

DOTTORATO DI RICERCA IN SISTEMI INFORMATIVI AZIENDALI

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TESI DI DOTTORATO

**ORGANIZATIONAL MODELS AND INFORMATION SYSTEMS
FOR INTEGRATED COMMUNITY HEALTHCARE**

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ABSTRACT

The governance of community healthcare plays a key role in the achievement of the healthcare systems' sustainability. Whereas hospitals are considered as the appropriate sites for the care of highly complex and technology demanding acute illness, the community is being considered the elective place for prevention, disease management and personalization of care.

Nevertheless, a radical change in the primary care organization is needed, in order that the shift of the barycentre from the hospital to the territory, could reflect a real improvement in healthcare performances. The reorder process should address the changed demographic conditions and the increasing complexity in the citizens' demand of health: in front of multidimensional and extended time-width healthcare needs, mostly due to the growing incidence of chronicle disease and geriatric co-morbidity, primary care is no longer a prerogative for individual general practitioners. Also considering the growing specializations of competences, primary care should be, then, transformed in an articulated system of socio-health acts, performed by a network of professionals and workers, variously involved in the healthcare delivery to individual patients.

In this reference context, the trigger for the research question is the growing need for integration among diverse jurisdictions, institutions and professionals involved in the healthcare delivery. Actually, these considerations led to concentrate on the study of the healthcare network model. An healthcare network is defined as a complex organization in which a plurality of autonomous and independent actors co-ordinately cooperate to deliver integrated healthcare services, overcoming professional and organizational structures' boundaries (Alexander et al., 2003; Cicchetti, 2002; Shortell, Gillies et Anderson, 1994).

The debate on the adoption of networked models, and more specifically on its contribution to the healthcare effectiveness, efficiency and appropriateness is actually rich both in the international literature (Shortell et al 1994; Pointer et al. 1994; Hurley 1993) and in the Italian one (Cicchetti, 2002; Lega, 2002; Meneguzzo, 1996). Among the twofold main approaches, the research perspective adopted in the present study is oriented to observe the dynamics of integration, coordination and interdependence in the network, rather than to analyse the characteristics of single nodes (Starkweather, 1990; Fennell e Warnecke, 1988; Levin e White, 1961).

From the analysis on the more diffused approaches to integration and co-ordination mechanisms in the healthcare practices - clinical pathways, case management

and interdisciplinary teams of care - emerges that there are relevant limitation in applying these mechanisms, originated in an hospital dimension, in the community care; limitations mostly due to communication difficulties which constitute a requirement for co-ordination (Barnard, 1938). In the healthcare sector, which has an high information intensity, the integration essentially depends on the availability of data and information on patients and medical knowledge variously structured and composed according to the specific roles, tasks and objectives of the involved healthcare professionals and workers.

In this perspective, the capability to collect, integrate and made available, at right moment and to the right authorized healthcare professionals, detailed information on patients is instrumental for guaranteeing appropriate interventions; it is thus an enabling factor for the carrying out of effective and efficient primary care systems. This implies that Information and Communication Technologies (ICT), as a supportive technology for the communication and decision-making of individuals performing mutually independent tasks (Ciborra, 1989), represents an interesting dimension of analysis in the considered application domain. This also implies that the research question may be formulated as follow:

- *What is the role of the ICT in the re-composition process around the citizens' needs, of the services provided within an healthcare network? and also*
- *How this contribution can influence the network's performances?*

The investigation moves within the e-Health domain, that includes all the aspects of ICT applied to the healthcare sector (Della Mea, 2001). More specifically it is focused on the Electronic Health Record System (EHR-S), defined as a multi-functional infrastructure dynamically collecting, filtering, and composing distributed and heterogeneous sources of data and information to support the stakeholders' specific needs, by providing them specialized and detailed views on the citizens' data (Contenti et Albano, 2006).

Analyzing from the literature the several functionalities of an EHR-S emerges how it could made available: (i) the right information at the right moment to support the delivery of appropriate complex healthcare services, as well as (ii) the knowledge sharing to stimulate the augment of competences and skills within the healthcare network. An up and running EHR-S can then have impacts on the dynamics of coordination: (i) enabling the integration or even the replacement of more traditional coordination mechanisms based on human resources; and (ii) contributing to a virtualization of relationship by overcoming time and space constraints, which generally hinders the interactions among professionals. In this perspective, then, the EHR-S can be considered as an enabling factor for the integration of nodes in an healthcare virtual network model. It provides an alternative strategy to the co-location of services – at the basis of the Community Health Center model – to overcome the traditional state of isolation of the healthcare professionals.

In order to consolidate the theoretical remarks and to investigate on how the EHR-S could actually impact on the healthcare network's performances, an empirical study was conducted. Despite the assumption by Alter and Hage (1991) according to which to a greater integration correspond a better network performances, the multidisciplinary nature of the network itself and of the concept of quality in healthcare prevent to extend the reasoning: considering the EHR-S as an enabling factor for the integration is not sufficient to guarantee better performances; and this justify the empirical research.

As theorized by Provan e Milward (2001), the evaluation of an healthcare network must be conducted at three different levels of analysis, which correspond to three main classes of stakeholders: the community (clients who actually receives the services provided); the network (principals who monitor and fund the network and its activities), the participants to the network (agents who work in the network both as administrators and service level professional).

This framework by Provan and Milward (2001) was formerly extended to capture all the performance dimensions. The extended framework was then adopted not for an actual measurement, but rather as a "lens" through which conducting a qualitative evaluation on the EHR-S contribution within one of the first Italian experience of community healthcare virtual network. The adopted methodology of investigation is a combination of a documental analysis and semi-structured interviews.

The same methodology was also employed in the qualitative analysis of a second experience. The two experiences considered are similar in respect of the constituent procedure (being both promoted by local authorities), and the contextual dimensions (demographical, territorial and socio-economic characteristics) of the reference communities. Nevertheless they differ in that the latter has been experimenting a different solution for the network structuring and integration options – typical for a Community Health Center – not including , at least in the first phase, the adoption of ICT.

This choice has both a methodological and an operational justifications. In respect of the method, the use of a multiple case is commonly adopted with the aim to reinforce the starting hypothesis by identifying an "adverse" case (Grandori, 1997). Operationally the comparison between two different experiences enables richer reflection on the EHR-S, and on possible evolutions of the Community Health Center model, which would integrate concept of virtual network.

In the three different levels of analysis considered (community, network, members), the outcomes of the investigation put in evidence how the EHR-S has, both directly and indirectly, a remarkable strong impact on the plurality of dimensions observed. Nevertheless, from the investigation also emerges that similar successes are constrained, both at the development and the implementation level, by the capacity to

conciliate the three dominant cultures emerging in this renewed healthcare environment: the professional; the managerial and the technological one.

This dissertation opens with an analysis on the reference context in which the healthcare organizations currently operate at the basis of the research problem (Chapter 1). The concept of healthcare networks, stressing the adopted perspective is introduced in Chapter 2. After having emphasized the relevance of the communication component in the process of coordination among the several nodes of the network, in Chapter 3 EHR-S' functionalities and the theoretical framework at the basis of the empirical analysis are discussed. Methodology adopted and the results of empirical analysis are introduced in the Chapter 4. A discussion of the limitations of the study and implications for future research completes this work (Chapter 5).

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