

## Chapter 8.2

# IT–Based Virtual Medical Centres and Structures

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### INTRODUCTION

Today, medical infrastructures are subject to organisational change the world over. The reasons for this are manifold. On the one hand, it can be observed through scientific innovation and gaining of knowledge that a more in-depth specialisation is taking place, which means that medical healthcare providers are able to offer in-depth knowledge in narrowing fields. On the other hand, through increased process orientation of treatment pathways for patients, the necessity for superior organisational principles has been established. This effects that organisational cooperation models have to be found, which integrate singular specialised institutions into an organisational whole, which

then employ integrative processes, information, and quality requirements.

Such organisational structures can be set up in real structures by the spatial accumulation of scattered service units, so that centralised medical centres establish. Alternatively, organisational and technical integration may substitute the physical integration. The individual medical service units stay dislocated, but appear as a virtual medical centre or as specialised medical networks having a clearly defined profile.

The management of the information technology in a virtual medical service centre is subject to different requirements than the IT-management of a hospital resembling more a closed shop.

Building a virtual centre calls for performance of an open shop principle, because the entire treatment chain cannot be mapped within one single

institution, but requires integrated cooperation in order to manage a patient's clinical pathway.

Not only the spatial displacement, but also the unavoidable higher process orientation within a virtual cooperation deserves particular consideration.

Additionally, the information management is challenged by the fact that the provision of relevant information in standardised form is an indispensable element of a virtual centre. In this context, the question about potential structural assembling, and organisational principles and elements of virtual medical service centres has to be answered in order to conclude on the basic requirements of data management and the appropriate solution approaches.

This shall be presented partly using the example of the virtual oncological medical centre in Tyrol.

## **BACKGROUND**

The question about the role of medical informatics in modified organisational structures has been frequently posed in the context of medical service supply (Power, 1999). In particular, an integrative IT-policy has considerably increased in importance through the standardisation of patient pathways, introduction of evidence-based medicine, standards, guidelines, and directives, and therefore, the inevitable necessary cooperation of healthcare providers. Especially in the earlier stages, exemplary models were introduced which were supposed to make the changed requirements more manageable (Ölvingsson, Hallberg, Timpka, & Lindqvist, 2002). This, however, does not only affect the cooperation between healthcare providers, but also the technical-based integration of patient data, as well as the extensive bonding of other persons and units involved with the treatment chain. Particularly opened by the evolution of telemedicine, concepts are currently being developed in this area (Bradley, Williams, Brownsell, & Levi, 2002), which integrate technical possibilities such

as virtual reality into medical treatment processes (Burdea, 2003).

The first and pivotal approaches of information technology in medical networks primarily concentrate on the field of electronic patient record. Correlating to this, scientifically evaluated projects and models introduced criteria which have to be considered by the IT-management in medical networks (Van den Haak, Mludek, Wolff, Bützlebruck, Oetzel, & Zierhut, 2002). It can therefore be adhered to, that through this structural development of the various sectors of the health system which are geared towards integrated care, medical informatics becomes more complex, too. Increased dialogue structures, principles of the standardisation of terminology, data exchange, and the comparability of data, and the resulting necessary transparency of medical healthcare providers have become subject matters of discussion and research (Coddington, 1997; Francis & Hart, 1998).

Beside the altered basic conditions, it can be observed that the aspired construct of "patient oriented health networks" actually take shape by the affiliation of medical disciplines towards patient oriented service centres, and hence in practice, forces a complex IT-management (Montreuil & Garon, 2005).

Linked to this is not only the question of the requirements and the practical implementation of such systems (Day & Norris, 2006), but also the investigation about barriers and restraints of a successful realisation of new concepts (Cashen, Dykes, & Gerber, 2004). At least the differing intentions and interests of single system partners (e.g., administration) also play an important role (Hassan, 2005), as do the requirements of health politics (Kaushal, Bates, Poon, Ashish, & Blumenthal, 2005). Dealing with the subject of virtual medical centres, science particularly has to focus on standardising the processes in the networks, and also on the quality of data (Hain, 2002; Stoop & Berg, 2003).

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