Health and social care services face several challenges regarding the effective use of Information and Communications Technologies (ICT) and Information Systems (IS). On one hand, clinical-related software applications have strict (non-functional) requirements, such as reliability, performance, and even usability. On the other hand, healthcare professionals tend to be (positively) suspicious when it comes, for instance, to medical data accuracy, diagnosis support, or data security. Additionally, in practice, these professionals have to fulfill a reasonable set of standard procedures, and often consider the use of healthcare ICT/IS applications as extra-work, with little positive feedback. The Chief Medical Information Officer (CMIO) is still a rarely seen position within healthcare organisation human resources, and their CIOs undergo many difficulties to improve the adoption of healthcare information systems and technologies. Oppositely, the last decade witnessed a growing interest from patients in using ICT to acquire, store, and share personal health data, or even to use ICT to fulfill treatments, perform e-therapy, and be remotely monitored.

This handbook addresses many of these challenges, and presents not only purely technical solutions, but also socio-technical guidelines for an effective adoption and use of ICT and IS in health and social care environments. The book is organised into seven correlated sections: section 1 presents three chapters related to ambient assisted living software applications and architectures. Section 2 stresses the use of knowledge management and artificial intelligence techniques to support clinical and health-related management decisions. Section 3 contains two chapters that describe socio-technical and patient-oriented solutions for e-therapy contexts, while section 4 addresses electronic health records and the use of Enterprise Resource Planning (ERP) information systems for hospital management. Section 5 is about medical coding, ranging from the use and adaptation of SNOMED and HL7 standards to the proposal of new ontologies for pervasive systems. Section 6 presents three chapters on image processing and clinical data visualisation, where authors propose data mining techniques to improve radiology practice, image contour extraction for cardiology, and a distributed environment for cooperative drug research and molecular visualisation. Finally, section 7 describes three interesting mobile health software applications for monitoring patient’s health and physical activity.
The handbook is expected to support a professional audience of hospital managers, CMIOs, CIOs of healthcare organisations, ICT professionals, healthcare-related software houses, and academia (teachers, researchers, and students, mainly from post-graduate studies). It intends to illustrate both real-scenario working solutions and healthcare informatics proofs of concept that may dictate its widespread use in the near future.

We hope you find it useful. Enjoy your reading!

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