**Book Review**

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# Principles of Health Interoperability HL7 and SNOMED

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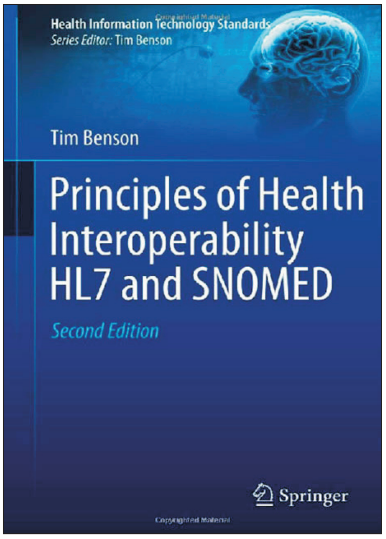


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In 1962, Thomas S. Kuhn wrote *The Structure of Scientific Revolutions*, in which he defined a paradigm as a belief which is generally accepted in a certain specific generation [1]. He stated that one paradigm gradually transitions to the next paradigm through revolutionary activities when a new scientific discovery is found. He called this transition a 'paradigm shift' [1].

Across the world, healthcare providers used to believe that paper-based medical records were necessary to provide healthcare. Now we are beginning to see a 'paradigm shift' in the field of health informatics as many healthcare organizations computerize patients' medical records. According to a report recently published by the European Union (EU), many hospitals and clinics are using electronic patient records or Electronic Health Records systems. Eighty-four percent of hospitals and 93% of clinics in the EU have adopted some kind of electronic patient record systems [2,3]. In the United States, many healthcare professionals have implemented Electronic Health Record systems [4,5]. The federal government even finances medical doctors when they use standardized Electronic Medical Records systems [6].

This paradigm shift from paper-based to digital electronic records brings many potential benefits. Among them, there are two critical advantages. One is the prevention of duplicative tests by sharing patient information among medical facilities, which would inevitably result in cost-saving. The other is improved quality of care. Providers can share patients' healthcare information with each other; therefore, they are able to make better healthcare decisions.

These benefits only exist where there are electronic patient or health records systems with the ability to exchange patients' information, known as interoperability. However,

it is impossible to construct interoperable systems without data standardization and common rules for communication. Thus, data standardization and the establishment of common communication rules are necessary for healthcare information exchanges. Scientists in the field of health informatics have been working to standardize these two areas. It is important for anyone involved in developing healthcare or hospital systems and decision-making in healthcare policy to understand these standardizations.

*Principles of Health Interoperability HL7 and SNOMED* by Tim Benson is one of the best known books synthesizing and summarizing these current standards and common rules for interoperability. Benson, a mechanical engineer and expert in healthcare computing in the UK, has a tremendous amount of experience with data standards, rules for data communication, and healthcare data computing, which he transfers to potential readers. Readers can easily understand what is necessary for healthcare information exchanges and what is going on with regard to interoperability.

This book is composed of three sections. Part I describes the principles of health interoperability. Specifically, Benson talks about the necessity and difficulty of healthcare communication, models in interoperability standards, and standards modeling notations, such as Unified Modeling Languages, and Extensible Markup Language. In addition, he also discusses privacy issues, such as data protection and cryptography. He ends with the introduction of standards development organizations, such as the Health Level 7 (HL7) International and Integrating the Healthcare Enterprise (IHE).

In part II, Benson introduces HL7 and its interchange formats, such as message syntax, segments, and data types. He presents the most updated data specification standards protocol, HL7 version 3. He also presents several standardized protocols for exchanging various clinical documents, such as Clinical Document Architecture (CDA), HL7 dynamic model, and IHE's Cross-Enterprise Document Sharing (XDS). Although this section includes various technical terminologies, it is clearly written. Therefore, readers can understand the contents of each chapter without any difficulty.

In part III, Benson explains the systematized nomenclature of human and veterinary medicine (SNOMED), several other clinical terminologies, as well as coding and disease or data classification schemes, including the International Classification of Diseases (ICD). Specifically, he talks about SNOMED's origin, history, expression, mapping, and relationship composition methods.

This book introduces various concepts, technical terminologies, and subjects that must be understood for successful interoperability between systems and for healthcare information exchanges. I would like to recommend this book to politicians, system developers, and researchers in healthcare. Thus, they can understand the circumstances under which data and records are shared within the scope of health informatics, specifically the interoperability of patients' clinical information.

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