

Accountable Communities of Health, Health and Social Service Systems Alignment, and Population Health: Eastern Washington State, 2017–2019

Stephanie Bultema, MAAL, Hadley Morrow, BA, and Stacy Wenzl, MHPA

Objectives. To assess health system transformation and alignment in the Better Health Together (BHT) accountable community of health (ACH) region of Eastern Washington.

Methods. This trend study leveraged cross-sectional data collected in 2017 and 2019 in Eastern Washington. A total of 165 responses from individuals representing 112 organizations were collected in 2017, and 211 responses from individuals representing 92 organizations were collected in 2019. More than one third (38%; $n = 35$ organizations) of cases overlapped between the 2 samples. Implementation of the ACH model is the exposure. Outcomes of interest included indicators of system transformation and alignment.

Results. Organizations throughout BHT's region became more engaged, less siloed, and better connected from 2017 to 2019. At least some of the increased connectivity observed was directly attributable to the role BHT played in facilitating the creation or maintenance of interorganizational relationships across Eastern Washington.

Conclusions. The ACH model is a promising approach to aligning health and social service systems for population health improvement. Evidence shows that ACH organizations can serve as trusted conveners able to facilitate interorganizational relationships across sectors. (*Am J Public Health.* 2020;110:S235–S241. doi:10.2105/AJPH.2020.305773)

 See also Dasgupta, p. S174.

Public health has evolved to champion the importance of improving social determinants of health, working across sectors, and engaging diverse communities.¹ This has resulted in a widespread acceptance that collaboration and alignment across the social service, medical care, and public health sectors are necessary components to health system transformation.² Although public health experts agree it is necessary to work with diverse stakeholders to improve population health, there is not consensus on how to go about the hard work of achieving successful cross-sector collaboration and alignment in practice.³ Various approaches have been presented as solutions to achieving alignment across sectors, yet there is little evidence to guide practitioners and policymakers as they determine which approach is best suited to their needs. A promising model that seeks to guide health system transformation through cross-

sector collaboration and alignment is the accountable communities of health (ACH) model.

THE ACCOUNTABLE COMMUNITIES OF HEALTH MODEL

The ACH model offers one approach to aligning resources and activities to achieve the quadruple aim, which strives for better care, better health, reduced costs, and improved health care provider experience.^{4–7} With its

grounding in the collective impact framework and its focus on the social determinants of health, the ACH model takes a holistic perspective of population health by aligning social services, medical care, and public health services at the local level with additional coordination at the state level.^{8,9} Unlike the traditional conception of a health care delivery system that focuses on health care providers treating ill people with services, “ACHs address health from a community perspective and consider the total investment in health across all sectors.”^{10(p365)} The ACH model brings cross-sector stakeholders together to improve population health at the local level and is a significant step toward integrating traditional public health and health care services with community efforts that address the social determinants of health.

Several states and dozens of communities across the United States have taken various approaches to implementation of the ACH model. Although there are differences in key elements such as the source of initiating leadership, funding models, and governance structure, there are also underlying similarities across implementation sites. These similarities can be seen in implementation approaches in the 4 states that were first to implement the model (CA, MN, VT, WA). First, adoption started at the state level with subsequent implementation at the local level. Second, every ACH region received some support from a state-level sponsor at their outset. Third, each ACH region has a coordinating entity that serves as the backbone organization for their community.¹¹ Variations seen in

ABOUT THE AUTHORS

Stephanie Bultema is with the School of Public Affairs, University of Colorado Denver, Denver. Hadley Morrow is with Better Health Together, Spokane, WA. Stacy Wenzl is with Spokane Regional Health District Data Center, Spokane.

Correspondence should be sent to Stephanie Bultema, MAAL, 1380 Lawrence St #500, Denver, CO 80204 (e-mail: stephanie.bultema@ucdenver.edu). Reprints can be ordered at <http://www.ajph.org> by clicking the “Reprints” link.

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model implementation provide the flexibility needed for ACH leaders to be responsive to the local community context, while common features provide a foundational structure that can be assessed for effectiveness across cases.

SIMILAR ACCOUNTABLE HEALTH MODELS

Various ACH-like models have also been implemented across the country. Similar models include accountable care communities, coordinated care organizations, and accountable health communities.⁴ These models differ from the ACH model in numerous ways, such as being adopted at the local level (vs state) or using different guiding frameworks (other than the collective impact framework). The Center for Medicare and Medicaid Innovation invested \$157 million in 2017 to test the accountable health communities model, which focuses on improving clinical–community linkages.¹² This example is noteworthy because it demonstrates the sizable investments being made in collaborative approaches to health system transformation.¹³ The Funders Forum on Accountable Health, a project of the George Washington University Milken Institute School of Public Health Department of Health Policy and Management, explains that ACHs are “focused on community-based strategies for integrating the health care and social needs of individuals and differ from Accountable Care Organizations (ACOs), which are health care provider-driven initiatives.”¹⁴ At its core, critical requirements of the ACH model include (1) local, community-driven implementation and (2) an emphasis on social determinants of health, including active participation of community members and social sector organizations in ACH work.

The Funders Forum on Accountable Health has addressed the overlap and divergence among these models in 2 important ways. First, they compiled an inventory of 127 ACHs and ACH-like initiatives across the country.¹⁴ This public-facing database captures key data points such as primary funding source, backbone organization, and interventions used by each community. Second, they established key characteristics of ACHs

by developing an ACH logic model and a common framework for assessing ACHs.⁴ These tools serve as valuable resources for understanding the ACH landscape and key requirements of the ACH model.

ACCOUNTABLE COMMUNITIES OF HEALTH MODEL EFFECTIVENESS

Evidence of the ACH model’s effectiveness is nascent but growing. States and local ACHs are working alongside external evaluators and consultants to help guide and continuously improve their work. Early evidence from a statewide evaluation of Washington ACHs conducted by the Center for Community Health and Evaluation shows that “the Washington ACH model that evolved in practice has been largely successful to date.”^{15(p2)} Although early results point to the ACH model’s promise, there is still much to be learned about when, why, and to what extent the ACH model succeeds in aligning health and social services for population health improvement.⁴ This study adds to the growing body of evidence that elucidates how ACHs are beginning to transform health systems.

BETTER HEALTH TOGETHER

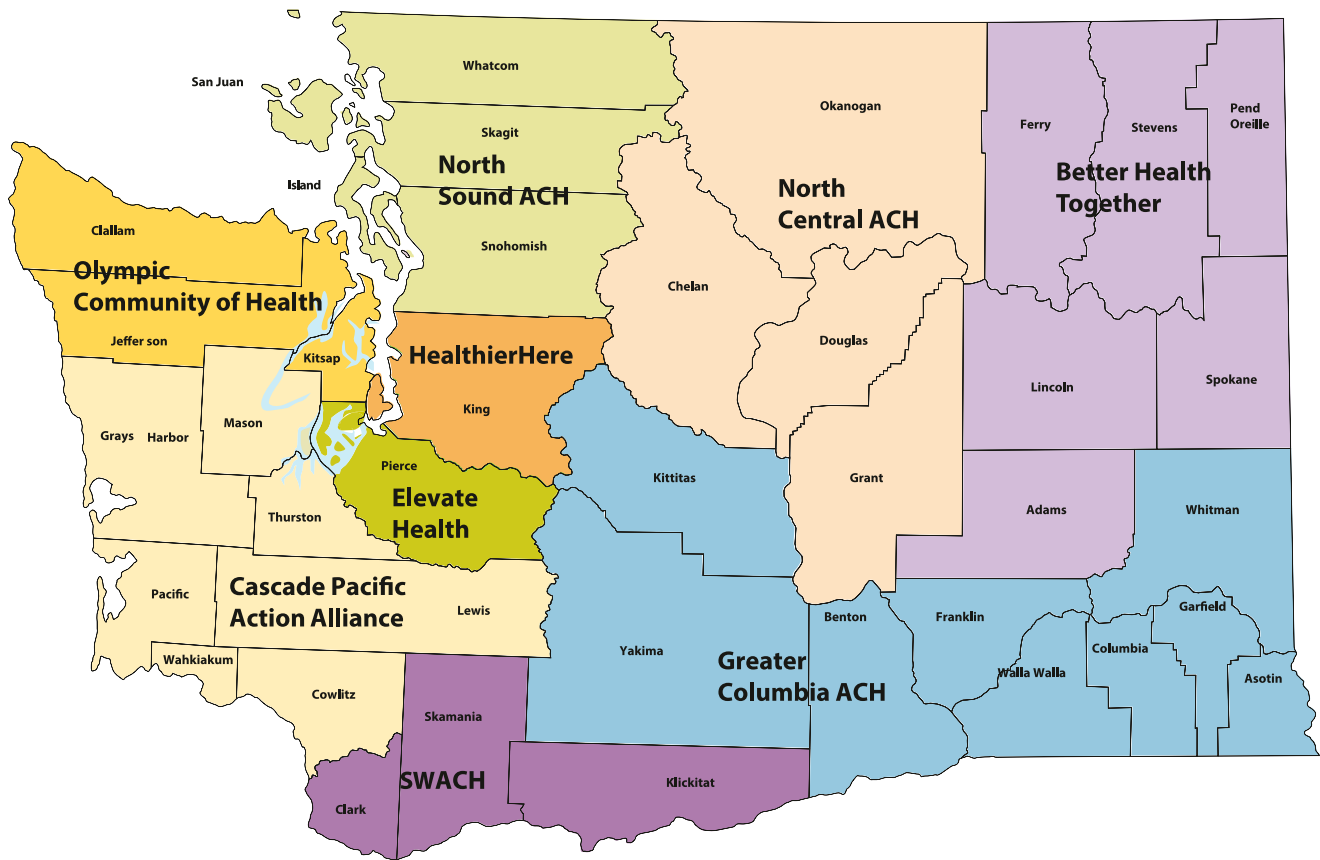
In this study, we investigated health system transformation and alignment through the lens of one ACH in Eastern Washington called Better Health Together (BHT). The BHT region is led by a nonprofit organization of the same name (BHT), with a vision to “create an integrated community health system, accountable to improving health through delivering culturally competent, whole person care to all community members.”¹⁶ BHT acts as a convener of health system actors across the diverse region of Eastern Washington, which comprises 6 counties and 3 tribal nations. The BHT region, shown in the upper-right-hand corner of Figure 1, was home to an estimated 613 500 people in 2019.¹⁷ Counties in Eastern Washington include municipalities ranging from midsized cities to remote rural towns. Population density ranged from 3.55 persons

per square mile in the rural county of Ferry to 292.13 persons per square mile in the mostly urban and suburban county of Spokane. The stark contrast in needs between rural, urban, and tribal communities creates complexity that must be carefully considered when working to align health and social services across boundaries.

Early in BHT’s development, the ACH’s leaders understood the importance of gaining an empirical understanding of how the regional health system functioned. They accomplished this objective by asking regional health system participants to share their perspective by responding to a health system survey.¹⁸ Survey results were used to inform BHT’s strategy to improve alignment across sectors and geographic service areas. Two years later, BHT sought to learn the extent to which their efforts had achieved the desired effect. This follow-up study showed that the health system has indeed started to transform in this short period of time and that BHT has helped facilitate these first steps toward health system transformation.

CONTRIBUTION

This study makes a unique contribution to the growing body of evidence pointing to the ACH model’s effectiveness by measuring relational and structural aspects of health system transformation and alignment via network analysis. It contributes to the dearth of literature demonstrating the effectiveness of novel models—such as the ACH model—focused on aligning determinants with medical services and public health programs. One notable gap in ACH evaluation and research is the lack of a standard set of measures to guide the monitoring, continuous improvement, and shared learning related to ACH outcomes.⁴ This study demonstrates how network analysis can be used to operationalize indicators of system change and measure process outcomes before seeing population-level impacts of health system transformation. Ultimately, this study contributes evidence of the ACH model’s utility for health system transformation and alignment and provides an example for how similar models can be assessed at the system level.



Note. The Better Health Together (BHT) region is shown in the upper-right-hand corner of the map. The region includes 6 counties and 3 tribal nations.
Source. Washington State Health Care Authority (<https://www.hca.wa.gov/assets/program/ach-map.pdf>).

FIGURE 1—Accountable Community of Health (ACH) Regions Map: Washington State, 2020

METHODS

The Spokane Regional Health District Data Center, in partnership with BHT and Bultema Consulting LLC, conducted this study as public health surveillance. Four conceptual lenses guided research question development, data collection, variable operationalization, and interpretation of findings: (1) the ACH model, which provides an overall framework for the phenomenon of study^{4,10}; (2) Public Health 3.0, which establishes the links between the social determinants of health, cross-sector partnerships, and population health improvement^{1,19}; (3) theories of collaboration, which yield insight into common challenges faced by collaborative networks and the conditions under which joint endeavors are likely to succeed^{20–22}; and (4) network theory, which guides measurement and interpretation of findings.^{23,24}

Although space limits our ability to provide an in-depth exploration of these conceptual lenses, references to relevant theories and frameworks can guide further inquiry.

Population

The population of study includes all organizations identified as health system participants in the BHT region of Eastern Washington. The project team first developed a list of known organizational participants to use as an organization roster for the 2017 health system survey. Organizations were categorized by sector (health, social, public, education, or business) and county. When responding to the survey, organization representatives were asked to identify organizations with which they worked on issues related to population health that were not listed on the roster. These organizations were

added to the roster and this process was repeated. Ultimately, a 3-phase snowball approach to sampling identified a study population of 565 organizations in 2017, which served as the 2019 organization roster. A fourth snowball sample in 2019 resulted in a study population of 613 cross-sector organizations. Study participants were recruited by e-mail invitation and through BHT meetings, newsletters, and individual outreach. An overview of the study population is provided in Table 1.

Data Sources

This study used primary and secondary data from 4 sources. The first 2 data sources were the identified health system surveys administered to organizational representatives using online and in-person formats in 2017 and 2019. These survey instruments are

TABLE 1—Distribution and Participation of Study Population by Sector and Geographic Service Area: Eastern Washington, 2017–2019

Sector	2017		2019		% Change
	Population	Participation Sample, No. (%)	Population	Participation Sample, No. (%)	
Business	26	4 (15)	28	2 (7)	-50
Education	78	22 (28)	78	11 (14)	-50
Public	103	5 (5)	102	14 (14)	180
Health	108	23 (21)	121	41 (34)	78
Social	250	42 (17)	284	23 (8)	-45
Geographic service area					
Tribal	21	2 (10)	24	6 (25)	200
Regional	95	16 (17)	103	21 (20)	31
Adams and Lincoln counties	57	6 (11)	56	5 (9)	-17
Northeast tri-county	119	18 (15)	116	14 (12)	-22
Spokane County	273	54 (20)	314	45 (14)	-17

Note. The "Population" columns include all organizations identified as participants in the Better Health Together health system. The "Participation Sample" columns include the number and percentage of organizations from each group that had at least 1 representative respond to the health system survey. The "% Change" column reflects the percentage change in the number of organizational participants from 2017 to 2019.

provided in Appendices A and B (available as supplements to the online version of this article at <http://www.ajph.org>). Surveys collected qualitative and quantitative data about ACH participant organizations' population health focus areas, referral and care coordination practices, and interorganizational relationships. The 2019 survey was incentivized with a raffle for 5 \$1000 prizes awarded to participant organizations. The third data source was an anonymous survey administered in 2019 in tandem with the identified survey. The anonymous survey collected data about participant perceptions of BHT and other organizations in BHT's health system. The fourth data source is public media, including directories and publicly available results found via Internet search, which were used to collect organization information such as sector and physical location. These data sources provided the evidence needed to gain an empirical understanding of BHT's regional health system.

Data Analysis

We analyzed data in Gephi version 9.2 (Gephi Consortium, Paris, France) and Stata version 16 (StataCorp LP, College Station, TX) using 3 units of analysis: the network (health system), the organization (health

system participant), and the dyad (linkage or partnership). Multiple respondents from a single organization were collapsed to create a single, weighted organization-level linkage. A partnership represents a connection of any type or weight between 2 organizations and may represent multiple linkages of various types. A linkage represents a single report of a specific relationship (collaboration, referral, or data exchange).

We analyzed survey data by using network analysis as the primary mode of inquiry. Network analysis includes a set of methods for visualizing networks, describing structural and node-level characteristics of networks, and modeling network dynamics and structures.^{24–28} We analyzed collaboration networks as undirected networks with edges weighted by collaboration level (i.e., cooperative, coordinated, or integrated).²⁹ We analyzed referral and data exchange networks as directed networks with edges weighted by the number of linkage reports.

RESULTS

Organizations throughout BHT's region became more engaged, less siloed, and better

connected from 2017 to 2019. Table 2 provides a summary of network trends, and Appendix C (available as a supplement to the online version of this article at <http://www.ajph.org>) provides geographic network maps for both time periods. Evidence also points to the important role BHT played in facilitating the creation and maintenance of interorganizational relationships across Eastern Washington. When asked how BHT can help organizations contribute to improving Eastern Washington's health system, one anonymous survey respondent said "Keep the convening work moving forward. It's been a tremendous opportunity and resource for growth and development."

Organizational engagement in BHT's health system increased over the 2-year study period. An organization was engaged in the health system if it had at least 1 reported partnership with another organization. Research shows that strong participant engagement is a key ingredient for succeeding in collaborative endeavors like health system transformation.^{30,31} In 2019, 97% (n = 593) of organizations were active in BHT's health system, as compared with 72% (n = 404) in 2017. This 47% increase in the number of organizations engaged means that more organizations reported working with one another to improve the health and well-being of individuals living in Eastern Washington. This finding was confirmed by analysis of our stable sample, in which 97% (n = 34) of organizations were engaged in 2017 and 100% (n = 35) were engaged in 2019. Respondents' self-reported levels of engagement in 2019 reflect this increase, with 76% (n = 113) of individuals reporting that their organization was "very engaged" (53%; n = 79) or "moderately engaged" (23%; n = 34) in the work of BHT. This increased engagement is a first step toward aligning health and social service systems for population health improvement.

The BHT health system became less siloed over the 2-year exposure period. When a network is siloed, it can be difficult to share resources or efficiently transmit information across the network.^{25,32} We measured silos by using a community detection algorithm called modularity, which identifies communities within a larger network by assessing the strength of division of a network into modules (i.e., silos).³³ In 2017, there were 168 silos

TABLE 2—Better Health Together Health System Trends: Eastern Washington, 2017–2019

Measure	All Organizations (n = 613)			Stable Sample (n = 35)		
	2017	2019	Change	2017	2019	Change
Identified organizations, no.	565	613	48	35	35	0
Active organizations, no. (%)	404 (72)	593 (97)	189 (47)	34 (97)	35 (100)	1 (3)
Silos	168	28	-140	4	2	-2
Reported partnerships, no.	5 887	7 219	1 332	406	618	212
Reported linkages	13 080	25 310	12 230	1 696	5 754	4 058
Collaboration	5 205	12 151	6 946	631	2 695	2 064
Referral	5 118	8 420	3 302	675	1 907	1 232
Data exchange	2 757	4 739	1 982	390	1 152	762
Graph density	0.018	0.019	0.001	0.341	0.519	0.178

Note. Columns labeled “All Organizations” include analysis of all organizations identified as health system participants for the period indicated. Columns labeled “Stable Sample” include analysis of only the 35 organizations that participated in the survey in both 2017 and 2019.

across the BHT regional health system. The number of silos sharply decreased to 28 in 2019. These findings were supported by analysis of the stable sample, which found fewer siloes in 2019 ($n = 2$) than in 2017 ($n = 4$). The reduction in working silos is reflected in the high levels of perceived trust and credibility among organizational representatives who responded to the anonymous survey: after we excluded responses of “don’t know” and “not applicable,” 99% of respondents agreed or strongly agreed that most organizations involved in BHT are trustworthy ($n = 118$) and credible ($n = 121$). ACHs have the potential to help bridge silos across sectoral and geographic boundaries as a first step toward aligning organizations across sectors.³¹

Density of connections among organizations in Eastern Washington’s health system also increased. Networks with dense connections are associated with higher credibility, reduced transaction costs, and greater levels of perceived trust and value among network participants.^{31,34,35} We measured the extent of connectivity among organizations by using a network statistic called graph density and by the number of partnerships reported. Graph density is a measure of how close the network is to being complete; a complete network is one in which every possible connection is recorded among actors in a network and has a graph density equal to 1.0.^{25,26} In 2017, the BHT health system had a graph density of 0.018, meaning about 2% of all possible interorganizational partnerships were reported

(5887 reported partnerships out of 320 922 possible). In 2019, graph density increased slightly to 0.019 (7219 reported partnerships out of 380 072 possible). Although the health system’s increase in density was marginal, there was a sizable increase in the percentage of reported partnerships. Analysis of the stable sample confirms findings in the full health system, with graph density increasing from 0.34 in 2017 to 0.52 in 2019. Table 3 provides an overview of linkages by sector in both time periods. The increased connectivity in BHT is indicative of a health system in which organizations work collaboratively across boundaries to improve population health.³¹

BHT’s role as an independent convener and health system facilitator was a driving force behind the nascent transformation observed in Eastern Washington’s health system. When responding to the identified survey, a school district representative said BHT “has been a huge source of connection to a variety of organizations, [with] which we hope to foster strategic partnerships.” In the 2019 health system assessment, survey respondents indicated that BHT helped facilitate 350 partnerships totaling 1907 linkages among 130 cross-sector organizations throughout the BHT region. This means that 5% of reported partnerships and 8% of reported linkages were in some way facilitated by the ACH’s backbone organization, BHT.

In addition to facilitating interorganizational partnerships, BHT helped organizations gain access to new sources of knowledge through participation in the ACH’s work;

95% ($n = 114$) of anonymous survey respondents agreed (55%; $n = 66$) or strongly agreed (40%; $n = 48$) with this statement. One anonymous survey respondent representing a social services organization shared that “By investing more time and resources in promoting expanded and deeper linkages between health care and social determinant of health providers, BHT can help organizations like mine be able to be more engaged in improving Eastern Washington’s health system.” These findings provide evidence of the importance of backbone organizations in facilitating health system transformation.

DISCUSSION

The 2019 network analysis shows that the siloed and largely disconnected health system recorded in 2017 now more closely resembles an aligned system of organizations working cohesively across sectors for population health improvement. “BHT is the best thing that has come out of the state’s plan for integrated managed care,” said one anonymous survey respondent. “What an accomplishment to bring so many diverse and sometimes hard-headed organizations together and successfully get them to collaborate. [We are] already seeing such positive results in just a few years.”

This study adds to the growing body of evidence that supports the ACH model’s utility as an effective approach to aligning organizations across boundaries by showing measurable improvements in health system engagement, cohesion, and connectivity in BHT, Eastern Washington’s ACH. Findings show structural improvements to the regional health system over the 2-year study period. More importantly, they provide evidence of the crucial role BHT plays in aligning health system actors across various sectors and jurisdictions. This can be seen today as communities work to respond to the COVID-19 pandemic. BHT is “coordinating the coordinators” by aligning highly connected organizations in each sector and county that are best positioned to act as communication hubs facilitating a coordinated, regional response to the crisis. They used node-level network statistics to verify the most influential partners are at the table so that trusted and up-to-date information could be quickly shared across the network. This is just 1 example from the

TABLE 3—Collaboration, Referral, and Data Exchange Linkages Within and Across Sectors: Eastern Washington, 2017–2019

Sector	Cross-Sector Linkages			Within-Sector Linkages			All Linkages		
	2017	2019	% Change	2017	2019	% Change	2017	2019	% Change
BHT region	7 689	13 728	79	5 391	11 582	115	13 080	25 310	94
Health	4 418	6 683	51	1 461	7 450	410	5 879	14 133	140
Social	5 267	5 871	11	2 944	3 307	12	8 211	9 178	12
Public	2 587	2 267	-12	322	385	20	2 909	2 652	-9
Education	2 655	2 244	-15	658	436	-34	3 313	2 680	-19
Business	451	369	-18	6	4	-33	457	373	-18

Note. BHT = Better Health Together. The "Cross-Sector Linkages" columns include all linkages reported among organizations in different sectors. The "Within-Sector Linkages" columns include all linkages reported among organizations in a single sector.

field that complements evidence of the ACH model's effectiveness and potential to help align health and social services to improve population health.

Limitations

Several limitations should be considered when reviewing study findings, including generalizability, sampling approach, survey response rate, respondent burden, and comparability of data sets. As results describe findings related to a single ACH, they cannot be generalized to all ACHs. The multistage snowball approach to sampling resulted in a current, comprehensive sampling frame but posed challenges for making direct contact with each identified organization and for comparing samples across time periods. In total, 211 representatives of 92 organizations responded to the 2019 survey, which yielded a 20% individual and 15% network response rate. Respondents were asked to identify sending and receiving linkages to create as complete a picture of the health system as possible from limited reports.

The survey instrument also posed limitations, as there is notable respondent burden associated with reporting relationships with more than 600 other organizations. The Web survey was designed with conditional display logic to minimize respondent burden. Health system comparability across time periods is another limitation because participants largely varied from 2017 to 2019. For this reason, networks were assessed using both full samples (2017: n = 567; 2019: n = 613) and stable samples (n = 35) for each measure. The stable

sample included 35 regional, cross-sector organizations that participated in the survey in both 2017 and 2019. Study results should be considered with these limitations in mind while also recognizing the valuable contribution this study makes to providing insight into the potential of the ACH model.

Public Health Implications

This study has several public health implications. First, it provides evidence of the ACH model's utility for increasing cross-sector engagement in health system transformation efforts, reducing silos across health systems, and increasing connectivity among health system participants. This information can be used by decision-makers considering various models as tools to guide health system transformation.

Second, this study demonstrates how network analysis can be used to assess health system transformation. This example can be used to guide future efforts to evaluate system change over time. However, it is worth noting that conducting network studies can be cost-prohibitive because they require significant investments of time and expertise.

Third, it has implications for local health jurisdictions (i.e., governmental public health). In BHT, the 3 local health jurisdictions are some of the best-connected organizations in the region. The Spokane Regional Health District—the region's largest local health jurisdiction—had the highest overall connectivity of any organization in the region. This finding points to the important role of public health's involvement

in health system transformation efforts. Overall, this study can inform decision-makers about ACHs as a promising approach to aligning health and social sector organizations, aid evaluators and researchers in measuring health system transformation, and reinforce the vital role of local health jurisdictions as key ACH partners in the work of health system transformation. *AJPH*

CONTRIBUTORS

S. Bultema led the research project, analyzed data, and wrote the first draft of the article. H. Morrow and S. Wenzl contributed to study design and implementation and provided substantive review of the article before submission.

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Every innovation owes its existence and vitality to generations from around the world who contributed their hope and energy to making the history that led us to this moment. This study aimed to measure and improve connection across many diverse organizations, and truth and acknowledgment are critical to building mutual respect and connection across barriers and difference. The authors acknowledge that this work was conducted across territory that has been an ancestral homeland and gathering place for many tribes across the inland northwest region of the United States, including the Spokane, Colville, Coeur d'Alene, Kalispel, and Salish Kootenai people. We pay respects to their elders past and present. We ask our readers to take a moment to consider the many legacies of violence, displacement, migration, and settlement that bring us here together and to join us in uncovering such truths in public spaces. The authors would like to acknowledge the valuable contributions of Spokane Regional Health District and Better Health Together staff who helped with this project. We are particularly grateful for Alison Poulsen's executive sponsorship, the content expertise provided by Jamie Wiggins and Jenny Slagle, and the research assistance provided by Boyd Foster, Amy Bower, Amy Riffe, and Marcia Green. We also extend our thanks to the article reviewers, who helped strengthen our article with their valuable feedback.

CONFLICTS OF INTEREST

The authors have no conflicts of interest to disclose.

HUMAN PARTICIPANT PROTECTION

Institutional review board approval was not needed because this study was conducted by the Spokane Regional Health District as public health surveillance.

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