The study excluded smokers and those with previous or existing reproductive or fertility problems. Researchers determined average intake of dietary and supplemental nutrients, including multivitamins, through participant questionnaires. Semen samples were collected within a week of completing the questionnaires.

After accounting for factors such as age, alcohol use, and medical history, the researchers found that men reporting the highest intake of folate had 19 percent lower rates of sperm with abnormal numbers of chromosomes than men with moderate folate intake, and 20 percent lower rates compared with men in the low folate intake group.



The researchers were not able to determine a link between sperm aneuploidy and the other nutrients examined, such as zinc, calcium, beta-carotene, and other vitamins.

But before fathers-to-be start popping folic acid supplements, researchers caution that this study only found a link, not a cause-and-effect relationship, between folate and chromosomal abnormalities. If future studies verify higher folate intake with lower rates of sperm abnormalities, it may be worthwhile to increase the U.S. recommended daily allowance of folate for men considering fatherhood from the current level of 400 micrograms per day, the researchers said.

The National Institute of Environmental Health Sciences, U.S. Environmental Protection Agency, U.S. Department of Energy, and National Institute on Aging helped support this research.

Strong community networks associated with fewer recurring heart problems

Home may be where the heart is, but it could be one's surrounding community that helps keep the ticker healthy, according to a new study led by researchers at the UC Berkeley School of Public Health, published online in the February 28, 2008, issue of *Social Science & Medicine.* Specifically, the study found, low-income patients with existing heart problems are significantly less likely to have another heart attack or a recurrence of chest pain if they live in a county with higher measures of trust, cooperation and social networks—something researchers call "social capital." This was true even after researchers accounted for such factors as gender, age, race or ethnicity, and the existence of other concurrent health problems.

"This analysis speaks to the value of clubs and social organizations in providing health information and reducing stress, both of which are known to reduce heart disease," said lead author **Richard Scheffler,** UC Berkeley professor of health economics and public policy.

"This is the first study to demonstrate a link between community social capital and prognosis following heart disease," said study coauthor **Ichiro Kawachi,** professor of social epidemiology in the Department of Society, Development, and Human Health at the Harvard School of Public Health. "Other research has linked social capital to health outcomes, but most of these studies have been cross-sectional, and therefore difficult to draw conclusions about cause-and-effect relationships."

The researchers based the degree of social capital in any given county upon the number of people employed in various organizations, including religious, civic, political, social, and alumni groups.

"This study clearly shows that the world within which people live also has an important impact on health."

There is growing evidence that cardiovascular health is linked to where a person lives, but it had been unclear whether location served as a proxy for other unmeasured factors, including the type of medical treatment or health care available there.

To address this gap, UC Berkeley researchers partnered with Kaiser Permanente Northern California. Data was obtained from actual clinical records of nearly 35,000 Kaiser Permanente patients who had been hospitalized for acute coronary syndrome in Northern California between 1998 and 2002. Patients were tracked for symptoms of recurring heart problems.

"Because we're using actual clinical records instead of self-reported medical information, we have a clearer picture of a person's health status and medical treatment," said Scheffler, who is also director of the Nicholas C. Petris Center on Health Care Markets & Consumer Welfare at the UC Berkeley School of Public Health. "And because all the patients are in the same health care system, we avoid the problem of comparing people with different kinds of health plans or who don't have insurance at all."

The researchers pointed out that patients did not need to be members of any of the community organizations measured in order to benefit. "An area with a high density of social networks and resources changes the character of a community, regardless of whether any one particular individual joins or not," said Scheffler. "It's the opposite of having a liquor store on every corner. You don't have to shop at the liquor stores to be impacted by the type of environment they create."

"The majority of information available about the determinants of health is based upon individual behavior," said **Leonard Syme,** UC Berkeley professor emeritus of epidemiology and study coauthor. "This study clearly shows that the world within which people live also has an important impact on health."

Other coauthors of the study are **Timothy Brown,** UC Berkeley assistant adjunct professor of health economics; and **Carlos Iribarren** and **Irina Tolstykh,** both research scientists at Kaiser Permanente Northern California.The project was jointly sponsored by UC Berkeley's Petris Center and the CDC through the Center for Family and Community Health at the UC Berkeley School of Public Health.

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Commencement speaker Barbara Staggers, M.D., M.P.H. '80 (left) and Alumnus of the Year Carl Lester, M.P.H. '65

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Inside this newsletter:

Alumni enjoy friends, food, fun, at the Spring Alumni Brunch and Silent Auction

On April 27, 2008, the School of Public Health held its annual Spring Alumni Brunch and Silent Auction at the Clark Kerr Campus in Berkeley.

1 Left to right: Leslie Louie, Ph.D. '90, M.P.H. '85, president of the Public Health Alumni Association (PHAA) board of directors; her daughter, Kim Bowen; PHAA board member Lucinda Bazile, M.P.H. '94, with her daughter, Briana (foreground). 2 PHAA vice president Mindi Lassman puts in the winning bid for a See's Candies springtime gift basket. 3 Left to right: Featured speaker Mary Pittman, Dr.P.H. '87, president and CEO of the Public Health Institute; Dean Stephen Shortell; PHAA board member Joan Lam, B.S. '62. 4 Judi Johnson (center) and her daughter, PHAA board member Laurel Davis, M.P.H. '94 (right), enter competing bids for a vintage bottle of pinot noir.