Developing a Community-Based Learning Health System

University of Michigan / MICHIR field research team
Jackson Health Improvement Organization
Jackson Health Network / Henry Ford Allegiance
Jackson Community Medical Record
RiverStar Software / MiHIN / Michigan 2-1-1 / MiBridges
Impact of Different Factors on Risk of Premature Death

- Genetics: 30%
- Individual Behavior: 40%
- Social and Environmental Factors: 20%
- Health Care: 10%

Biomedical data captured in enterprise EHRs, clinical data warehouses, genomics/biobanking repositories.
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Behavioral/social/environmental data inconsistently captured in multiple settings.

We propose to develop, implement, and evaluate a **Community-based Learning Health System (CLHS)** that will capture and link information gathered locally in the course of care for biomedical, behavioral, and social needs to close the ‘community gap’ in our LHS evidence base and enhance community engagement in improving translation.

**SURVEILLANCE + Local effector arm**
Closing the ‘community gap’

- Hundreds of CSAs (253?)
- Dozens of data silos, no standardization
- ‘Free-range’ data
- No unified community voice
- No broad community convenor (schools/services/corrections/public health/behavioral health)
- Unclear community-at-large interest

Need to create a sociotechnical infrastructure
Sociotechnical design:

A process by which social systems (communities) and technical experts co-create, co-design, and co-evolve technical solutions to problems affecting their systems.

Community ← Researchers → Technical experts
Work to date in Jackson

- Establishing partnership
- Preparatory research
  - Pilot studies on behavioral health integration
  - Rounds of qualitative interviews of lay community, stakeholders, providers, leaders
- Creation of local working group structure
  - Collective Impact model, HIO Coordinating Council as lead
- Clinical-community linkages focus (SIM)
  - Data/IT ad hoc group as lead
  - Convening community service agencies
  - Co-design of care model, infrastructure, and core application(s)
- Large-scale conversations across domains
Information technology infrastructure to support CLHS

**INTELLIGENCE**
- Surveillance
- Predictive models
- Registries
- Notifications

**CARE SUPPORT**
- Permissions/security
- Communication
- Messaging/alerts
- Closed Loop Referral System
- Summaries
- Assessments
- Outcome monitoring

**REPORTING**
- Cost/utilization
- Services used
- Quality metrics
- Dashboards
FIGURE: INTEGRATED CARE TRIANGLE and the COMMUNITY HEALTH INFORMATION HUB

Supported by EMR capabilities

MEDICAL ENTERPRISE
- Hospital(s) and ER(s)
- Affil PCMH practices
- Affil spec practices
- Affil BH (firewalls)
- Indep PCMH practices
- Indep spec practices
- EMS
- Home Health
- SNF/EOF/SRF

Fragmented IT infrastructure - requires coordination and some investment

COMMUNITY SERVICES
- 'hublets'
  - 2-1-1
  - Region 2 AAA
  - MDHHS/Bridges
  - [Others TBD]

Community Health Information Hub

Jackson County State Innovation Model demonstration

[COMMUNITY] BEHAVIORAL HEALTH
- LifeWays
- Embedded CMH

PLUS:
- Recovery Technology
- Catholic Charities
- Family Services and Children’s Aid
- AWARE
- Many other agencies and private therapists

About half are currently paper-based.

Minimal IT infrastructure - requires investment

Department on Aging
- Region 2 AAA

AWARE
- Council for the Prevention of Child Abuse and Neglect
- Family Services and Children’s Aid

Community Action Agency
- Catholic Social Services
- DisAbility Connections
- Habitat for Humanity
- Highfields
- Jackson Transportation Authority
- MDHHS local office
- Salvation Army

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CLHS proposal

Our hypothesis is that a federated, scalable health IT infrastructure will enable communities to more effectively use local data to identify and solve complex health problems that cross domains, thereby catalyzing community-engaged translational research.

Aim 1: Explore the acceptability of data sharing from the community perspective.

Aim 2: Evaluate the effectiveness of current prototype community IT infrastructure components to support data collection and management for the CLHS.

Aim 3: Develop a sociotechnical evaluation framework that supports collaborative and comparative research on CLHS design.
Questions?
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High-level view: application and infrastructure

Phase 1

Phase 2

Other community “spoke” systems (end points)

Community SS Navigation application

Federation Hub

‘medical enterprise’
EHR

Other Hubs
AIM: Redesign health care delivery to integrate social services and medical care (and behavioral health care???) for at-risk population

OVERALL DESIGN:

- **Community Health Innovation Region (CHIR)**—backbone organization that convenes a governing body of community partners, including health systems, community based organizations, and governmental entities in a geographic region

- **Accountable Systems of Care (ASCs)**—organized clinical networks that provide and support medical services

- **Patient-Centered Medical Homes**—core of medical-side intervention

- **Michigan Pathways to Better Health**—Pathways community hub model for community service delivery, core of community-side intervention

- **Payment Reform**—to support and sustain redesigned care model