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](http://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
- Arizona State University
- Indiana University – Purdue University Indianapolis

National Coordinating Center
- University of Kentucky

Individual Research Projects
- LA Co. Dept. of Health
- Drexel Univ.
- Univ. of Delaware
- Michigan State Univ.
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
joshvest@iu.edu
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 integrated services

Study 2
Social determinants of health decision support

Study 3
Integration of public health into case conferencing
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)
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
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

Study 2
Social determinants of health decision support

Study 3
Integration of public health into case conferencing
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....

Claims & EHR
Diagnoses & Utilization

Algorithm

Individual risk score (high utilization)
Our project expands to the social determinants of health

Claims & EHR
Diagnoses & Utilization

Financial assist.
Behavioral health referral risk score

Dietician referral risk score

Social work referral risk score

Additional health behaviors
Utilization at other providers

Area resources
Living conditions
Social context
Safety
Transport

Neighborhood risk behaviors
Chronic diseases

nationswell.com
www.citygalleryindy.org
INPC

The Polis Center
www.citygalleryindy.org

Marion County Public Health Department
Prevent. Promote. Protect.

Richard M. Fairbanks School of Public Health
Indiana University

IUPUI
Data included in most prediction models

Framework for organizing the factors included in risk identification tool

What we are adding

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?
Framework for organizing the factors included in decision support modeling
Framework for organizing the factors included in decision support modeling

### Social Determinants of Health

<table>
<thead>
<tr>
<th>Economic Stability</th>
<th>Neighborhood and Physical Environment</th>
<th>Education</th>
<th>Food</th>
<th>Community and Social Context</th>
<th>Health Care System</th>
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<td>Employment</td>
<td>Housing</td>
<td>Literacy</td>
<td>Hunger</td>
<td>Social integration</td>
<td>Health coverage</td>
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<td>Income</td>
<td>Transportation</td>
<td>Language</td>
<td>Access to healthy options</td>
<td>Support systems</td>
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<td>Safety</td>
<td>Early childhood education</td>
<td>Social integration</td>
<td>Community engagement</td>
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<td>Debt</td>
<td>Parks</td>
<td>Vocational training</td>
<td>Support systems</td>
<td>Discrimination</td>
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<td>Medical bills</td>
<td>Playgrounds</td>
<td>Higher education</td>
<td>Community engagement</td>
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<td>Support</td>
<td>Walkability</td>
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<td>Hunger</td>
<td>Discrimination</td>
<td>Quality of care</td>
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**Health Outcomes**

Mortality, Morbidity, Life Expectancy, Health Care Expenditures, Health Status, Functional Limitations
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
- ....

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

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<thead>
<tr>
<th></th>
<th>Summer 2016</th>
<th>Fall 2016</th>
<th>Winter 2017</th>
<th>Spring 2017</th>
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<td>Second 3 clinics</td>
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Effects of an integrated service delivery approach on health care utilization: background & preliminary

a Robert Wood Johnson Foundation Collaborative Research Center project

Joshua R Vest, PhD, MPH
joshvest@iu.edu

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
Project Updates

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

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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

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<td><strong>S4A National Coordinating Center Intramural Research</strong></td>
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| 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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111 Washington Avenue #201, Lexington, KY 40536
859.218.2317
www.systemsforaction.org
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:

- RWJF Data Across Sectors for Health (DASH) program: [http://hinfonet.org/dash-grant/](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.