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Social Interventions Research & Evaluation Network

# Examining the Validity of Clinical Social Risk Screening Tools

SIREN Webinar

July 18, 2019

# Examining the Validity of Clinical Social Risk Screening Tools

Moderator:

Yuri Cartier, MPH
Research Associate
Social Interventions Research and Evaluation Network (SIREN)
University of California, San Francisco (UCSF)

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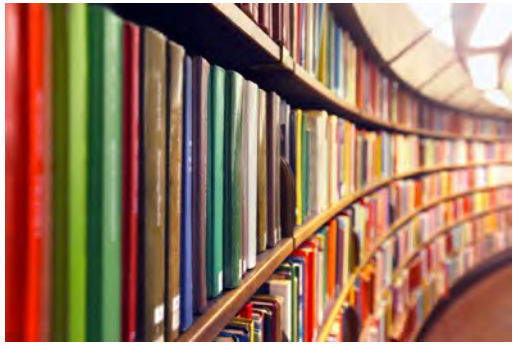
- Submit questions and technical issues via the chat function.

# Social Interventions Research & Evaluation Network

SIREN's mission is to catalyze and disseminate high quality research that advances health care sector efforts to improve health equity by addressing social risks.

Catalyze & conduct high quality research

Provide evaluation, research & analytics consultation services



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# Today's speakers

Nora Henrikson, PhD, MPH
Assistant Investigator
Kaiser Permanente Washington
Health Research Institute

Richard Sheward, MPP
Director of Innovative
Partnerships
Children's HealthWatch

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# Evaluating multidomain tools for screening social risk in health care settings

Nora Henrikson PhD MPH

Kaiser Permanente Washington Health Research Institute

SIREN Webinar July 18 2019

 

# Study team

Nora B. Henrikson, PhD, MPH
Paula Blasi, MPH
Caitlin N. Dorsey
Kayne D. Mettert
Matthew Nguyen, MPH
Callie Walsh-Bailey, MPH
Jennifer Macuiba, MS
Laura M. Gottlieb, MD, MPH
Cara C. Lewis, PhD

These authors attest they have no conflicts of interest to report.

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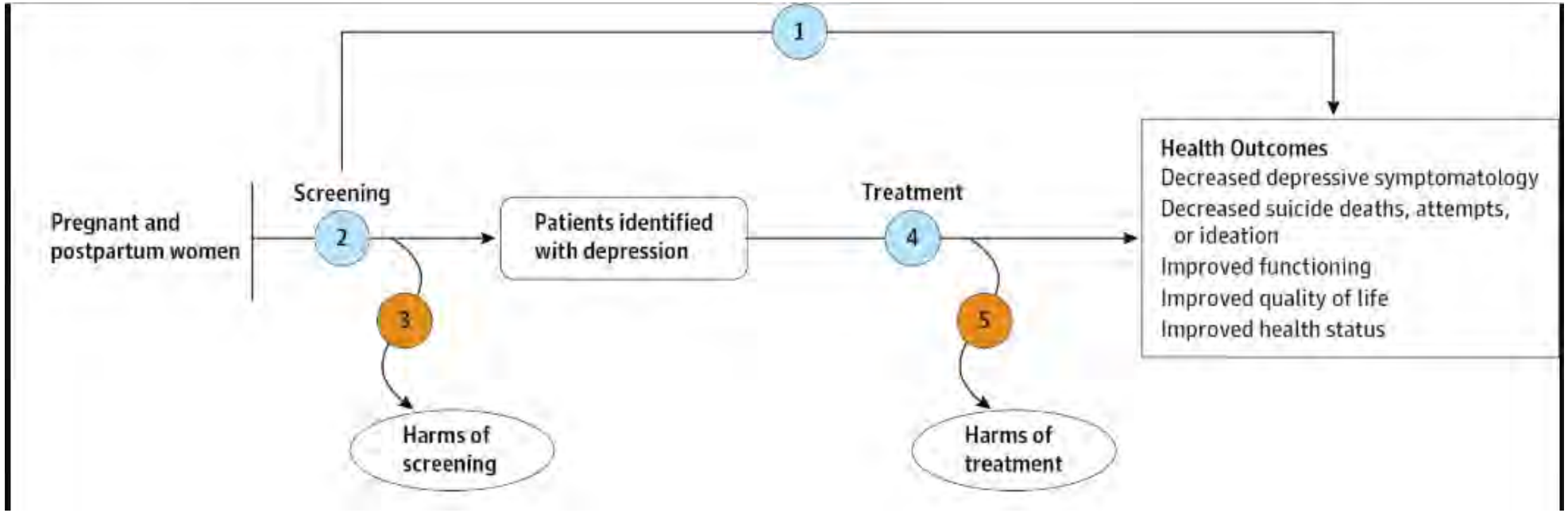
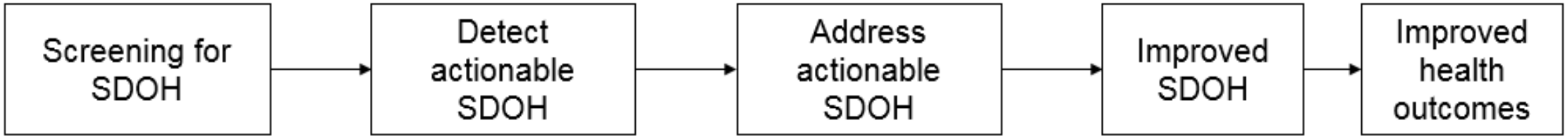
# Benefits of screening: example



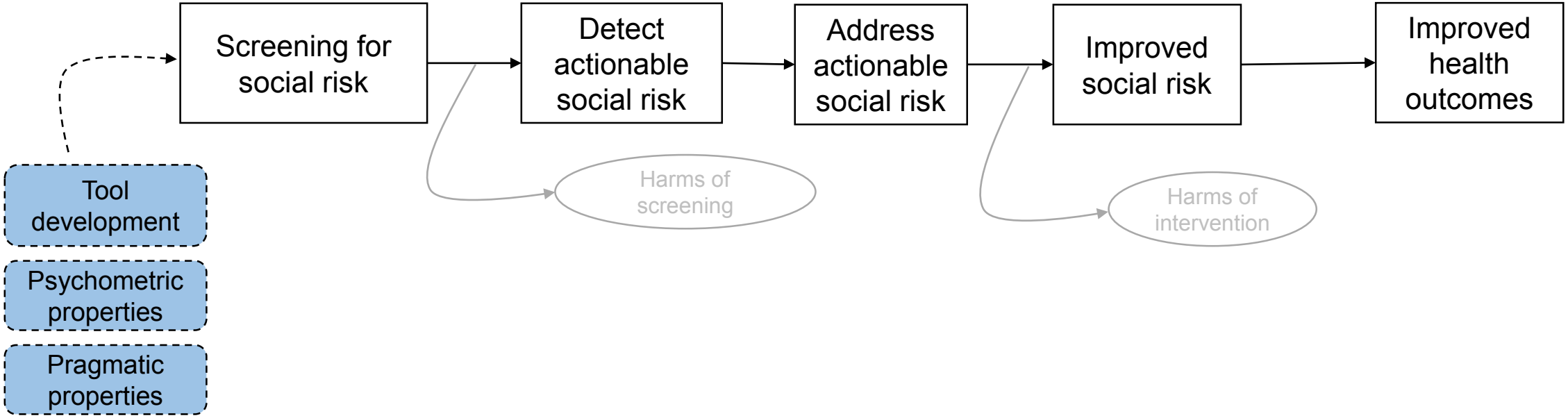

O'Connor et al *JAMA.* 2016;315(4):388-406.

# Context

- Screening for social risk could improve health outcomes by identifying and intervening on risk
- Increasing interest in clinic-based screening
- Generating evidence for the impact of screening requires high-quality screening tools



# High quality screening tools are needed to develop evidence on the benefits of screening for social risk



# An ideal screening tool

| Psychometrically strong | Easy to use in practice (pragmatic) |
| --- | --- |
| • Accurately and precisely measures social risk domains (validity)<br>• Measures changes in social risk over time and repeated measure (reliability)<br>• Developed using gold standard processes | • Brief<br>• Easy to administer and score<br>• Free or low cost |

Objective: To evaluate the current state of multidomain tools intended for screening social risk in health care settings

# Research questions

1. To what degree have gold standard methods been used to develop multidomain social risk screening tools?
2. What is the available psychometric evidence for social risk screening and tracking tools?
3. What is the available pragmatic evidence for social risk screening tools?
4. What is the relation between psychometric and pragmatic evidence?

# Methods

- Systematic review
  - Manual searching to identify examples of empiric uses
- PubMed and CINAHL
  - 2000 to May 18, 2018

- Included:
  - U.S. based
  - Measured ≥2 social risk domains
  - Intended for use in clinical settings
- Data abstracted:
  - Study information
  - Steps in tool development
  - Psychometric properties
  - Pragmatic properties

# We included these six social risk domains

**Economic stability:**

employment, income, expenses, debt, medical bills, support

**Education:**

early childhood education, high school graduation, higher education, language, literacy / health literacy, vocational training

**Social & community context:**

discrimination, incarceration, social integration, support systems / loneliness, community engagement, immigration/refugee status

**Health & clinical care:**

access to health care/primary care, health coverage, provider availability, provider linguistic & cultural competency, quality of care

**Neighborhood & physical environment:**

safety, crime, violence, environmental conditions, housing quality / stability, transportation, parks, playgrounds, walkability

**Food:**

Hunger/food insecurity, access to healthy options

We abstracted evidence on use of these gold standard steps of measure development

(1) defining the construct
(2) generating initial questions using a group of experts
(3) pilot testing with a representative sample
(4) testing of validity and reliability based on pilot testing
(5) refining of instrument based on pilot results
(6) administration of refined instrument to target sample
(7) performing of validity and reliability tests
(8) reporting of psychometric properties

# We rated the psychometric and pragmatic properties using the PAPERs scale (Lewis)

**Psychometric properties**
Possible overall score:
-9 (low) to 36 (high quality)

- internal consistency
- convergent validity
- discriminant validity
- known-groups validity
- predictive validity
- concurrent validity
- structural validity
- responsiveness
- norms

**Pragmatic properties**
Possible overall score:
-5 (least) to 20 (most) pragmatic

- cost
- accessibility of language
- assessor burden (training)
- assessor burden (interpretation)
- length

# Psychometric properties

| Construct | Definition |
|---|---|
| Reliability – internal consistency | Whether several items that purport to measure the same construct produce similar scores in the same test |
| Construct validity – convergent | Degree to which two constructs that are theoretically related are in fact related |
| Construct validity – discriminant | Degree to which two constructs that are theoretically distinct are in fact distinct |
| ***Construct validity – known-groups** | **Distinct groups with differing characteristics can be differentiated** |
| ***Criterion validity – predictive** | **Refers to the degree to which a measure can predict or correlate with an outcome of interest measured at some point in the future** |
| Criterion validity – concurrent | Whether two measurements taken at the same time are correlated, and how the measure under consideration compares to an established measure of the same construct |
| Dimensionality – structural validity | Degree to which all test items rise and fall together (aka “test structure”) |
| ***Responsiveness** | **Measure’s ability to detect clinically important changes in the construct over time** |
| Norms | Measured by sample size, means, and standard deviations of measures; meant to assess generalizability |

# We judged these three psychometric properties as particularly relevant to social risk

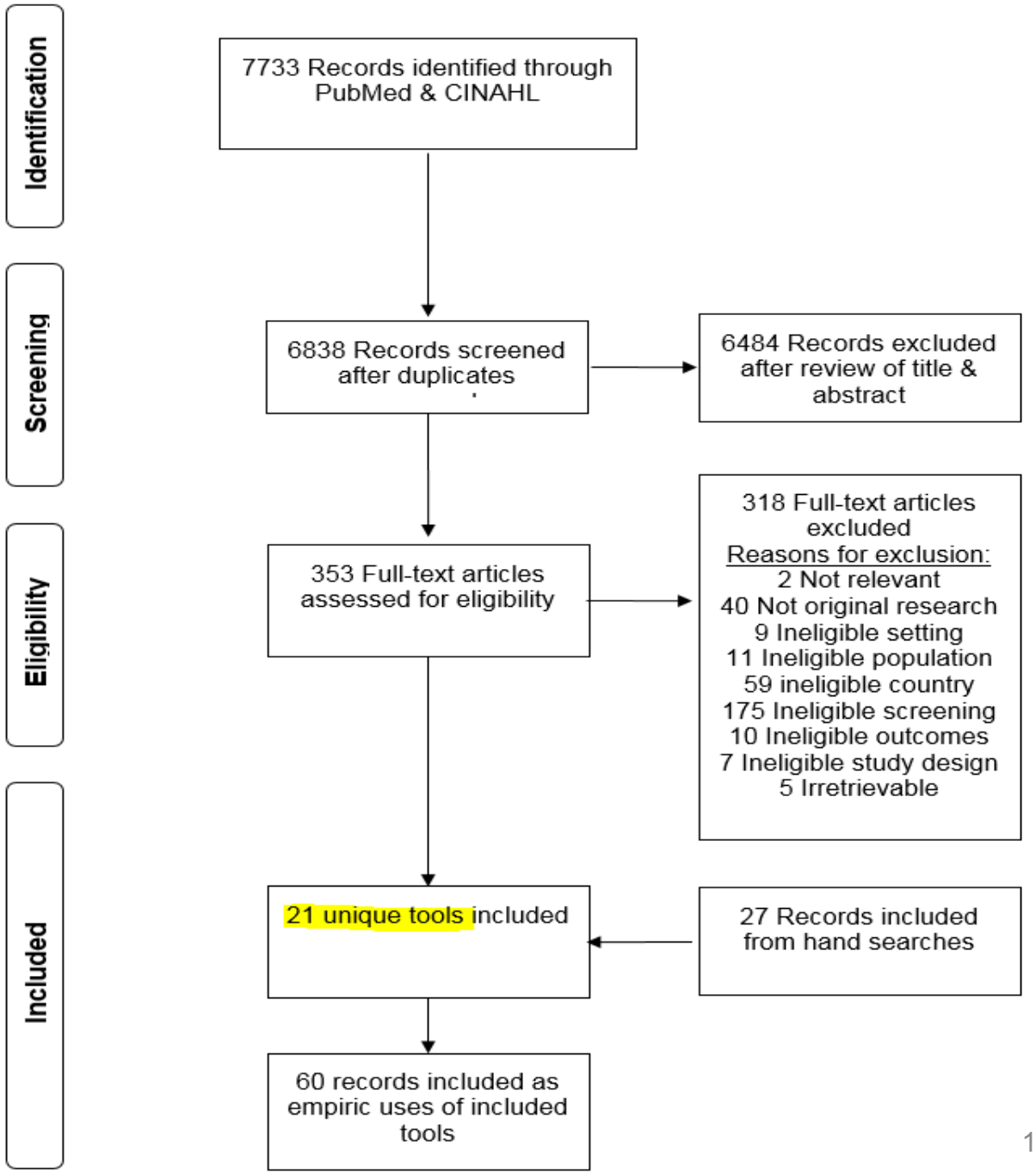
| Construct | Definition |
|---|---|
| *Construct validity – known-groups | Distinct groups with differing characteristics can be differentiated |
| *Criterion validity – predictive | Degree to which a measure can predict or correlate with an outcome of interest measured at some point in the future |
| *Responsiveness | Detects clinically important changes in the construct over time |

# Psychometric properties (2)

| Construct | Definition |
|---|---|
| Reliability – internal consistency | Whether several items that purport to measure the same construct produce similar scores in the same test |
| Construct validity – convergent | Degree to which two constructs that are theoretically related are in fact related |
| Construct validity – discriminant | Degree to which two constructs that are theoretically distinct are in fact distinct |
| Criterion validity – concurrent | Whether two measurements taken at the same time are correlated, and how the measure compares to an established measure of the same construct |
| Dimensionality – structural validity | Degree to which all test items rise and fall together (aka “test structure”) |
| Norms | Measured by sample size, means, and standard deviations of measures; meant to assess generalizability |

# Results

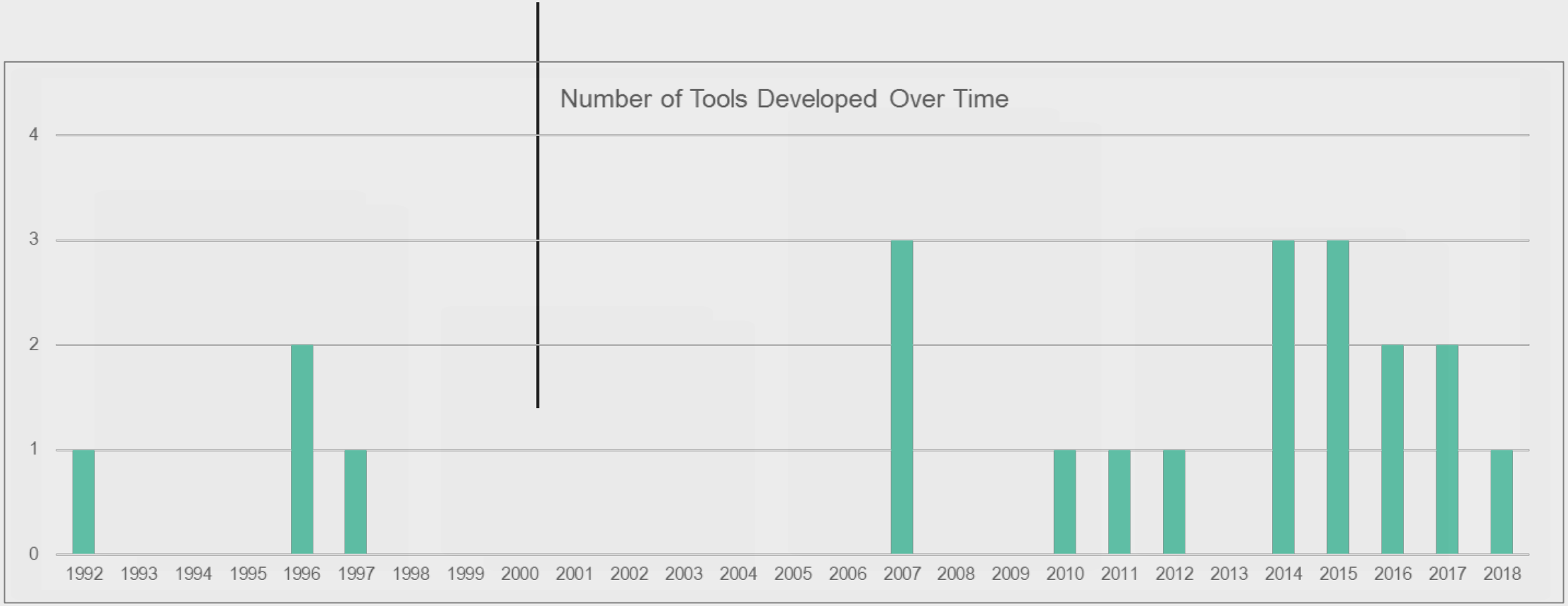
21 unique tools met inclusion criteria



# Results – overview of included tools

- 3-6 domains assessed (median 4)
  - Neighborhood / physical environment (21/21)
  - Economic risk (19/21)
- Adult and pediatric populations
- Administered in ambulatory care (19/21)
- Median 3 empiric uses

# Results – Increasing tools over time



# Included tools (21)

| | |
|---|---|
| Accountable Health Communities Health-Related Social Needs (AHC-HRSN) | Social History Template |
| Health Begins | Social Needs Checklist |
| Health Leads | Structural Vulnerability Assessment Tool |
| HelpSteps (Online Advocate) | Survey of Well-being of Young Children (SWYC) |
| Income, Housing, Education, Legal Status, Literacy, Personal Safety (IHELLP) Questionnaire | Total Health Assessment Questionnaire for Medicare Members |
| Institute of Medicine (IOM) | Urban Life Stressors Scale (ULSS) |
| Legal Checkup | WeCare |
| Medical-Legal Partnership (MLP) | Well Rx |
| Partners in Health Survey | Women's Health Questionnaire |
| Protocol for Responding to and Assessing Patient Assets, Risks, and Experiences (PRAPARE) | Your Current Life Situation (YCLS) |
| Safe Environment for Every Kid (SEEK) | |

## 1. To what degree have gold standard methods been used to develop multi-domain social risk assessment tools?

- No tool reported following all 8 steps of gold standard measure development.
- 18/21 used at least one step (median 2, range 0-7)
- 8/21 reported some reliability or validity testing
- 15/21 reported modifications from original
  - Dropping / adding / changing items; modifying response options

# 2. What is the available psychometric evidence for social risk screening tools?

- Very little psychometric evidence for the 21 included tools
- No data on discriminant validity, known-groups validity, structural validity, or responsiveness
- Most commonly available evidence was on norms (15/21 tools)
- PAPERS psychometric score -1 to 9 (mode: 2),
  - **all included tools in the lowest quartile of possible scores**

# Psychometric properties

| | |
|---|---|
| Known-groups validity (distinct groups with differing characteristics can be differentiated) | No data |
| Predictive validity (measure can predict or correlate with an outcome of interest) | 3 studies reporting: all low |
| Responsiveness (measure's ability to detect clinically important changes in the construct it measures over time) | No data |

# 3. What is the available pragmatic evidence for social risk screening tools?

- Pragmatic evidence available 20/21 tools
- 14/20 in public domain
- 14/20 written in accessible language (13 at 8th grade reading level)
- Limited evidence for ease of training (4/21) and scoring (7/21)
- 5/21 contained 1-10 items (median 21 items)
- PAPERS score range -1 to 20
  - **11/21 in top two quartiles**

# 4. What is the relation between psychometric and pragmatic evidence for social risk screening tools?

- Given the lack of psychometric evidence, it was not possible to sufficiently assess the relationship between pragmatic and psychometric evidence.

# Discussion

- Many new multi-domain tools have been developed in the last 5 years
- Pragmatic assessments show that many tools have favorable readability, are low-cost and easily administered
- Very little psychometric information available
- Majority of tools modified from original
- At present, there appear to be no social risk screening tools designed to:
    a) accurately and differentially identify risk between known groups in a clinical setting
    b) accurately detect changes in risk over time
    c) measure the impacts of an intervention
    d) Measurement work may be underway

# Limitations

- Focus on U.S. settings
- Focus on tools developed for clinical settings
- Intended as a single point in time review of already published work

# Future work

- The lack of data about measure development or psychometric properties limits the utility of screening tools
- Research establishing tools' measurement properties could provide a strong foundation for observational and intervention research on identifying and responding to patients' social risks in clinical settings.
- Only adapt existing tools when necessary, provide documentation
- This review could be considered a benchmark for future progress

# For more information

- View our results: https://sdh-tools-review.kpwashingtonresearch.org/
- SIREN https://sirenetwork.ucsf.edu/
- AJPM publication (under review)

# Thank you

Nora.B.Henrikson@kp.org

@norahenrikson

CHILDREN'S HealthWatch 20 YEARS

# EXAMINING THE EVIDENCE: THE HUNGER VITAL SIGN™ AND THE HOUSING STABILITY VITAL SIGN ™


Richard Sheward, MPP

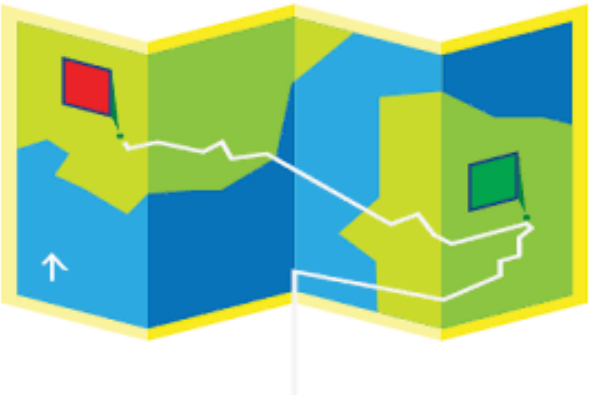
Director of Innovative Partnerships

Children's HealthWatch

# Disclosures

I have no relevant financial relationships to disclose or conflicts of interest to resolve.

# Roadmap



About Children's HealthWatch

1. The Hunger Vital Sign™
   - Validation study
   - Subsequent studies and implementation
2. The Housing Stability Vital Sign™
   - Conceptual definition
   - Housing instability study and implementation


Founded: 1998

Non-partisan, pediatric research and policy network

Collect data in urban hospitals across the country on infants and toddlers from families facing economic hardships

Improve health & development of young children→ alleviate economic hardships→ inform public policies

Provide policy makers with evidence from the frontlines of health care to develop policies that protect young children's health and development

# CHILDREN'S HealthWatch 20 YEARS

Improving the health and development of young children by informing policies that address and alleviate economic hardships

## SINCE OUR LAUNCH IN 1998,

## 65K+ FAMILIES

We have interviewed more than 65,000 caregivers of young children under 4 years of age in pediatric emergency rooms and clinics

A nonpartisan network of pediatricians, public health researchers & policy experts, we bring data & analysis from the front lines of care in Boston, Baltimore, Philadelphia, Little Rock & Minneapolis

## PEER REVIEWED JOURNAL ARTICLES

## 43+

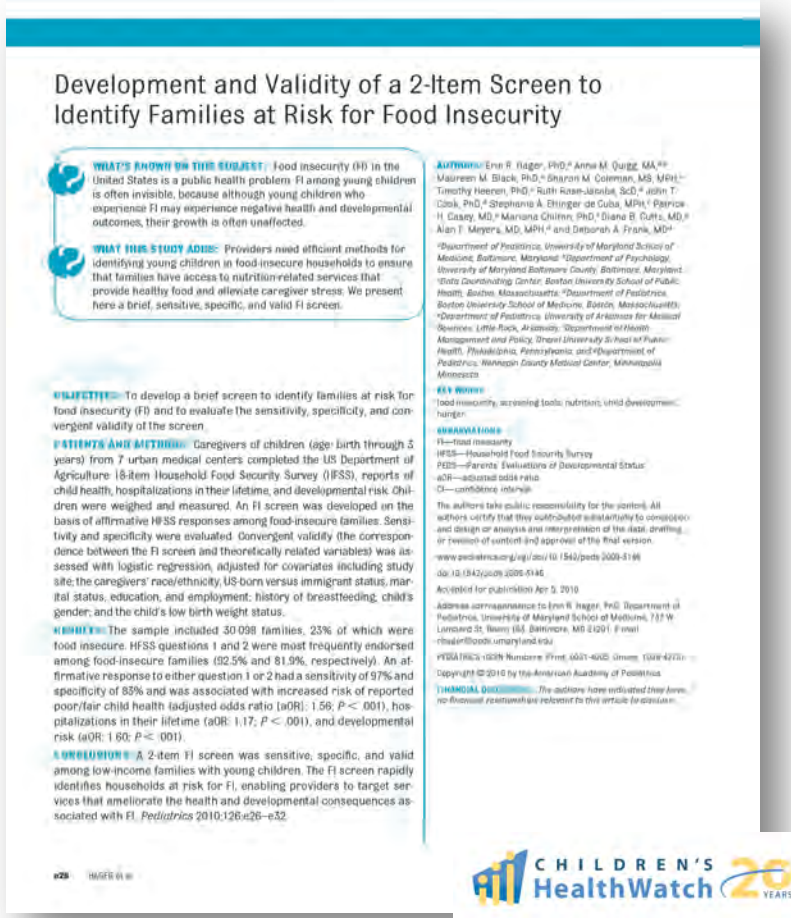

Our researchers have made landmark contributions to the understanding of how public policies and economic hardships impact children's health

## 20 YEARS

Leveraging the perspective of pediatricians, our research and testimony has improved public policies (nutrition, housing, anti-poverty) and practices that give all children equal opportunities for healthy, successful lives

# Development and Validity of a 2-Item Screen to Identify Families at Risk for Food Insecurity

Hager ER, Quigg AM, Black MM, Coleman SM, Heeren T, Rose-Jacobs R, Cook JT, Ettinger de Cuba S, Casey PH, Chilton M, Cutts DB, Meyers AF, Frank DA. Development and Validity of a 2-Item Screen to Identify Families at Risk for Food Insecurity. *Pediatrics;* 2010;126:e26–e32.



Development and Validity of a 2-Item Screen to Identify Families at Risk for Food Insecurity

WHAT'S KNOWN ON THIS SUBJECT: Food insecurity (FI) in the United States is a public health problem. FI among young children is often invisible, because although young children who experience FI may experience negative health and developmental outcomes, their growth is often unaffected.

WHAT THIS STUDY ADDS: Providers need efficient methods for identifying young children in food-insecure households to ensure that families have access to nutrition-related services that provide healthy food and alleviate caregiver stress. We present here a brief, sensitive, specific, and valid FI screen.

AUTHORS: Erin R. Hager, PhD,[a] Anna M. Quigg, MA,[a,b] Maureen M. Black, PhD,[c] Sharon M. Coleman, MS, MPH,[d] Timothy Heeren, PhD,[e] Ruth Rose-Jacobs, ScD,[f] John T. Cook, PhD,[g] Stephanie A. Ettinger de Cuba, MPH,[f] Patrick H. Casey, MD,[h] Mariana Chilton, PhD,[i] Diane B. Cutts, MD,[j] Alan F. Meyers, MD, MPH,[k] and Deborah A. Frank, MD[l]

[a]Department of Pediatrics, University of Maryland School of Medicine, Baltimore, Maryland; [b]Department of Psychology, University of Maryland Baltimore County, Baltimore, Maryland; [c]Data Coordinating Center, Boston University School of Public Health, Boston, Massachusetts; [d]Department of Pediatrics, Boston University School of Medicine, Boston, Massachusetts; [e]Department of Pediatrics, University of Arkansas for Medical Sciences, Little Rock, Arkansas; [f]Department of Health Management and Policy, Drexel University School of Public Health, Philadelphia, Pennsylvania, and [g]Department of Pediatrics, Hennepin County Medical Center, Minneapolis, Minnesota

KEY WORDS
food insecurity, screening tools, nutrition, child development, hunger

ABBREVIATIONS
FI—food insecurity
HFSS—Household Food Security Survey
PEDS—Parents' Evaluations of Developmental Status
aOR—adjusted odds ratio
CI—confidence interval

The authors take public responsibility for the content. All authors certify that they contributed substantially to conception and design or analysis and interpretation of the data, drafting or revision of content, and approval of the final version.

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Address correspondence to Erin R. Hager, PhD, Department of Pediatrics, University of Maryland School of Medicine, 737 W. Lombard St, Baltimore, MD 21201. E-mail: rhager@peds.umaryland.edu

PEDIATRICS (ISSN Numbers: Print, 0031-4005; Online, 1098-4275).



FINANCIAL DISCLOSURE: The authors have indicated they have no financial relationships relevant to this article to disclose.

OBJECTIVE: To develop a brief screen to identify families at risk for food insecurity (FI) and to evaluate the sensitivity, specificity, and convergent validity of the screen.

PATIENTS AND METHODS: Caregivers of children (age: birth through 5 years) from 7 urban medical centers completed the US Department of Agriculture 18-item Household Food Security Survey (HFSS), reports of child health, hospitalizations in their lifetime, and developmental risk. Children were weighed and measured. An FI screen was developed on the basis of affirmative HFSS responses among food-insecure families. Sensitivity and specificity were evaluated. Convergent validity (the correspondence between the FI screen and theoretically related variables) was assessed with logistic regression, adjusted for covariates including study site; the caregivers' race/ethnicity, US-born versus immigrant status, marital status, education, and employment; history of breastfeeding, child's gender; and the child's low birth weight status.

RESULTS: The sample included 30 098 families, 23% of which were food insecure. HFSS questions 1 and 2 were most frequently endorsed among food-insecure families (92.5% and 81.9%, respectively). An affirmative response to either question 1 or 2 had a sensitivity of 97% and specificity of 83% and was associated with increased risk of reported poor/fair child health (adjusted odds ratio [aOR]: 1.56; $P < .001$), hospitalizations in their lifetime (aOR: 1.17; $P < .001$), and developmental risk (aOR: 1.60; $P < .001$).

CONCLUSION: A 2-item FI screen was sensitive, specific, and valid among low-income families with young children. The FI screen rapidly identifies households at risk for FI, enabling providers to target services that ameliorate the health and developmental consequences associated with FI. *Pediatrics* 2010;126:e26–e32.

e26 HAGER ET AL

Complementary article: Are Food Insecurity's Health Impacts Underestimated in the U.S. Population? Marginal Food Security Also Predicts Adverse Health Outcomes in Young U.S. Children and Mothers. Cook, JT, Black, M, Chilton, M et al. Advances in Nutrition. *Advances in Nutrition*. 2013;4: 51-61.

# Study design

We sought to develop a food insecurity screen from the “gold standard” USDA Household Food Security Survey (HFSS) with five specific characteristics:

(1) applicable to families with young children

(2) brief

(3) highly sensitive (90%)

(4) specific (80%)

(5) valid (convergent validity)

# Which questions?

Most common affirmatively answered questions with best sensitivity/specificity compared to "gold standard" (USDA HFSS)

- First two questions

The Hunger Vital Sign™ identifies individuals and families as being at risk for food insecurity if they answer that either or both of the following two statements is 'often true' or 'sometimes true' (vs. 'never true'):

> **" Within the past 12 months we worried whether our food would run out before we got money to buy more."**

> **" Within the past 12 months the food we bought just didn't last and we didn't have money to get more."**

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# Why two questions and not one?

- Cross-tabulation tables were generated for combinations of the first two questions of the HFSS to examine sensitivity and specificity
- Four combinations were explored
- An affirmative response to question one only or question two only of the HFSS provided a sensitivity of 93% or 82% and a specificity of 85% or 95%, respectively
- Because an affirmative response to question one and/or question two of the HFSS provided the highest **sensitivity (97%)** and **specificity (83%)**; these are the criteria that comprise the HVS

# Analysis

Adjusted logistic regression models were conducted by using both the HFSS and the HVS (separately) to examine how FI status is related to child and caregiver health outcomes while controlling for covariates

**TABLE 3** Relation Between FI Status on the HFSS and on the 2-Item FI Screen With Child and Caregiver Health Outcomes ($N = 30\,098$)

| | HFSS | | | FI Screen | | |
|---|---|---|---|---|---|---|
| | Food Secure | Food Insecure | | Food Secure | Food Insecure | |
| | | aOR (95% CI) | *P* | | aOR (95% CI) | *P* |
| Reported child health (fair/poor) | 1.0 | 1.73 (1.59–1.88) | <.001 | 1.0 | 1.56 (1.44–1.68) | <.001 |
| Number of lifetime hospitalizations | 1.0 | 1.19 (1.11–1.28) | <.001 | 1.0 | 1.17 (1.10–1.24) | <.001 |
| At risk for underweight | 1.0 | 0.96 (0.88–1.05) | .36 | 1.0 | 0.94 (0.87–1.01) | .09 |
| Overweight | 1.0 | 1.03 (0.94–1.12) | .56 | 1.0 | 0.98 (0.91–1.06) | .59 |
| Developmental risk[a] | 1.0 | 1.72 (1.51–1.97) | <.001 | 1.0 | 1.60 (1.42–1.80) | <.001 |
| Caregiver health (fair/poor) | 1.0 | 2.29 (2.12–2.46) | <.001 | 1.0 | 1.99 (1.86–2.13) | <.001 |
| Caregiver positive depression screen | 1.0 | 3.13 (2.91–3.37) | <.001 | 1.0 | 2.76 (2.59–2.94) | <.001 |

Data were adjusted for site, race/ethnicity, US-born mother versus immigrant, marital status, education, child gender, caregiver employment, breastfeeding, low birth weight, and maternal age. The sample was limited to families that were uninsured or receiving public insurance.

[a] Developmental risk was determined by the PEDS (≥1 concern) only for children older than 4 months, and data collection began in 2004 ($n = 10\,874$).

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# Results

Caregivers

- Almost 2x as likely to be in fair/poor health
- Almost 3x as likely to report depressive symptoms

Young children

- 56% more likely to be in fair/poor health
- 17% more likely to have been hospitalized
- 60% more likely to be at risk for developmental delays

- These associations are similar to, although slightly weaker than, the corresponding associations with the 18-item HFSS, which demonstrates convergent validity of the HVS as a measure of food insecurity.

# Further Analysis

To assess whether the households identified as food insecure by the HVS experienced risk despite classification as food secure by the 18-item HFSS, analyses were repeated among those who were classified as food secure on the basis of the 18-item HFSS

The HVS results show attenuated, but statistically significant, associations with poor child and caregiver health outcomes.

**TABLE 4** Relation Between FI Status on the 2-Item FI Screen and Child and Caregiver Health Outcomes Among the Subset of Food-Secure Households on the HFSS ($N = 23\,256$)

| | FI Screen | | |
|---|---|---|---|
| | Food Secure | Food Insecure | |
| | | aOR (95% CI) | *P* |
| Reported child health (fair/poor) | 1.0 | 1.26 (1.12–1.40) | <.001 |
| Number of lifetime hospitalizations | 1.0 | 1.11 (1.02–1.21) | .01 |
| At risk for underweight | 1.0 | 0.90 (0.81–1.00) | .05 |
| Overweight | 1.0 | 0.95 (0.85–1.05) | .31 |
| Developmental risk[a] | 1.0 | 1.36 (1.15–1.61) | <.001 |
| Caregiver health (fair/poor) | 1.0 | 1.41 (1.28–1.56) | <.001 |
| Caregiver positive depression screen | 1.0 | 1.88 (1.72–2.06) | <.001 |

Data were adjusted for site, race/ethnicity, US-born mother versus immigrant, marital status, education, child gender, caregiver employment, breastfeeding, low birth weight, and maternal age. The sample was limited to families that were uninsured or receiving public insurance.

[a] Developmental risk was determined by the PEDS (≥1 concern) only for children older than 4 months, and data collection began in 2004 ($n = 8497$).

# What's Happened Since?

REVIEWS FROM ASN EB 2012 SYMPOSIA

**Are Food Insecurity's Health Impacts Underestimated in the U.S. Population? Marginal Food Security Also Predicts Adverse Health Outcomes in Young U.S. Children and Mothers[1–3]**

Advances in Nutrition An International Review Journal

Short Communication

Brief assessment of food insecurity accurately identifies high-risk US adults

Craig Gundersen[1], Emily E Engelhard[2], Amy S Crumbaugh[2] and Hilary K Seligman[2,3,*]

Journal of Adolescent Health 57 (2015) 601–607

JOURNAL OF ADOLESCENT HEALTH

ELSEVIER

Original article

Food Insecurity and the Burden of Health-Related Social Problems in an Urban Youth Population

Tamara E. Baer, M.D., M.P.H., Emily A. Scherer, Ph.D., Eric W. Fleegler, M.D., M.P.H., and Areej Hassan, M.D., M.P.H.

- - -

- Marginal food security matters!
- HVS validated for use in adolescent population
- HVS validated for use in US adult population

http://bit.ly/Cook-2013

http://bit.ly/Baer-2015

http://bit.ly/Gunderson-2017

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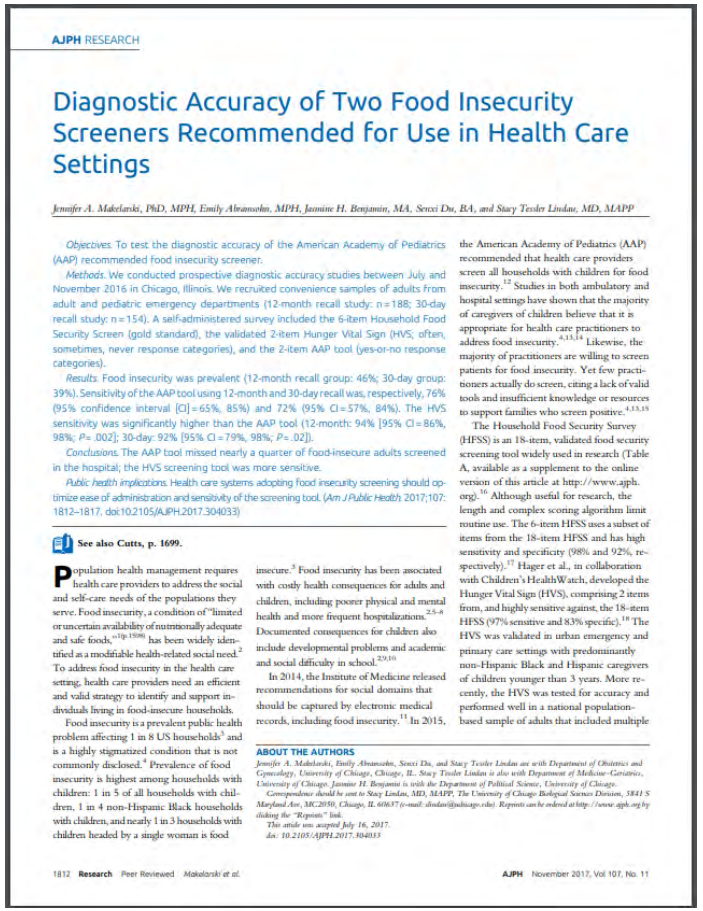
# What's Happened Since?



AJPH RESEARCH

## Diagnostic Accuracy of Two Food Insecurity Screeners Recommended for Use in Health Care Settings

*Jennifer A. Makelarski, PhD, MPH, Emily Abramsohn, MPH, Jasmine H. Benjamin, MA, Senxi Du, BA, and Stacy Tessler Lindau, MD, MAPP*

*Objectives.* To test the diagnostic accuracy of the American Academy of Pediatrics (AAP) recommended food insecurity screener.

*Methods.* We conducted prospective diagnostic accuracy studies between July and November 2016 in Chicago, Illinois. We recruited convenience samples of adults from adult and pediatric emergency departments (12-month recall study: n = 188; 30-day recall study: n = 154). A self-administered survey included the 6-item Household Food Security Screen (gold standard), the validated 2-item Hunger Vital Sign (HVS; often, sometimes, never response categories), and the 2-item AAP tool (yes-or-no response categories).

*Results.* Food insecurity was prevalent (12-month recall group: 46%; 30-day group: 39%). Sensitivity of the AAP tool using 12-month and 30-day recall was, respectively, 76% (95% confidence interval [CI] = 65%, 85%) and 72% (95% CI = 57%, 84%). The HVS sensitivity was significantly higher than the AAP tool (12-month: 94% [95% CI = 86%, 98%; *P* = .002]; 30-day: 92% [95% CI = 79%, 98%; *P* = .02]).

*Conclusions.* The AAP tool missed nearly a quarter of food-insecure adults screened in the hospital; the HVS screening tool was more sensitive.

*Public health implications.* Health care systems adopting food insecurity screening should optimize ease of administration and sensitivity of the screening tool. (*Am J Public Health.* 2017;107:1812–1817. doi:10.2105/AJPH.2017.304033)

See also Cutts, p. 1699.

Population health management requires health care providers to address the social and self-care needs of the populations they serve. Food insecurity, a condition of "limited or uncertain availability of nutritionally adequate and safe foods,"[1(p.1808)] has been widely identified as a modifiable health-related social need.[2] To address food insecurity in the health care setting, health care providers need an efficient and valid strategy to identify and support individuals living in food-insecure households.

Food insecurity is a prevalent public health problem affecting 1 in 8 US households[3] and is a highly stigmatized condition that is not commonly disclosed.[4] Prevalence of food insecurity is highest among households with children: 1 in 5 of all households with children, 1 in 4 non-Hispanic Black households with children, and nearly 1 in 3 households with children headed by a single woman is food insecure.[5] Food insecurity has been associated with costly health consequences for adults and children, including poorer physical and mental health and more frequent hospitalizations.[2,5–8] Documented consequences for children also include developmental problems and academic and social difficulty in school.[2,9,10]

In 2014, the Institute of Medicine released recommendations for social domains that should be captured by electronic medical records, including food insecurity.[11] In 2015, the American Academy of Pediatrics (AAP) recommended that health care providers screen all households with children for food insecurity.[12] Studies in both ambulatory and hospital settings have shown that the majority of caregivers of children believe that it is appropriate for health care practitioners to address food insecurity.[4,13,14] Likewise, the majority of practitioners are willing to screen patients for food insecurity. Yet few practitioners actually do screen, citing a lack of valid tools and insufficient knowledge or resources to support families who screen positive.[4,13,15]

The Household Food Security Survey (HFSS) is an 18-item, validated food security screening tool widely used in research (Table A, available as a supplement to the online version of this article at http://www.ajph.org).[16] Although useful for research, the length and complex scoring algorithm limit routine use. The 6-item HFSS uses a subset of items from the 18-item HFSS and has high sensitivity and specificity (98% and 92%, respectively).[17] Hager et al., in collaboration with Children's HealthWatch, developed the Hunger Vital Sign (HVS), comprising 2 items from, and highly sensitive against, the 18-item HFSS (97% sensitive and 83% specific).[18] The HVS was validated in urban emergency and primary care settings with predominantly non-Hispanic Black and Hispanic caregivers of children younger than 3 years. More recently, the HVS was tested for accuracy and performed well in a national population-based sample of adults that included multiple

ABOUT THE AUTHORS

*Jennifer A. Makelarski, Emily Abramsohn, Senxi Du, and Stacy Tessler Lindau are with Department of Obstetrics and Gynecology, University of Chicago, Chicago, IL. Stacy Tessler Lindau is also with Department of Medicine-Geriatrics, University of Chicago. Jasmine H. Benjamin is with the Department of Political Science, University of Chicago.*

*Correspondence should be sent to Stacy Lindau, MD, MAPP, The University of Chicago Biological Sciences Division, 5841 S Maryland Ave, MC2050, Chicago, IL 60637 (e-mail: slindau@uchicago.edu). Reprints can be ordered at http://www.ajph.org by clicking the "Reprints" link.*

*This article was accepted July 16, 2017.*

*doi: 10.2105/AJPH.2017.304033*



http://bit.ly/Makelarski-2017

http://bit.ly/Cutts-2017

Questions have arisen…

- Why ask both HVS questions?
- Can question wording can be changed?
- Can response alternatives be "yes or no"?

Replacing the HFSS and HVS three response options with simplified "yes or no" options results in **missing nearly 25% of food-insecure adults** and **lowers sensitivity from 94% to 76%**

CHILDREN'S HealthWatch 20 YEARS

# What's Happened Since?

HUNGER Vital Sign™
NATIONAL COMMUNITY OF PRACTICE

Development and validity of a 2-item screen to identify families at risk for food insecurity

ER Hager, AM Quigg, MM Black, SM Coleman… - Pediatrics, 2010 - Am Acad Pediatrics

OBJECTIVES: To develop a brief screen to identify families at risk for food insecurity (FI) and to evaluate the sensitivity, specificity, and convergent validity of the screen. PATIENTS AND METHODS: Caregivers of children (age: birth through 3 years) from 7 urban medical centers completed the US Department of Agriculture 18-item Household Food Security Survey (HFSS), reports of child health, hospitalizations in their lifetime, and developmental risk. Children were weighed and measured. An FI screen was developed on the basis of …

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How Hospitals Are Addressing Food Insecurity

Hospitals & Health Networks - May 1, 2017

The health system uses the Children's HealthWatch **Hunger Vital Sign** survey in its inpatient admission database and screened 57,224 patients …

DISCUSSION PAPER

**Standardized Screening for Health-Related Social Needs in Clinical Settings**

The Accountable Health Communities Screening Tool

**Alexander Billioux, MD, DPhil,** Centers for Medicare & Medicaid Services;
**Katherine Verlander, MPH,** Centers for Medicare & Medicaid Services;
**Susan Anthony, DrPH,** Centers for Medicare & Medicaid Services;
**Dawn Alley, PhD,** Centers for Medicare & Medicaid Services

May 30, 2017

**The impacts of unmet health-related social needs, such as homelessness, inconsistent access to food, and exposure to violence on health and health care utilization, are well-established.** Growing evidence indicates that addressing these and other needs can help reverse their damaging health effects, but screening for social needs is not yet standard clinical practice. In many communities, the absence of established pathways and infrastructure and perceptions of inadequate time to make community referrals are barriers that seem to often keep clinicians and their staff from broaching the topic. The Centers for Medicare & Medicaid Services (CMS) Accountable Health Communities Model, tested by the Center for Medicare and Medicaid Innovation, addresses this critical gap between clinical care and community services in the current health care delivery system by testing whether systematically identifying and addressing the health-related social needs of Medicare and Medicaid beneficiaries impacts their total health care costs and improves health.

With input from a panel of national experts and after review of existing screening instruments, CMS developed a 10-item screening tool to identify patient needs in 5 different domains that can be addressed through community services (housing instability, food insecurity, transportation difficulties, utility assistance needs, and interpersonal safety). Clinicians and their staff can use this short tool across a spectrum of ages, backgrounds, and settings, and it is streamlined enough to be incorporated into busy clinical workflows. Just like with clinical assessment tools, results from this screening tool can be used to inform a patient's treatment plan as well as make referrals to community services.

**Introduction**

Evidence demonstrates that non-medical health-related social needs (HRSNs), such as housing instability, food insecurity, and exposure to interpersonal violence, drive health care utilization and impact health outcomes [1, 2, 3]. Clinicians routinely employ standardized questions and validated assessment tools to screen for clinical and behavioral drivers of poor health, such as alcohol dependency, decompensated heart failure, and depression, but screening for HRSNs is not yet standard clinical practice [4, 5, 6]. Standardized application of screening tools as a part of clinical routines allows provider teams to quickly and consistently identify possible health needs for further investigation and intervention. A variety of assessment tools have been developed to help health providers identify the presence of deleterious social circumstances, and a few recent studies have demonstrated the efficacy

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POLICY STATEMENT Organizational Principles to Guide and Define the Child Health Care System and/or Improve the Health of all Children

American Academy of Pediatrics
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**Promoting Food Security for All Children**

COUNCIL ON COMMUNITY PEDIATRICS, COMMITTEE ON NUTRITION

abstract

Sixteen million US children (21%) live in households without consistent access to adequate food. After multiple risk factors are considered, children who live in households that are food insecure, even at the lowest levels, are likely to be sick more often, recover from illness more slowly, and be hospitalized more frequently. Lack of adequate healthy food can impair a child's ability to concentrate and perform well in school and is linked to higher levels of behavioral and emotional problems from preschool through adolescence. Food insecurity can affect children in any community, not only traditionally underserved ones. Pediatricians can play a central role in screening and identifying children at risk for food insecurity and in connecting families with needed community resources. Pediatricians should also advocate for federal and local policies that support access to adequate healthy food for an active and healthy life for all children and their families.

**INTRODUCTION**

In 2013, 17.5 million US households, or 14.3% of all households and 21% of all children, met the US Department of Agriculture (USDA) definition of a food-insecure household, one in which "access to adequate food is limited by a lack of money or other resources."[1-3] Households with children are nearly twice as likely to be food insecure as households without children. In 2013, 7.5 million American families with children lacked consistent access to adequate, nutritious food. The crisis becomes even more pressing for families facing severe economic hardships. In 2013, almost 60% of all food-insecure households had incomes below 185% of the federal poverty thresholds, the income eligibility cutoff for many child nutrition programs. The federal poverty threshold for an average family of 4 people in 2013 was $23 834; 185% of this threshold amount is $44 093, but the federal poverty level is not a definition of economic hardship, and the amount to provide basic needs for a family of 4 often far exceeds this amount. Because 30% of food-insecure households have incomes above this level, it is clear the problem is not related solely to poverty.

The demographic of food-insecure Americans extends beyond the areas of concentrated urban poverty and into suburbs and rural America, areas

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PEDIATRICS Volume 136, number 5, December 2015

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DOI: 10.1542/peds.2015-3301

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FROM THE AMERICAN ACADEMY OF PEDIATRICS

CHILDREN'S HealthWatch 20 YEARS

# Stability: The Housing Iceberg


CHILDREN'S HealthWatch 20 YEARS

# An Evolving Conceptual Definition of Housing Instability

RESEARCH AND PRACTICE

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

Maternal Child Health J
DOI 10.1007/s10995-014-1633-6

Homelessness During Pregnancy: A Unique, Time-
Risk Factor of Birth Outcomes

Diana B. Cutts · Sharon Coleman · Maureen M. Black · Mariana M. Chilton · John T. Cook · Stephanie Ettinger de Cuba · Timothy C. Heeren · Alan Meyers · Megan Sandel · Patrick H. Casey · Deborah A. Frank

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Published online: 18 November 2014

Homelessness During Infancy: Associations With Infant and Maternal Health and Hardship Outcomes

Diana B. Cutts
Hennepin County Medical Center

Allison Bovell-Ammon
Boston Medical Center

Stephanie Ettinger de Cuba
Boston University

Richard Sheward
Boston Medical Center

Meg Shaefer
The Everett Clinic

Cassie Huang
Boston University

Maureen M. Black
University of Maryland

Patrick H. Casey
University of Arkansas for Medical Sciences

Sharon Coleman
Boston University

Megan Sandel
Deborah A. Frank
Boston Medical Center

Cityscape: A Journal of Policy Development and Research • Volume 20 Number 2 • 2018
U.S. Department of Housing and Urban Development • Office of Policy Development and Research
Cityscape 119

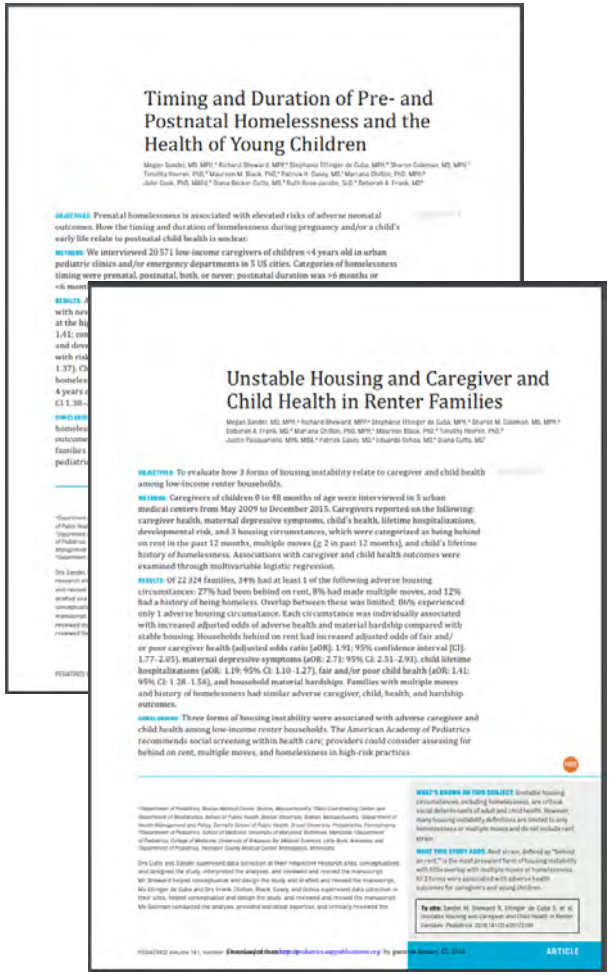
## What housing circumstances matter?

- 2011: multiple moves and overcrowding
- 2014: Homelessness during pregnancy (prenatal homelessness)
- 2018: Homelessness during infancy (postnatal homelessness)

http://bit.ly/Cutts-2011
http://bit.ly/Cutts-2014
http://bit.ly/Cutts-2018

CHILDREN'S HealthWatch 20 YEARS

# An Evolving Conceptual Definition of Housing Instability


Timing and Duration of Pre- and Postnatal Homelessness and the Health of Young Children

Unstable Housing and Caregiver and Child Health in Renter Families

**What housing circumstances matter?**

- 2018: timing and duration of pre and postnatal homelessness
- 2018: Current understanding of housing instability

http://bit.ly/Sandel-2018-2
http://bit.ly/Sandel-2018

CHILDREN'S HealthWatch 20 YEARS

# HOUSING STABILITY Vital Sign™

*Since [current month] of last year,*

**1. Was there a time when you were not able to pay the mortgage or rent on time?**

*Answer is yes/no, positive screen if answer is yes*

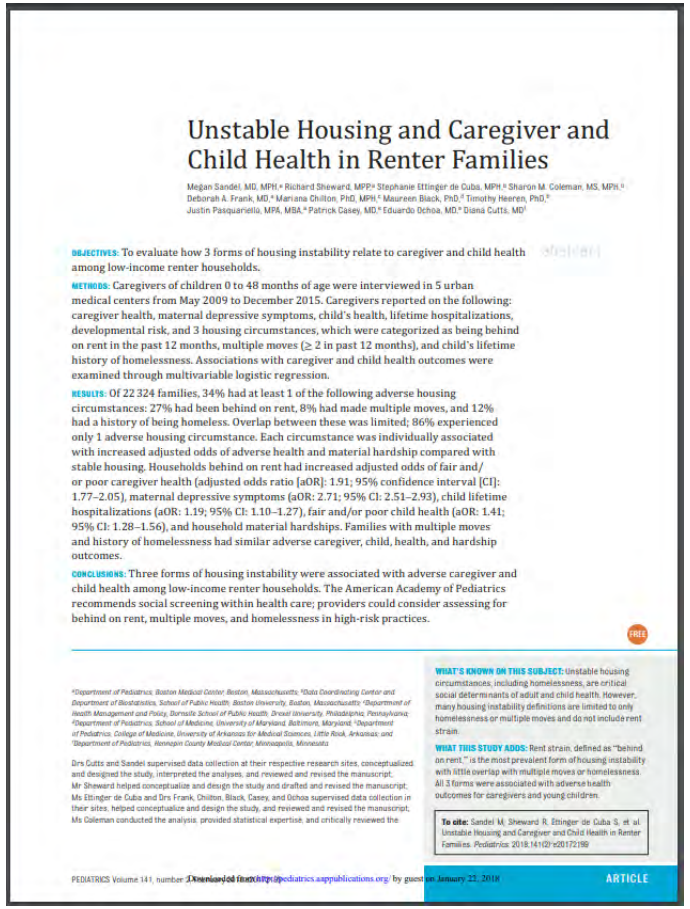
**2. How many places have you lived?**

*Answer is # of places lived, positive screen if answer is 3 or more (i.e. multiple moves ≥ 2 in 12 mos.)*

**3. Was there a time when you did not have a steady place to sleep or slept in a shelter (including now)?**

*Answer is yes/no, positive screen if answer is yes*

# HOUSING STABILITY Vital Sign™



## Unstable Housing and Caregiver and Child Health in Renter Families

Megan Sandel, MD, MPH,[a] Richard Sheward, MPP,[a] Stephanie Ettinger de Cuba, MPH,[a] Sharon M. Coleman, MS, MPH,[b] Deborah A. Frank, MD,[c] Mariana Chilton, PhD, MPH,[d] Maureen Black, PhD,[e] Timothy Heeren, PhD,[b] Justin Pasquariello, MPA, MBA,[a] Patrick Casey, MD,[f] Eduardo Ochoa, MD,[a] Diana Cutts, MD[g]

**OBJECTIVES:** To evaluate how 3 forms of housing instability relate to caregiver and child health among low-income renter households.

**METHODS:** Caregivers of children 0 to 48 months of age were interviewed in 5 urban medical centers from May 2009 to December 2015. Caregivers reported on the following: caregiver health, maternal depressive symptoms, child's health, lifetime hospitalizations, developmental risk, and 3 housing circumstances, which were categorized as being behind on rent in the past 12 months, multiple moves (≥ 2 in past 12 months), and child's lifetime history of homelessness. Associations with caregiver and child health outcomes were examined through multivariable logistic regression.

**RESULTS:** Of 22 324 families, 34% had at least 1 of the following adverse housing circumstances: 27% had been behind on rent, 8% had made multiple moves, and 12% had a history of being homeless. Overlap between these was limited; 86% experienced only 1 adverse housing circumstance. Each circumstance was individually associated with increased adjusted odds of adverse health and material hardship compared with stable housing. Households behind on rent had increased adjusted odds of fair and/or poor caregiver health (adjusted odds ratio [aOR]: 1.91; 95% confidence interval [CI]: 1.77–2.05), maternal depressive symptoms (aOR: 2.71; 95% CI: 2.51–2.93), child lifetime hospitalizations (aOR: 1.19; 95% CI: 1.10–1.27), fair and/or poor child health (aOR: 1.41; 95% CI: 1.28–1.56), and household material hardships. Families with multiple moves and history of homelessness had similar adverse caregiver, child, health, and hardship outcomes.

**CONCLUSIONS:** Three forms of housing instability were associated with adverse caregiver and child health among low-income renter households. The American Academy of Pediatrics recommends social screening within health care; providers could consider assessing for behind on rent, multiple moves, and homelessness in high-risk practices.

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[a]Department of Pediatrics, Boston Medical Center, Boston, Massachusetts; [b]Data Coordinating Center and Department of Biostatistics, School of Public Health, Boston University, Boston, Massachusetts; [c]Department of Health Management and Policy, Dornsife School of Public Health, Drexel University, Philadelphia, Pennsylvania; [d]Department of Pediatrics, School of Medicine, University of Maryland, Baltimore, Maryland; [e]Department of Pediatrics, College of Medicine, University of Arkansas for Medical Sciences, Little Rock, Arkansas; and [f]Department of Pediatrics, Hennepin County Medical Center, Minneapolis, Minnesota

Drs Cutts and Sandel supervised data collection at their respective research sites, conceptualized and designed the study, interpreted the analyses, and reviewed and revised the manuscript; Mr Sheward helped conceptualize and design the study and drafted and revised the manuscript; Ms Ettinger de Cuba and Drs Frank, Chilton, Black, Casey, and Ochoa supervised data collection in their sites, helped conceptualize and design the study, and reviewed and revised the manuscript; Ms Coleman conducted the analysis, provided statistical expertise, and critically reviewed the

**WHAT'S KNOWN ON THIS SUBJECT:** Unstable housing circumstances, including homelessness, are critical social determinants of adult and child health. However, many housing instability definitions are limited to only homelessness or multiple moves and do not include rent strain.

**WHAT THIS STUDY ADDS:** Rent strain, defined as "behind on rent," is the most prevalent form of housing instability with little overlap with multiple moves or homelessness. All 3 forms were associated with adverse health outcomes for caregivers and young children.

**To cite:** Sandel M, Sheward R, Ettinger de Cuba S, et al. Unstable Housing and Caregiver and Child Health in Renter Families. *Pediatrics*. 2018;141(2):e20172199





- Among 22,234 families, 34% had at least one adverse housing circumstance:
  - 27% behind on rent
  - 8% multiple moves
  - 12% history of homelessness
- Each circumstance individually associated with adverse health and material hardship compared to stable housing

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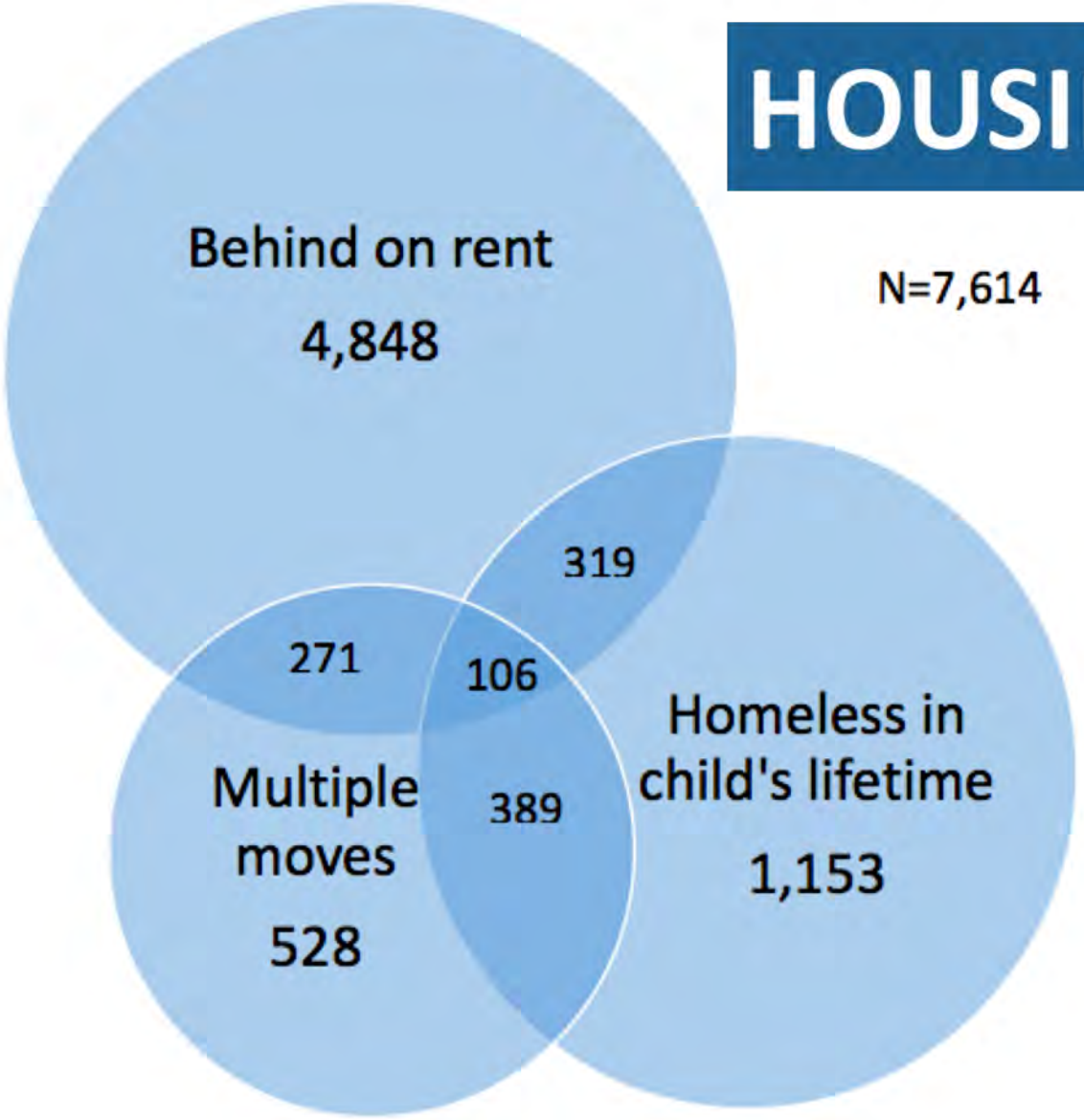
# HOUSING STABILITY Vital Sign™

Number of adverse housing conditions




N=7,614

**Little overlap among three adverse housing conditions**

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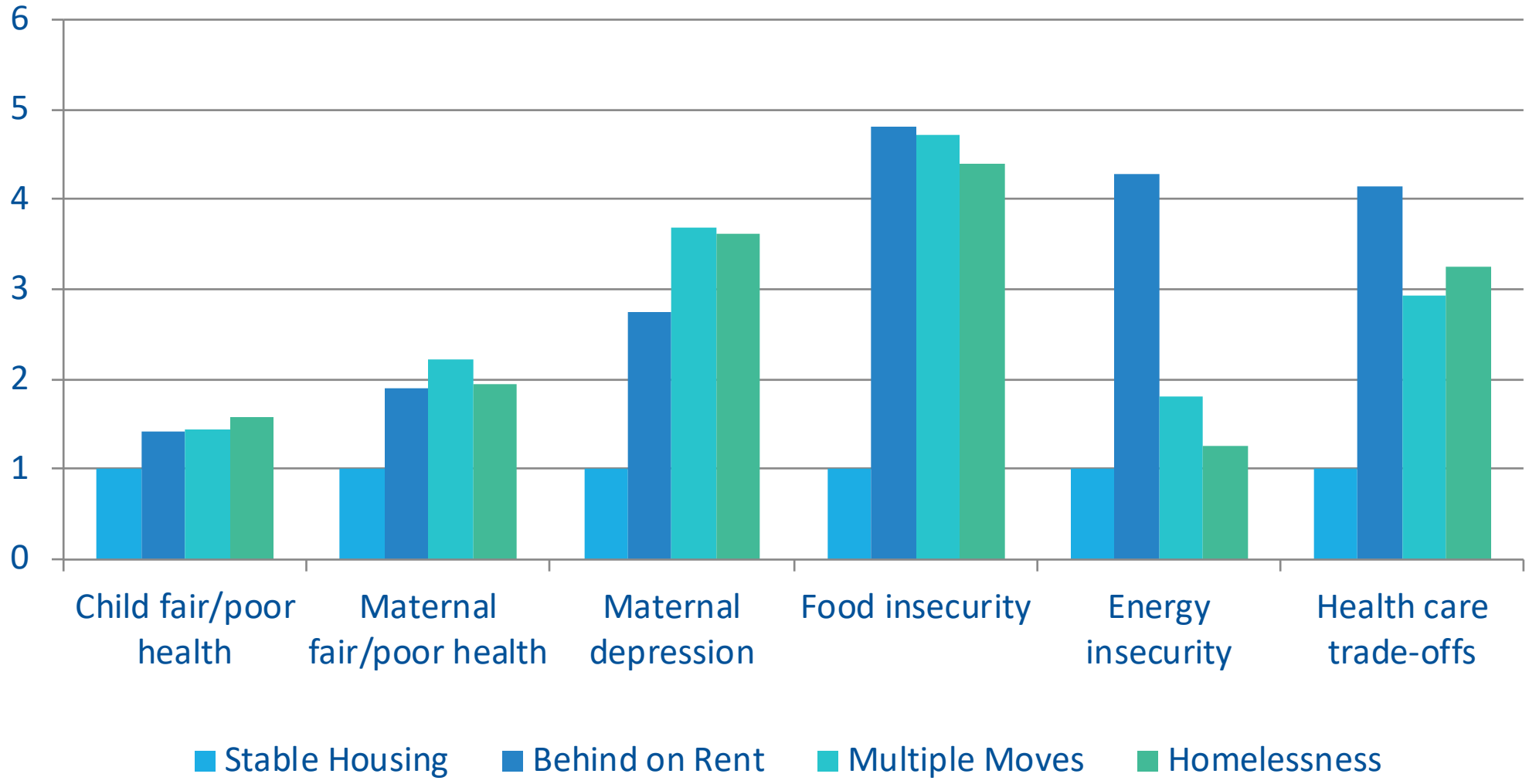
# Outcomes of unstable housing with health and material hardship outcomes

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# Limitations & Next Steps

- There is no agreed upon definition of circumstances that define housing instability
- There is no gold standard housing stability measure against which the Housing Stability Vital Sign can be compared
- Investments in future research to create robust standard testing of a diagnostic tool, such as sensitivity and specificity analysis is warranted

# Housing Instability Screening



## Promoting Caregiver and Child Health Through Housing Stability Screening in Clinical Settings

Richard Sheward
Allison Bovell-Ammon
Nayab Ahmad
Children's HealthWatch, Boston Medical Center
Boston, Massachusetts

Genevieve Preer
Boston Medical Center
Boston, Massachusetts

Stephanie Ettinger de Cuba
Boston University

Megan Sandel
Boston University
Boston Medical Center
Boston, Massachusetts

**Abstract**
Within the health care sector, researchers, clinicians, and payers increasingly recognize the importance of the social determinants of health for improving maternal and child health. This article focuses on existing and emerging approaches to screening families for unstable housing circumstances. The authors describe how housing stability screening helps health care providers to better understand risks for caregiver and child health and wellness. They urge clinicians to screen more actively for housing stability, not just homelessness, hospitals to pursue incentive payments and alternative financial models to address housing instability, and policymakers to expand investments in housing as a health-promoting policy opportunity.

Unstable housing circumstances have been associated with a wide range of negative health outcomes, including lead exposure and toxic effects, asthma, and depression (Shaw, 2004). Housing instability is a social determinant of health variably defined by high housing costs relative to income, poor housing quality, unstable neighborhoods, overcrowding, and homelessness (Johnson & Meckstroth, 1998; Satcher, 2010). Additional metrics have included multiple moves; eviction; and difficulty paying rent, mortgage, or utilities (Geller & Curtis, 2010; Cutts et al., 2011; Gilman, Kawachi, Fitzmaurice, & Buka, 2003; Kushel, Gupta, Gee, & Haas, 2006; Pavao, Alvarez, Baumrind, Induni, & Kimerling, 2007; Stahre, VanEenwyk, Siegel, & Njai, 2015; Suglia, Duarte, Chambers, & Boynton-Jarrett, 2013). Children's HealthWatch has previously examined health, developmental, and anthropometric correlates of housing insecurity among children younger than 3 years using crowding (> 2

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Why Should Health Care Screen for Housing Stability and Other Social Determinants of Health?

How Should Health Care Providers Screen for Housing Stability in Clinical Settings?

While there is no agreed upon standard for screening for and assessing housing stability, previous research and current pilot projects have indicated the need to include questions that not only identify patients currently experiencing the most severe form of housing instability—homelessness—but also to identify patients and families experiencing instability that puts their health and well-being at risk.

http://bit.ly/Sheward-2019

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# Closing Thoughts


**Clarity (your why)**

*Why am I screening for social risk?*

**Begets confidence (your how)**

*Am I using the right tool?*

**Followed by action (your what)**

*The work I do everyday!*

# Thank You!

The mission of Children's HealthWatch is
***to improve the health and development of young children by informing policies that address and alleviate economic hardships.***

CHILDREN'S
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**Contact us:**
**richard.sheward@bmc.org**

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- The webinar recording and slides will both be available on the SIREN website (sirenetwork.ucsf.edu) next week.
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