

## Chapter 2

# Research Problem and Aims

### 2.1 Research Problem

The health care system is subject to a significant change because of demographic developments. It is under pressure to improve efficiency in the provision of health services, especially the efficient allocation of resources. The provision of health care services is one of the largest and most complex of issues. It involves making decisions about the planning and management of health care resources (Harper 2002). Traditional decision making methods cannot guarantee the required comprehensiveness and adaptability of the complex work systems. In a complex system there are numerous components and interconnections, and interdependence which are difficult to describe, understand, and manage. They comprise a variety of elements and a large number of uncertainties. Therefore, it needs a comprehensive decision making model, which can improve the efficiency and effectiveness of health care service provision. Hospitals, as complex human service organizations, have highly interconnected and complex planning problems. This makes the development of decision making technology for planning and management a challenging task (McKee and Healy 2000).

Hospitals are one component of health service organizations. The resources involved, including humans, equipment, and infrastructures, are scarce and expensive. Hospitals consume great resources, and many of them tend to have low occupancy rates. Hospital managers face the task of utilizing existing resources more efficiently. Therefore, increasing the utilization of resources is a major managerial issue in hospital management. The need to use resources more cost-effectively has never been greater than it now is with diminishing resources and escalating costs. Hence, deploying resources with efficiency and effectiveness is a main target in hospital resource management (Marshall et al. 2002; Hutzschenreuter et al. 2009; Chawla and Govindaraj 1996).

There is much research into the resource management in primary work processes (direct patient treatment, such as surgery, intensive care, etc.) and secondary work

processes (supporting direct patient care, such as OR management, Laboratory diagnosis, etc.). However, there has been little research into resources in tertiary processes (supporting indirect patient care, such as sterile goods, etc.) (Marsolek and Friesdorf 2007). Sterile goods management is significant for primary work processes in hospitals. Sterile goods are operated in CSSD, which in most cases is located near the OT. Sterile processes incur high opportunity cost (Van de Klundert et al. 2008). Managing sterile goods and the use of valuable space (CSSD) near the OT for care and cure is important for hospital development. It involves decision making for sterile goods in hospitals.

## 2.2 Aims

Due to the complexity of resource management in the complex work system, especially in hospital complex systems, there is an urgent need to develop a scientific methodology to deal with the complexity and improve efficiency and effectiveness.

The main aim of this study is to develop and evaluate a conceptual framework of decision making models for resource management in highly complex work systems, using the example of sterile goods management in hospitals.

To accomplish this, the following sub-objectives are established:

- To outline the complexity of resource management in hospital using the example of sterile goods management
- To analyze the knowledge required for developing models
- To synthesize the knowledge in order to develop the following models
  - General Framework for complex work systems
  - Generic model for complex hospital systems
  - Specific model for outsourcing sterile goods decision in hospitals
- To evaluate the models.

In this study, the conceptual model is referred as DERESIS.

**DE**cision making model for **RE**source Management of Complex Work System **In** Sterile Goods Management.

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Analysis of Resource Management in Complex Work  
Systems

Using the Example of Sterile Goods Management in  
Hospitals

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2017, VII, 123 p. 58 illus., 57 illus. in color., Hardcover

ISBN: 978-981-10-2169-5