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National Center for Medical Legal Partnership

www.medical-legalpartnership.org

The Housing Vaccine: Why a Stable, Decent Affordable Home Keeps Kids Healthy

Megan Sandel MD MPH

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Grow Clinic, Boston Medical Center

How does Housing Influence Health

- Discuss how housing impacts health and how quality affordable housing is like a vaccine
  - Provide multiple though differential benefits
  - Benefits to individual and society
- Discuss how Housing is part of a Series of Vaccines for the Social Determinants of Health
  - Health/Wellness, Education, Safety, Jobs
  - Why Housing must be First
- Stocking the Housing Vaccine in the Pharmacy
  - Nationwide Children's Hospital as leader

Evidence on Housing Quality and Children's Health

- Development and Worsening Asthma has been tied specific housing conditions
  - Pests (cockroaches and mice)
  - Molds/Chronic Dampness
  - Tobacco smoke
- Lead exposure tied to long term effects
  - CDC recently lowered the "action level" to 5 ug/dl
- "Heat or eat" ties energy costs, housing costs and poor health

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HOW HOUSING MATTERS
macfound.org/HousingMatters

POLICY RESEARCH BRIEF

Poor Quality Housing Is Tied to Children's Emotional and Behavioral Problems

Parents' stress from living in poor quality and unstable homes takes a toll on children's well-being

by REBEKAH LEVINE COLEY, TAMA LEVENTHAL, ALICIA DOYLE LYNCH, AND MELISSA KULL

SEPTEMBER 2013

A family's home is their haven, but for families living with leaking roofs and roaches, for those who have to choose between paying for rent or for food, or for families who repeatedly move in search of higher quality or more affordable housing, one's place of refuge may not be very homey.

This brief examines how housing characteristics matter to children and families' well-being.[1] Among the various possibilities tested, poor housing quality was the most consistent and strongest predictor of emotional and behavioral problems in low-income children and youth. It also had a sizable association with school performance among older youth. Housing affected children because the stress of living in unhealthy and unsafe conditions affected parenting.

KEY FINDINGS

- Poor housing quality is the most consistent and strongest predictor of emotional and behavioral problems in low-income children and youth among the five housing characteristics studied (quality, stability, affordability, ownership, and receiving a housing subsidy).
- Residential instability also is important for children's well-being.
- Even though much of the sample struggled with housing costs, unaffordability has little discernible link to children's well-being.
- Much of the association between poor quality and unstable housing and children's well-being operates through parental stress and parenting behaviors.

Advantages of the Current Study

Past research has identified several aspects of housing that are thought to be associated with children's development.[2] Researchers, for example, have found that substandard housing—exposed wiring, peeling lead paint, rodent infestation, and the like—may contribute to physiological stress in children, inhibiting their emotional stability and learning. Similarly, residential instability may interrupt peer and school networks, impeding academic and behavioral success. If housing costs are unaffordable, families may be forced to limit other valuable investments, such as extracurricular activities, and even other basic necessities such as food and medical care, all of which are important to healthy development. On the other hand, owning one's home or receiving government subsidies may increase family stability and social connections, helping to improve children's school success.

Children's HealthWatch

- Non-partisan, pediatric research and policy center
- Improve health & development young children→ alleviate economic hardships→ public policies
  - Hunger (Food Insecurity)
  - Unstable Housing (Housing Insecurity)
  - Keeping Heat or Lights on (Energy Insecurity)
- Provide policy makers with evidence to develop policies that protect young children's health and development

Where our data comes from:

- Emergency Departments and Primary Care Clinics in Boston, Baltimore, Philadelphia, Little Rock and Minneapolis.
- Interviews - caregivers with children 0 to 4 years old
  - “invisible” group
  - critical window of time

CHILDREN'S HealthWatch

US Housing Insecurity and the Health of Very Young Children

Diana Becker Cutts, MD, Alan F. Meyers, MD, MPH, Maureen M. Black, PhD, Patrick H. Casey, MD, Mariana Chilton, PhD, MPH, John T. Cook, PhD, Joni Geppert, MPH, RD, LN, Stephanie Ettinger de Cuba, MPH, Timothy Heeren, PhD, Sharon Coleman, MPH, MS, Ruth Rose-Jacobs, ScD, and Deborah A. Frank, MD

Objectives. We investigated the association between housing insecurity and the health of very young children.

Methods. Between 1998 and 2007, we interviewed 22 069 low-income caregivers with children younger than 3 years who were seen in 7 US urban medical centers. We assessed food insecurity, child health status, developmental risk, weight, and housing insecurity for each child's household. Our indicators for housing insecurity were crowding (>2 people/bedroom or >1 family/residence) and multiple moves (≥2 moves within the previous year).

Results. After adjusting for covariates, crowding was associated with household food insecurity compared with the securely housed (adjusted odds ratio [AOR]=1.30; 95% confidence interval [CI]=1.18, 1.43), as were multiple moves (AOR=1.91; 95% CI=1.59, 2.28). Crowding was also associated with child food insecurity (AOR=1.47; 95% CI=1.34, 1.63), and so were multiple moves (AOR=2.56; 95% CI=2.13, 3.08). Multiple moves were associated with fair or poor child health (AOR=1.48; 95% CI=1.25, 1.76), developmental risk (AOR 1.71; 95% CI=1.33, 2.21), and lower weight-for-age *z* scores (–0.082 vs –0.013; *P*=.02).

Conclusions. Housing insecurity is associated with poor health, lower weight, and developmental risk among young children. Policies that decrease housing insecurity can promote the health of young children and should be a priority. (*Am J Public Health.* 2011;101:1508–1514. doi:10.2105/AJPH.2011.300139)

In the United States, as in other countries, housing is considered a strong social determinant of health.[1] Poor housing conditions have been linked to multiple negative health outcomes in both children and adults. The Department of Health and Human Services has defined housing insecurity as high housing costs in proportion to income, poor housing quality, unstable neighborhoods, overcrowding, or homelessness.[2] Crowding in the home and multiple moves from home to home have clear negative associations for children. Crowding is negatively associated with mental health status,[3] ability to cope with stress,[4] child and parent interaction,[5] social relationships,[3] and sleep.[3] It also increases the risk for childhood injuries,[6] elevated blood pressure,[5] respiratory conditions,[7] and exposure to infectious disease.[7] Adults[8] and children[9] living in crowded households are less likely to access health care services than are those in noncrowded households, and families with multiple moves are less likely to establish a medical home and seek out preventive health services for their children than are securely housed families.[10]

adjusted income has been used as the threshold for affordable housing costs. But affordability

HealthWatch study approached 36 618 adult caregivers of children younger than 3 years at

Unstable Housing, Hunger, Health Linked

TABLE 2—Variables Associated With Insecure Housing, by Housing Group: Children Younger Than 3 Years, 7 US Cities, 1998–2007

Variables	Secure Housing (Ref)		Crowding			Multiple Moves		
	Unadjusted No. (%)	AOR (95% CI)	Unadjusted No.	[illegible]	[illegible]	djusted No. (%)	AOR (95% CI)	*P*
Household food insecurity (n = 22 069)	1052 (9)	1.0	1060 (12)	1.30 (1.18, 1.43)	<.001	166 (16)	1.91 (1.59, 2.28)	<.001
Child food insecurity (n = 22 069)	872 (7)	1.0	1513 (17)	1.47 (1.34, 1.63)	<.001	204 (19)	2.56 (2.13, 3.08)	<.001
Caregiver report of fair/poor child health (n = 22 069)	1313 (11)	1.0	1193 (13)	1.07 (0.98, 1.18)	.14	192 (18)	1.48 (1.25, 1.76)	<.001
Caregiver report of child developmental risk (after 2004, n = 7345)	621 (14)	1.0	355 (14)	1.06 (0.91, 1.23)	.49	96 (22)	1.71 (1.33, 2.21)	<.001

Note. AOR = adjusted odds ratio; CI = confidence interval. Analyses are adjusted for site, race/ethnicity, US-born mother, marital status, maternal age, education, mean child's age, mean number of children in the home, household employment, breastfeeding, and low birth weight. Secure housing is the referent group.

Unstable Housing, Hunger, Health Linked

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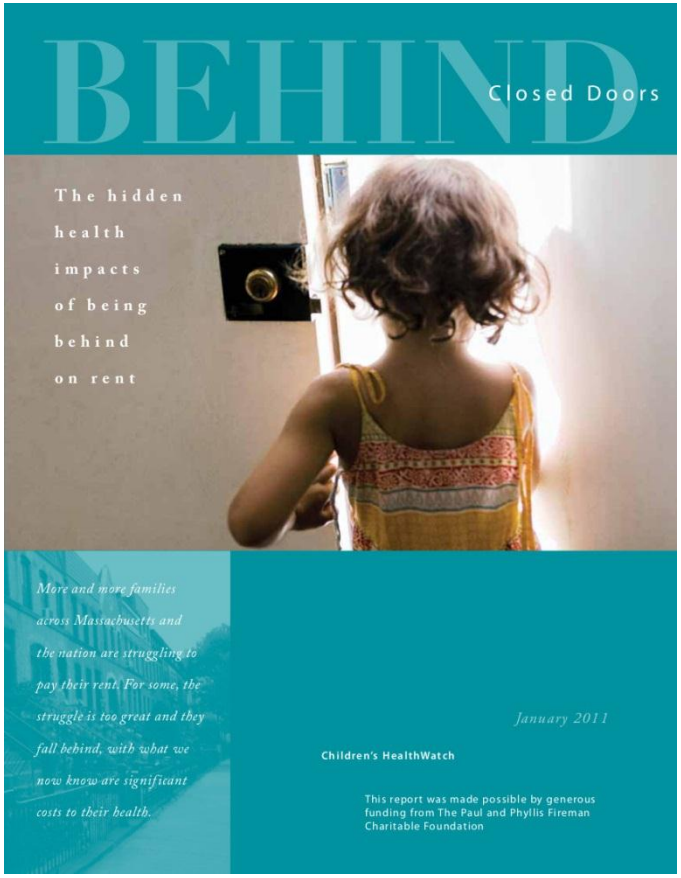
Behind Closed Doors



- Being <u>behind on rent</u> strongly associated with negative health outcomes
  - High risk of child food insecurity
  - Children & mothers more likely in fair or poor health
  - Children more likely at risk for developmental delay
  - Mothers more likely experiencing depressive symptoms

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for the Study of Race and Ethnicity

The Significance of Housing to Child Development

- Housing stressed families spent 30% less on food, 50% less on clothing, and 70% less on health care (Joint Center for Housing Studies)
- Children are particularly vulnerable to housing instability, impacting health and educational outcomes (stress, toxin/environmental exposure, classroom/school instability)
- Housing instability can potentially undermine child development initiatives and interventions

Community Development for All People

More than Half of Families in Philadelphia are Housing Insecure

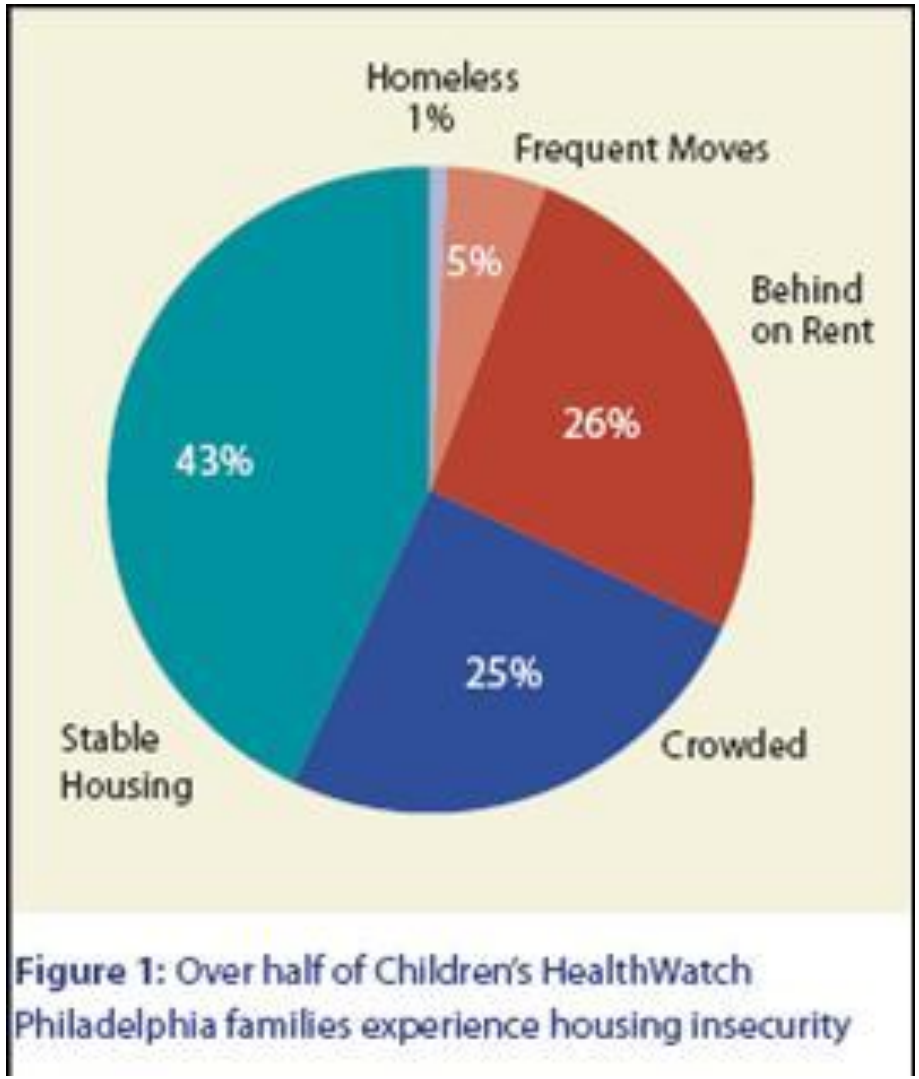

Figure 1: Over half of Children's HealthWatch Philadelphia families experience housing insecurity

- Similar findings in briefs from:
  - Minneapolis
  - Arkansas
  - Massachusetts
  - Baltimore

Why would Housing be like a Vaccine?

- What are the properties of vaccines?
  - Provide benefits against multiple threats
  - Builds immunity to be long lasting
  - Acknowledged to have differential benefits, can be targeted or tailored to groups
- Vaccines benefit Individuals and Society
  - Housing has to be first in a series of vaccines to improve community health

ARTICLE

Subsidized Housing and Children's Nutritional Status

Data From a Multisite Surveillance Study

Alan Meyers, MD, MPH; Diana Cutts, MD; Deborah A. Frank, MD; Suzette Levenson, MEd, MPH; Anne Skalicky, MPH; Timothy Heeren, PhD; John Cook, PhD; Carol Berkowitz, MD; Maureen Black, PhD; Patrick Casey, MD; Nieves Zaldivar, MD

Background: A critical shortage of affordable housing for low-income families continues in the United States. Children in households that are food insecure are at high risk for adverse nutritional and health outcomes and thus may be more vulnerable to the economic pressures exerted by high housing costs. Only about one fourth of eligible families receive a federally financed housing subsidy. Few studies have examined the effects of such housing subsidies on the health and nutritional status of low-income children.

Objective: To examine the relationship between receiving housing subsidies and nutritional and health status among young children in low-income families, especially those that are food insecure.

Design: Cross-sectional observational study.

Setting and Participants: From August 1998 to June 2003, the Children's Sentinel Nutrition Assessment Program interviewed caregivers of children younger than 3 years in pediatric clinics and emergency departments in 6 sites (Arkansas, California, Maryland, Massachusetts, Minnesota, and Washington, DC). Interviews included demographics, perceived child health, the US Household Food Security Scale, and public assistance program participation. Children's weight at the time of the visit was documented. The study sample consisted of all renter households identified as low income by their participation in at least 1 means-tested program.

Main Outcome Measures: Weight for age, self-reported child health status, and history of hospitalization.

Results: Data were available for 11 723 low-income renter families; 27% were receiving a public housing subsidy, and 24% were food insecure. In multivariable analyses, stratified by household food security status and adjusted for potential confounding variables, children of food-insecure families not receiving housing subsidies had lower weight for age (adjusted mean z score, −0.025 vs 0.205; $P<.001$) compared with children of food-insecure families receiving housing subsidies. Compared with children in food-insecure, subsidized families, the adjusted odds ratio (95% confidence interval) for weight-for-age z score more than 2 SDs below the mean was 2.11 (1.34-3.32) for children in food-insecure, non-subsidized families.

Conclusions: In a large convenience sentinel sample, the children of low-income renter families who receive public housing subsidies are less likely to have anthropometric indications of undernutrition than those of comparable families not receiving housing subsidies, especially if the family is not only low income but also food insecure.

Arch Pediatr Adolesc Med. 2005;159:551-556

Families in subsidized housing who are food insecure were two fold protected against being underweight compared to similar food insecure families on waiting list

Moving to Opportunity (MTO) Study: Randomized Controlled Trial

- Five cities (Boston, Baltimore, Chicago, Los Angeles and New York)
- Designed to examine how relocation influenced employment, income, education and well-being
- Almost 5,000 families with children were randomized to three groups from 1994-1998
  - Low poverty voucher with counseling
  - Traditional voucher
  - Remain in public housing
- Continued 2 waves of studies on these three groups

The NEW ENGLAND JOURNAL of MEDICINE

SPECIAL ARTICLE

Neighborhoods, Obesity, and Diabetes — A Randomized Social Experiment

Jens Ludwig, Ph.D., Lisa Sanbonmatsu, Ph.D., Lisa Gennetian, Ph.D., Emma Adam, Ph.D., Greg J. Duncan, Ph.D., Lawrence F. Katz, Ph.D., Ronald C. Kessler, Ph.D., Jeffrey R. Kling, Ph.D., Stacy Tessler Lindau, M.D., Robert C. Whitaker, M.D., M.P.H., and Thomas W. McDade, Ph.D.

ABSTRACT

BACKGROUND

The question of whether neighborhood environment contributes directly to the development of obesity and diabetes remains unresolved. The study reported on here uses data from a social experiment to assess the association of randomly assigned variation in neighborhood conditions with obesity and diabetes.

METHODS

From 1994 through 1998, the Department of Housing and Urban Development (HUD) randomly assigned 4498 women with children living in public housing in high-poverty urban census tracts (in which ≥40% of residents had incomes below the federal poverty threshold) to one of three groups: 1788 were assigned to receive housing vouchers, which were redeemable only if they moved to a low-poverty census tract (where <10% of residents were poor), and counseling on moving; 1312 were assigned to receive unrestricted, traditional vouchers, with no special counseling on moving; and 1398 were assigned to a control group that was offered neither of these opportunities. From 2008 through 2010, as part of a long-term follow-up survey, we measured data indicating health outcomes, including height, weight, and level of glycated hemoglobin (HbA_{1c}).

From the University of Chicago, Chicago (J.L., S.T.L.); the National Bureau of Economic Research (J.L., L.S., L.F.K., J.R.K.) and Harvard University (L.F.K.) — both in Cambridge, MA; the Brookings Institution (L.G.) and the Congressional Budget Office (J.R.K.) — both in Washington, DC; Northwestern University, Evanston, IL (E.A., T.W.M.); the University of California at Irvine, Irvine (G.J.D.); Harvard Medical School, Boston (R.C.K.); and Temple University, Philadelphia (R.C.W.). Address reprint requests to Dr. Ludwig at the University of Chicago, 1155 E. 60th St., Chicago, IL 60637, or at jludwig@uchicago.edu.

N Engl J Med 2011;365:1509-19.

Moving to Opportunity (MTO) Study:

- Results examined severe obesity (BMI >35), morbid obesity (BMI >40) and Hgb A1C > 6.5 levels
- Each was lower by 3-4 percentage points over all between low poverty vs control group
  - BMI >35 was 31.1% vs 35.5%
  - BMI >40 was 14.4% vs 17.7%
  - Hgb A1c was 16.3% vs 20.0%
- For a study not designed to have this health effect, this is similar effect that is seen in diabetes medications (15-20 percent overall reduction)

Original Investigation

Associations of Housing Mobility Interventions for Children in High-Poverty Neighborhoods With Subsequent Mental Disorders During Adolescence

Ronald C. Kessler, PhD; Greg J. Duncan, PhD; Lisa A. Gennetian, PhD; Lawrence F. Katz, PhD; Jeffrey R. Kling, PhD; Nancy A. Sampson, BA; Lisa Sanbonmatsu, PhD; Alan M. Zaslavsky, PhD; Jens Ludwig, PhD

IMPORTANCE Youth in high-poverty neighborhoods have high rates of emotional problems. Understanding neighborhood influences on mental health is crucial for designing neighborhood-level interventions.

OBJECTIVE To perform an exploratory analysis of associations between housing mobility interventions for children in high-poverty neighborhoods and subsequent mental disorders during adolescence.

DESIGN, SETTING, AND PARTICIPANTS The Moving to Opportunity Demonstration from 1994 to 1998 randomized 4604 volunteer public housing families with 3689 children in high-poverty neighborhoods into 1 of 2 housing mobility intervention groups (a low-poverty voucher group vs a traditional voucher group) or a control group. The low-poverty voucher group (n=1430) received vouchers to move to low-poverty neighborhoods with enhanced mobility counseling. The traditional voucher group (n=1081) received geographically unrestricted vouchers. Controls (n=1178) received no intervention. Follow-up evaluation was performed 10 to 15 years later (June 2008-April 2010) with participants aged 13 to 19 years (0-8 years at randomization). Response rates were 86.9% to 92.9%.

MAIN OUTCOMES AND MEASURES Presence of mental disorders from the *Diagnostic and Statistical Manual of Mental Disorders* (Fourth Edition) within the past 12 months, including major depressive disorder, panic disorder, posttraumatic stress disorder (PTSD), oppositional-defiant disorder, intermittent explosive disorder, and conduct disorder, as assessed post hoc with a validated diagnostic interview.

RESULTS Of the 3689 adolescents randomized, 2872 were interviewed (1407 boys and 1465 girls). Compared with the control group, boys in the low-poverty voucher group had significantly increased rates of major depression (7.1% vs 3.5%; odds ratio (OR), 2.2 [95% CI, 1.2-3.9]), PTSD (6.2% vs 1.9%; OR, 3.4 [95% CI, 1.6-7.4]), and conduct disorder (6.4% vs 2.1%; OR, 3.1 [95% CI, 1.7-5.8]). Boys in the traditional voucher group had increased rates of PTSD compared with the control group (4.9% vs 1.9%, OR, 2.7 [95% CI, 1.2-5.8]). However, compared with the control group, girls in the traditional voucher group had decreased rates of major depression (6.5% vs 10.9%; OR, 0.6 [95% CI, 0.3-0.9]) and conduct disorder (0.3% vs 2.9%; OR, 0.1 [95% CI, 0.0-0.4]).

CONCLUSIONS AND RELEVANCE Interventions to encourage moving out of high-poverty neighborhoods were associated with increased rates of depression, PTSD, and conduct disorder among boys and reduced rates of depression and conduct disorder among girls. Better understanding of interactions among individual, family, and neighborhood risk factors is needed to guide future public housing policy changes.

Editorial page 915

Author Video Interview at jama.com

Supplemental content at jama.com

CME Quiz at jamanetworkcme.com and CME Questions page 959

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Moving to Opportunity (MTO) Study:

- Examined prevalence of mental disorders in the adolescents 10-15 years later
- Boys in the low poverty voucher group had higher rates of mental disorders than control group
  - Major Depression 7.1% vs 3.5%
  - PTSD 6.2% vs 1.9%
  - Conduct disorder 6.4% vs 2.1%
- Girls in traditional voucher group had lower rates of mental disorders vs control groups
  - Major depression 6.5% vs 10.9%
  - Conduct disorder 0.3% vs 2.9%

Cite this article as: BMJ, doi:10.1136/bmj.39010.581354.55 (published 1 December 2006)

Research

Effectiveness of an influenza vaccine programme for care home staff to prevent death, morbidity, and health service use among residents: cluster randomised controlled trial

Andrew C Hayward, Richard Harling, Sally Wetten, Anne M Johnson, Susan Munro, Julia Smedley, Shahed Murad, John M Watson

Abstract

Objective To determine whether vaccination of care home staff against influenza indirectly protects residents.
Design Pair matched cluster randomised controlled trial.
Setting Large private chain of UK care homes during the winters of 2003-4 and 2004-5.
Participants Nursing home staff (n=1703) and residents (n=2604) in 44 care homes (22 intervention homes and 22 matched control homes).
Interventions Vaccination offered to staff in intervention homes but not in control homes.
Main outcome measures The primary outcome was all cause mortality of residents. Secondary outcomes were influenza-like illness and health service use in residents.
Results In 2003-4 vaccine coverage in full time staff was 48.2% (407/884) in intervention homes and 5.9% (51/859) in control homes. In 2004-5 uptake rates were 43.2% (365/844) and 3.5% (28/800). National influenza rates were substantially below average in 2004-5. In the 2003-4 period of influenza activity significant decreases were found in mortality of residents in

dents are therefore vulnerable to influenza outbreaks even when vaccination coverage is high.[3–5 7]

In many countries it is recommended that acute hospitals offer influenza vaccine to healthcare workers annually.[14] Employers in the United Kingdom are advised to consider providing vaccination for care home staff, but most do not.[15] Evidence shows that vaccination of healthcare workers can reduce serologically confirmed influenza by nearly 90% in those vaccinated.[16] An indirect effect may also exist whereby immune staff do not infect patients.[17 18] Two previous cluster randomised controlled trials showed that influenza vaccination of healthcare workers on wards for the care of elderly people in Scotland led to a decrease in mortality among patients.[17 18] Results have been questioned owing to the relatively small number of wards randomised (which led to unbalanced randomisation) and because it was not possible to show that the reductions in mortality were related temporally to influenza activity on the wards or in the community.[19] We studied the effect of vaccinating care home staff against influenza on mortality, health service use, and influenza-like illness among residents. To overcome some of the methodological limitations of previous studies we ran-

Special Communication

Cost-effectiveness of a Routine Varicella Vaccination Program for US Children

JAMA The Journal of the American Medical Association

Tracy A. Lieu, MD, MPH; Stephen L. Cochi, MD; Steven B. Black, MD; M. Elizabeth Halloran, MD, DSc; Henry R. Shinefield, MD; Sandra J. Holmes, PhD; Melinda Wharton, MD; A. Eugene Washington, MD, MSc

Objective.—To evaluate the economic consequences of a routine varicella vaccination program that targets healthy children.

Methods.—Decision analysis was used to compare the costs, outcomes, and cost-effectiveness of a routine vaccination program with no intervention. Clinical outcomes were based on a mathematical model of vaccine efficacy that relied on published and unpublished data and on expert opinion. Medical utilization rates and costs were collected from multiple sources, including the Kaiser Permanente Medical Care Program and the California Hospital Discharge Database.

Results.—A routine varicella vaccination program for healthy children would prevent 94% of all potential cases of chickenpox, provided the vaccination coverage rate is 97% at school entry. It would cost approximately $162 million annually if one dose of vaccine per child were recommended at a cost of $35 per dose. From the societal perspective, which includes work-loss costs as well as medical costs, the program would save more than $5 for every dollar invested in vaccination. However, from the health care payer's perspective (medical costs only), the program would cost approximately $2 per chickenpox case prevented, or $2500 per life-year saved. The medical cost of disease prevention was sensitive to the vaccination coverage rate and vaccine price but was relatively insensitive to assumptions about vaccine efficacy within plausible ranges. An additional program for catch-up vaccination of 12-year-olds would have high incremental costs if the vaccination coverage rate of children of preschool age were 97%, but would result in net savings at a coverage rate of 50%.

Conclusions.—A routine varicella vaccination program for healthy children would result in net savings from the societal perspective, which includes work-loss costs as well as medical costs. Compared with other prevention programs, it would also be relatively cost-effective from the health care payer's perspective.

(*JAMA.* 1994;271:375-381)

VARICELLA virus causes an estimated 3.7 million cases of chickenpox and 9000 hospitalizations in the United States annually.[1] A routine varicella vaccination program targeting healthy children could prevent most of this morbidity and mortality (M.E.H., S.L.C., M.W., and L. Fehrs, MD, unpublished data, 1993), but would it be worth the cost?

A cost-benefit analysis in 1985 suggested that a varicella vaccine that provided lifelong immunity would save $7 in costs to society for every dollar in-

Policy decisions about new health programs today ideally should be based not only on clinical effectiveness but also on cost-effectiveness. We performed an updated cost-effectiveness analysis of a routine varicella vaccination program for preschool-age children, who are currently being considered by policymakers as the primary target group for vaccination. The present analysis is unique because it takes into account (1) current evidence about vaccine efficacy, (2) the effects of expected changes in the age distribution of disease, and (3) empirical data on the costs of medical utilization and work loss from varicella.

METHODS

Decision Analysis Model

We constructed a decision tree (Fig 1) to compare two major options for varicella. Under "No Vaccination," a person's probability of contracting chickenpox reflects the current absence of a vaccination program. Chickenpox may cause no complications, major complications, or death (Fig 2). It also may cause medical utilization including telephone advice, outpatient visits, emergency department visits, and hospitalization.

Major complications were defined as those requiring hospitalization, including but not limited to pneumonia and encephalitis. Patients with major complications could go on to have no long-term sequelae, long-term disability, or death. The possibility that a vaccination program could cause changes in the

Routine Chicken pox vaccination only, the health costs are more than saved in healthcare, but when adding in lost work time, it saves $5 for every $1 invested

Effect of a Housing and Case Management Program on Emergency Department Visits and Hospitalizations Among Chronically Ill Homeless Adults

A Randomized Trial

Laura S. Sadowski, MD, MPH
Romina A. Kee, MD, MPH
Tyler J. VanderWeele, PhD
David Buchanan, MD, MS

Context Homeless adults, especially those with chronic medical illnesses, are frequent users of costly medical services, especially emergency department and hospital services.

Objective To assess the effectiveness of a case management and housing program in reducing use of urgent medical services among homeless adults with chronic medical illnesses.

Design, Setting, and Participants Randomized controlled trial conducted at a public teaching hospital and a private, nonprofit hospital in Chicago, Illinois. Participants were 407 social worker–referred homeless adults with chronic medical illnesses (89% of referrals) from September 2003 until May 2006, with follow-up through December 2007. Analysis was by intention-to-treat.

Intervention Housing offered as transitional housing after hospitalization discharge, followed by placement in long-term housing; case management offered onsite at primary study sites, transitional housing, and stable housing sites. Usual care participants received standard discharge planning from hospital social workers.

Main Outcome Measures Hospitalizations, hospital days, and emergency department visits measured using electronic surveillance, medical records, and interviews. Models were adjusted for baseline differences in demographics, insurance status, prior hospitalization or emergency department visit, human immunodeficiency virus infection, current use of alcohol or other drugs, mental health symptoms, and other factors.

Results The analytic sample (n=405 [n=201 for the intervention group, n=204 for the usual care group]) was 78% men and 78% African American, with a median duration of homelessness of 30 months. After 18 months, 73% of participants had at least 1 hospitalization or emergency department visit. Compared with the usual care group, the intervention group had unadjusted annualized mean reductions of 0.5 hospitalizations (95% confidence interval [CI], −1.2 to 0.2), 2.7 fewer hospital days (95% CI, −5.6 to 0.2), and 1.2 fewer emergency department visits (95% CI, −2.4 to 0.03). Adjusting for baseline covariates, compared with the usual care group, the intervention group had a relative reduction of 29% in hospitalizations (95% CI, 10% to 44%), 29% in hospital days (95% CI, 8% to 45%), and 24% in emergency department visits (95% CI, 3% to 40%).

Conclusion After adjustment, offering housing and case management to a population of homeless adults with chronic medical illnesses resulted in fewer hospital days and emergency department visits, compared with usual care.

ADDRESSING THE HEALTH NEEDS of the homeless population is a challenge to physicians, health institutions, and federal, state, and local governments. Homelessness is pervasive in the United States, and an estimated 3.5 million individuals are likely to experience homelessness in a given year.[1] To address this problem, 860 cities and counties have enacted 10-year plans to end homelessness, and 49 states have created Interagency Councils on Homelessness.[2]

Rates of chronic medical illness are high among homeless adults. With the exception of obesity, stroke, and cancer, homeless adults are far more likely to have a chronic medical illness such as human immunodeficiency virus (HIV), hypertension, and diabetes mellitus and more likely to experience a complication from the illness because they lack adequate housing and regular, uninterrupted treatment.[3-6] Homeless adults are frequent users of costly emergency department and hospital services, largely paid for by pub-

ORIGINAL CONTRIBUTION

CHILDREN'S HealthWatch

Effect of a Housing and Case Management Program on Emergency Department Visits and Hospitalizations Among Chronically Ill Homeless Adults

A Randomized Trial

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Context Homeless adults, especially those with chronic medical illnesses, users of costly medical services, especially emergency department and hos

Objective To assess the effectiveness of a case management and hous in reducing use of urgent medical services among homeless adults with c cal illnesses.

Design, Setting, and Participants Randomized controlled trial conduc lic teaching hospital and a private, nonprofit hospital in Chicago, Illinois were 407 social worker–referred homeless adults with chronic medical ill of referrals) from September 2003 until May 2006, with follow-up thro ber 2007. Analysis was by intention-to-treat.

Intervention Housing offered as transitional housing after hospita charge, followed by placement in long-term housing; case managemen site at primary study sites, transitional housing, and stable housing site participants received standard discharge planning from hospital social w

Main Outcome Measures Hospitalizations, hospital days, and emerg ment visits measured using electronic surveillance, medical records, and inte els were adjusted for baseline differences in demographics, insurance stat pitalization or emergency department visit, human immunodeficiency virus infe use of alcohol or other drugs, mental health symptoms, and other factors.

Results The analytic sample (n=405 [n=201 for the intervention grou the usual care group]) was 78% men and 78% African American, with a ration of homelessness of 30 months. After 18 months, 73% of partici least 1 hospitalization or emergency department visit. Compared with t group, the intervention group had unadjusted annualized mean reductio pitalizations (95% confidence interval [CI], −1.2 to 0.2), 2.7 fewer hospit CI, −5.6 to 0.2), and 1.2 fewer emergency department visits (95% CI, − Adjusting for baseline covariates, compared with the usual care group, tion group had a relative reduction of 29% in hospitalizations (95% CI, 1 29% in hospital days (95% CI, 8% to 45%), and 24% in emergency dep its (95% CI, 3% to 40%).

Conclusion After adjustment, offering housing and case management to a popu- lation of homeless adults with chronic medical illnesses resulted in fewer hospital days and emergency department visits, compared with usual care.

ADDRESSING THE HEALTH NEEDS of the homeless population is a challenge to physicians, health institutions, and federal, state, and local governments. Homelessness is pervasive in the United States, and an estimated 3.5 million individuals are likely to experience homelessness in a given year.[1] To address this problem, 860 cities and counties have enacted 10-year plans to end homelessness, and 49 states have created Interagency Councils on Homelessness.[2]

Rates of chronic medical illness are high among homeless adults. With the exception of obesity, stroke, and cancer, homeless adults are far more likely to have a chronic medical illness such as human immunodeficiency virus (HIV), hypertension, and diabetes mellitus and more likely to experience a complication from the illness because they lack adequate housing and regular, uninterrupted treatment.[3-6] Homeless adults are frequent users of costly emergency department and hospital services, largely paid for by pub-

Usual case management alone was ineffective in preventing hospitalizations or ER visits. Only when paired with housing did it result in fewer hospitalizations and ED visits.

Housing and education

The secret to successful urban schools is housing, argues Megan Sandel, principal investigator at Children's Health Watch.

Megan Sandel

November 12th 2014

From The Economist Intelligence Unit

For children to learn in school, they first have to show up. But the data on school absenteeism in many urban schools would make your hair curl. In San Francisco, it is estimated in some school districts that over 50% of students are chronically absent (defined as missing 10% or more of school in a given year).

The longevity of students at a given school is as valuable to them as simple attendance. But students often "churn" – leave and change schools or districts –each year, forcing teachers to re-teach material to new students. In Massachusetts, it was estimated that over a third of students across 11 cities churn through a school in a given year, that is, who start and finish a grade in different places.

The Economist Intelligence Unit

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Never m
opinions

In MA, it is estimated that over 1/3 of students leave and change schools over the course of a year, In CA, many urban district over half of miss at least 10% of the school year, undermining any public education

Should I Stay or Should I Go?

Exploring the Effects of Housing Instability and Mobility on Children

CENTER FOR HOUSING POLICY

Should I Stay or Should

Exploring the Effects of Ho
Instability and Mobility on

CENTER FOR HOUSING POLICY

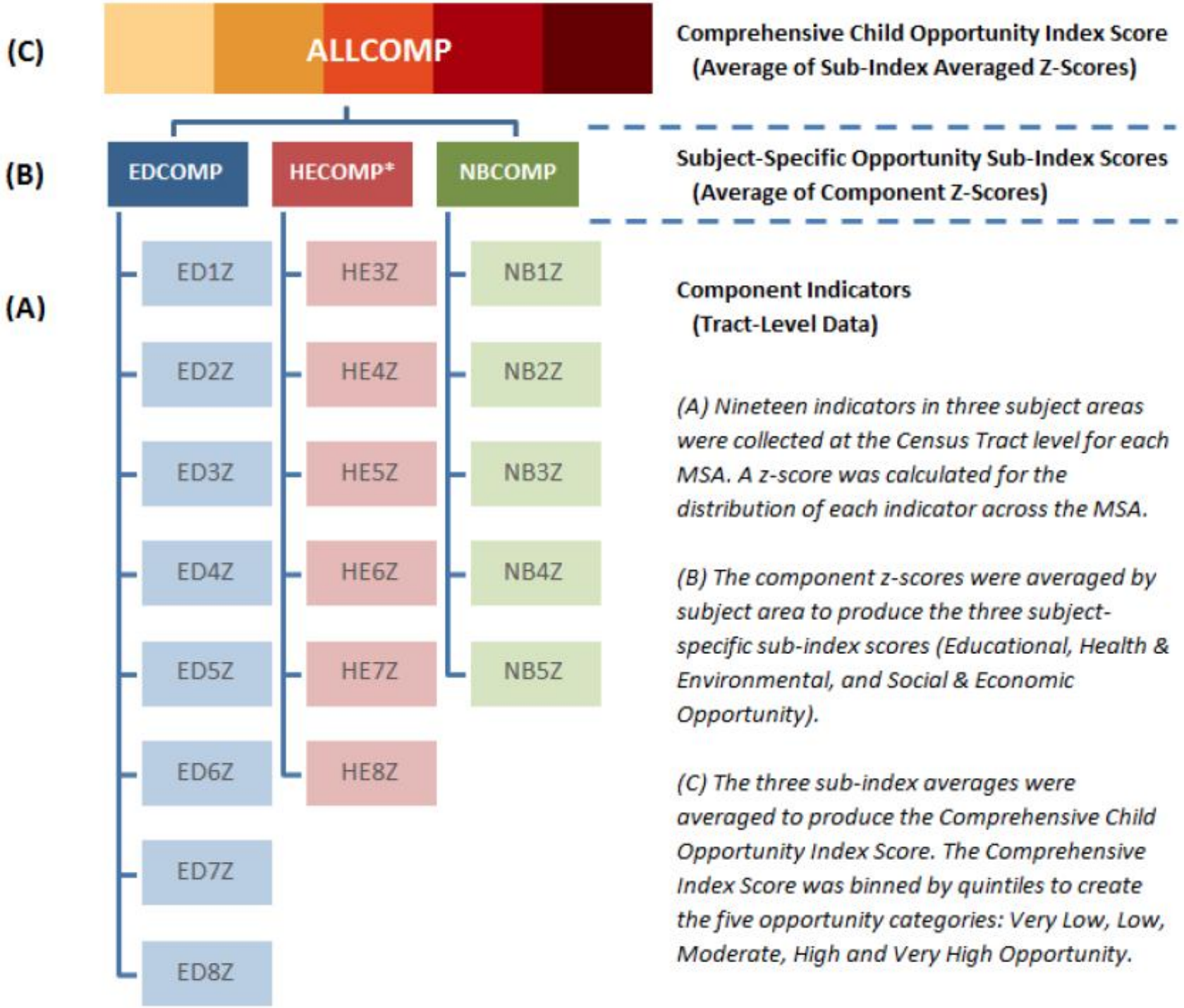
A study out of Minnesota found that first through sixth grade students who had moved three or more times scored on average 20 points lower on reading assessments than students who had not moved

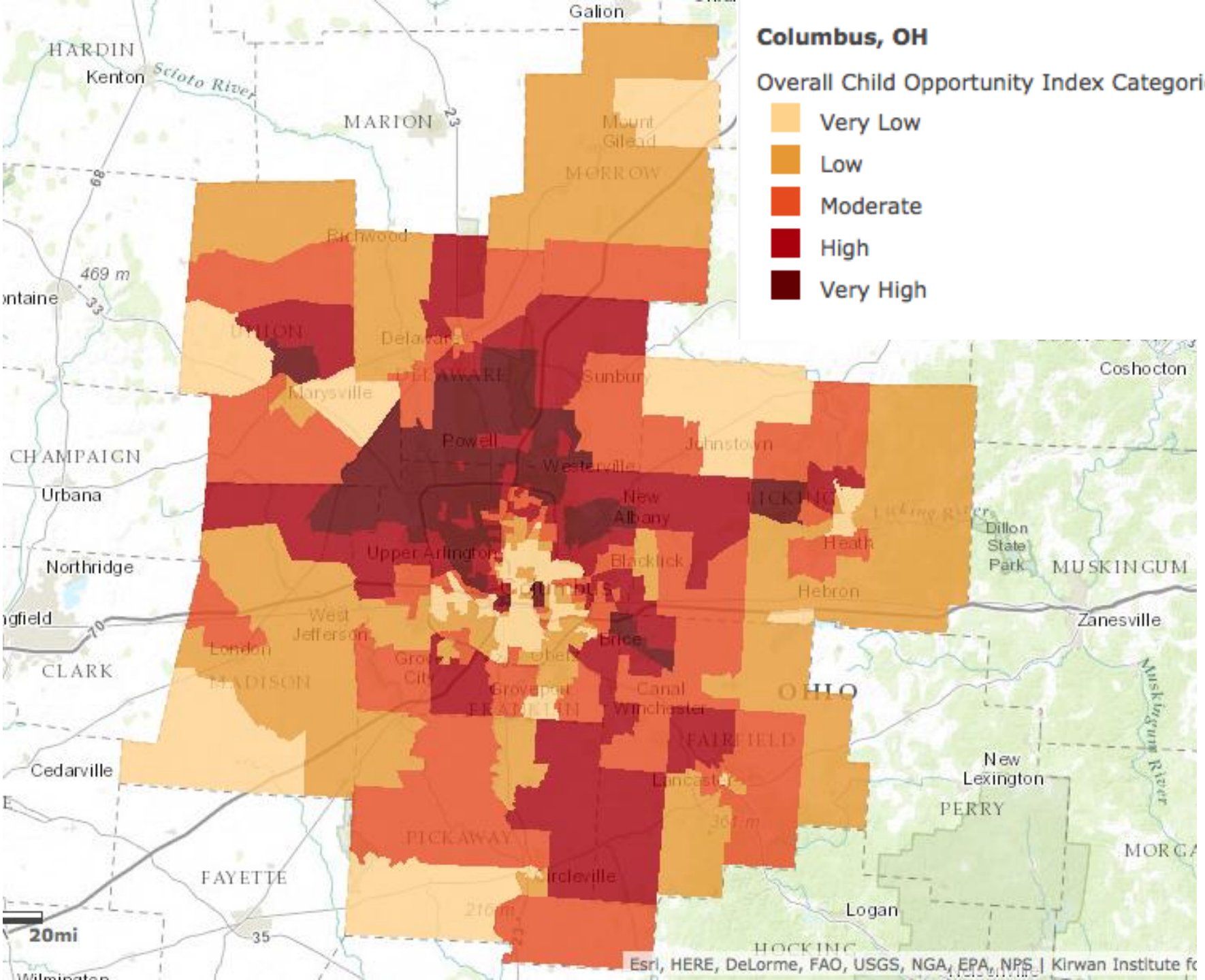
Developing an Opportunity Index for Neighborhoods

- Developed by the Kirwan Institute at Ohio State University
- Pulls together an array of indicators demonstrated to impact an individual or family's chance to succeed
- Includes indicators of both community health and of individual and family health

CHILDREN'S HealthWatch

Opportunity Indicators In The Child Opportunity Index
Educational Opportunities
School poverty rate (eligibility for free or reduced-price lunch)
Student math proficiency level
Student reading proficiency level
Proximity to licensed early childhood education centers
Proximity to high-quality early childhood education centers
Early childhood education participation
High school graduation rate
Adult educational attainment
Health and Environmental Opportunities
Proximity to health care facilities
Retail healthy food environment index
Proximity to toxic waste release sites
Volume of nearby toxic waste release
Proximity to parks and open spaces
Housing vacancy rate
Social and Economic Opportunities
Foreclosure rate
Poverty rate
Unemployment rate
Public assistance rate
Proximity to employment


(C)
ALLCOMP
Comprehensive Child Opportunity Index Score
(Average of Sub-Index Averaged Z-Scores)
(B)
EDCOMP
HECOMP*
NBCOMP
Subject-Specific Opportunity Sub-Index Scores
(Average of Component Z-Scores)
(A)
ED1Z
ED2Z
ED3Z
ED4Z
ED5Z
ED6Z
ED7Z
ED8Z
HE3Z
HE4Z
HE5Z
HE6Z
HE7Z
HE8Z
NB1Z
NB2Z
NB3Z
NB4Z
NB5Z
Component Indicators
(Tract-Level Data)
(A) Nineteen indicators in three subject areas were collected at the Census Tract level for each MSA. A z-score was calculated for the distribution of each indicator across the MSA.
(B) The component z-scores were averaged by subject area to produce the three subject-specific sub-index scores (Educational, Health & Environmental, and Social & Economic Opportunity).
(C) The three sub-index averages were averaged to produce the Comprehensive Child Opportunity Index Score. The Comprehensive Index Score was binned by quintiles to create the five opportunity categories: Very Low, Low, Moderate, High and Very High Opportunity.


Columbus, OH
Overall Child Opportunity Index Categories
Very Low
Low
Moderate
High
Very High
Galion
HARDIN
Kenton
Scioto River
MARION
Mount Gilead
MORROW
Richwood
469 m
Marysville
Sunbury
Powell
Westerville
Johnstown
CHAMPAIGN
Urbana
New Albany
Dillon State Park
Heath
Upper Arlington
Blacklick
Hebron
Northridge
MUSKINGUM
Zanesville
West Jefferson
London
Brice
CLARK
Canal Winchester
OHIO
Cedarville
New Lexington
PERRY
PICKAWAY
Circleville
FAYETTE
Logan
20mi
Coshocton
Esri, HERE, DeLorme, FAO, USGS, NGA, EPA, NPS | Kirwan Institute

Equity in Opportunity

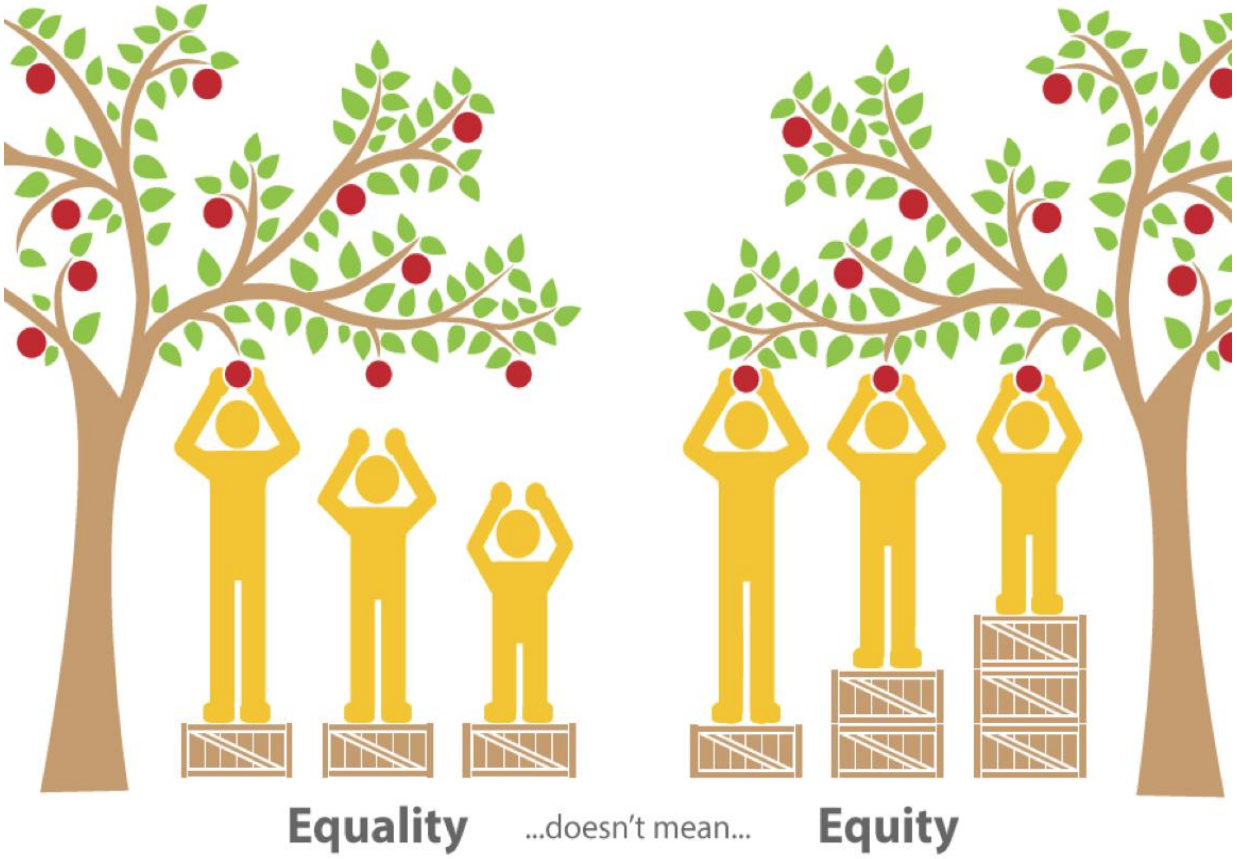


Figure 1. Neudorf C, Kryzanowski J, Turner H, Cushon J, Fuller D, Ugolini C, Murphy L, Marko J. (2014). Better Health for All Series 3: Advancing Health Equity in Health Care. Saskatoon: Saskatoon Health Region. Available from: https://www.saskatoonhealthregion.ca/locations_services/Services/Health- Observatory/Pages/ReportsPublicatlions.aspx

Addressing Equity in Opportunity Gap

- Nationwide Children's Hospital thinking about address in housing as the first social determinant of health
  - Healthy Neighborhoods Healthy Families Program

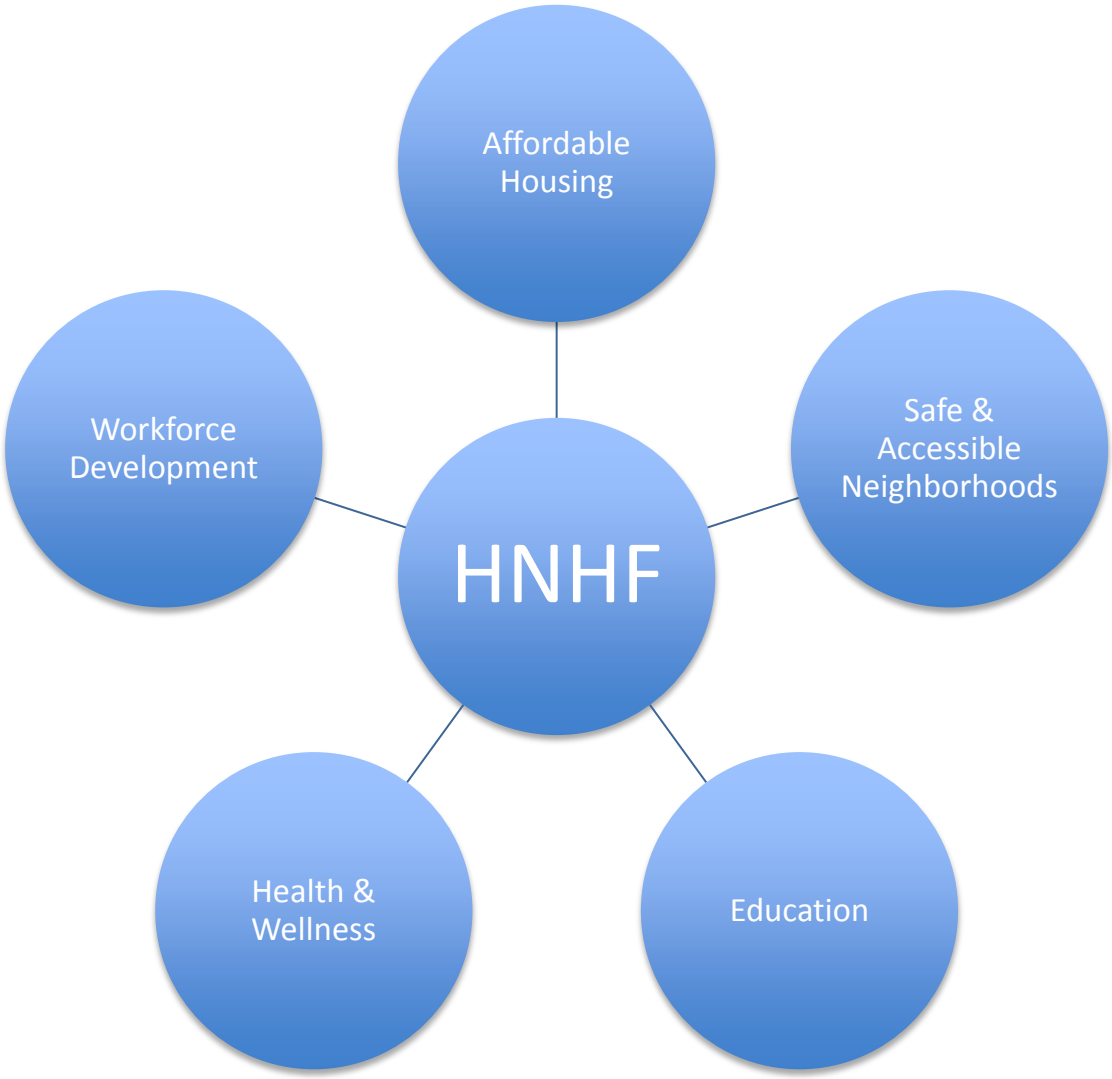
Franklin County HealthMap 2013

Navigating Our Way to a Healthier Community Together

Stocking the Housing Vaccine in the Pharmacy?

- Focuses on the revitalization of three zip codes around anchor institution, Nationwide Children's Hospital
- How it's unique:
  - Focus on population and place
  - Authentic engagement of residents
  - Strong relationships with the neighborhood schools
  - Strong community partnerships

Healthy Neighborhoods Healthy Families



Healthy Neighborhoods Healthy Families

762 Carpenter Street

Healthy Homes

A NEIGHBOR AND A COLLEAGUE

EMPLOYEE PURCHASES HER FIRST HOME THROUGH HEALTHY HOMES PROGRAM

Paris Bradford needed to find a new home for her family. Paris is a cast technician in the Department of Orthopedics and lived in a two-bedroom apartment with her daughter, Anila, 5, and her son, Eli, 2. As her young children grew, Paris knew they'd outgrow their small apartment.

Paris heard from co-workers about Nationwide Children's Hospital's Healthy Neighborhoods Healthy Families (HNHF). One important initiative within HNHF is the Healthy Homes program, focused on creating affordable and revitalized housing and neighborhoods in the area immediately surrounding the hospital's Main Campus. Typically, Healthy Homes rehabilitates vacant and abandoned properties. To specially fit the needs of the Bradford family, Nationwide and other community partners provided funding and assistance for a completely new build of a three bedroom, two bathroom home for this family of three.

Every Saturday for five months, Paris had the unique opportunity to help build her new home from the ground up. She was able to make personalized choices about many features, including the home model, siding and countertops to match her appliances. In addition to her assistance on the home build, Paris attended home buyer education classes while balancing her responsibilities as a full-time employee and single mother. All of her dedicated time and hard work paid off when Paris, Anila and Eli moved into their brand new home in March 2015.

Learn more on page 4

Healthy Neighborhoods Healthy Families

- NCH has hired more than 250 South Side residents since 2012 and more than 540 residents are employed throughout the hospital
- HNHF workforce development programming involved job training and access to opportunities through job fairs and workshops
- NCH has partnered with Columbus State Community College to create a program called FastPath, designed to identify and recruit unemployed and underemployed adults to prepare them for in-demand jobs

Continuing Our Commitment to Best Outcomes

Affordable housing through the Healthy Homes program helps us support the well-being of the children in our community, driving towards the strategic plan's commitment to improving wellness and population health. In this issue of *Inside Nationwide Children's*, we feature several programs and initiatives designed to fulfill Nationwide Children's goals.

Steve Allen, Angela Mingo and Robert Williams discuss plans for Healthy Homes.

As an extension of this commitment, Farmers Markets in Livingston Park support local farmers and their families. The markets are open to the community, hospital visitors and employees and accept a variety of financial assistance payment methods.

Partners for Kids, our pediatric accountable care organization, serves nearly 300,000 children in Ohio with a goal to improve quality and access to health care. A recent study found improvement for three quality indicators of pediatric care for children who are part of Partners for Kids compared to those who are not.

I challenge each of you to think beyond the care we provide when patients show up at our doors. When we take an active interest in our community, cultural competency, health equity and inclusiveness, we can create better health outcomes for our patients and children everywhere.

Steve Allen, MD

Continuing Our Commitment to Best Outcomes

NCH is bringing in healthy food to the neighborhood through local farmer's markets, open to both community members, hospital visitors and employees

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financial assistance payment methods.

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Steve Allen, MD

How does Housing Influence Health

- Discuss why Housing is like a Vaccine
  - Provide multiple benefits
  - Benefits to individual and society
- Discuss how Housing is part of a Series of Vaccines for the Social Determinants of Health
  - Health/Wellness, Education, Safety, Jobs
  - Why Housing must be First
- Stocking the Housing Vaccine in the Pharmacy
  - Nationwide Children's Hospital as leader