



*Strategies to Achieve Alignment, Collaboration, and Synergy
across Delivery and Financing Systems*

**Improving Population and Clinical Health with
Integrated Services and Decision Support**

Research In Progress Webinar
Wednesday, December 7, 2016 *12:00-1:00pm ET*

Funded by the Robert Wood Johnson Foundation

Agenda

Welcome: **Glen P. Mays, PhD, MPH**, Director, RWJF [Systems for Action](#) National Coordinating Center, University of Kentucky College of Public Health

Improving Population and Clinical Health with Integrated Services and Decision Support

Presenter: **Joshua Vest, PhD, MPH**, Associate Professor of Health Policy and Management, Indiana University Richard M. Fairbanks School of Public Health – Indianapolis joshvest@iu.edu

Commentary: **Katie Sendze, MBA**, Director of Client Services HealthInfoNet, Maine's Health Information Exchange
ksendze@hinfonet.org

Questions and Discussion



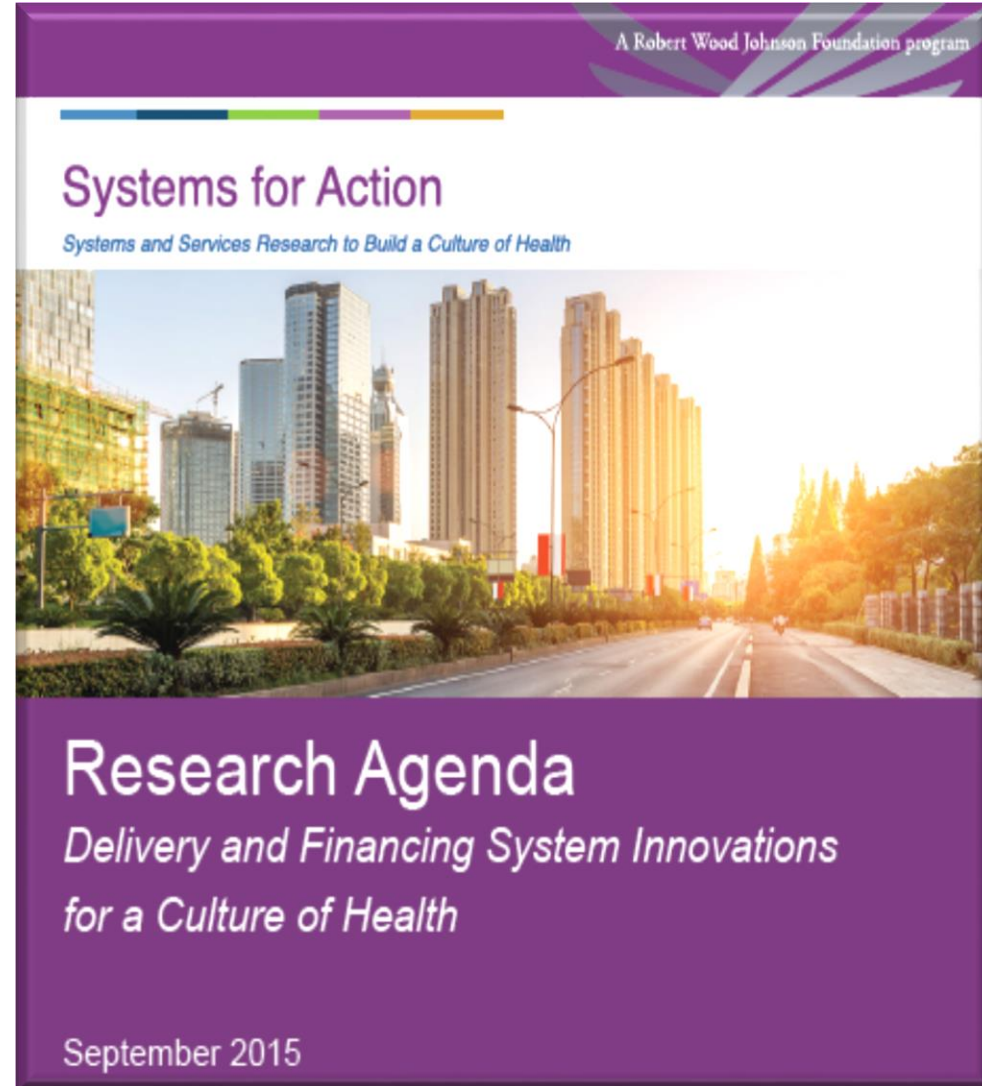
RWJF Systems for Action Program to build a national Culture of Health <http://www.systemsforaction.org/>

Overview

Mission: Widen the lens beyond health care & public health systems

Rigorous research to identify novel mechanisms for aligning delivery and financing systems in **medical care**, **public health**, and **social & community services** in ways that improve **health** and **wellbeing**, achieve **efficiencies** in resource use, and reduce **inequities**.

www.systemsforaction.org



Wide lens: implicated sectors

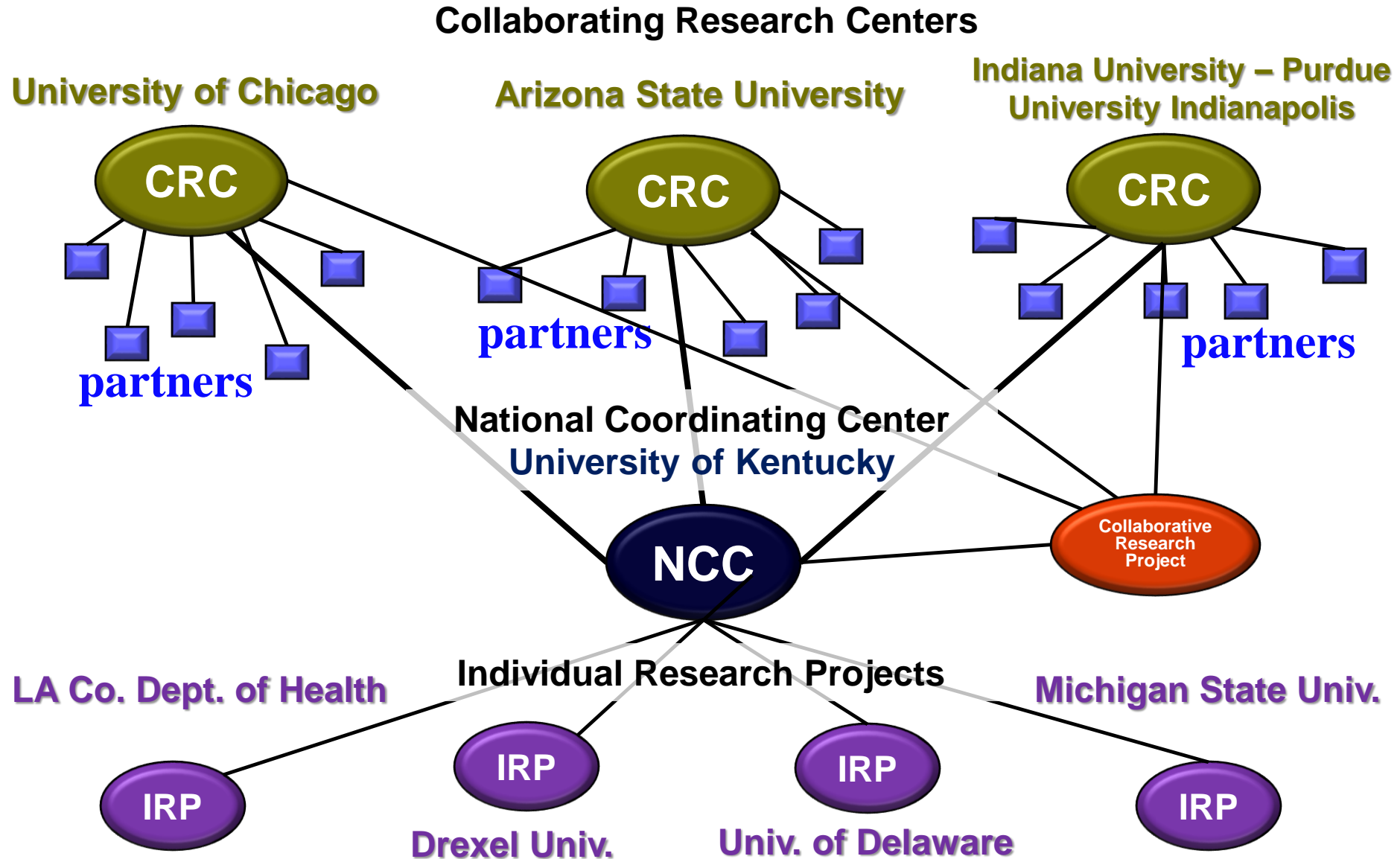
- Public health
- Medical care: ACOs, PCMCs, AHCs
- Income support
- Nutrition and food security
- Education and workforce development
- Housing
- Transportation
- Criminal justice
- Child and family services
- Community development and finance



Study novel mechanisms for aligning systems and services across sectors

- Innovative alliances and partnerships
- Inter-governmental and public-private ventures
- New financing and payment arrangements
- Incentives for individuals, organizations & communities
- Governance and decision-making structures
- Information exchange and decision support
- New technology: m-health, tele-health
- Community engagement, public values and preferences
- Innovative workforce and staffing models
- Cross-sector planning and priority-setting

S4A Program Structure



Collaborating Research Centers

- ***University of Chicago:*** Randomized trial of a Comprehensive Care, Community and Culture program
- ***Arizona State University:*** Analysis of medical, mental health, and criminal justice system interactions for persons with behavioral health disorders
- ***IUPUI:*** Evaluating integration and decision support strategies for a community-based safety net health care and public health system
- ***University of Kentucky:*** Measuring multi-sector contributions to public health services and population health outcomes.

Individual Research Projects

- ***Michigan State University:*** Randomized trial of Community Complex Care Response Team
- ***Los Angeles Department of Health:*** Evaluation of Housing for Health initiative, which provides permanent housing and supportive services for vulnerable populations
- ***University of Delaware:*** Randomized trial to test the efficacy of using the team approach to leverage different financing systems and services
- ***Drexel University:*** Evaluation of Building Wealth and Health Network within anti-poverty programming

Presenter



Joshua R. Vest, PhD, MPH

Director, Center for Health Policy

Associate Professor of Health Policy &
Management

Indiana University Richard M Fairbanks
School of Public Health - Indianapolis

Affiliated Scientist, Regenstrief Institute

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Improving Population and Clinical Health with Integrated Services and Decision Support

a Robert Wood Johnson Foundation Collaborative Research Center project

Joshua R Vest, PhD, MPH
Associate Professor Health Policy & Management
Indiana University Richard M. Fairbanks School of Public Health
Affiliated Scientist
Regenstrief Institute



IU Collaborating Research Center Partners

- Indiana University Richard M. Fairbanks School of Public Health
- Eskenazi Health
- Regenstrief Institute
- Marion County Public Health Department
- Indiana University Polis Center

Support for this presentation was provided by the Robert Wood Johnson Foundation through the Systems for Action National Coordinating Center, ID 73485.



Research Team

- Paul Halverson (Co-PI)
- Nir Menachemi
- Shaun Grannis
- Brian Dixon
- Jennifer Williams
- Suranga Kashuriranthne
- Bashia Andraka-Christou
- Dennis Watson
- Ying Zhang
- Jennifer Long
- Karen Comer
- Mark Bustamante
- Jennifer Ferrell
- ...and many others...



Overall objective

Support the collaboration and partnership of the health care, public health, and social services systems in addressing social determinants of health.

Focus area: the delivery of integrated care services in an urban safety-net population.

Increasingly, patients require services and expertise that go beyond the tradition scope of health care services.

- Increased emphasis on the social determinants of health
- Increased organizational accountability for health and prevention
- Insufficient time in a single clinical visit to address social, behavioral, environmental, and contextual factors

Examples of social determinant of health services integrated into primary care

- behavioral health
- social work
- dental
- dietetics
- respiratory therapy (includes asthma education)
- financial counseling
- patient navigation
- pharmacy assistance

Study 1

Impact of
integrating
social
determinant
services

Study 2

Social
determinants
of health
decision
support

Study 3

Integration of
public health
into case
conferencing

Relationship to the RWJF Culture of Health

- foster cross-sector collaboration to improve well-being
- investigate the implementation and impact of strategies designed to achieve alignment, collaboration, and synergy across delivery and financing systems
- investigate the effectiveness and efficiency of information and decision support strategies in achieving alignment, collaboration, and synergy across delivery and financing system
- strengthening integration of health services and systems

Study 1

Impact of
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Measuring the association of between patient receipt of social determinant of health services and avoidable utilization

Setting - Eskenazi Health

- Public hospital system serving the Indianapolis, IN area
- 315 bed hospital
- Federally qualified health center (FQHC) operating 10 sites

Subjects

- 9 year propensity score matched panel
- Adults
- >1 primary care visit before 1/2011 and >1 primary care visit after 1/2011 (Eskenazi increased offerings of services in 2011)

Data

Indiana Network for Patient Care

- Largest & oldest health information exchange in the nation
- Data from >100 health systems, hospitals, & outpatient providers
- Encounters, demographics, etc.

Social determinant of health services

- Eskenazi Health billing & registration systems
- Orders from the G3 electronic health record system
- NLP of outpatient clinical documents (e.g. visit notes)

Approach: a difference-in-difference like approach in propensity-score matched panel

Matched sample

- Logistic regression model estimating the probability of receiving social determinant of health services
- Including: patient demographic characteristics, diagnoses, and prior utilization
- 3 matched controls

Outcomes

- Readmissions (30 day)
- Ambulatory care sensitive admissions
- Avoidable emergency department encounters

About our sample (as of making this slide)

- 50,116 individual patients
- 44,078 identified social service encounters (and counting)
 - Navigation ~ 8%
 - Dental ~ 17%
 - Dietician ~ 50%
 - Behavioral health ~ 15%
 - Respiratory therapy ~ 2%

Lessons

- Identifying service delivery data is challenging (especially over time)
 - Multiple systems within a single organization (10 systems)
 - Diverse practices across services, locations, and providers (e.g. actual order, documented in notes, billed...)
- Conceptual issues & labels
 - “integrated services” vs. “co-located services” vs. “wraparound services”

Study 1

Impact of
integrated
services

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Need to more effectively and efficiently identify patients in need of “wrap around” services.

- Wrap around services target the social and behavioral determinants of health
- Traditional risk identification has not included social determinants of health
- ***Objective:* Determine the impact of decision support that includes social determinants on referral and uptake of wrap around services**



Traditional risk prediction modeling....

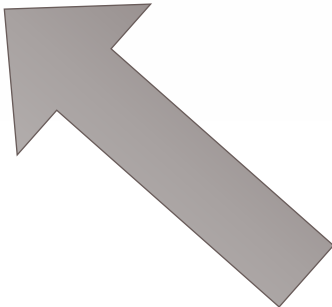
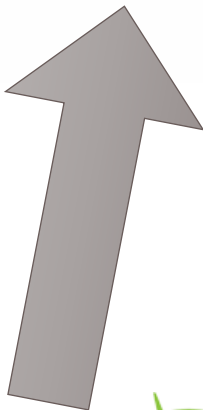
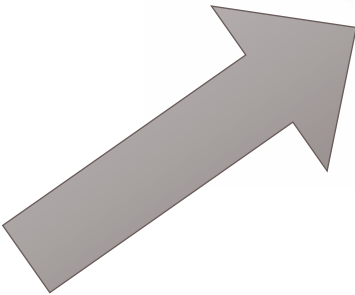
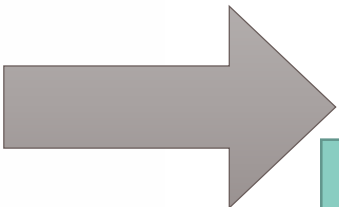
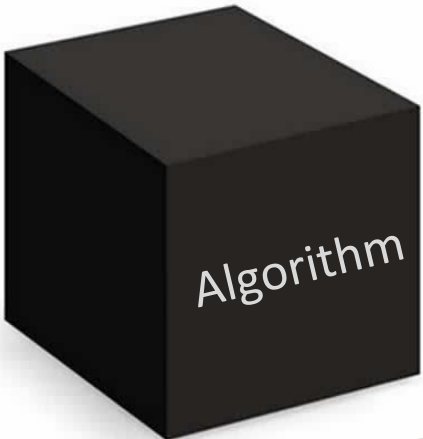
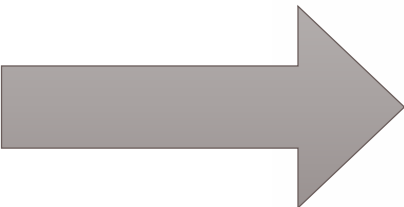


Our project expands to the social determinants of health



Claims &
EHR

Diagnoses & Utilization



Additional health behaviors
Utilization at other providers



Area resources
Living conditions
Social context
Safety
Transport



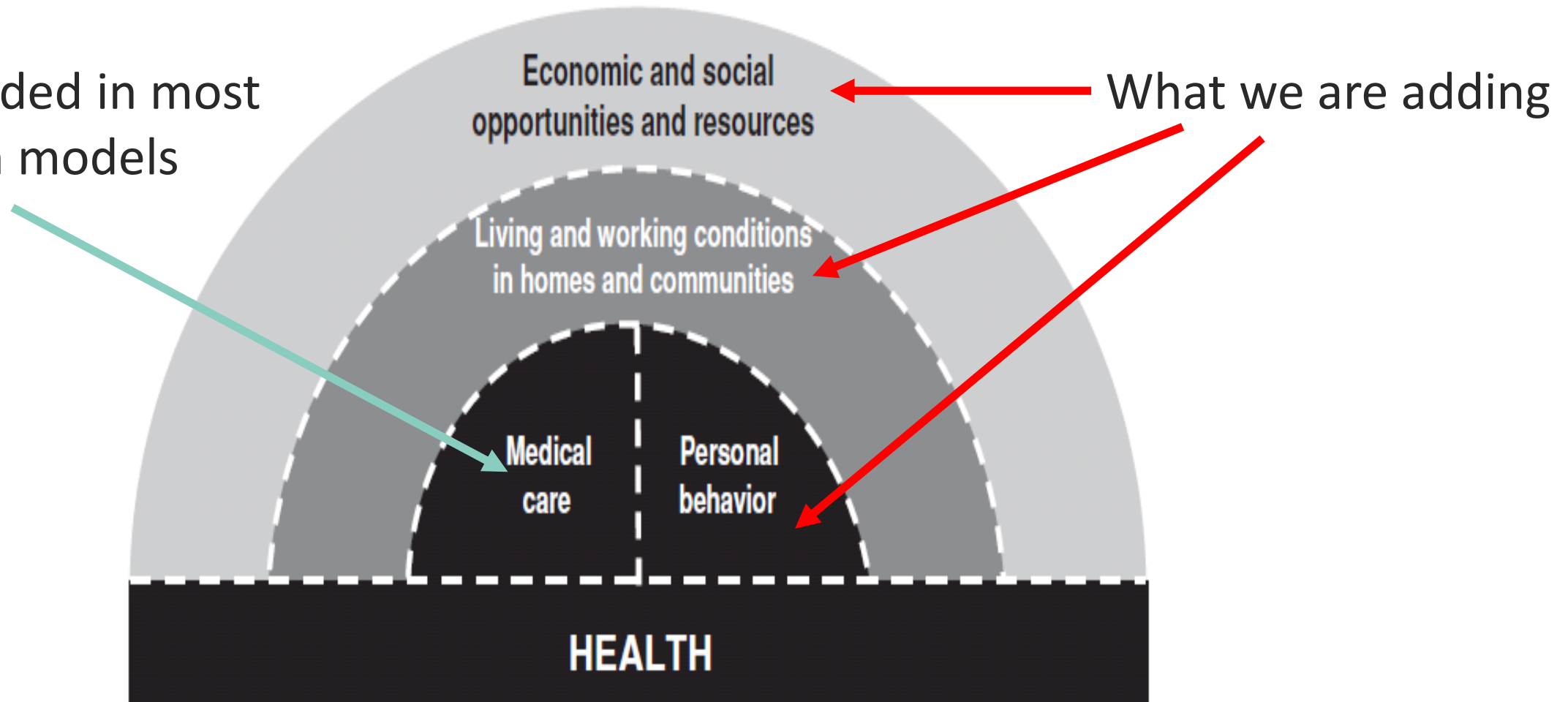
Neighborhood risk behaviors
Chronic diseases



**RICHARD M. FAIRBANKS
SCHOOL OF PUBLIC HEALTH**
INDIANA UNIVERSITY
Indianapolis

Framework for organizing the factors included in risk identification tool

Data included in most prediction models



“Social Determinants of Health Model” by Braveman et al (2011) Annu. Rev. Public Health, 32:381-398

Framework for organizing the factors included in decision support modeling

INPC

- Diagnoses
 - AHD
 - Asthma
 - Autism
 - Coronary artery disease
 - Cervical cancer
 - Chronic kidney disease
 - Colorectal cancer
 - Congestive heart failure
 - COPD
 - Stroke / cerebrovascular accident
 - Depression
 - Diabetes
 - Hypertension
 - Ischemic vascular disease
 - Obesity
 - Pregnancy
 - Peripheral vascular disease
- ED visits (number)
- >2 ED / urgent care visits in 6 months
- Inpatient admissions
- >2 readmissions in 1 year
- >5 medications
- PCP visits
- Mental illness

INPC

- Smoking
- Substance abuse
- Age
- Domestic violence
- Care fragmentation
- Payer?



Annu. Rev. Public Health 2011.32:381-398

Framework for organizing the factors included in decision support modeling



Annu. Rev. Public Health 2011.32:381-398

Framework for organizing the factors included in decision support modeling

Figure 2

Social Determinants of Health

Economic Stability	Neighborhood and Physical Environment	Education	Food	Community and Social Context	Health Care System
Employment	Housing	Literacy	Hunger	Social integration	Health coverage
Income	Transportation	Language	Access to healthy options	Support systems	Provider availability
Expenses	Safety	Early childhood education		Community engagement	Provider linguistic and cultural competency
Debt	Parks	Vocational training		Discrimination	Quality of care
Medical bills	Playgrounds	Higher education			
Support	Walkability				
Health Outcomes Mortality, Morbidity, Life Expectancy, Health Care Expenditures, Health Status, Functional Limitations					



kff.org/disparities-policy/issue-brief/beyond-health-care-the-role-of-social-determinants-in-promoting-health-and-health-equity/

Examples of indicators

IU POLIS @ census tract

- Employment rates
- Tax delinquent properties
- Crime indices
- Education rates
- Voter participation
- Walkability
-



Marion County LHD @ census /
health planning area

- Smoking prevalence
- Perceived safety
- Mortality rates
- Infant mortality rates
- Maternal smoking
- Overweight / obesity prevalence
-

Annu. Rev. Public Health 2011.32:381-398

Methods

Based on daily clinic appointment lists, population health nurses automatically receive:

1. Results of predictive algorithm of need for wrap around services
 - Service specific need (e.g. mental health, or social work)
 - Machine learning algorithm (2 years of training data)
2. Recent ED and inpatient encounters from across the state
3. Supplemented with access to online resource look up tool in patients neighborhood

Timeline

	Summer 2016	Fall 2016	Winter 2017	Spring 2017	Summer 2017	Fall 2017	Winter 2018
AIM 1							
Data aggregation	X	X	X				
Analyses				X	X	X	
AIM 2							
Data aggregation	X	X					
Modeling / Testing		X					
First 3 clinics			X (Jan)				
Second 3 clinics				X (May)			
Third 3						X (Sep)	
Analyses							X

Effects of an integrated service delivery approach on health care utilization: background & preliminary

a Robert Wood Johnson Foundation Collaborative Research Center project

Study 1

Impact of integrating social determinant services

Study 2

Social determinants of health decision support

Study 3

Integration of public health into case conferencing

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Project Updates


go to: <http://systemsforaction.org/projects/improving-population-and-clinical-health-integrated-services-and-decision-support>

Improving Population and Clinical Health with Integrated Services and Decision Support

Researchers from IUPUI and the Eskenazi Health System will use retrospective studies and a prospective randomized controlled trial to test the effectiveness of several strategies for integrating the delivery of medical, public health, and social services for low-income populations receiving care through Indianapolis' network of federally qualified health centers. The integration strategies to be studied include the use of population health nurses who conduct home and community visits, the use of interdisciplinary case conferences involving medical and public health professionals, and a novel electronic decision support tool that combines clinical, social, and public health data to better characterize the social and physical environments in which patients live. This research will provide important insights into the value of integrated approaches to health delivery and how public health organizations can contribute to efforts of the health care and social and community services systems.


[Close](#)

Project Details

 **Year:** 2016

Status: Active

Primary Investigator: Paul Halverson



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Title	Date	Type
Improving Population and Clinical Health with Integrated Services and Advanced Analytics	06/26/2016	Presentation
Press Release: New Studies Test Novel Systems for Integrating Medical, Public Health, and Social Services	03/18/2016	Communication

Commentary



Katie Sendze, MBA

Director of Client Services

HealthInfoNet, Maine's Health Information
Exchange

Portland, Maine ksendze@hinfonet.org

More information:

Program: <http://hinfonet.org/about-us/>

RWJF Data Across Sectors for Health:
<http://hinfonet.org/dash-grant>

Questions and Discussion

Webinar Archives & Upcoming Events

go to: <http://systemsforaction.org/research-progress-webinars>

Upcoming Webinars

S4A National Coordinating Center Intramural Research

December 15, 2016, 1 pm ET

[A NETWORK VIEW OF POPULATION HEALTH DELIVERY SYSTEMS](#)

Rachel Hogg Graham, DrPH, MA, Assistant Professor of Health Sciences, Education, and Research, University of Kentucky College of Health Sciences

January 11, 2017, 12 pm ET

[ESTIMATING THE COSTS OF FOUNDATIONAL CAPABILITIES FOR THE NATION'S PUBLIC HEALTH SYSTEM](#)

C. B. Mamaril, PhD, Senior Scientist, Systems for Action National Coordinating Center, University of Kentucky College of Public Health

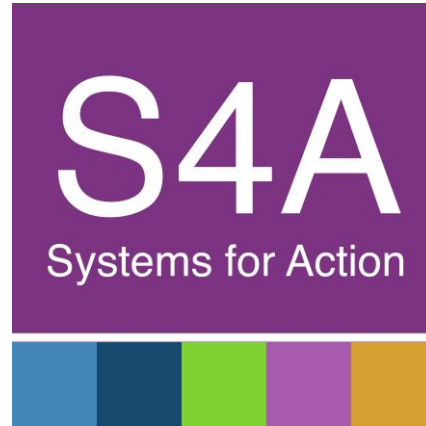
Public Health Practice-Based Research Networks

January 19, 2017, 1 pm ET/ 10 am PT

[INTER-ORGANIZATIONAL COLLABORATION IN LOCAL PUBLIC HEALTH SYSTEMS](#)

Justin Marlowe, PhD and Betty Bekemeier, PhD, University of Washington

Thank you for participating in today's webinar!



For more information about the webinars, contact:

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Speaker Bios

Joshua Vest, PhD, MPH is a health services researcher with interests in organizational determinants and effectiveness of health information technology and systems, specifically the adoption, utilization, and policy issues of technologies that facilitate the sharing of patient information between different organizations. He is widely published and his work has employed a variety of research techniques from large scale database analyses, to geographical information system mapping, to survey research, to qualitative focus groups and interviews. As a former local public health practitioner, Dr. Vest has a particular interest in effective public health information systems including the role of information technology governance structures on local public health departments' adoption of information technology and systems, the structure of state and local public health information systems, as well as an evaluation of email intervention to improve disease notification efforts.

Katie Sendze, MBA, is Director of Client Services for HealthInfoNet, Maine's Health Information Exchange in Portland, Maine. For more information:

- HealthInfoNet: <http://hinfonet.org/about-us/>
- RWJF Data Across Sectors for Health (DASH) program:
<http://hinfonet.org/dash-grant/>

Acknowledgements

Systems for Action is a National Program Office of the Robert Wood Johnson Foundation and a collaborative effort of the Center for Public Health Systems and Services Research in the College of Public Health, and the Center for Poverty Research in the Gatton College of Business and Economics, administered by the University of Kentucky, Lexington, Ky.

