

Vermont Blueprint for Health

Rutland Area Community Network Report

Network Analysis and Team Based Care

Maurine Gilbert, contracted Community Facilitator
July 2015

Objective

Describe the network of organizations that has emerged in each Blueprint Health Service Area (HSA) to support population and individual health, focusing on modes of collaboration and relationships between organizations.

Background and Key Questions

The Vermont Blueprint for Health is a state-led, nationally-recognized initiative transforming the way primary care and comprehensive health services are delivered and paid for. The Blueprint encourages the growth of regionally-based multi-disciplinary networks of health, social and economic service providers. These networks are intended to bring a diverse group of service providers closer together, to deliver more seamless and holistic care to the people of their regions. This study is the first step towards answering key questions about the networks that are active in Blueprint communities: *What role did investment in core Community Health Teams have in seeding these larger networks? How are the participating organizations connected to each other? How are these relationships maintained and reinforced – how durable are they? What characteristics do the most successful networks share? And, ultimately, what impact do they have on individual and population health?*

Network Analysis

Network analysis was the central methodology in this study, used for its ability to characterize and quantify relationships in a complex system. Network analysis creates graphs that show the connections between individuals or (as in this case) organizations. With these graphs and quantitative network data, researchers and community members can explore the relationships that make up the network and start to look for patterns as well as changes over time. Observations of network data and network graphs can lead to smarter, better questions about how community-based teams coalesce and how they create change.

The data used in this study are responses to a survey question that asked representatives of organizations to report whether their organization interacted with other organizations in their area in any (or all) of six ways, stated as follows:

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

Additionally, several questions were included in the study that were not intended for network analysis. These included demographic questions and a set of questions about whether respondents perceived their communities to be acting as teams.

List Development

Over the course of the 2015 network survey, the list development methodology used for this study was adjusted twice in response to findings from the research, which was conducted in waves. Each adjustment pushed the network bounding towards greater consistency across HSAs and towards smaller network membership lists and shorter survey instruments.

This HSA was in the second wave of communities surveyed, using the Community Network List Development approach.

With this methodology, the network list began with a core group of organizations similar to the organizations represented in the area's Unified Community Collaborative, as shown below.

| Types of Organizations Included in Seed List for Community Network List Development |
|--------------------------------------------------------------------------------------------|
| Community Health Team |
| Each Blueprint PCMH primary care practice |
| Known non-Blueprint primary care practices |
| FQHC dental clinic |
| Hospital |
| Hospital – Emergency Department |
| Hospital – Case Management/Social Work Department |
| Designated Mental Health Agency |
| “Hub” of Hub/Spoke Program |
| VNA |
| Area Agency on Aging |
| Designated Regional Housing Organization – SASH Program |
| State of VT – Agency of Human Services (AHS) |
| State of VT – Vermont Chronic Care Initiative (VCCI) |
| State of VT – Vermont Department of Health (VDH) |

Contacts at each of the corresponding organizations in an HSA were emailed a request to review the list of organizations and add to it any organization not already included, that their organization works with on an ongoing basis to provide medical, health and wellness, or health support services. Sample email text is given below. Non-respondents were emailed a reminder request.

Sample email text inviting participation in Community Network List Development:

Hello,

The Vermont Blueprint for Health is requesting your help. We are launching the 2nd year of a study of Vermont's community health networks, including the network that is active in your area. We want to know who the players are, how they work together, and what impact they are having on individual and population health. Our first step is to create a community-generated list of network members. We have a partial list of organizations (below) and would like your help completing it.

Please review the list below and add to it any organization that your organization works with on an ongoing basis to provide medical, health and wellness, or health support services. Please add as many additional organizations as fit this description and serve the _____ Health Service Area (which encompasses _____ County). Departments of the State of VT or other large organizations may be entered on separate lines.

SEED LIST:

- 1.
- 2.
- 3.
- 4.

Responses were compiled, sorted and tallied. Organizations receiving at least two mentions were included in the final survey list in cases where the resulting list would be less than or equal to forty organizations, organizations receiving at least three mentions were included in the final survey list in cases where the resulting list would be more than forty organizations. This approach limited the number of organizations in the survey, so that the survey would be a manageable length. Representatives of all organizations included in the final list – core members and community additions – were invited to take the survey themselves.

Survey Participation

| | |
|-------------------|-----|
| Invitations Sent | 38 |
| Surveys Started | 26 |
| Response Rate | 68% |
| Completed Surveys | 20 |
| Completion Rate | 77% |

| Seed List Organizations | Completed Survey |
|---------------------------------------------------------|------------------|
| Associates in Primary Care | |
| Community Health Centers of the Rutland Regions (CHCRR) | Y |
| CHCRR – Brandon Medical Center | |
| CHCRR – Castleton Family Health Center | |
| CHCRR – CHCRR Pediatrics | Y |
| CHCRR – Community Dental | |
| CHCRR – Mettowee Valley Family Health Center | |
| CHCRR – Rutland Community Health Center | Y |
| Marble Valley Healthworks | Y |
| Practice of Drs. Peter and Lisa Hogenkamp | Y |
| Rutland Regional Medical Center (RRMC) | Y |
| RRMC – Case Management Department | |
| RRMC – Community Health Team | Y |
| RRMC – Emergency Department | Y |
| Rutland Area Visiting Nurse Association and Hospice | Y |
| Rutland Housing Authority – SASH Program | Y |
| Rutland Mental Health Services | Y |
| Southwestern Vermont Council on Aging | |
| State of VT – Agency of Human Services (AHS) | Y |
| State of VT – Vermont Chronic Care Initiative (VCCI) | Y |
| State of VT – Vermont Department of Health (VDH) | Y |
| United Way of Rutland County | Y |
| Community Additions | |
| West Ridge Center for Addiction Recovery | Y |
| Rutland Area Prevention Coalition | Y |
| Rutland Free Clinic | Y |

Data Analysis

Non-network data analysis was conducted in Survey Monkey and Excel.

Network analysis was conducted using Gephi. Data is input into Gephi in node lists and edge lists. Node lists are lists of the names/labels of the organizations included in the study and a corresponding number. Edge lists are lists of the connections between organizations. In this study each edge list represented all the instances of a single type of connection (sharing resources, for instance) in a single HSA. The edge lists began with an extract of data from Survey Monkey, a grid format recording each connection between organizations. The grids were transformed in a series of steps into the edge lists, which code connections in pairs of numbers giving the “Source” and “Target” of each connection. The edge lists used in this study have been de-duplicated – in cases where multiple respondents answered on behalf of a single organization the connection between that organization and any other organization will appear only once per list. This choice was made to prevent over representing the role in the network of organizations fielding multiple respondents.

Network Maps

See Appendix A for the Network Maps

Network Statistics

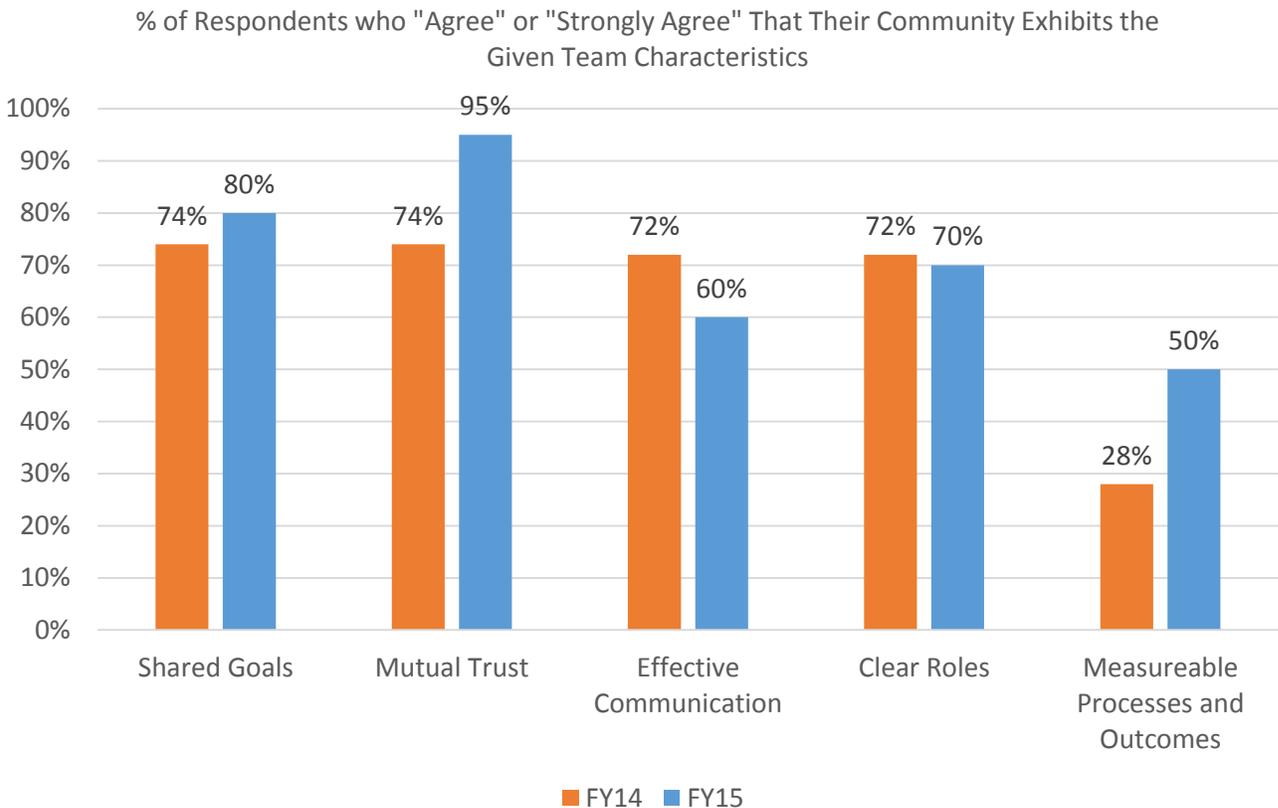
| | Common Patients | Info – Patients | Info – Programs | Resources | Referrals | Full Network |
|-----------------------------|-----------------|-----------------|-----------------|-----------|-----------|--------------|
| Avg. Degree | 9.36 | 7.8 | 7.84 | 3.28 | 10.72 | 14.24 |
| Avg. Weighted Degree | 9.36 | 7.8 | 7.84 | 3.28 | 13.76 | 42.04 |
| Network Diameter | 3 | 3 | 4 | 10 | 3 | 2 |
| Graph Density | 0.39 | 0.325 | 0.327 | 0.137 | 0.447 | 0.593 |
| Modularity | 0.052 | 0.071 | 0.074 | 0.24 | 0.078 | 0.06 |
| Avg. Clustering Coefficient | 0.593 | 0.572 | 0.593 | 0.273 | 0.691 | 0.745 |
| Avg. Path Length | 1.368 | 1.489 | 1.703 | 2.755 | 1.59 | 1.415 |

Organization Statistics

| Organizations Ranked by Betweenness Centrality | |
|------------------------------------------------|-----------------------------------------------------|
| 1 | Rutland Area Visiting Nurse Association and Hospice |
| 2 | RRMC – Community Health Team |
| 3 | RRMC – Emergency Department |
| 4 | Rutland Mental Health Services |
| 5 | State of VT – Agency of Human Services |

| Organizations with Highest In-Degree | |
|--------------------------------------------------------|----|
| Rutland Area Visiting Nurse Association and Hospice | 22 |
| RRMC – Emergency Department | 22 |
| RRMC – Community Health Team | 21 |
| Rutland Mental Health Services | 21 |
| Community Health Centers of the Rutland Region (CHCRR) | 19 |

Team-Based Care



Observations and Opportunities

The following are the researcher's observations of the network graphs and team based care results, and related questions. Additional observations, questions, and ideas for improving network relationships and effectiveness will be solicited when these findings are presented in the community.

- The Team Based Care measures show exceptionally high levels of trust in the Rutland network, with 95% of respondents indicating they "agree" or "strongly agree" that "our organizations trust each other." This is a 21% jump from the previous survey. What has changed in the past year to drive this improvement?
- Agreement has nearly doubled (50% vs. 28% a year ago) with the statement "our organizations measure the work we do together and its outcomes." How is this network measuring its shared projects and successes?
- The full network's network neighborhoods overlap, and the modularity of this network is relatively low, indicating it could not easily break apart into separate networks.
- The Vermont Department of Health and the Agency of Human Services are most central to the referrals sub-network, which isn't seen in many HSAs. What accounts for their prominence here?
- The RRMCC Emergency Department is central in the information sharing sub-networks. Has this had any impact on ED utilization patterns in the area?

Appendix A

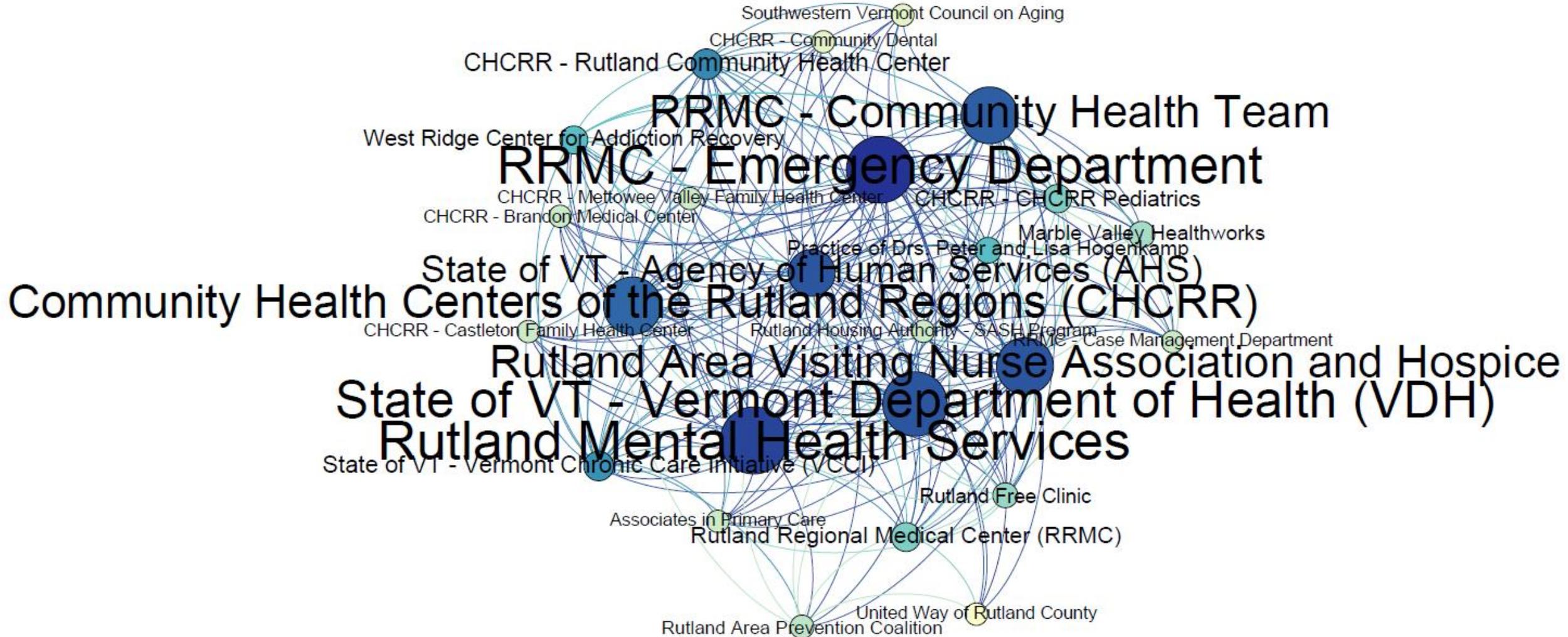
Rutland Network Maps

Rutland Common Clients Network

Our organizations have clients/patients in common

Node color shows Degree

Node size shows Betweenness Centrality



Rutland Info-Patients Network

Our organizations share information about specific patients/clients

Node color shows Degree

Node size shows Betweenness Centrality

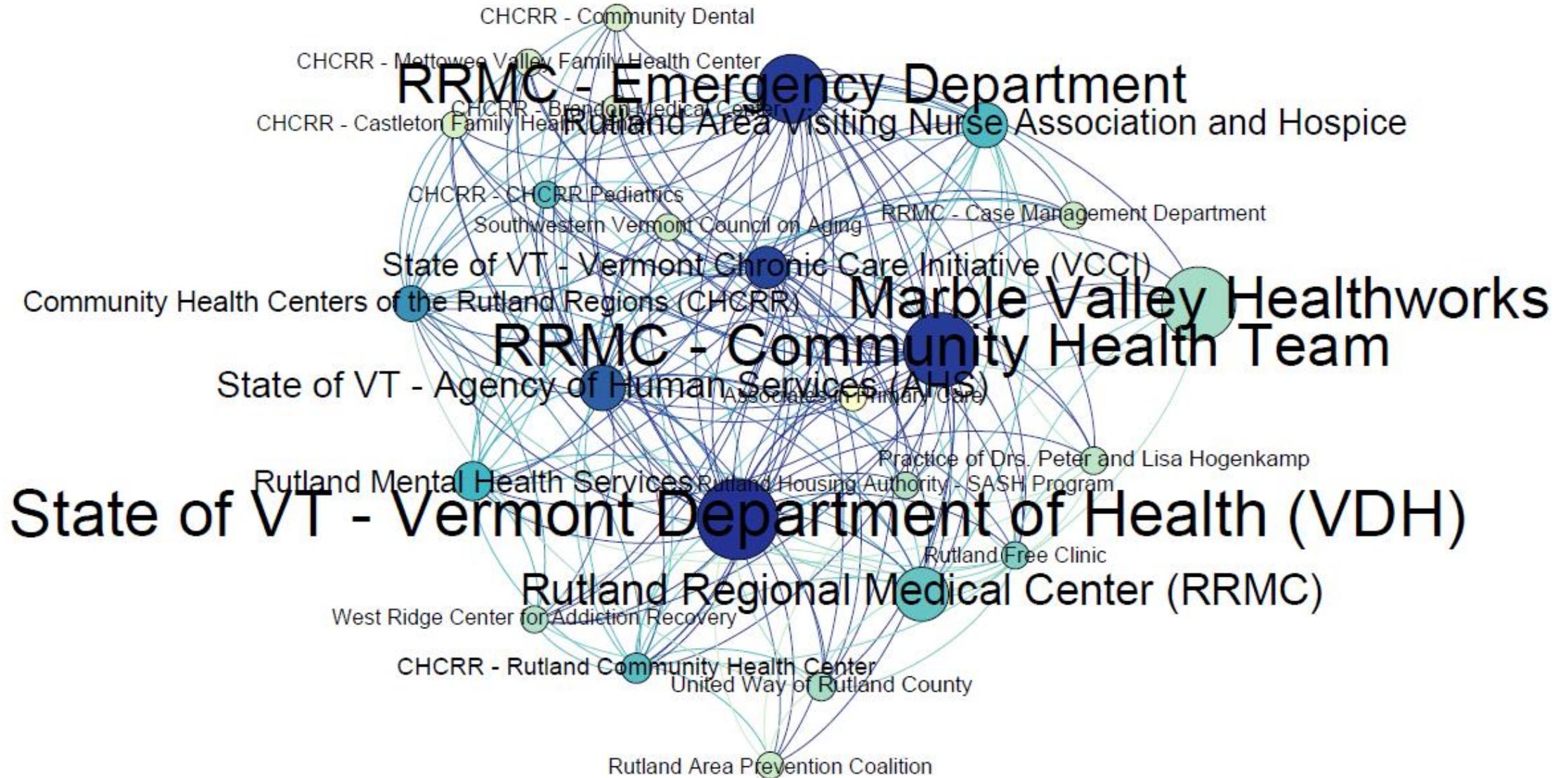


Rutland Info-Programs Network

Our organizations share information about programs, services and/or policy

Node color shows Degree

Node size shows Betweenness Centrality

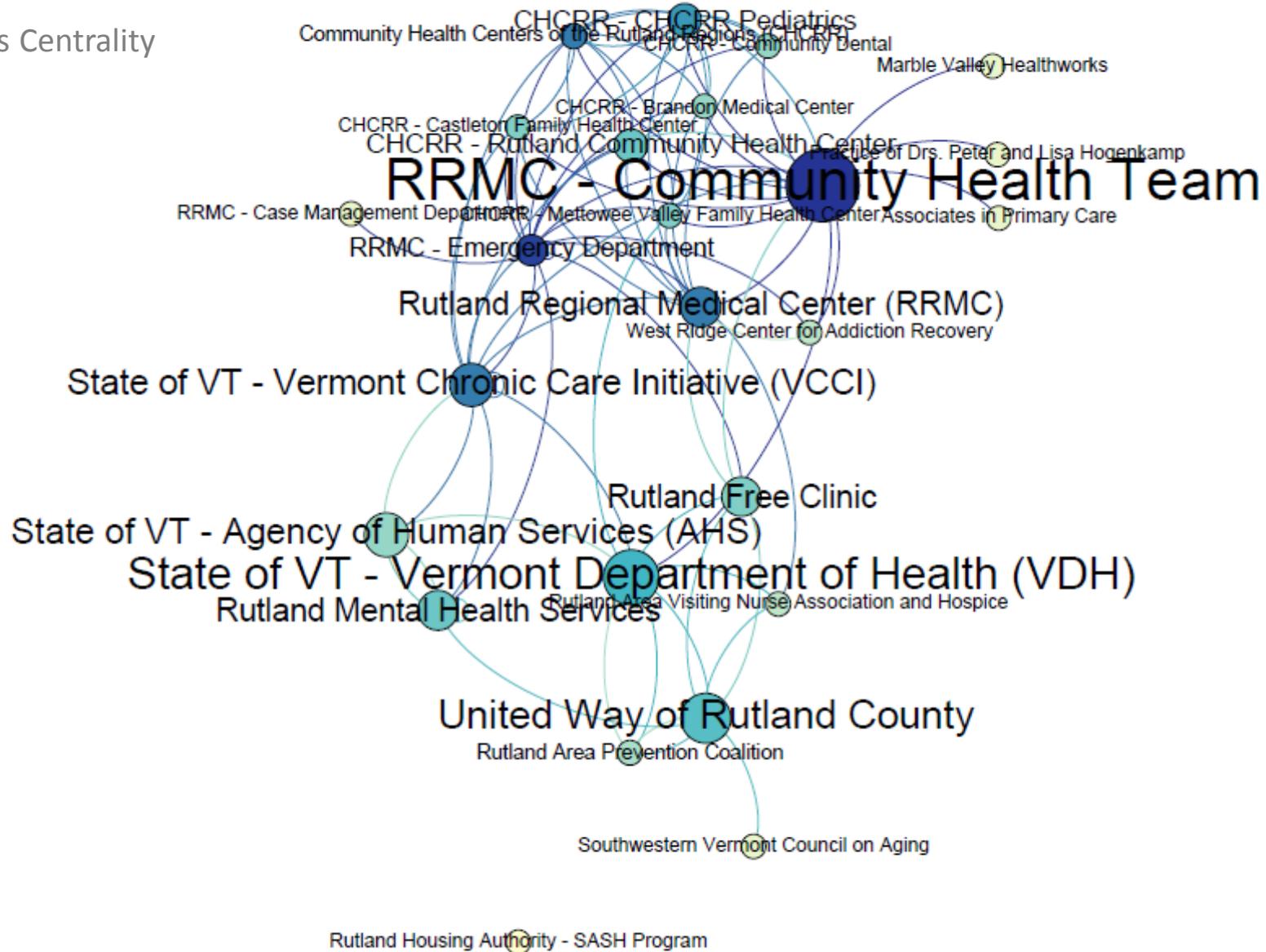


Rutland Resources Network

Our organizations share resources (e.g. joint funding, shared equipment, personnel or facilities)

Node color shows Degree

Node size shows Betweenness Centrality



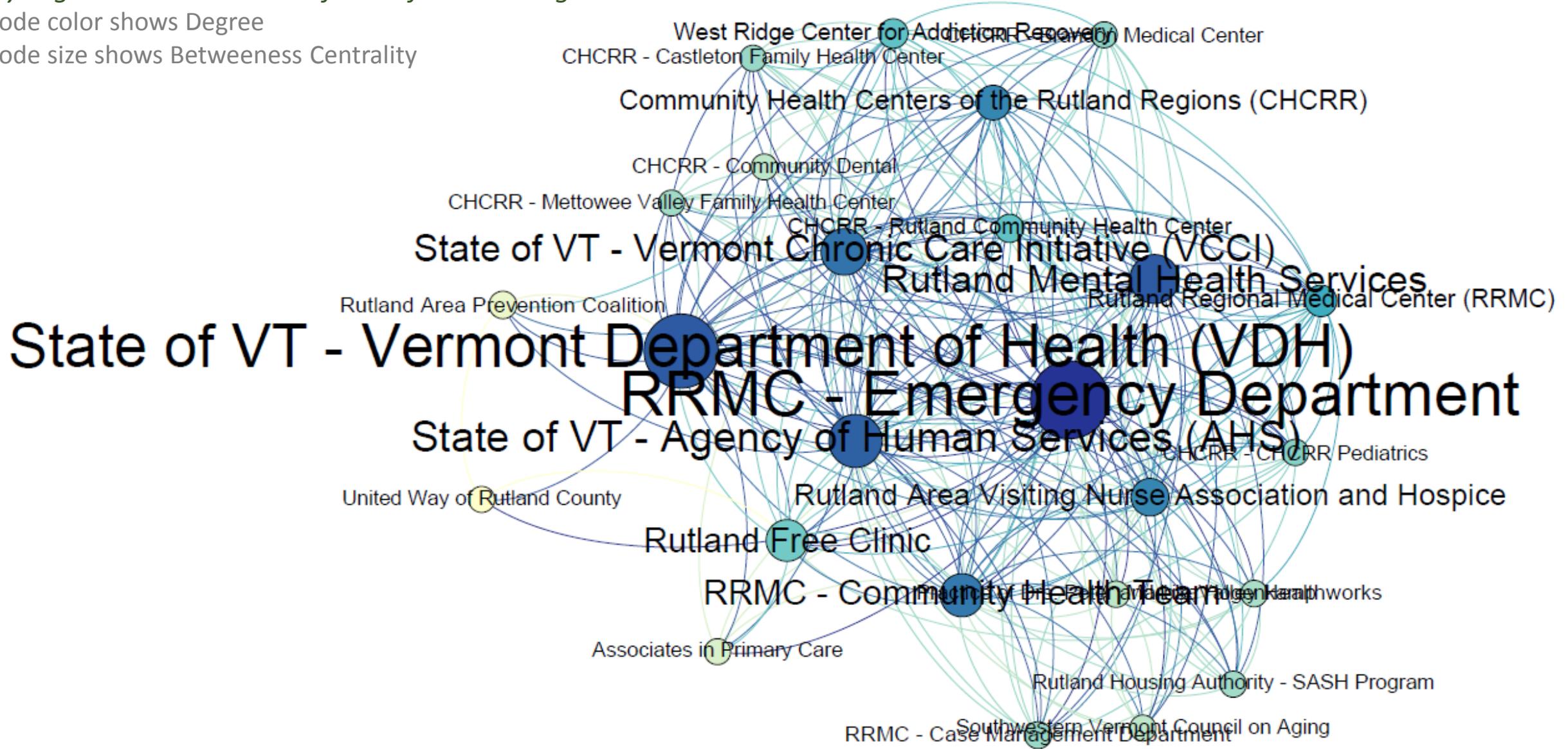
Rutland Referrals Network

My organization sends referrals to this organization +

My organization receives referrals from this organization

Node color shows Degree

Node size shows Betweenness Centrality



Rutland Full Network

Node color shows Network Neighborhood

Node size shows Betweenness Centrality

