

**Strategic Choices of Rural Health Networks:
Implications for Goals and Performance Measurement**

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Anthony Wellever, M.P.A.

Douglas Wholey, Ph.D.

Tiffany Radcliff, B.S.

Rural Health Research Center
Division of Health Services Research and Policy
School of Public Health
University of Minnesota

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EXECUTIVE SUMMARY

The purpose of this study is to obtain a greater understanding of rural health networks by classifying them according to their functions and purposes rather than relying on classification schemes that use only structural characteristics to define networks. Using a framework developed by Miles and Snow (1978), we examined how closely categories of rural health networks correspond to an existing theory of organizational strategy. Recognizing that the different types of networks identified have different performance goals, we discuss the relationship of network type to performance measurement.

To create the classification of rural health networks, we used data from 117 networks with fewer than 20 members collected in the fall and winter of 1996 as part of a larger survey. The networks were asked 1) to list their members by name and zip code and 2) identify which, if any members, participated in each of 21 enumerated functions. Using a two-step process, we created clusters of five functional dimensions (management policies, marketing and planning, risk sharing, quality initiatives, and professional recruiting). Scores for each of the functional dimensions were calculated for each network and six clusters of networks were identified. We were able to discern a clear strategic orientation in 70 percent of the rural health networks in the sample.

The six network clusters focused on different combinations of functional dimensions. Cluster 1 (n=25) concentrated on quality initiatives and professional recruiting; Cluster 2 concentrated on risk sharing (n=29); Cluster 3 on marketing and planning and risk sharing (n=16); Cluster 4 on management policies, quality initiatives and professional recruiting (n=8); and Cluster 5 concentrated on marketing and planning, risk sharing, quality initiatives and professional recruitment (n=4). Cluster 6 (n=35) had no discernable pattern to the activities in which its member networks participate.

Using the organizational typology developed by Miles and Snow, we assigned the six network clusters to one of four organizational types: Defenders, Prospectors, Analyzers, and Reactors. The members of Defender rural health networks focus primarily on administrative and clinical management (i.e., functional dimensions of management policies, quality initiatives, and professional recruiting). They have a managerial strategic orientation. They focus on activities of organizational control: record keeping, evaluation, human resources management.

Prospector rural health networks focus on risk sharing, marketing and planning. These networks may be said to have an entrepreneurial strategic orientation. They engage in planning, marketing, investment, and operation of new ventures.

Analyzer rural health networks try to combine the strengths of Defenders and Prospectors. The Analyzers engage in a combination of the functional dimensions employed by Defender and Prospector networks: Quality initiatives and professional recruiting (Defender-like functions) and marketing and planning and risk sharing (Prospector-like functions). Analyzers, on the one hand, attempt to minimize risk by reducing uncertainty and controlling operations, and on the other hand, attempt to maximize the opportunity for profits by investing in new ventures.

The last group, Reactors, is composed of networks that lack a consistent strategic orientation. The lack of a strategic orientation means that these networks have no routines to set in motion when faced with a changing environment. As such, we hypothesize they are the group of networks that is most at risk for failure or dissolution.

Identifying rural health networks as Defenders, Prospectors, Analyzers, and Reactors suggests that networks form to solve different kinds of problems. Because networks differ in their fundamental purposes, the measures of their performance also differ. Examples of performance measures that might be used for Defender, Prospector, Analyzer, and Reactor rural health networks are suggested.

Recognition of strategic diversity among rural health networks may affect the funding decisions of private and public agencies that support network development. Some funding agencies may decide to support one type of network over another to promote specific policy goals. Finally, suggestions are offered for future research on rural health network goals and performance measurement.

INTRODUCTION

Joining an existing rural health network, or helping to form a new one, is an increasingly popular strategic response to a highly uncertain rural health care environment. In 1996, approximately 43 percent of rural hospitals belonged to a “network” or “alliance” as defined by the American Hospital Association (Wellever, 1999). Less is known about the degree to which other rural providers participate in rural health networks, but 53 percent of 180 rural health networks with at least one rural hospital member identified in 1996 had members other than hospitals (Moscovice, Wellever, and Krein, 1997). Physicians were the most common members of these networks (after hospitals), joined by mental health providers, home health agencies, public health agencies, nursing homes, and so on. The degree to which rural providers other than hospitals form horizontal networks composed of a single provider type or band together to form vertical networks without hospitals is unknown, but the frequency of such collaboration is likely low.

Past examination of rural health networks suggest that the functions they engage in vary considerably (Moscovice, Christianson, Johnson, Kralewski, and Manning, 1995; Moscovice, Wellever, Christianson, Casey, Yawn, and Hartley, 1997; Wellever, 1999). For example, some engage in group purchasing, legislative and regulatory advocacy, and staff sharing, while other combinations of rural providers collaboratively offer new services to their communities. Yet no systematic examination of rural health care networks by function has been made to date. The purpose of this study is to obtain a greater understanding of rural health networks by classifying them according to their functions and purposes rather than relying on classification schemes that use only structural characteristics to define networks.

Classifying rural health networks by function and purpose is more than a taxonomic exercise; it provides a basis for measuring the performance of networks. To be meaningful, measures of network performance must be linked to the aims and activities of the network. For example, a network that engages successfully in group purchasing and staff sharing cannot be faulted for not improving health status indicators of the population served by its members. This network was not created with intention of directly improving the public's health. Instead, performance must be measured by indicators that are directly related to its goals, performance measures such as the cost of purchased material, practitioner satisfaction with the range and quality of products available through group purchasing, availability of staff, amount of overtime, and ease of scheduling.

In the recent past, substantial amounts of public (e.g., federal Office of Rural Health Policy and state offices of rural health) and private (e.g., Robert Wood Johnson Foundation, James Irvine Foundation, Claude Worthington Benedum Foundation) money have gone to finance the development of rural health networks. Investment in the strategy of rural health networking has been predicated on the belief that collaboration is good C that through cooperation scarce resources can be shared and that through coordination production processes can be streamlined C when, in fact, networks may be less efficient than hierarchical forms of organization and may be less able to respond quickly to environmental challenges. Before rural health networks advance much further, methods and measures must be developed that allow funders, the public, and network members themselves to evaluate rural health network performance. Developing a better understanding of why rural health networks form and what they do is a step in that direction.

STRATEGIC CHOICE IN RURAL HEALTH NETWORKS

Networks form when their individual members come together to attempt to solve a problem or problems in their task environment they cannot solve alone or which they believe can be solved better by collective action. “Task environment” refers to all aspects of the environment that are “potentially relevant to goal setting and goal attainment” of an organization (Dill, 1958). The four major sectors of the task environment to which most organizations relate are 1) customers or consumers, 2) suppliers of materials, labor, capital, equipment and property, 3) competitors for both markets and resources, and 4) public and private regulatory groups (Scott, 1981). Task environment problems that rural health networks attempt to overcome include scarce resources necessary to produce health services; lack of coordination and redundancy of action among health care providers within the chain of production; out-migration for health services from rural communities; and the high cost of health service production relative to increasingly diminished payments from third party payers.

Each of these environmental problems poses a threat to the performance and survival of the member organizations of rural health networks. We view a rural health network as a strategy chosen by individual organizations to help them solve a specific problem in their task environment. This implies the network provides some function for its members.

Rural health networks typically are distinguished on the basis of structural characteristics. Most commonly, networks have been described as being either horizontal (composed of all one type of provider member) or vertical (composed of various types of provider members). Bazzoli, Shortell, Dubbs, Chan, and Kralovec (1999) recently broke this pattern. Although their work was not directly related to rural health networks, they attempted to classify multi-hospital

systems on the basis of strategic and structural characteristics.¹ The strategic/structural dimensions used to develop the classification scheme were differentiation (“the number of different products/services along the healthcare continuum”), integration (“mechanisms used to achieve unity of effort across organizational components”) and centralization (“the extent to which activities take place at centralized versus dispersed locations”) (Bazzoli, et al., 1999). While this approach is important for understanding how well networks are organized, it does not provide information on what the networks are trying to do.

To date, little effort has been made to describe rural health networks by their functions. In an overview of rural health networks, Wellever (1999) described several different kinds of interorganizational arrangements occurring in rural areas that *imply* certain functions. For example, independent practice associations (IPAs), physician-hospital organizations (PHOs), and provider sponsored organizations (PSOs) are all networks whose primary purpose, by definition, is managed care contracting. But no researchers to date, however, have attempted to define networks explicitly by their functions.

Organization theory provides an explanation for the function of rural health networks. The resource dependence model of interorganizational relations proposes that organizations develop strategies and structures to reduce uncertainty in their environment. To improve their ability to control and garner resources, thus reducing uncertainty, organizations enter into exchange relationships with external forces in the environment (often other organizations) to

¹Bazzoli, et al. (1999) focus on hospital combinations, including both multi-hospital systems and horizontal networks of hospitals in their analysis. Moscovice, et al. (1997) draw a sharp distinction between networks and systems. Systems are composed of participants that are not autonomous and whose assets, services, and functions are owned by a single entity. In contrast, networks are composed of autonomous members who coordinate and provide functions and services under the terms of written agreements that specify the roles and responsibilities of members and the purpose of their joint action. Commenting on the Bazzoli, et al. article, Luke and Wholey (1999) observe that systems and networks differ a great deal structurally as well as in terms of approaches to achieving operational and strategic objectives for their participating hospitals.

acquire resources and to assure future access to needed resources. Contractual relationships and joint ventures C in other words, networking C are examples of two dependence-reducing strategies (Pfeffer and Salancik, 1978).

Transaction cost theory holds that organizations engage in interorganizational relationships to lower their transaction costs. Transaction costs are the non-production costs of operating an organization, such as transfer and use of information, coordination of activities, and monitoring of output. When transaction costs are high, the theory goes, organization tend to move into more structured interorganizational relationships as a way of improving efficiency by reducing the number of competitive exchanges they must make and by institutionalizing decision rules (Williamson, 1975; Powell, 1990). A variety of “hybrid” interorganizational relationships result from the effort to reduce transaction costs, including long-term bilateral contracts and formal networks joining together multiple organizations (Borys and Jemison, 1989).

The strategies used by rural health networks to garner resources or reduce transaction costs vary. Shortell, Morrison, and Friedman (1992) suggest that complex organizations employ many different strategies, and that these strategies typically have a common thread that ties them together. This common focus is the organization’s strategic orientation. Miles and Snow (1978) developed a typology of strategic types to explain organizational behavior. They identified four organizational types (defenders, prospectors, analyzers, and reactors) that possess the following characteristics:

- ! **Defenders** are organizations that offer a limited range of services and products within a narrowly circumscribed market. These organizations are highly expert within their limited area, but they tend not to search outside of their domains for new opportunities. They focus primarily on improving efficiency of existing operations.
- ! **Prospectors** are organizations that continually search for new services, products, and markets. They respond quickly to market needs and opportunities, investing and

divesting in services and products. Because prospectors are concerned with product and market innovation, they tend to not be extremely efficient.

- ! **Analyzers** are organizations that operate in two product domains simultaneously, one stable, the other changing. At times, they behave like both defenders and prospectors. In stable areas, they act like defenders, concentrating on core activities and efficiency; in turbulent areas, they mimic prospectors, rapidly adopting new ideas which appear most promising.
- ! **Reactors** are organizations that lack a consistent strategy. Top managers often perceive changes and uncertainty in the environment, but they are unable to respond effectively. They make adjustments only when they are forced to by external forces.

Using the Miles and Snow framework, we examined how closely categories of rural health networks correspond to an existing theory of organizational strategy. To do that we formed clusters of rural health networks by function using data from a survey of 117 networks and compared the results to the strategic types of organizations proposed by Miles and Snow. Recognizing that the different types of networks identified have different performance goals, we discuss briefly the relationship of network type to performance measurement.

CONSTRUCTING CLUSTERS OF NETWORKS

Data and Methods

Data for the study were collected in a survey of rural health networks (n=180) conducted in the fall and winter of 1996. Rural health networks with twenty or fewer members² were asked 1) to list their members by name and zip code and 2) identify which, if any members, participated in each of 21 enumerated functions. Limiting the sample to networks with 20 or fewer members reduced the sample size from 180 to 117 networks; these networks completed a matrix of members and functions they engaged in. Data on the structure of the networks and

² Networks with twenty or fewer networks comprised 65 percent of our sample of rural health networks. Networks with more than twenty members were not asked this question in an effort to reduce their reporting burden and to increase response rates. The decision to exclude networks with more than twenty members means that our results generalize only to smaller networks, i.e., those with fewer than twenty members.

their governance and management practices were also collected. These data were collected as part of a larger survey of rural health networks conducted with funding from the Robert Wood Johnson Foundation.

We used a multi-step procedure to construct clusters of networks with similar use of network functions. The 117 rural health networks analyzed for the study were composed of 900 members participating in some network. For each member of the network, a response of yes (1) or no (0) was coded to indicate whether the member participated in each of the 21 network functions. For each network, we constructed a measure of the proportion of all network members that used a function. Table 1 shows the average and standard deviation of this proportion for the 117 networks, ordered by the proportion of network members participating.

Contributing capital to network ventures was the most prevalent activity participated in by these rural health network members, with approximately 41 percent of members participating. Participating in common legislative and regulatory advocacy efforts (39 percent of members) and using the same continuing education programs (30 percent of members) were the next most prevalent activities. Network members also accepted a portion of both the operating and business loss of network ventures in relatively high proportions compared to other network activities.

Since a number of functions are similar and may reflect a common underlying function (e.g., professional recruiting and credentialing), we factor-analyzed the individual measures of network functionality. We used PROC FACTOR in SAS to obtain an oblique promax rotation. The eigenvalues flattened after the fifth factor and we retained all factors with an eigenvalue of

Table 1
Member Participation in Rural Health Network Functions
(n=117)

Functions	Proportion of Network Members Using Function	
	Average	Standard Deviation
Contribute capital to network ventures	0.41	0.47
Participate in common legislative and regulatory advocacy efforts	0.39	0.47
Use the same continuing education programs	0.30	0.43
Accept a portion of the risk of operating loss on network ventures	0.28	0.43
Use the same physician credentialing system	0.23	0.40
Accept a portion of the risk of business failure on network ventures	0.23	0.41
Use shared staff	0.23	0.37
Use a consolidated network office or service for grant writing	0.21	0.40
Use a consolidated network office for planning	0.20	0.39
Use the same health professional recruitment program	0.18	0.35
Use a consolidated network office for marketing and community relations	0.14	0.33
Use the same network-wide management information system	0.13	0.30
Use the same quality measurement and improvement program	0.11	0.30

Table 1 (continued)

Functions	Proportion of Network Members Using Function	
	Average	Standard Deviation
Use a system for sharing medical records among network members	0.11	0.29
Use the same network-wide materials management system	0.10	0.27
Use the same clinical protocols	0.08	0.26
Use a consolidated network office for patient billing and collections	0.05	0.21
Use a consolidated network office for payroll and/or accounts payable	0.04	0.17
Use the same personnel policy manual	0.03	0.13
Use the same salary and wage system	0.03	0.14
Use the same chart of accounts	0.03	0.14

greater than 1.5. With one exception we retained all items that loaded on one of the first five factors with greater than a .60 loading. The exception was using the same network-wide materials management system, which loaded on the fifth factor along with credentialing and professional recruitment. Because of the dissimilarity of material management from these other two items, we dropped it.

PROC VARCLUS in SAS was then used to harden the measurement scores for each item so that they were either zero or a positive value, with each item being used in the construction of only one factor. The five functional dimensions (items included in factor, scoring coefficient) were *Management Policies* (same personnel policy manual, .88; same chart of accounts, .88), *Marketing and Planning* (use a consolidated network office for marketing and community relations, .65; use a consolidated network office for planning, .74; use a consolidated network office for grantwriting, .43), *Risk Sharing* (accept a portion of the risk of operating loss on network ventures, .79; accept a portion of the risk of business failure on network ventures, .79), *Quality Initiatives* (use same quality measurement and improvement program, .74; use the same clinical protocols, .74), and *Professional Recruiting* (use the same physician credentialing system, .68; use the same health professional recruitment program, .68). Table 2 presents the correlations of the functional dimensions.

Scores on each functional dimensions were calculated for each network. The networks were clustered using PROC CLUSTER in SAS with Ward's minimum-variance method. We kept six clusters, with the number of networks in each being 35, 25, 29, 16, 8, and 4. We chose the six cluster solution because moving from five to six clusters split a cluster of 60 networks into two distinct clusters of 35 and 25 networks.

Table 2
Correlation of Functional Dimensions

Functional Dimensions	1	2	3	4	5
Management Policies	1.00				
Marketing and Planning	-0.05	1.00			
Risk Sharing	-0.09	0.09	1.00		
Quality Initiatives	0.29	0.16	-0.03	1.00	
Professional Recruiting	0.07	0.02	0.04	0.25	1.00

Findings

Six clusters of networks emerged from this analysis. One cluster (n=25) concentrated on quality initiatives and professional recruiting; one focused on risk sharing (n=29); another on marketing and planning and risk sharing (n=16); another on management policies, quality initiatives and professional recruiting (n=8); and one concentrated on marketing and planning, risk sharing, quality initiatives and professional recruitment (n=4). The largest cluster of networks (n=35) had no discernable pattern to the activities in which its member networks participate. This last cluster of networks likely is composed of either networks that engage in a variety of functions in response to member concerns without an overarching theme to the activities, or networks that engage in a very limited number of network functions. Table 3 lists the constructed factor scores for the network clusters and lists mean proportion of members in the cluster who participate in various network functions.

Using the terminology of Miles and Snow (1978), the rural health networks that comprise the two network clusters whose members focus primarily on administrative and clinical management (i.e., functional dimensions of management policies, quality initiatives, and professional recruiting) are Defenders. Together these networks constitute 33 networks or 28 percent of the sample. Defender Type A networks (n=25) focus on quality initiatives and professional recruiting, while Defender Type B networks (n=8) focus on management policies in addition to the functions focused on by Defender A networks.

The functions engaged in by Defender B networks are primarily ones related to managerial control: accounting, human resources management, quality measurement, record

Table 3

Constructed Factor Scores of Network Clusters and Member Participation in Functions by Network Clusters
(n=117)

	CONSTRUCTED FACTOR SCORES OF NETWORK CLUSTERS					
	Defender A (n=25)	Defender B (n=8)	Prospector A (n=29)	Prospector B (n=16)	Analyzer (n=4)	Reactor (n=35)
Factor						
Management Policies	-0.22	3.17	-0.22	-0.24	-0.24	-0.24
Marketing and Planning	-0.26	-0.10	-0.46	2.04	0.88	-0.44
Risk Sharing	-0.65	-0.41	1.23	0.27	0.89	-0.69
Quality Initiatives	0.17	0.85	-0.41	-0.13	3.87	-0.36
Professional Recruiting	0.89	0.41	-0.20	-0.13	1.33	-0.65
	PROPORTION OF MEMBERS PARTICIPATING IN NETWORK FUNCTIONS					
Network Function						
Use the same personnel policy manual	0.00	0.45	0.00	0.00	0.00	0.00
Use the same chart of accounts	0.01	0.44	0.00	0.00	0.00	0.00
Use the same health professional recruitment program	0.47	0.23	0.11	0.17	0.25	0.00
Use the same physician credentialing system	0.47	0.43	0.17	0.15	1.00	0.00
Use the same quality measurement and improvement program	0.19	0.36	0.00	0.00	1.00	0.02
Use a system for sharing medical records among network members	0.16	0.07	0.07	0.08	0.50	0.08
Accept a portion of the risk of operating loss on network ventures	0.02	0.17	0.80	0.30	0.72	0.00
Accept a portion of the risk of business failure on network ventures	0.00	0.04	0.64	0.41	0.47	0.00
Use a consolidated network office for marketing and community relations	0.13	0.13	0.00	0.65	0.50	0.01
Use a consolidated network office for planning	0.06	0.09	0.10	0.93	0.50	0.00
Use a consolidated network office or service for grant writing	0.13	0.26	0.03	0.72	0.25	0.17

keeping. These systems are also the building blocks of functional integration (Shortell et al., 1992). Functional integration may provide the background in front of which greater levels of clinical and financial integration take place.

Other rural health networks concentrate more on boundary-spanning activities. The rural health networks that comprise the two network clusters whose members focus on risk sharing or risk sharing and marketing and planning have an entrepreneurial strategic orientation. They engage in planning, marketing, investment, and operation of new ventures. According to the Miles and Snow typology, these networks are Prospectors.

The Prospector network group is the largest of the four network types with 38 percent of all members (n=45). Prospector A networks (n=29) have a substantially higher factor score for risk sharing than do Prospector B networks (n=16). Instead of using risk sharing, Prospector B networks integrate planning and marketing functions with their investment strategy (the factor score for risk sharing for Prospector B networks is much weaker than the score for marketing and planning). The networks that do integrate planning with investment would appear to approach their joint ventures on a more businesslike basis than those that do not. As a practical matter, however, much of the strategic planning of Prospector networks may take place implicitly at the board level in the decision to offer a new service, and once a joint venture is created, the marketing of the venture devolves to the joint venture entity itself (i.e., marketing is not a function of the network).

For both types of Prospector networks, the network functions in the form of joint venture. In a joint venture, the partners (parents) come together to create a new entity (child) to provide a new service (Harrigan and Newman, 1990). The parents do not need to integrate their internal functions to operate the child entity successfully. New operating and control systems are created

by the child entity to manage itself. These management systems may or may not resemble those of one or more of the parents. Because the needs of the parents are adequately met by the creation and successful operation of the child corporation, the parents have no need, insofar as the joint venture is concerned, to bear the costs of integrating functionally or clinically. Rather than beginning to meld into a single organization, as the Defender networks appear to do, Prospector networks appear to achieve their goals through the creation of a child corporation (the network as a corporate entity) to do the bidding of network members.

A third group of networks may be characterized as Analyzers. Analyzers, in the Miles and Snow typology, combine the strengths of Defenders and Prospectors. The Analyzers among rural health networks, therefore, engage in a combination of the functional dimensions employed by both Defender and Prospector rural health networks: Quality initiatives and professional recruiting (defender-like functions) and marketing and planning and risk sharing (prospector-like functions). Analyzers, on the one hand, attempt to minimize risk by reducing uncertainty and controlling operations, and on the other hand, attempt to maximize the opportunity for profits by investing in new ventures.

Analyzer networks formed the smallest of the six network clusters (n=4). The cluster has the smallest mean age. Among this group of Analyzers, the Defender-like characteristics are dominant. The functional dimensions of quality initiatives and professional recruitment are stronger than those of risk sharing and marketing and planning. Indeed, the members of all four of these Analyzer networks use the same physician credentialing system and use the same quality measurement and improvement system.

Strategies are fluid and strategic orientation is not fixed. Because Analyzers are a hybrid of Defenders and Prospectors, it is possible that an Analyzer, over time, may evolve into either a

Defender or Prospector network. Given the small number of Analyzers and their relatively young age, the networks in this group may simply be testing strategic orientations before settling into a pattern of operation.

It was not possible to discern a pattern in the functions of 35 networks studied. This cluster is composed of networks that lack a consistent strategic orientation; in the terminology of Miles and Snow, they are Reactors. The lack of a strategic orientation means that these networks have no routines to set in motion when faced with a changing environment. The inconsistency of these potentially unstable networks may stem from at least three sources: 1) managers and board members fail to articulate a viable organizational strategy; 2) a strategy is developed but the structure, process, and technology of the network is not linked to the strategy in an appropriate manner; and 3) managers or board members adhere to a particular strategy-structure relationship even though it is not relevant to environmental conditions (Miles and Snow, 1978).

Reactor networks constitute 30 percent of our sample of rural health networks. Our failure to discern a pattern of functional participation among Reactor networks in this study may be due, in part, to a limitation of the methods chosen to analyze the networks. An inherent lack of strategic orientation among some of these networks, however, is also highly probable. This lack of focus cannot, in all cases, be attributed to the newness of the network: on average, Reactor networks in our analysis have been in existence as long as other rural health networks.

The membership of Reactor networks is relatively diverse. Although hospitals dominate, the remaining membership is split almost evenly between physicians and other health care and social service providers. Twenty percent of Reactor networks are composed of a mix of hospital, physicians, and “other” members.

Many rural health networks, especially ones with diverse memberships, have difficulty sorting out power relationships and agreeing on goals that are shared mutually by their members. Unable to move beyond this initial phase of network development, they become stymied. They cannot agree on what to do and where to go and fall back on marginally useful, uncontroversial programs such as joint advocacy, shared continuing education, and group purchasing.

The members of some rural health networks may not have joined their networks with the intention of integrating functions or mutually providing services. They may be more interested in the social networking aspects of rural health networks and value their participation as a way of gaining and sharing information and of developing collegial interaction.

MEASURING PERFORMANCE

Identifying rural health networks as Defenders, Prospectors, Analyzers, and Reactors suggests that networks form to solve different kinds of problems. Using deductive reasoning, it is possible to move backward from functions to strategies and goals to identify the kinds of problems rural health networks attempt to solve for their members. Once the organizational goals of a network (i.e., what it was created to do) are understood, they can be translated into performance goals. For example, a rural health network may form to halt the expansion of an urban competitor into the service area of the network. The network develops a menu of services and programs to respond to the incursion. The measure of the success of the network is not whether each of the individual services and programs is successful³, but whether the overall strategy of offering the services and programs was successful. In this example performance is

³ Indeed, the individual services and programs could be unsuccessful in conventional terms such as profitability and efficiency, but as a strategy for protecting market share they may be successful.

measured by the market share of members. If market share stays the same or increases, the network's functions (offering the services and programs) are achieving the network's strategic goal.

Because networks differ in their fundamental purposes, the measures of their performance also differ. In Table 4 we suggest some performance measures that might be used for Defender, Prospector, Analyzer, and Reactor rural health networks. In the following sections, performance measurement for these types of is discussed briefly.

Defender Networks

The strategies that Defender rural health networks employ flow directly from their goals. They engage in activities that 1) improve access to and reduce the cost of securing needed resources (e.g., physician recruitment, shared continuing education, and joint contracting with employers and managed care organizations); 2) improve internal management systems (e.g., combined human resources, financial, and quality improvement systems); 3) reduce production costs through economies of scale (e.g., joint provision of accounting and billing functions); and 4) improve coordination (e.g., sharing medical records and management information systems, and joint legislative and regulatory advocacy).

Because the goals of Defender networks are related primarily to cost reduction, the measures of their performance should be predominately financial. Fundamentally, the success of a Defender rural health network can be measured in terms of the improved financial health of member organizations. A successful Defender rural health network will reduce resource and transaction costs for its members. Gross financial indicators include organizational measures of profitability, liquidity, and capital structure. Middle-tier indicators include cost per unit of output (e.g., case, patient day, visit) and product-line measures of costs and revenues. At the

Table 4

Examples of Performance Measures by Network Type

Network Type	Strategic Goal/Objectives	Performance Measure (Examples)
Defender Networks	Improve efficiency of members A. Reduce member cost B. Improve coordination among members C. Improve member quality	Gross measures: ■ Member financial ratios Intermediate measures: ■ Cost per admission ■ Cost per DRG or outpatient visit Specific measures: ■ Cost per employee of workers compensation premium ■ Unit costs of supplies purchased through group purchasing
Prospector Networks	Protect or increase incomes of members A. Stabilize or improve market share of network service area B. Improve availability and use of services offered by the network or network members	Gross measures: ■ Out-migration/market share (undifferentiated) Intermediate measures: ■ Income of members ■ Availability of health services in network service area ■ Use of local services by residents Specific measures: ■ Out-migration/market share (differentiated by provider, service, or patient characteristics)

Table 4 (continued)

Network Type	Strategic Goal/Objectives	Performance Measure (Examples)
Analyzer Networks	A. Improve efficiency of members B. Protect or increase incomes of member	Match performance measures listed under Defender and Prospector networks with specific strategic goals to be achieved; emphasis will vary by network.
Reactor Networks	Reactor networks lack a consistent strategic orientation	Necessary to determine organizational goals on a case-by-case basis and to link measures of performance to the achievement of specific goals (e.g., if the goal of a network is to provide an advocacy voice for rural providers in a region of a state, performance measures might include 1) number of contacts with legislators, 2) proportion of favorable bills passed, 3) proportion of unfavorable bills defeated, and 4) member awareness of legislative and regulatory issues)

highest level of detail, measures of performance would include the cost of specific resources and transactions, for example, the cost of IV solutions, the cost per employee of workers compensation insurance premiums, or the costs of duplicate tests foregone by sharing of information among network members.

While Defender networks exist to serve their members, organizational members of these networks exist to serve their communities. Therefore, successful rural health networks with a managerial strategic orientation may indirectly benefit their communities by 1) providing services at lower cost to consumers; 2) providing services of higher quality, and 3) financing service expansions, thereby improving local access to services.

Prospector Networks

A Prospector rural health network can be seen as a collaborative strategy employed by rural providers to protect their incomes in a competitive market. The network may offer new services or expand existing services as a way of blocking the entry of new providers to the market or of stanching the out-migration of rural residents to urban settings. These choices may be simply protective in nature, but they have the corollary effect of improving the availability (and perhaps the quality) of local health care services. On the other hand, new services may be offered through the network as a result of a community strategic planning process that attempts to meet the identified needs of the local population. Responding to consumer demand for new services helps providers assure that patients will not leave the community for a service that is unavailable in the community and use other services that are available in the community during their out-of-town visit. In other words, stopping out-migration for one service may have residual benefits for other services. These arguments suggest that Prospector networks performance is measurable by the degree to which they make new services available in a community.

Prospector rural health networks seek to enhance the competitive position of their members. Using a variety of strategies, they attempt to improve the cumulative market shares of the network and its members. Strategies include expanding services or offering new services, typically through network joint ventures. Services may be provided by the network itself, by arrangement with network members, or by arrangement with providers who do not participate in the network. Some rural health networks will promote the interests of its members by collectively negotiating with managed care organizations. Through these negotiations, providers may receive higher payments or lower their administrative costs of practicing in a managed care environment by obtaining favorable patient referral and clinical management policies from managed care organizations. Managed care may be viewed by Prospector networks as a way to protect or to increase the market share of their members.

Other strategies that Prospector networks might take to improve market share are joint marketing of network services and joint strategic planning. Some local health care services are not used because local residents are not aware that they are available locally or because they are perceived to be of poor quality. Marketing programs can address both of these problems and potentially improve market share. By pooling the planning resources of members, networks may be able to improve their environmental surveillance, data gathering, and analysis skills, thereby improving their strategic decision making. Through planning, networks should be better able to identify environmental opportunities and threats and to take actions accordingly.

Since Prospector networks are formed implicitly to maximize rural provider revenues, one measure of their effectiveness may be the income of members. Because the activities of prospector networks typically result in enhanced availability of services, other measures of performance may be the availability of services over time and the use of local services by

residents. Finally, another indicator of performance for prospector rural health networks is out-migration. Out-migration may be measured grossly or disaggregated by provider, service, or patient characteristics.

Analyzer Networks

As suggested earlier in this paper, Analyzer networks may not consciously decide to strike a balance between Defender and Prospector networks. Rather, Analyzers simply may be networks that have yet to commit to a specific strategic orientation. Over time, Analyzers may decide to become more like Defenders or more like Prospectors. In doing so, they may move from the Analyzer group into either the Defender or the Prospector group and their performance should be measured accordingly. For example, the four networks in the Analyzer group in this study have a tendency to be more like Defenders than Prospectors (see the constructed factor scores on Table 3).

Reactor Networks

Despite the promotion of rural health networks as a possible solution for many of the ills of rural health services delivery, the determinants of their success are not well understood. Nevertheless, many rural providers have formed networks. Some of these networks may not be driven by a cohesive, goal-oriented organizing principle, but serve merely as a symbol to the environment that the members of the networks are rational, up-to-date, and behaving appropriately, regardless of the possible effect of the networks on efficiency (Meyer and Rowan, 1977). A large proportion of Reactor networks likely comprise the group of networks that form simply because forming a network is the thing to do.

Anecdotal evidence suggests that rural health networks are a fragile organizational form

and, consequently, the mortality of networks is high. It would appear that of the four types of networks identified in our analysis, Reactor networks are at the highest risk of dissolution. Failure to develop a strategic orientation will likely limit the overall effectiveness of the network. To the extent that rural health networks build upon their successes, the lack of clear goals may limit the growth of some Reactor networks.

Reactor networks present a performance measurement problem, because the lack of a discernable strategic orientation hampers the ability to infer organizational goals, strategies, and performance measures. Undoubtedly, some Reactor networks do have explicit organizational goals and strategies to accomplish them. Before the effectiveness of Reactor networks can be judged, it is necessary to develop performance measures for them that fit their particular constellation of aspirations and actions.

CONCLUSION

Using the functions rural health networks engage in to classify networks, we were able to discern a clear strategic orientation in 70 percent of the rural health networks in our sample. This work suggests that rural health networks vary in what they do (functions) and what they hope to achieve (goals). Recognizing strategic diversity among rural health networks may affect the funding decisions of private and public agencies that support network development. One network development program for example, *Networking for Rural Health*,⁴ explicitly recognizes differences in strategic orientation among networks and tailors its financial support accordingly. In its Request for Applications (1999), the program administrators say that they will fund technical assistance intended to 1) increase access to care or offer a new service, 2) improve

⁴ *Networking for Rural Health* is a program funded by the Robert Wood Johnson Foundation and administered by the Alpha Center, Washington, D.C.

quality of health services, 3) improve the ability of network members to participate in managed care, and 4) improve member efficiency. These activities reflect those of Defender, Prospector, and Analyzer networks: they are concerned with either improving members' efficiency (including quality), or improving members' competitive position, or both. The program also offers assistance to emerging rural health networks and networks struggling with self-definition C networks which might be thought of as Reactors C in the form of a site visit by a project team to help the networks members sort out the purpose, structure, and functions of the network.

Some agencies funding rural health networks may choose to limit grants to only Defenders, believing that improvements in efficiency and quality will make rural providers better able to compete in the larger health care marketplace. Funding agencies eager to improve local access to currently unavailable services may choose to focus on Prospector networks. Because both Defender and Prospector networks are capable of providing direct benefits to local residents, agencies might choose to fund Defenders, Prospectors, and their hybrid, Analyzers. Unless an agency is particularly interested in funding network start-ups, it might decide to avoid funding Reactor networks. Successful Reactor networks over time will metamorphose into Defenders, Prospectors, and Analyzers. Unsuccessful Reactor networks will simply die from lack of interest on the part of their members. Funding agencies might improve the efficiency of their expenditures by focusing only on networks with clear strategic orientations.

If the ultimate measure of a network's success is its ability to achieve its goals, it is important to link functions to goals in the measurement of performance. This line of reasoning suggests a number of research studies that might produce policy-relevant results. These include:

- # Assessment of the effectiveness of various functions in achieving network goals;
- # Determination of factors that influence the selection of goals by network members;

- # Analysis of the effect of network structure on the selection of functions and the relationship of structure to performance;
- # Assessment of the allocation of benefits among members and the public at large;
- # Assessment of factors that lead some Reactor networks to evolve into Defenders, Prospectors, and Analyzers, and lead others to die; and
- # Improvement in the methods of rural health network performance measurement.

While far from exhaustive, this list suggests a range of studies that might be undertaken. Collaborative effort among rural health providers to achieve common goals makes intuitive good sense, but the empirical evidence to back up the speculation is missing. Even if it were true that some networks do yield benefits to their members and the public they serve, we do not know which networks are more likely to produce those benefits nor the characteristics of those networks. In the past ten years, millions of dollars have been dedicated to rural health network development; it is time to start answering questions about their effectiveness.

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