

## Chapter 8.9

# Health Information Standards: Towards Integrated Health Information Networks

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### ABSTRACT

This chapter presents an abstract view of the regional health information networks (RHN). A presentation of the architecture and structures of the RHN is included. It also reveals the need for integration of information in the framework of a RHN and key issues for the applicability of health information standards to achieve interoperable health care organizations which are the stakeholders of the RHN are presented. Furthermore, a list of case studies for the implementation of RHN in health systems in European, as well as non-European countries, such as the U.S., Canada, New Zealand, and Australia are demonstrated. Finally, important areas to focus when evaluating RHN are described. The authors hope that the abstract view of RHN would assist in the understanding of the key areas when building regional health networks.

DOI: 10.4018/978-1-60566-356-2.ch008

### DEFINITION OF RHN

Since 1990s, the regional innovation systems gain the focus of researchers and policy makers as the framework for financial development in regional level and generally for innovation policy making. The territorial dimension of regional systems remains ambiguous, along with the role of actors in those systems. The regional health network offers health care services in a region through efficient administrative organization of health care providers in region and by means of regional innovation systems like the information systems, eHealth tools and services.

The definition of regional systems should start with the definition of the region. The literature is ambiguous on the nature and characteristics of the regional innovation systems (Doloreux & Parto, 2005). The term region has sometime the same meaning with the administrative regions or divisions of

country. However a regional health network does not always correspond to administrative regions. The regional structure is also ambiguous, where the providers can be public or private companies and their collaboration is diverse depending mainly on the scope of the collaboration.

According to Oates & Jensen in (Oates & Jensen, 2000) “A health region is the geographical area where most health services are provided to the inhabitants in the area, and in which area the patient typically receives almost all of the health services they need.” Following this definition in many healthcare regions the population may reach the 0,5 million or more.

Additionally, according to Grinten & Jarvis in (Grinten & Jarvis, 2007) “a Regional Health Information Organization is a multi-stakeholder organisation that enables the secure exchange and use of patient health information among clinicians and caregivers to improve the delivery, efficiency, quality, and safety of patient care.”

Generally the new area for development of regional health networks follows the need for active involvement of patients in the decision making process regarding the health services or knowledge about health and quality of life. The eHealth tools and services, the World Wide Web and other information system and communication tools facilitate these needs.

The healthcare providers in region are mostly the following (Oates & Jensen, 2000): (1) Primary care providers, (2) Secondary, Tertiary and specialised hospitals, (3) Pharmacies, (4) Laboratories and diagnostic centers, (5) Specialists, (6) Other healthcare providers, and (7) Home care providers and midwife services

The aim of the regional health networks is the sharing of health care information among the healthcare providers in regional, national or cross-border level. The factors that define the degree of development of those networks are the organizational structure of health system, the need for information flows according to the

organizational structure and the penetration of ICT in health.

## **HEALTH INFORMATION NETWORKS: ARCHITECTURE AND ORGANIZATIONAL STRUCTURE**

There is a wide variation on how the ICT facilitate the organizational structure of RHN and the sharing of information either patient information or administrative and financial information. The organizational structure of a RHN provided by the health policy makers, determines the possible data owners and the ability to achieve interoperability among the stakeholders of a RHN determines the architecture of the information system that supports the RHN. The models for the architecture of RHN can be an abstraction of the architecture models of the Health Units. The systems that support the health units can be categorized in three models: transactional, federated, centralized depending to their ability for health information exchange with other health care providers, individuals, patients etc.

The participation of stakeholders in a regional system depends on the implementation of an interoperable health information infrastructure. The main barriers to achieve the interoperable infrastructure and facilitate the information sharing are the patient matching and legal data sharing agreements.

According to Wilcox et. Al. in (Wilcox et al., 2006) and the experience from the case studies of Health Information Networks, the architecture approaches for an interoperable health information infrastructure in an organization are (Thielst & Jones, 2007):

### **Transactional Model**

The transactional model is characterized by the fact that the architectures supporting the stakeholders are separated systems. The communication among

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