2. BACKGROUND AND CONCEPTUAL MODEL

2.1 Clinical service lines in hospitals

Clinical service lines may be defined as a family of organizational arrangements based on a hospital's outputs, rather than on its inputs. Clinical outputs of health care can be defined in three ways:

– procedures or interventions, such as surgery, radiation therapy, or organ transplantation;

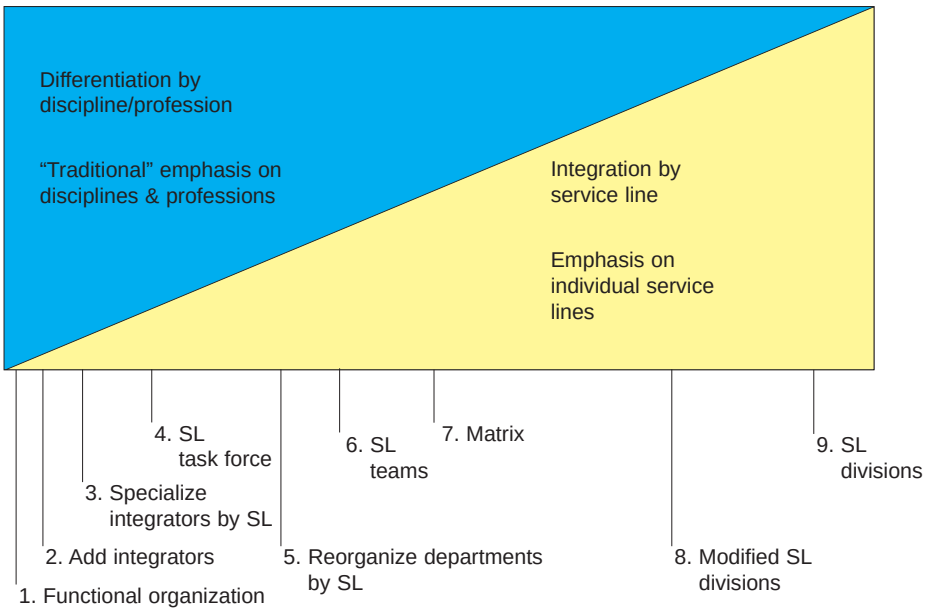
– management of diseases, such as comprehensive care for cancer or for heart disease;

– management of care for and/or maintaining health of identifiable segments of the population, such as older adults or children.

All of these bases for service lines can be readily found in practice, and they are not mutually exclusive. Key defining characteristics of clinical service lines are that they are multidisciplinary, have a clinical care mission, and provide a mechanism for integrating personnel and services across disciplines.

Based on extensive case studies of service line development in hospitals, Charns and Tewksbury (1993) developed a nine-point continuum of organizational structures for hospitals that places traditional discipline/professional departmental and service line divisional designs as endpoints (see Exhibit 1). The theoretical constructs that provided the starting point for the development of the continuum are discussed in Appendix A. The continuum[1] arrays structures in terms of their increasing focus on integration of disciplines for delivery of services. Concurrent with the increase in focus on integration is a decrease in emphasis and advocacy for each discipline/profession individually. Moving from left to right along the continuum, the structures depicted provide increasing integration for each service line and also decreasing emphasis on each traditional discipline and profession. Each structure along the continuum has both advantages and disadvantages, with the endpoints of the continuum representing the extremes of emphasis on individual disciplines and professions versus service lines. The nine structural alternatives, along with their advantages and disadvantages, in individual hospital facilities are described in Exhibit 2, below.

Exhibit 1: Continuum of Organizational Configurations



[1] This framework was used in the VA services line guidelines, developed at the request of the Chief Network Officer in the Office of the Under Secretary for Health, by a national workgroup chaired by Laura Miller, Network Director for VISN 10. The purpose of the guidelines was to provide guidance and consistency in use of service line terminology throughout VHA. The guidelines were distributed in draft form to all VISNs in 1998.

Exhibit 2: Charns and Tewksbury Organization Forms

	Description	Strengths	Limitations
1	***Traditional "Functional Organization."*** The major units of the medical center are traditional professional disciplines or functions, such as nursing, food service, social services, etc. This form provides a management focus for each discipline to function independently.	– maximizes focus on professional development and professional standards – maintains state of the art in each profession – facilitates sharing of resources within each department or service throughout the hospital	– provides no substantial integration for delivery of services across disciplines – contributes to territoriality by profession/ discipline and fragmentation of care
2-3	***Integrators.*** Planners or analysts provide a focus on various clinical areas through planning, marketing or analytical activities. Individual integrators either are assigned on-going responsibility for specific clinical areas (3) or share responsibilities for clinical areas (2).	– provides initial focus on service lines and their outputs throughout the medical center – vehicle for coordination across traditional departments – no detrimental effect on disciplines or professions	– weakest approach to integrating across traditional departments
4	***Multidisciplinary Task Forces.*** Multidisciplinary service line task forces consist of members from different discipline/professional departments, who address specific planning, marketing, or operational improvements within service lines. These task forces are temporary and disband after their assigned task is accomplished. Staff retain reporting relationships to their discipline-based departments or services. The task force leader does not provide input to members' performance evaluations. Within VA, these task forces do not themselves meet the definition of service lines, but rather are precursors to service lines or are adjuncts to service lines.	– can be used to address planning or operational improvements within a facility (e.g. planning for implementation of new service lines or addressing how to improve delivery of care to a specific type of patient) – allows for multidisciplinary input and collaboration – causes little disruption to traditional discipline-based departments or services	– does not provide for on-going management of the service line over time – limited as coordinating mechanisms because they are not based on enduring relationships among group members
5	***Reorganize Departments (Services).*** Each major discipline/professional department is internally restructured so that its sub-units correspond to different service lines (e.g. specializing nursing units so that all patients of a service line are admitted to a designated unit; assigning patients to individual social workers and therapists consistently on the basis of service line). Reporting relationships of personnel and sub-units remain within their departments.	– enables staff to specialize in their service line clinical content – permanence of personnel assignments to different service lines allows staff to develop working relationships that assist in coordination	– as departmental staff is assigned to specific service line clinical areas, the department loses some flexibility to respond to fluctuations in workload across the medical center
6	***Multidisciplinary Clinical and Management Teams.*** Individuals from different disciplines are assigned to permanent teams. Staff retains formal reporting relationships to discipline-based services or departments. The service line manager serves as the team leader and provides input to members' performance evaluations. Generally, the teams have a clinical mission. Some service lines are not managed by single managers but by management teams– for example, a triad representing medical, nursing, and administrative leadership or a dyad of a physician and a nurse leader.	– provides a mechanism for ongoing interaction of personnel from different services and a sustained management focus on the service line – provides substantial integration within each service line	– requires major adjustments by the traditional service chiefs, who lose a large amount of their control over personnel in their services – a management team may be more powerful than an individual service line manager, but is challenged to manage the team's group dynamics
7	***Matrix Organization.*** The organization is simultaneously organized along the two dimensions of traditional departments (services) and service lines. Key staff and managers have two lines of accountability – one to the department and one to the service line. The service line and department managers jointly evaluate these "matrixed" individuals and have equal influence.	– provides management and coordination of both disciplines/professions and service lines simultaneously – has advantages of both the traditional discipline/professional departmental structure and the service line divisional structure	– the most complex of all organization designs to manage – difficult to maintain the balance between the two dimensions of the matrix – presents high demands for conflict management
8	***Reorganization into Modified Service Line Divisions, Maintaining Discipline Leaders.*** The facility structure is altered by shifting primary reporting relationships from discipline-based services to service lines. Each service line is self-contained, with all of the core personnel needed to provide care to its defined group of patients. (Some administrative and clinical support functions may remain organizationally separate from service lines.) Service or discipline chiefs have no formal authority for personnel in their disciplines. Discipline councils, such as a nursing council, may also be developed to oversee facility-wide professional practice and professional development.	– places primary emphasis on service line – service line managers control the resources required to address the needs of their patients and therefore may respond more rapidly and appropriately – eliminates the fragmentation traditionally found among discipline-based services	– functions of the traditional discipline-based services (e.g. sharing of staff and resources within each discipline across service lines; maintaining organizational focus on each discipline) greatly diminished – may reduce the organization's ability to maintain the state of the art in each professional area – risk of fragmentation among service lines
9	***Fully Implemented Service Lines in a Divisional Structure.*** The last stage in reorganization is full implementation of service lines and complete removal of all organizational mechanisms that focus on individual disciplines and functions.	– enhances and optimizes the features of the modified divisional form – this form takes service line integration to its highest level	– no mechanisms for individual professional issues including performance review, mentoring and professional education – no mechanisms for sharing staff and resources within professional/ disciplines – territoriality and fragmentation may develop among service lines, hindering sharing of resources and transfer of patients

2.2 Clinical service lines in IDNs

Previous work suggests that the purposes and structures of service lines at the facility level are different from those at the IDN level (Parker, Charns and Young, 2001). The purposes of service lines within facilities are determining and reducing costs, improving marketing of services, and/or improving processes and quality of care. At the IDN level, however, they can also be very useful in resource allocation, in altering availability and access to different services, and in promoting uniformity in processes and procedures by shifting from facility-driven processes to processes and management that focus within each clinical service line across the network. Scott (1996) argued that IDNs should consider service lines that integrate across facilities for the following reasons: they can eliminate excess costs associated with under-utilization, centralize dispersed services in one place, enable cross-training of employees, disseminate best practices across locations, and allow for the standardization of services.

Shortell et al. (1993), in particular, have advocated for service lines as a mechanism for achieving clinical integration across facilities. However, the literature on IDNs provides no description of the different forms of service lines nor guidance on when different forms are most appropriately used. Therefore, Parker, Charns and Young (2001) extended the original Charns and Tewksbury (1993) organizational continuum to apply it to IDNs, as shown in Exhibit 3.

When the organizational continuum is applied at the level of the IDN, the organizational tradeoff is between integration across facilities and independent operation of each facility. Thus, the left end of the continuum represents traditional organization of an IDN by facility with no IDN-level service lines. The right end of the continuum represents complete organization of the IDN by service lines, with no management of individual facilities per se. Successive positions from left to right on the continuum represent increasing emphasis on service lines with decreasing emphasis on managing each facility. In moving from left to right on the continuum, service line managers assume greater strategic roles and the facility senior managers' roles shift more toward operations management. As in the individual facility level, each variation of IDN-level service line organization is expected to have its own advantages and disadvantages. These advantages and disadvantages are likely to vary depending on the service line clinical focus, its purpose, and whether it is being implemented simultaneously at the medical center and network levels. The different IDN structures, together with a summary of their advantages and disadvantages, are presented in Exhibit 4.

Exhibit 3: Continuum of Organizational Configurations - IDNFS

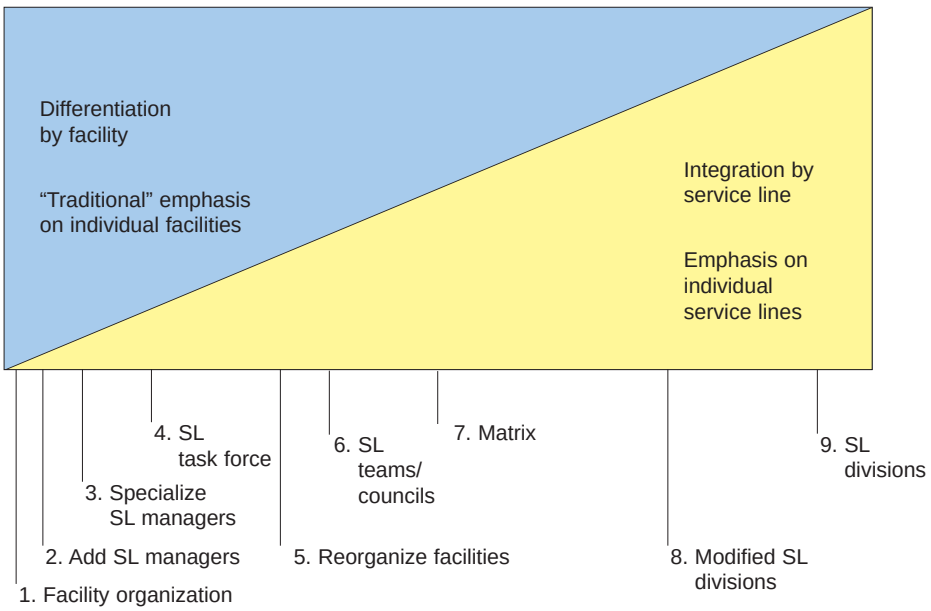


Exhibit 4: Descriptions of Network Service Lines

	Description	Strengths	Limitations
1	***Traditional Facility Structure.*** The primary management units in the IDN are the facilities; facility management remains intact.	– facility autonomy and connections with traditional stakeholders are maintained – each facility may address the needs of its local market	– does not contribute to any substantial integration across facilities – facilities compete with each other for resources – territoriality by facility is fostered – no performance benefits of this structure over independent hospitals that are not members of a network (Conrad, 1993)
2-3	***Individual service line managers.*** Individuals are given responsibility for service lines. They have no formal authority over personnel providing services to patients in the service line clinical area, nor budget authority.	– provides a management focus for the service line area, its market and resource requirements	– limited by lack of authority – highly dependent on personal influence of service line manager
4	***VISN-level Task Forces.*** Task force members are drawn from different facilities, and formal reporting relationships remain facility-based. These task forces have no formal power, input on performance evaluations of task force members or budget control. Because they are by definition not permanent structures, VISN-level task forces are not considered service lines within VA.	– task forces can obtain input from facilities and some commitment to the recommendations they develop – can be used to develop plans of action across facilities (e.g. implementation plans for guidelines and uniform policies, or plans for service line implementation)	– task force leadership has no formal control over task force members – effectiveness is highly dependent on the influence of the task force leader and the support of the task force by VISN leadership
5	***Reorganize Facilities.*** Each facility is reorganized internally into service lines. VISN-level service line directors have no formal authority over the facilities or corresponding facility-level service line managers.	– on-going relationships facilitate coordination across facilities – may be used as a transition to more integrative service line structures, and is necessary for implementing network-level service line divisions	– network-level service line director is limited by lack of authority over facility-level service lines
6	***VISN-level Service Line Teams/Councils.*** Representatives from different facilities serve on permanent VISN-level groups focusing on specific clinical areas. Councils may provide input on performance evaluations of council members, although members' primary reporting relationships remain at their home facility. Because they are permanent – in contrast to task forces – councils are considered service lines in VA.	– provides a mechanism for ongoing interaction of personnel from different facilities and disciplines – provides a VISN-wide perspective – typically used to provide policy recommendations, and to monitor, plan, and coordinate the activities within each service line across facilities – more influential than task forces due to permanence	– limited by their inability to directly control personnel, whose primary relationships remain with their facilities
7	***Matrix Organization.*** Authority and influence are balanced between the VISN-level service line directors and facility leadership. Thus, each facility-level service line manager is evaluated jointly by the network-level service line manager and the facility senior management (i.e., chief of staff or facility director). Budget is allocated simultaneously by service lines and by facilities.	– provides the advantages of both organizing by facility and organizing by VISN-level service line – provides coordination and management of both dimensions	– difficult to maintain the balance between the two dimensions of the matrix – latent conflicts between the goals of VISN service lines and the goals of facilities are surfaced, raising the importance of conflict management skills
8	***Modified Service Line Divisions.*** In this model, as in model #9 (see below), the basis of organization is the network-level service line. Facility-level personnel, typically facility-level service line managers, report directly to VISN-level service line directors. Facility leadership is retained and is responsible for operations and for coordination of service lines within each facility.	– maximizes clinical integration throughout the VISN by giving primary control to VISN service lines rather than to facilities – is a stronger approach to service line management than are teams/councils or matrix structures	– may reduce the ability of facilities to respond to facility-level stakeholders and to coordinate across service lines within facilities – may make it difficult to recruit talented individuals into facility management positions – competition among service lines may result in fragmentation
9	***Network Service Line Divisions.*** Like model #8, facility-level personnel ultimately report to VISN-level service lines, but there are no managers at the facility level responsible for the facility or coordination across facility-level service lines. Managerial emphasis in the network is shifted totally to the service lines. Although theoretically possible and conceptually consistent with the facility-level service line divisional structure, no examples of this structure are known to exist in practice.	– allows for the greatest control by each service line director – promotes the perspective of network-wide issues within each service line and facilitates deployment of resources within each service line	– facility concerns are minimized, as are professional issues – sharing of resources across service lines is most difficult in this form – high potential for fragmentation among service lines, especially when performance measures allow one service line to gain at the expense of others

This continuum is based on the authority of service line managers and the organizational form (e.g. task forces, teams/councils, etc.) used to integrate across facilities. Organizational mechanisms other than personnel authority may be used to enhance the influence of service lines and service line managers. These mechanisms include resource control and authority to set policies, standards and performance measures.

As noted above, when the service line evaluation project was initiated, some VISNs had indicated their intent to implement VISN-level and facility-level service lines, but the structures of these intended service lines varied from task forces to service line divisions. Previous work on service lines in the private sector suggested a number of potential benefits of service lines, but no evidence was available on the effect of this type of organization on organizational outcomes, particularly quality of care. Furthermore, prior empirical work was based on case studies of a small number of organizations, and most of that work concerned service lines within hospitals. Thus, there was no strong empirical evidence to guide VA's service line development in VISNs.

3. EVALUATION DESIGN

3.1 Guiding questions

Objective 1: Describing service line implementation: To address this objective we began the project with an examination of service line organization at the VISN level. We then examined service lines in the facilities. This inquiry was organized around questions based on the conceptual model of service lines explicated above. These questions were:

1. In which VISNs have service lines been implemented? What structural forms do they take? What is the distribution of clinical foci of service lines? How has implementation of service lines progressed?
2. How did each VISN's strategy of network development and integration relate to its organizational structure (application and types of service line forms)?
3. In which medical centers have service lines been implemented? What structural forms do they take? What is the distribution of their clinical foci? How has implementation of facility-level service lines progressed?

Objective 2: Empirically testing the effects of facility-level service lines on organizational outcomes: We developed specific hypotheses related to service line activity and outcomes at the facility level. These hypotheses are based on the general theory discussed earlier, as well as on specific points discussed below. Service lines shift an organization's emphasis from the care process inputs (i.e., the work of each profession and discipline individually) to its outputs (i.e. the array of services that together constitute a patient's care experience). Thus, it brings together multiple disciplines and is expected to encourage collaboration and coordination among health care professionals from different disciplines. These features of a service line structure in turn are expected to result in greater success in meeting organizational goals related to the quality and efficiency of patient care.

We also expect a dose effect regarding service line structures. Based upon their case studies and general organizational theory, Charns and Tewksbury (1993) argued that service line structures further to the right on their continuum provide greater integration and focus on the hospital's outputs. These, in turn, are expected to result in higher levels of patient-centered care and more effective utilization of resources. Furthermore, consistent with the view that structures further to the right on the continuum are more integrative, VA's Service Line Guidelines state that a team, matrix or divisional structure is needed for service lines and that a task force is not sufficient.

Finally, organizational changes take some period of time to take effect, as personnel learn their new roles and responsibilities and develop new working relationships (cf., Charns and Tewksbury, 1993, Chapter 7). Therefore, we expect that over a period of time service line structures will have an increasing impact on outcomes related to stated organizational goals.

Based upon this logic, we hypothesize:

H1. Hospitals with service lines will have greater success in achieving organizational goals related to patient care than hospitals without service lines.

H2. Hospitals with service line structures further to the right on the Charns and Tewksbury (1993) continuum (e.g. more integrated) and service line structures of longer duration will have greater success in achieving organizational goals related to patient care than hospitals with less integrated structures and/or service line structures of shorter duration.

3.2 Evaluation methods

Investigation of a complex phenomenon that exists at multiple organizational levels and may have multiple types of effects requires a multi-method inquiry strategy. Collecting multiple types of data, from multiple sources, to develop as complete an understanding of the phenomenon as possible is consistent with a strategy of triangulation (Jick, 1979). Thus, the strategy in this study has been to study the service line implementation process in multiple stages. At each stage we related our questions and methods to the state of knowledge about service lines available at that stage in the evaluation process. We have utilized both qualitative methods to develop a richly textured understanding of the different approaches to service line management and its implementation, and quantitative methods to identify potential relationships between service line management and outcomes. The design included the following phases:

1) ***Developments at the VISN level:*** Exploratory site visits to each VISN office and to a sampling of facilities, designed to begin answering questions 1 and 2 (see page 7), were conducted in 1997. Follow-up site visits to selected VISNs and facilities were conducted in 1998 and 1999, to extend the analysis of developments at the VISN level in relation to questions 1 and 2. A telephone survey was also conducted in 1998 and 1999, to reach VISNs that had not been visited in either of those years. In addition to using this information to describe VISN service line development, we formally coded the interviews to tally perceived effects of service lines.

2) ***Service lines at the facility level:*** Based on preliminary findings from the site visits, a survey instrument designed to elicit information on facility-level service lines from all facilities was developed and pilot-tested. The revised (based on pilot testing) facility-level survey was administered in two consecutive years, 1998 and 1999[2]. This provided descriptive data on the extent and types of service lines implemented at the facility level and addressed question 3.

3) ***Relationship of service lines to outcomes:*** Data from the survey regarding service line form and duration were then analyzed in relationship to data obtained from VA databases regarding various patient outcomes and health care service utilization, in order to test hypotheses 1 and 2.

Detailed descriptions of the methods for each of these components are presented in Appendix B.

[2] Throughout this report the 1998 survey data were used in analysis, and all references to "the survey" are to the 1998 survey.