Strategic Information Management in Health Care Networks

10

10.1 Introduction

In Chap. 7, we discussed specific architectural aspects that have to be considered in a transinstitutional health information system, which is the information system of a health care network. We will now examine how *strategic information management* works in such networks.

Similar to information system architectures, principles of *strategic information management* in health care networks turn out to be similar to *strategic information management* in hospitals. But since such a network is a group of legally separated health care institutions, the managerial authority in health care networks can hardly be centralized in one organizational unit. Thus, we are faced with polycentric or decentralized organizations, resulting in the following challenges:

- While members of health care networks remain legally autonomous, the mutual dependency rises with increasing importance of the network.
- While members of health care networks have to cooperate in order to provide high-quality and efficient care, they may compete in other sectors.
- While trust between health care network members is an important factor for the success of the network, the economic risk rises with increasing dependency on cooperation partners.
- While members of health care networks have to specialize in their core competencies on the one hand, they need to align their transinstitutional care processes on the other hand.

A consequence of these characteristics is that in health care networks each member follows its own strategy on the one hand but the network has to fulfill its goal on the other hand. Typically no single person in charge, i.e., a CIO (see Sect. 9.3.1), exists in health care networks. Hence, the typical (ideal) organizational structure of *strategic information management* as presented in Sect. 9.3 cannot always be applied.

In this chapter, we can forbear from repeating the principles of strategic planning, monitoring, and directing health information systems. But we have to supplement Sect. 9.3 by examining additional organizational aspects of *strategic information management* when legally separated institutions cooperate in networks.

A. Winter et al., *Health Information Systems*,
DOI: 10.1007/978-1-84996-441-8_10, © Springer-Verlag London Limited 2011

In contrast to single institutions with hierarchical structures, such as hospitals, the interests of many legally autonomous actors have to be coordinated in health care networks. After reading this chapter you should be able to answer the following questions:

- What are health care networks?
- How can health care networks be described?
- What organizational structures are appropriate for information management in health care networks?

10.2 Description of Health Care Networks

In order to understand the challenges and possible information management mechanisms, we need to be able to describe health care networks systematically. The attributes in Table 10.1 can be used.

10.3 Organizational Structures of Information Management in Health Care Networks

Information management in health care networks is the sum of all planning, directing, and monitoring activities with regard to the transinstitutional information system of the respective network (see Sect. 9.2). In contrast to information management in hospitals, a multiplicity of strategic interests exist in health care networks that may interfere with each other and have to be coordinated with respect to the strategic goals of the network as a whole. This coordination requires adequate organizational structures, which can be characterized by two dimensions: centrality of information management and intensity of information management.

10.3.1 Centrality of Information Management in Health Care Networks

Centrality of information management describes how the competencies of information management are shared among the network members. A high degree of centralization means that few or only one network member is authorized to make decisions.

Regarding centrality, a continuum with two extremes can be identified: the complete centralized information management and the complete decentralized information management. Most of the real world examples are featuring characteristics of both extremes and can therefore be termed hybrid management mechanisms.

In case of complete centralized information management, one member of a health care network provides a *strategic information management* plan for the network and is in charge of implementing the strategy. This is often the case when one member is a large

Table 10.1 Attributes for the description of health care networks

Attribute	Description
Structural attributes of health care networks:	
Range	Geographic extension of the network, e.g., local, regional, national, international
Size	Number of the network members
Configuration	Describes to what extent different types of institutions (hospitals, private practices, etc.) are part of the network
Stability	Describes the extent of member fluctuation
Network management system, i.e., managerial characteristics of a network:	
Legal form	Legal foundation or corporate form of the health care network
Financing form	Describes the mechanism, how the network is maintained financially
Openness	Describes the conditions for becoming a network member
Centrality of network management	Describes, how the authority to make decisions is allocated among the network members
Attributes of the network care system:	
Comprised groups of patient	Describes which groups of patients are treated within the network. These groups can be based on medical, demographic, or administrative characteristics
Coordination of care process	Describes the mechanism that leads the patient through the network, e.g., medical guidelines, "gatekeeping," i.e., the care process is coordinated by one institution, or the care process is coordinated by the patient
Temporal attributes of the health care network:	
Life span	Describes the planned period of time in which the network exists
Development stage	Describes the development stage of a network, e.g., planning stage, operative stage, or dissolution stage

institution, such as a hospital and the other members are small, such as physicians in private practices. Normally, the central member can provide many more resources for information management. The interests of the members regarding the information management strategy for the network are not coordinated systematically.

Complete decentralized information management is characterized by mutual coordination of interests among the network members. The information management strategy is developed in a standardized process that is open to all members.

Both mechanisms possess advantages and disadvantages. The efficiency of decision making is higher in the centralized information management. In contrast, coordinating the interests of all network members in the decentralized mechanism can be a time- and resource-consuming process. On the other hand, mutually agreed decisions have a better chance to be accepted by all network members.

10.3.2 Intensity of Information Management in Health Care Networks

Intensity of information management describes the degree to which the decisions of information management in health care networks are obligatory for the network members. Remember that the membership in a health care network is voluntary.

In case of high intensity, the information management decisions have to be implemented by the network members. This can be based on contracts and may be mandatory for the network membership.

Low intensity means that the network members are not bound to implement the strategy of the network information management. Here, the decisions can be understood as guidelines or recommendations.

Again, advantages and disadvantages can be identified. A higher degree of information management intensity leads to increased reliability for the network members. If the implementation of a certain communication standard or the purchase of a certain application component is mandatory for all network members, the chance of improving efficiency and quality of transinstitutional information processing increases. In case of low intensity, the individual member cannot rely on the decisions of the other members.

On the other hand, a high degree of intensity leads to external dependencies that institutions normally are trying to avoid. By investing in application components, communication interfaces, or infrastructure that supports the collaboration within the network, the economic risk increases, since the investments may be useless once the network membership has ended or the network dissolves. This is called “lock-in effect”.

10.4 Types of Health Care Networks

It turns out that the organizational structure of information management reflects the type of collaboration in a network. Therefore health care networks can be characterized with regard to their information management centrality and intensity. We can identify the following different types of health care networks (see Fig. 10.1):

- Loosely coupled networks show a low degree of centrality and intensity. They are typically regional bordered, homogeneously configured, and are based on social structures.

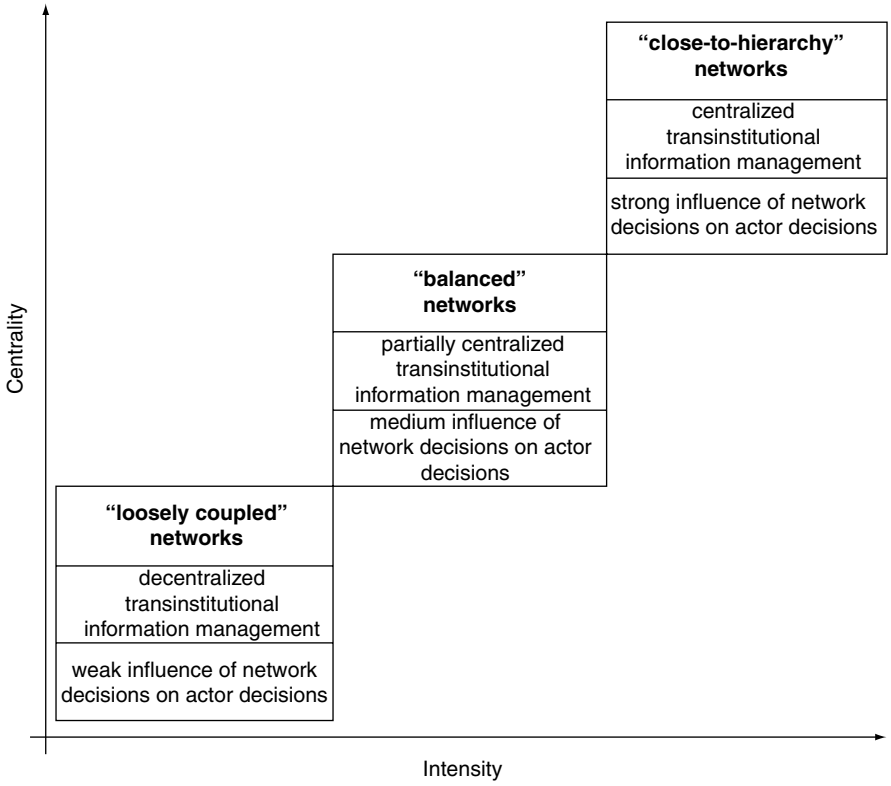

Fig. 10.1 Types of health care networks

- Hierarchy-like networks still fulfill the definition of health care networks, but decision making in information management is highly centralized and the decisions made are compulsory. Typically, these networks are configured heterogeneous and are dominated by one large institution, such as a hospital.
- Balanced networks show medium degrees of centrality and intensity.

10.5 Example

10.5.1 Regional Health Information Organizations

One of the major approaches to reduce costs and increase efficiency in the US health care system is focusing on so-called Regional Health Information Organizations (RHIOs). It has been initiated by the US Department of Health and Human Services in 2004. RHIOs are state-wide, local, or rural health care networks with a strong emphasis on the use of

computer-based application components in order to support transinstitutional care processes.

The ultimate goal is to crosslink all RHIOs aiming at establishing a Nationwide Health Information Network (NHIN). This process is in the lead of the National Coordinator for Health Information Technology, a CIO with nationwide competencies. Typically, RHIOs have to answer the following strategical questions:

- What are the appropriate architectures to achieve transinstitutional integration?
- Which standards should be implemented in order to ensure efficient transinstitutional information processing and data protection?
- Which business models ensure sustainability of the RHIO?
- How can all stakeholders profit from the RHIO?

10.6 Exercise

10.6.1 The Plötzberg Health Care Network

In order to improve quality and efficiency of care for patients with chronic back pain, the Plötzberg Medical Center wants to share medical data with regional general practitioners and experts in private practices as well as rehabilitation centers.

The CIO of Plötzberg Medical Center and his experienced team decide to install a portal-based solution to share information from the hospitals EHRs with cooperation partners. A few weeks later, the application component has been introduced and is ready for routine operation. In order to inform the doctors in private practices and rehabilitation centers, a press conference is held. A few more weeks later, though, the CIO notices that the portal is used only by two practitioners on an irregular basis.

Try to help the CIO of the Plötzberg Medical Center by answering the following questions:

- How high is the degree of centrality in the Plötzberg Health Care Network?
- How high is the degree of intensity in the Plötzberg Health Care Network?
- What could be the reasons for the low acceptance of the introduced portal?
- What could be the approaches to raise the acceptance?

10.7 Summary

In contrast to information management in single institutions, such as a hospital, information management in health care networks has to cope with additional problems that result from the non-hierarchical organization of networks. Autonomy and dependency, cooperation and competition, trust and risk between the members are coexisting in networks.

In order to understand health care networks, we need to be able to describe them systematically. Important attributes are the network structure, the network management system, the network care system, as well as temporal attributes of the health care network.

Transinstitutional information management in health care networks can furthermore be characterized by the degree of centrality, i.e., the allocation of managerial authority and the degree of intensity, i.e., the degree to which the decisions of information management in health care networks are obligatory for the network members. Based on centrality and intensity we can differentiate loosely coupled, balanced, and hierarchy-like networks.