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Information Systems for the Management of Clinical, Administrative and Government Dat a of Clinical Imaging Laboratories

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Integrated network-based medical information systems are in continuous development an d evolution, furthered by the ongoing technology: the aim is to limit healthcare expend iture, while facing the increase of the demand of health services, as a result of the improvement of social-economic conditions, ageing of the population, and progress in medical knowledge and technologies. Today the discipline of OHealth Informaticso takes care of the design and the impleme ntation of information systems, to provide to the organization, processing, integration, storage , distribution and management, of the clinical and administrative data. Information and communication te chnology (ICT) guarantees a coordinate activity, by enhancing the efficiency of the healthcare global and local systems, as well as by improving the medical decision-making. The model of netw ork-centered information system, implemented in the past ten years at the CNR Institute of Clinica l Physiology, among the technical challenges of the project, faced the following issues: the defini tion of a system architecture able to conjugate a centric view, as required by data integration needs, with flexibility and modularity, in order to satisfy the different laboratory or healthcare environmen ts; the creation of local information systems devoted to the management of each single laboratory acti vity; the creation of a suitable network to exchange information both inside and outside the ho spital; the overcoming of safety and security issues in the treatment of healthcare data; the dat a processing for extracting knowledge from the archived data and for supporting the diagnostic/treatme nt process; the education of healthcare personnel; the adoption of standards for both storage and distribution of data. Imaging data sources (gamma cameras, PET, PET/CT, MRI, Digital Radiology) are functionally considered as part of local Information Systems, devoted to peculiar cli nical activity or specialization ("functional island"). Different models have been studied and applied to plan the integration and the operative protocols, by harmonizing different clinical practices, instrumental resources and human expertise. Significant images, integrated into the diagnostic rep orts for documentation of salient findings and results, feed, through a middleware channel, th e patient's clinical document in the central database; the original sets of images are available in suitable local archives, to improve the behavior and the efficiency of the whole system. Problems of safety and security of the clinical data have been faced too, by giving also directives for thei r storage and distribution which can easily harmonize with the clinical practice. Actual efforts ar e directed to the creation of standard, structured architecture of the clinical documents, by integrati ng and expanding all consolidated standards.

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