

What is a health information system? The literature defines health information systems (HIS) in many different ways and presents various views. Some articles focus on the organizational aspects of information processing, while others focus on the technology used. To begin with, we understand a health information system as the information processing and information storing subsystem of a health care organization, which may be a single institution, for example, a hospital, or a group of health care institutions like a health care network.

This book discusses the significance of information processing in health care, with an emphasis on information processing in hospitals, the progress in information and communication technology, and the importance of systematic information management. Nearly all people working in health care institutions have an enormous demand for information, which has to be fulfilled in order to achieve high-quality and efficient patient care. For example, physicians and nurses need information concerning the health status of patients from different departments of their hospital. They also need current medical knowledge as a basis for their clinical decisions. In addition, the management of a hospital needs up-to-date information about the hospital's costs and services. Of course, the quality of information processing is important for the competitiveness of a hospital. Consequently, this system of information processing can be regarded as the memory and nervous system of the respective health care institution.

The subject of information processing is quite complex. Nearly all groups and all areas in a health care institution depend on the quality of information processing. The amount of information processing is tremendous. Additionally, the information needs of the different groups are often based on the same data. Therefore, integrated information processing is necessary. If health information systems are not systematically managed and operated, they tend to develop chaotically. This, in turn, leads to negative consequences such as low data quality, resulting in low quality of patient care and increasing costs. Systematic information management can help to prevent such HIS failures and contribute to a high-quality and efficient patient care.

Well-educated specialists in health informatics/medical informatics, with the knowledge and skills to systematically manage and operate health information systems are therefore needed to appropriately and responsibly apply information and communication technology to the complex information processing environment of health care settings.

This book discusses the typical architectures of health information systems and their systematic strategic management. A lot of examples will show how certain methods and

tools can be used to describe and assess architectures of health information systems and to support the various information management tasks in an integrated fashion.

This textbook addresses you as a health care and health/medical informatics professional as well as a student in health/medical informatics and health information management. It should be regarded as an introduction to this complex subject. For a deeper understanding, you will need additional knowledge and, foremost, practice in this field.

If you are not familiar with patient care and medical research, you can find an introductory chapter to health institutions and their respective information processing tasks. If you are not familiar with information systems, you can find an introductory chapter to information system basics.

We want to provide you with a terminology about health information systems which is as complete and sound as possible. To support this, we compiled a catalog of the most important terms as a thesaurus at the end of the book. The terms cataloged are underlined in the text, where they are explained. If you find terms which are printed in italics, these terms will refer to

- actions to be undertaken in health care in order to process data and information and to thereby contribute to the mission of health care (i.e., hospital functions).
- computer-based tools to support professionals in health care to undertake these actions (i.e., application components).

You will find explanations of the respective terms in [Sects. 6.3, 6.4](#).

After reading this book, you should be able to answer the following questions:

- Why is systematic information processing in health care institutions important?
- What are appropriate models for health information systems?
- How do health information systems look like and what architectures are appropriate?
- How can we assess the quality of health information systems?
- How can we strategically manage health information systems?

In the end, we are confident that you will be able to answer the question “How can good information systems be designed and maintained?”

If you are a lecturer, we would like to support you by some supplementary materials based on the book which can be downloaded from <http://www.3lgm2.de/en/Publications/Materials/HealthInformationSystems.jsp>.”