

Local Public Health System Partnerships

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SYNOPSIS

Objectives. Interorganizational collaboration aimed at community health improvement is an expectation of local public health systems. This study assessed the extent to which such collaboration occurred within one state (Wisconsin), described the characteristics of existing partnerships, and identified factors associated with partnership effectiveness.

Methods. In Stage 1, local health department (LHD) directors in Wisconsin were surveyed (93% response rate). In Stage 2, LHDs completed self-administered mailed surveys for each partnership identified in Stage 1 (85% response rate). Two-level hierarchical logit regression methods were used to model relationships between partnership and LHD variables and partnership outcomes. Data from 924 partnerships associated with 74 LHDs were included in the analysis.

Results. Partnerships most frequently addressed tobacco prevention and control, maternal and child health, emergency planning, community assessment and planning, and immunizations. Partnering was most frequent with other government agencies, hospitals, medical practices or clinics, community-based organizations, and schools. Partnership effectiveness was predicted by having a budget, having more partners contributing financially, having a broader array of organizations involved, and having been in existence for a longer period of time. A government mandate to start the partnership was inversely related to successful outcomes. Characteristics of LHDs did not predict partnership effectiveness.

Conclusions. Financial support, having a broader array of partners, and allowing sufficient time for partnerships to succeed contribute to partnership effectiveness. Further study—using objective outcome measures—is needed to examine the effects of organizational and community characteristics on the effectiveness of local public health system partnerships.

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Partnering with other organizations has become an expectation of public health agencies at the local, state, and national levels. Healthy People 2010 promotes a leadership role for state and local health departments (LHDs) in collaborating with partners to facilitate the implementation and evaluation of community health improvement plans.¹ “Mobilizing community partnerships” is one of the essential public health services defined by the Institute of Medicine,² and use of partnership strategies is included as an indicator of performance in the National Public Health Performance Standards.³ Partnership has become established as a major component of public health policy in some states with the inclusion of specific goals or priorities directed toward public health partnerships.⁴ Collaboration across organizations is also often mandated by government agencies or required by funding organizations.^{5,6}

While the literature on factors that promote or inhibit interorganizational collaboration is rich, it is somewhat limited with regard to partnerships involving LHDs. In a study of collaboration between public health departments and managed care organizations, larger health department size was associated with more collaboration.⁷ Access to resources to support collaboration was identified by Bardach as an important factor in promoting collaboration between public agencies.⁸ Government mandates have been noted as powerful promoters of collaboration in the social services field,⁹ although their existence is not sufficient to assure successful collaboration.¹⁰

Documentation is also limited regarding the extent to which LHDs actually engage in interorganizational collaboration, the characteristics of such efforts, and factors associated with the effectiveness of local public health system partnerships. Recent critical reviews of the literature on community collaboratives and consortia as vehicles for community health improvement have revealed the increasing popularity of such partnership strategies and the involvement of a wide variety of organizational partners, but have not addressed the extent of involvement of LHDs.^{11,12} A survey of LHDs conducted by the National Association of County and City Health Officials (NACCHO) in 1999 found that large percentages of LHDs across the country reported collaborating with government and nongovernmental organizations and that LHDs serving larger populations reported collaborating with a wider array of partners.¹³ The study did not report types of activities or reasons for collaboration.

Because interorganizational collaboration in general is difficult and can be costly in terms of finances, time, and relationships, partnerships need to be effective in order to justify the difficulties involved.¹⁴ Little information is available on the determinants of effective partnerships involving LHDs. In a study of local tobacco coalitions lead by LHDs, Kegler and colleagues reported that a greater extent of implementation of coalition plans was associated with more staff time, good communication among partners, more complex organizational structure, and greater group cohesion.¹⁵ In a 1995 Iowa study, success in community health planning efforts involving LHDs was associated with the use of more planning techniques and a broader representation of stakeholders on the steering committee.¹⁶ In a literature review, Roussos and Fawcett found that factors reported as contributing to successful interorganizational collaboration included

having a clear vision and mission, conducting action planning, developing and supporting leadership, having systems for documentation and evaluation, being able to access technical assistance, and securing necessary financial and staff resources.¹¹

The purposes of the present study were to explore the extent to which LHDs in one state (Wisconsin) were involved in interorganizational collaboration, to describe the characteristics of existing partnerships within local public health systems in the state, and to identify LHD and partnership characteristics that predict partnership effectiveness.

METHODS

Data collection

The study design incorporated two cross-sectional surveys. Both survey instruments were created for this study based on survey instruments by Zahner¹⁷ and Weiss, Lasker, and Miller.¹⁸ The Stage 1 study had two purposes. First, information was collected from LHD directors about the problem areas they addressed using partnerships as a strategy. The definition of partnership provided to the LHD directors was: “Collaborative, synergistic alliances that include the LHD and one or more other public health system partners, which work to improve health and/or health care services in an identified need or problem area and in an identified geographic area.” Local public health system partners were defined as including “diverse governmental, public, private, nonprofit, and voluntary agencies and groups as well as individual residents.” These definitions were created by the author to incorporate concepts included in a number of published definitions^{5,9,19,20} and to be consistent with language used in *Healthiest Wisconsin 2010: A Partnership Plan to Improve the Health of the Public*.⁴ These intentionally inclusive definitions allowed the LHDs to report a wide range of types of partnerships—from large, well established coalitions such as tobacco-free coalitions to smaller, more service-specific collaborative efforts.

The second purpose of the Stage 1 survey was to gather data on the organizational “collaborativeness” of each LHD. Based on the work of Bardach⁸ and Zahner,¹⁷ organizational collaborativeness was conceptualized as the internal, subjective collaborative capacity of the organization to engage in and sustain collaborative effort. Organizational collaborativeness incorporates the domains of valuing collaboration, knowledge of other organizations, and having the resources available for participation in, and leadership of, collaborative efforts. Organizational collaborativeness was conceptualized for the present study as an organizational characteristic that has the potential to affect the likelihood of using partnership strategies and effectiveness in doing so. The data on organizational collaborativeness were collected using a 13-item index, with respondents indicating the extent of their agreement with each item using a five-point, Likert-type response scale anchored by “strongly disagree” and “strongly agree.”

The Stage 1 survey was conducted on-line using the Wisconsin Health Alert Network (HAN), an electronic network that links all LHDs in the state. A letter explaining the study was sent to the 94 directors of certified LHDs in Wisconsin; the mailing included a letter of support from the adminis-

trator of the Wisconsin Division of Public Health (WDPH). On the day the survey was made available on-line, an electronic mail alert was sent to the LHD directors reiterating the purpose of the study and informing them that it was available. It offered the option of doing the survey by telephone, and 10 LHD directors subsequently completed the survey by telephone. Two electronic mail reminders were sent, and a final telephone reminder call was made to non-responders. The response rate was 93%, with 87 of Wisconsin's 94 certified LHDs participating.

In Stage 2, LHD directors or their designees were asked to complete one self-administered survey for each partnership reported in Stage 1. The survey instrument included 11 forced-choice questions and one open-ended question. The purpose of Stage 2 was to collect information on partnership characteristics and success. Stage 2 surveys were mailed to LHD directors with a cover letter describing the study and a return-addressed, stamped envelope. Two electronic mail reminders were sent to non-responders, followed by a telephone reminder. The response rate for Stage 2 was 85% (74/87) of the LHDs that responded in Stage 1. Overall, 79% of all certified LHDs in the state participated in both surveys. A total of 924 partnerships involving 74 LHDs were included in the analysis.

Study variables

Outcome measures of effectiveness used in this study were Stage 2 survey items that asked respondents to report on whether the partnership's plans had been implemented (yes or no) and, if yes, how successful the partnership had been in the implementation of its plans, measured on a 1 to 4 scale anchored by "very successful" and "very unsuccessful." These measures had been used in prior research by Weiss, Lasker, and Miller.¹⁸ The success outcome was dichotomized for analysis (very/generally successful or very/somewhat unsuccessful).

The data structure was considered to be hierarchical, with two levels; data to measure predictor variables were collected at the partnership and LHD levels. This conservative approach was taken because dependency in the data was considered likely since (1) partnerships led by the LHD or in which the LHD participated were potentially more similar to each other than to partnerships that did not have this connection; and (2) the data were provided by the LHD directors, and their perceptions of the partnerships in which their agencies were involved were more likely to be similar than the perceptions of different LHD directors. Partnership variables included the number of different types of organizational partners making up the partnership, whether the partnership had a budget, the extent to which partners contributed financially to the partnership, the length of time the partnership had been in existence, the reasons the partnership was started, the types of activities in which the partnership was engaged, and the problem areas targeted for action by the partnership.

Data at the LHD level included an organizational collaborativeness index score (OC score). This variable was constructed from four items included in the OC index on the survey chosen based on the results of a principal components factor analysis of the full OC index. Geographic focus of the LHD (dichotomized for analysis to urban/suburban

or rural) came from an item on the Stage 1 survey. Organizational variables were drawn from WDPH data. These included whether the LHD was structured as an independent entity or was part of a human services organization and whether the LHD served part of a county or was a county-wide agency.²¹ State certification level was used as a proxy for organizational size; the certification level reflects the complexity of services provided by the LHD as well as the mean population size of the jurisdiction served (see Table 1). Data on certification level were obtained through correspondence with Yvonne Eide, RN, MS, Southern Regional Office, WDPH (August 1, 2002).

Data analysis

Descriptive data were summarized using Stata software, Version 8.²² Two-level hierarchical logit regression modeling analyses were conducted using MLWin as described by Goldstein.²³ The analysis was designed to determine which partnership variables or organizational variables predicted the outcomes, and whether the number of partnerships per LHD had a mediating effect on the outcomes. Sets of variables were progressively added in the analysis of five models for each of the two outcome measures. The influence of two interaction variables, "LHD level" and "LHD organizational structure," at the LHD level and "mandate" and "time" at the partnership level were also assessed.

RESULTS

Extent of partnerships

Table 1 displays the numbers and proportions of responding LHDs, non-responding LHDs, and partnerships, by LHD characteristics. Exact tests revealed no statistically significant differences between responding and non-responding LHDs by LHD characteristics. The percentage of partnerships that were associated with large, Level 3 agencies (34%) was higher than the percentage of such agencies in the full sample of LHDs (27%). Partnerships were also associated with a higher percentage of LHDs with urban/suburban geographic focus (51%) compared to their representation in the sample (47%).

Characteristics of partnerships

Partnership characteristics are displayed in Table 2. Respondents reported partnerships addressing 35 different primary focus areas. The most commonly reported were tobacco prevention and control, maternal and child health, emergency planning/bioterrorism, community assessment and planning, and immunization.

The most frequently reported types of partners were other government organizations, hospitals, medical practices or clinics, community-based organizations, and schools. Individual community residents were reported as partners in 42% of the partnerships. Overall, the mean number of types of partners was 5 (standard deviation [SD]=3.45; 95% confidence interval [CI] 5.14, 5.58; range 1–18). The mean number of types of partners was lower for Level 1 (mean=5; SD=3.17; 95% CI 3.98, 5.09; range 1–15) and Level 2 (mean=5; SD=3.35; 95% CI 5.05, 5.65; range 1–18) than for Level 3 LHDs (mean=6; SD=3.65; 95% CI 5.30, 6.11; range 1–18), with a statistically significant difference be-

Table 1. Numbers and proportions of responding LHDs, partnerships, and non-responding LHDs, by LHD characteristics

LHD characteristic	Responding LHDs		Partnerships		Non-responding LHDs	
	Number	Percent	Number	Percent	Number	Percent
Jurisdiction						
Subdivision of county	26	35	324	35	4	20
County	48	65	600	65	16	80
Total	74	100	924	100	20	100
Structure						
Independent	58	78	720	78	18	90
Part of human service agency	16	22	204	22	2	10
Total	74	100	924	100	20	100
Geographic focus						
Urban/suburban	35	47	475	51	6	30
Rural	39	53	449	49	14	70
Total	74	100	924	100	20	100
State certification level ^a						
Level 1	12	16	127	14	4	20
Level 2	42	57	482	52	13	65
Level 3	20	27	315	34	3	15
Total	74	100	924	100	20	100

^aCertification level reflects services provided and mean population of area served. The 2000 population means for LHD jurisdictions in Wisconsin were: Level 1=15,465; Level 2=42,693; Level 3=209,741.

LHD = local health department

tween Levels 1 and 3. The number of types of partners varied considerably by primary focus area addressed. Compared to the overall mean, more partner types were represented in partnerships that addressed tobacco prevention and control (mean=8; 95% CI 7.47, 8.83) and community assessment and planning (mean=8; 95% CI 7.13, 9.07). The average numbers of partner types were lower than the overall mean for partnerships with a primary focus on lead poisoning prevention (mean=3; 95% CI 2.35, 3.65), environmental health (mean=3; 95% CI 2.46, 4.44), sexually transmitted infection (STI) prevention and control (mean=4; 95% CI 2.55, 4.60), senior health (mean=4; 95% CI 3.16, 4.80), mental health (mean=4; 95% CI 3.11, 5.05), and emergency/bioterrorism preparedness (mean=3; 95% CI 3.20, 4.63).

The number of partnerships reported by LHDs ranged from 3 to 70 with a mean of 18 (SD=15.58; 95% CI 16.94, 18.96) and a median of 14. The mean number of partnerships per LHD was significantly higher for Level 3 departments (mean=27; SD=23.45; 95% CI 24.46, 29.66; range 4–70) than for Level 1 departments (mean=12; SD=4.26; 95% CI 11.62, 13.12; range 4–19) and Level 2 departments (mean=13; SD=4.41; 95% CI 13.08, 18.87; range 3–20). The most frequently reported activities were networking/information sharing, disseminating information to the public, creating action plans, providing or coordinating services, and setting community health goals.

Partnerships varied with regard to the number of years they were reported to have been in existence. Overall, 63% (n=590) of partnerships had existed for more than three

years. Meeting a community need was the most frequently reported reason for creating the partnership (78%).

Information was elicited about three types of financial support. Having a budget was reported for 53% (n=455) of the partnerships. Financial contribution (other than staff time) by no or few partners was reported for 83% (n=698) of the partnerships. In 75% of partnerships (n=690), the LHD provided in-kind support in the form of staff time. Other commonly reported mechanisms for LHD support of partnerships were grant monies passed through the LHD budget to the partnership (n=329, 36%) and non-staff-time in-kind support such as supplies, postage, and office space (n=300, 33%).

Predictors of effectiveness

Of 852 partnerships for which outcome data were reported, 733 (86%) reported that at least some of the partnerships' plans had been implemented. The hierarchical logit regression modeling was completed using the 747 cases for which data were available on all of the variables used in the analysis. The results of the full hierarchical logit regression model on implementation, with logits converted to estimated odds ratios, are shown in Table 3.²⁴ More types of partners, having a budget, more partners contributing financially, and having been in existence for a longer period of time were all statistically significant predictors of implementation of partnership plans. A government mandate to start the partnership was a statistically significant predictor of lower likelihood of implementation. However, the interaction of

Table 2. Characteristics of local public health system partnerships in Wisconsin (n=924)

Characteristic	Number	Percent	Characteristic	Number	Percent
Primary focus area			Types of partner organizations		
Tobacco prevention and control	75	8	Other governmental	650	70
Maternal and child health	74	8	Hospitals	511	55
Emergency planning	74	8	Medical practices or clinics	457	50
Community assessment and planning	69	7	Community-based organizations	449	49
Immunization	63	7	Schools (K-12)	440	48
Healthy lifestyles	50	5	Individual residents	385	42
Injury prevention	50	5	Businesses	314	34
Lead poisoning prevention	44	5	Advocacy groups	284	31
Senior health	44	5	Faith-based organizations	224	24
Access to health care	43	5	Colleges/universities	202	22
Child abuse and neglect prevention	41	4	Voluntary health organizations	179	19
Environmental health	41	4	Media	173	19
Teen pregnancy prevention	40	4	Managed care organizations	136	15
Nutrition and/or hunger prevention	38	4	Professional associations	156	17
Alcohol/other drug abuse prevention	31	3	Foundations	89	10
HIV/AIDs prevention	30	3	Neighborhood associations	87	9
Access to mental health care	26	3	Labor organizations	23	3
Violence prevention	26	3	Other	157	17
Sexually transmitted infection control	22	2	Reasons partnerships were formed		
Housing/homelessness	20	2	To address a community need	723	78
Other	23	2	To increase chance of achieving desired results	438	47
Types of partnership activities			To meet a grant requirement	319	35
Networking/information sharing	773	84	To meet a government mandate	163	18
Disseminating information to the public	690	75	Type of financial support by LHD		
Creating action plans	537	58	Staff time in-kind support	690	75
Providing or coordinating direct services	500	54	Cash pass-through from a grant	329	36
Setting community health goals	429	47	Non-staff-time in-kind support (e.g., supplies)	300	33
Conducting community health events	398	43	Cash support from LHD budget	154	17
Addressing specific state health objectives	396	43	None	126	14
Community assessment	377	41			
Influencing community health policy	368	40			

mandate and time was statistically significant, indicating that partnerships started with mandates that had also been in existence for more time were highly likely to have implemented their plans, with time being more important in the relationship than mandate.

Two of the activities predicted implementation in a positive direction ("conducting community health events" and "disseminating information to the public"). For one activity, designing or redesigning systems or services, the direction of the relationship was reversed. None of the LHD organizational factors was a statistically significant predictor of implementation, and the number of partnerships per LHD did not mediate the relationship between predictors and outcomes.

For the subset of the partnerships that reported implementation of at least some of their plans, 669 (91%) reported that the partnership had been "very" or "generally" successful in implementing its plans. Hierarchical logit regression modeling was conducted to predict the dichotomized outcome of extent of success in implementation of plans, using the explanatory variables as described above

and the 651 cases with complete data on these variables. Statistically significant predictors of successful implementation of plans were having a budget, having more partner organizations that contributed financially, and providing or coordinating direct services to clients. Again, none of the LHD organizational variables was predictive of success, and number of partnerships per LHD did not mediate the relationships between predictors and outcomes.

DISCUSSION

Wisconsin's LHDs are representative of local public health agencies in the United States with regard to services, jurisdiction size, and expenditures: the types of services and programs offered by LHDs in Wisconsin are similar to those reported in a national survey conducted by NACCHO in 1999.¹³ In Wisconsin, 67% of LHDs serve jurisdictions with populations under 50,000,²¹ compared to 69% of LHDs in the U.S.¹³ The median expenditure by Wisconsin LHDs was \$621,589 in 2000,²¹ compared to \$621,100 nationally in 1999 dollars.¹³ However, funding sources for LHDs in Wisconsin

Table 3. Multivariate predictors of implementation of partnership plans (n=747 partnerships)

Variable	OR ^a	95% CI ^b
Partnership characteristics		
Number of partner types	1.29	1.17, 1.42 ^b
Budget (yes vs. no)	2.15	1.04, 4.43 ^b
Financial contribution (most/all vs. none/few)	2.94	1.22, 7.09 ^b
Time (≥3 years vs. <3 years)	8.29	4.09, 16.79 ^b
Government mandate (yes vs. no)	0.20	0.08, 0.48 ^b
Started with a grant (yes vs. no)	1.28	0.65, 2.54
Partnership activities		
Goal setting (yes vs. no)	1.14	0.52, 2.49
Action planning (yes vs. no)	1.16	0.56, 2.41
Conduct community events (yes vs. no)	6.86	2.83, 16.61 ^b
Community assessment (yes vs. no)	1.41	0.68, 2.91
Networking/information sharing (yes vs. no)	1.83	0.85, 3.94
System design/redesign (yes vs. no)	0.37	0.18, 0.77 ^b
Public information dissemination (yes vs. no)	2.06	1.00, 4.26 ^b
Influence policy (yes vs. no)	0.61	0.29, 1.28
Address specific state health plan objectives (yes vs. no)	0.57	0.28, 1.16
Provide or coordinate direct services (yes vs. no)	1.29	0.66, 2.49
LHD characteristics		
OC score	1.07	0.88, 1.31
Jurisdiction (part of county vs. county ^c)	0.68	0.18, 2.65
Structure (independent vs. part of human service agency ^c)	0.07	0.002, 2.82
Geographic focus (urban/suburban vs. rural ^c)	2.55	0.70, 9.29
State certification level	0.59	0.15, 2.31
Number of partnerships per LHD	1.00	0.95, 1.06
Interaction terms		
Structure/level	3.09	0.60, 15.84
Mandate/time	15.38	1.47, 161.26 ^b

^aLogit converted to estimated OR.^bStatistically significant at $p < 0.05$.^cReferent.

CI = confidence interval

LHD = local health department

OC = organizational collaborativeness

OR = odds ratio

reflect a higher dependence on local tax dollars (53% of revenues), a lower dependence on state dollars (19% of revenues), and a similar degree of dependence on reimbursement for services (18% of revenues)²¹ relative to LHDs across the nation (44% from local sources, 30% from state sources, and 19% from reimbursement for services¹³). This difference in funding mix potentially allows LHDs in Wisconsin more flexibility in the approaches they take to providing services (including choosing to use partnership strategies) compared to LHDs that rely more heavily on state

dollars that may be more restrictive in their use. Overall, the similarity of Wisconsin's LHDs to counterparts across the country allows for fair confidence in interpreting the findings of this study as representative of LHDs' experience across the U.S.

This study suggests that LHDs in Wisconsin, of all types, sizes, and locations, are meeting basic expectations of federal and state public health agencies for engaging in partnerships to work toward improving public health. While use of partnership strategies by these LHDs is not a new phenomenon, the finding that one-fourth of the partnerships had been formed within the past two years indicates that partnering is also a contemporary approach to addressing local health issues. Partnering seems to be an elective and purposeful process, implying that LHDs find advantages in partnership that outweigh any difficulty and expense involved in using this strategy.

The findings in this study support those reported from the NACCHO survey with regard to the types of organizations with which LHDs collaborate.¹³ As found in the NACCHO study, LHDs in Wisconsin most commonly partnered with other government agencies, hospitals, and medical practices or clinics. An interesting finding in this study, not addressed in the NACCHO study, is the frequency of involvement of individual residents. Engaging and supporting authentic community participation in collaborative processes that involve official sector agencies is known to be difficult and often requires special efforts to be meaningful and successful.²⁵ The nature of individual citizen participation in local public health system partnerships is worthy of further exploration.

The relationship between larger LHD size and wider range of partners identified in the NACCHO survey was supported by the present study.¹³ The reason for this finding may be the same as that identified by Hajat et al.: it is likely that there are more organizations with which to partner in areas that support larger LHDs.¹³ In addition, LHD size has been associated with more successful collaboration^{7,26,27} and with better performance of public health core functions.²⁸ Larger organizations may have greater staff and resource capacities that allow them to engage in and sustain partnerships. However, in the present analysis, LHD size was not a statistically significant predictor of the outcomes, implying that LHDs of all sizes can be involved in successful partnerships.

While all of the partnerships addressed issues of concern to public health agencies, certain problem areas were addressed using partnership strategies more frequently than others. The most frequently reported problem areas reflect issues for which (1) funding has been broadly available to LHDs across the state, (2) new funding sources have been identified in recent years, or (3) there has been relatively stable federal pass-through funding. For example, significant funding has been available to LHDs across the state in recent years from new sources to address tobacco prevention and control and emergency planning. Federal pass-through funding has been relatively consistently sustained over time to LHDs to address maternal and child health and immunization issues. In addition, the state mandate for LHDs to conduct community assessment and planning, combined with the increasing availability of tools such as NACCHO/CDC's Assessment Protocol for Excellence in Public Health²⁹

and MAPP (Mobilizing for Action through Partnership and Planning),³⁰ which promote the use of partnerships for this core function, may help explain the large number of partnerships reportedly focused on this area. Conversely, less frequently mentioned problem areas reflect issues that may not be as prevalent in certain jurisdictions or are more controversial to address (STIs, HIV, violence, homelessness, teen pregnancy). Overall, the wide variation in types of problems addressed by these partnerships implies that LHDs find partnering a useful approach in many public health improvement efforts.

It is interesting to note that two activities reported in the literature as required for partnership success (action planning and goal setting) were reportedly engaged in by fewer than 60% of these partnerships.¹¹ The more frequently reported activities were those that involve less complex forms of collaboration.²⁰ This may reflect limitations of time and resources as well as the difficulties involved in interorganizational collaboration. Three activities were found to be statistically significant predictors of partnership effectiveness, offering evidence in support of the influence of partnership activities on outcomes. Two activities, “conducting community health events” and “disseminating information to the public” positively predicted effectiveness and are examples of activities that may be less complex, are quantifiable, and can be readily identified as having been accomplished. Engaging in the third activity, “designing or redesigning local health systems or services” was associated with lower likelihood of partnership effectiveness. This finding may reflect the difficult, complex, and longer-term effort required to accomplish this type of activity.

The picture emerging from this analysis of successful partnerships at the local public health system level is characterized by the inclusion of a variety of actively engaged partner organizations providing a broad base of support through financial contributions; a structure formalized enough to have an identified budget; and a history of existing for a number of years. Although government mandates have been used to stimulate collaboration,^{5,6} in this study, partnership creation in response to a government mandate was inversely associated with effectiveness. This finding implies that mandates are not necessary for partnerships to be successful. However, it is also possible that the LHD directors held more negative perceptions of partnerships started under mandates, particularly if they were unfunded mandates. The interaction of mandate and time was a positive predictor of implementation, implying that if collaboration is mandated, the government agencies that do so must also allow sufficient time for partnerships to develop and should not expect short-term results.

The lack of statistically significant findings with regard to the LHD organizational variables implies that LHDs can be involved with successful partnerships regardless of size, structure, geographic area, or extent of organizational collaborative capacity. The LHD is often only one of many partners in these efforts, and may not be as important a player in some partnerships as in others. It is also possible that the organizational characteristics studied are not those that are important in determining whether a partnership is successful. For example, the OC index may not adequately measure the underlying construct, or organizational collaborativeness may be

more important in determining whether LHDs decide to engage in partnerships than in predicting partnership success.

Three methodological limitations of the study should be noted. First, the assumption of a two-level hierarchy in the data structure was a conservative approach and may have reduced the ability to detect existing relationships in the data. Second, data were gathered only from the LHD and not from other partner organizations. Had they been asked, other partners may have reported different, more positive or more negative, perspectives on partnership outcomes. Future research on local public health system partnerships should include perspectives from a range of partner organizations. Third, the outcome measure used in this study was subjective and data were collected at one point in time. As a result, the generalizability of the findings to other local public health systems is limited. Greater confidence in the results might have existed if repeated and more objective outcome measures had been used. The development and use of a more consistent set of objective and subjective short-term, intermediate, and long-term partnership effectiveness outcome measures would facilitate comparison of findings across partnership types and locations.

CONCLUSION

LHDs are actively partnering with other organizations to address public health issues. Such partnerships can be supported through funding and technical assistance tailored to their specific needs. Building the evidence base for the value of partnership as a strategy for public health improvement remains a challenge. Additional research is needed on public health system partnerships at the state and federal levels, and in other states, regions, or nations. Research is also needed on the relative effectiveness of partnerships compared to other approaches to addressing public health issues to assure that public health resources are used most efficiently. Guided by evidence revealed through research on effective partnership approaches, the dedicated work of the people and organizations that contribute to local public health systems will assure that the promise of partnership for public health improvement is realized.

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