Mapping & Measuring Community Networks

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Maurine Gilbert for The Vermont Blueprint for Health
Today’s Agenda

• Research introduction / recap
• What’s new for 2014
The Original Challenge

• Objective: quantity health networks
  – Quantity and describe the network of organizations that has emerged in each Blueprint HSA to support population and individual health, focusing on modes of collaboration and relationships between organizations

• A first step towards key questions about the Blueprint:
  – What role did investment in core CHTs have in seeding these larger networks?
  – How are the relationships maintained and reinforced – how durable are they?
  – What characteristics do the most successful networks share?
  – What is the impact of these networks on population health?
Focus on Organization Relationships

• Relationships between organizations are the unit of analysis
• Which organizations? In 2013, Project Managers id’ed:

<table>
<thead>
<tr>
<th>Primary care offices</th>
<th>Hospitals</th>
<th>Mental health and substance abuse providers</th>
<th>Health clubs</th>
</tr>
</thead>
<tbody>
<tr>
<td>State health, social and economic services</td>
<td>Assisted living facilities</td>
<td>Community service organizations</td>
<td>Law enforcement and corrections</td>
</tr>
<tr>
<td>Legislators</td>
<td>Religious organizations</td>
<td>Home health providers</td>
<td>Pharmacists</td>
</tr>
<tr>
<td>Transportation</td>
<td>Advocacy groups</td>
<td>Schools</td>
<td>And more . . .</td>
</tr>
</tbody>
</table>

• Relying on people for the data: leadership, direct service providers, others
Network Survey v1

• Fall 2013
• 422 participants, representing organizations in 15* HSAs
• 54% response rate!
• We asked about:
  – Perceptions of “teamness”
  – Benefits and drawbacks of working together
  – How respondents’ organizations interact with each other
Are Blueprint Communities Teams?

• Starting point: the Institute of Medicine’s (IOM) paper “Core Principles & Values of Effective Team-Based Health Care.”

• The Blueprint for Health embraces this paper’s model as a goal for both direct clinical care and multidisciplinary community health improvement.

• Survey asked about the IOM’s 5 Principles:
  – Shared goals
  – Mutual trust
  – Clear roles
  – Effective communication
  – Measurable processes and outcomes
Yes! Blueprint Communities are Teams.

Average % of Respondents Who "Agree" or "Strongly Agree" that the Group of Organizations in their HSA Exhibit the Following Characteristics of Team-Based Care

- Shared Goals: 79%
- Mutual Trust: 76%
- Effective Communications: 69%
- Clear Roles: 68%
- Measurable Processes and Outcomes: 38%
Why Work Together?

- The benefits have to be big, and the drawbacks minor

<table>
<thead>
<tr>
<th>≥94% have experienced</th>
<th>Building new relationships</th>
<th>Ability to serve my clients better</th>
<th>Acquisition of new knowledge or skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heightened public awareness of my organization</td>
<td>Better use of my organization’s resources</td>
<td>Greater capacity to serve the community</td>
<td>Enhanced influence in the community</td>
</tr>
</tbody>
</table>

| 60% have experienced | Taking too much time and resources | 46% have experienced | Difficultly in dealing with partner organizations |
Network Connections

• We asked respondents to indicate whether their organization has interacted with other organizations in these ways:
  – Sharing information
  – Sharing resources
  – Sending referrals
  – Receiving referrals

• This data, a simple list of connections between organizations, is the basis for our network analysis.
What is Network Analysis?

• Network Analysis is mapping and measuring relationships

• For the first time, we can **see** how organizations work together

• The analysis also quantifies these networks – how big, how connected, how cliquish, and more

• A few caveats
  – A partial picture
  – A single point in time
  – Shows how (but not why)
What you’re about to see

• Nodes (dots) represent organizations and edges (lines) represent connections between them.

• The network analysis software (we used Gephi) maps organizations and their relationships using a force-based algorithm – nodes that are connected attract each other and nodes that are not connected are pushed further apart.

• We’ve chosen to
  – Size the nodes based on betweenness centrality
  – Color the full graphs based on sub-network/neighborhood membership.
SAMPLE NETWORK: RUTLAND
Rutland HSA
Resources network

Rutland County Housing Coalition
BROC (Community Action in Southwestern Vermont)
Department of Corrections
Interage
Vermont Psychiatric Survivors
Rutland City Police Department
Stafford Technical Center
Division for the Blind and Visually Impaired
BGVS VT
Boys and Girls Club
Rutland United Neighbors
RSVP
Marble Valley Transit
Vermont Agency of Human Services
Vocational Rehab
Rutland County Parent Child Center
Rutland Mental Health
Rutland City School District
Rutland County Women’s Network and Shelter
Southwestern Vermont Council on Aging
Rutland Mental Health - Rutland Area Prevention Coalition

Rutland Housing Authority
Prevent Child Abuse Vermont
Vermont Department of Health (VDH)
The Pines at Rutland
Rutland Area Visiting Nurses and Hospice
Vermont Achievement Center
RRMC - Emergency Department
Rutland Regional Medical Center (RRMC)
RRMC - Case Management, Utilization, and Social Work
RRMC - Community Education
Vermont Chronic Care Initiative (VCCI)
RRMC/Blueprint Community Health Team
Recovery House
Practice of Jennifer Faumontroy, MD
Practice of Beverly Roseberry, MD
Practice of Drs. Peter and Lisa Hogenkamp
Marble Valley Healthworks

Vermont Adaptive Ski and Sports
CCV (Community College of Vermont)
Proctor High School
Castleton Cares
Mountain View Care, Genesis
Mentor Connector
Veterans Affairs
Dodge House
Open Door Mission
Vermont Cares
Fair Haven Concerned
Choices for Care
Southern Vermont Area/Health Education Center
Bayada
Vermont Center for Independent Living
Castleton Senior Center

Blueprint for Health
Smart choices. Powerful tools.
Rutland HSA
Referrals network

Rutland County Parent Child Center
Rutland United Neighbors
Rutland County Women's Network and Shelter
Vermont Agency of Human Services
Vermont Psychiatric Survivors

Rutland City School District
Vermont Achievement Center
Rutland Mental Health - Rutland Area Prevention Coalition

Southern Vermont Area Health Education Center
United Way of Rutland County Boys and Girls Club

Mentor Connector

Proctor High School
Vermont Adaptive Ski and Sports

RSVP
Par Haven Concerned
Division for the Blind and Visually Impaired
Marble Valley Transit
Integra
Casleton Senior Center
Michael Dor
CCVI (Community College of Vermont)

Rutland Community Cupboard

Prevent Child Abuse Vermont

Rutland City Police Department
Rutland County Housing Coalition

RRMC/Blueprint Community Health Team
Rutland Regional Medical Center (RRMC)
RRMC - Community Education
RRMC - Emergency Department

Bayada

Rutland Free Clinic
Practice of Beverly Roseberry, MD
Practice of Drs. Peter and Lisa Hogenkamp

Vocational Rehab

BCBS VT

Vermont Chronic Care Initiative (VCCI)

Rutland Area Visiting Nurses and Hospice

CHCRR (Community Health Centers of the Rutland Region)

Vermont Department of Health (VDH)

Rutland Mental Health

RRMC - Case Management, Utilization, and Social Work
Marble Valley Healthworks

The Priest at Rutland

Veterans Affairs

Southwestern Vermont Council on Aging

Vermont Center for Independent Living

Mountain View Care, Genesis
Choices for Care

Rutland Housing Authority

Vermont Department of Human Services

211 Vermont

BCBS VT
SELECTED ADDITIONAL NETWORKS
Morrisville HSA
Full network

<table>
<thead>
<tr>
<th>Shows</th>
<th>Vs.</th>
</tr>
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<tbody>
<tr>
<td>Many high-centrality orgs</td>
<td>Centralized leadership</td>
</tr>
<tr>
<td>Full participation of primary care offices</td>
<td>Primary care offices not represented</td>
</tr>
</tbody>
</table>
Burlington HSA
Full network

<table>
<thead>
<tr>
<th>Shows</th>
<th>Vs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A BIG network</td>
<td>A small network</td>
</tr>
<tr>
<td>Clustering / modularity</td>
<td>No sub-networks</td>
</tr>
<tr>
<td>Sub-networks follow populations served</td>
<td>Sub-networks follow geography or other factors</td>
</tr>
</tbody>
</table>

Elder Care
Underprivileged

Healthcare services
WHAT’S NEW: 2014 STUDY
New and Improved! Questionnaire

• Updated methodology
  – Dropped a few questions to make it as short as possible (still not short)
  – Double-down on network connections questions
  – More nuance: from 4 connections → 6 connections

1. My organization sends referrals to this organization
2. My organization receives referrals from this organization
3. Our organizations share resources (e.g. joint funding, shared equipment, personnel or facilities)
4. Our organizations have clients/patients in common
5. Our organizations share information about specific clients/patients
6. Our organizations share information about programs, services and policy
Better Survey Lists

- Blueprint Program Manager and Facilitators
- Blueprint CHT
- Blueprint medical homes (PCMHs) including pediatrics
- Non-Blueprint primary care practices including pediatrics
- Area FQHC(s)
- Other primary care providers (free clinics, etc.)
- Hospital
- Emergency Services, Adult Outpatient Services, Community Rehabilitation and Treatment, Children's Services
- “Hub” of Hub/Spoke program
- Other mental health/substance abuse agencies/organizations
- VNA
- Area agency on aging
- Home care providers
- SASH
- Nursing homes
- Law enforcement
- Corrections
- Schools k-12
- Colleges
- Vocational
- Health/Medical Training
- AHEC
- Children’s Integrated Services
- Parent Child Center(s)
- AHS
- DCF
- VDH and VDH District Offices
- DVHA – VCCI
- Pharmacies (key contacts)
- Dentists (key contacts)
- Area Housing Authority
- Transportation
- Food shelf
- Employment services
- United Way
- Vermont 2-1-1
- Other services and organizations (for instance – health clubs, community coalitions, churches, local government, etc.)
New Opportunities to Use Network Data

• Analytics team looking for relationships between network characteristics and health outcomes
• Engaging communities to understand why networks look the way they do and
• Asking what next? – helping create purposeful, planned networks
We Need Your Help

- Survey launches mid-November
- Please take it, and encourage your colleagues to take it
- Let us know if someone didn’t receive the survey who should have – we’ll send one their way (Maurine Gilbert / 802-488-0688 / maurine.r.gilbert@gmail.com)
- Stay tuned for results in the new year . . .