## Chapter 4.12
# Implementation of a Computerized System in an Oncology Unit

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## ABSTRACT

Information management is essential for health professionals in order to maintain a level of productivity for health care services management. This is significant when treating cancer patients. The main target of this study was to employ computers to enhance the daily practice of Oncology Unit (Sotiria Hospital, Athens, Greece). Accordingly, a computerized system was developed consisting of three modules: the EPR, the Image Archive, and the Lab Module. The EPR Module is a database application that stores clinical results, physician orders, and several administrative data. The Image Archive Module is used mainly for the reduction of images volume and the Lab Module stores information about the patient blood samples. These two modules interoperate through EPR Module under strict data security policies. Key physicians, biologists, and secretary personnel are involved in data entry and information management, while the system administrator is responsible for the system functioning. Improved health care, user satisfaction, and cost savings were the most important benefits gained with this system. The need of similar systems in oncology is crucial and could involve additional applications, such as quality of life (QoL) systems.

## INTRODUCTION

Health Informatics is one of the fastest growing areas of information and communication technology (ICT) (Eysenbach, 2000). It is a multifaceted field concerned with electronic patient records, image processing, computer aided diagnosis, research support, database archival, and hospital

management. Despite the remarkable barriers to adoption there are significant technical, legal, economical, professional, and cultural reasons for the evolution of such systems. In parallel, their use should promote and must certainly not be in conflict with the fundamental principles of medical ethics.

In the clinical work processes, the handling of huge amounts of information is a very important issue. Generally, health care information systems are used to guarantee quality and efficiency of the medical practice. The structured analysis and communication of clinical information are necessary in specific areas of health care (Asp & Petersen, 2003). This is extremely important in the case of caring for cancer patients. The cooperative care for cancer patients (declared as "Shared Care") requires complete, distributed, and summarized clinical records as cancer documentation (Blobel, 2000). Computer-based applications assist crossing specialty boundaries involving members of a multidisciplinary team in an oncology unit (Benghiat, Saunders, & Steele, 1999). Moreover, computer systems support collaboration between patients and health care providers in the area of symptom management (Goldsmith, McDermott & Safran, 2004).

One of the most widely discussed issues among health informatics professionals is the Electronic Patient Record (EPR), also referred to as Electronic Health Record (EHR). EPR is an indicator of the progress in health informatics domain and allows health providers, patients, and payers to interact more efficiently and in life-enhancing ways. It offers new methods of storing, manipulating, and communicating various types of medical information, and is thus characterized as more powerful and flexible compared to paper-based systems. EPR systems are not usually stand-alone, but enhance a variety of add-on components according to the specific requirements of each environment.

In the past, many patient record systems were developed to provide oncology staff with a key

*Figure 1. Unit's computerized system*
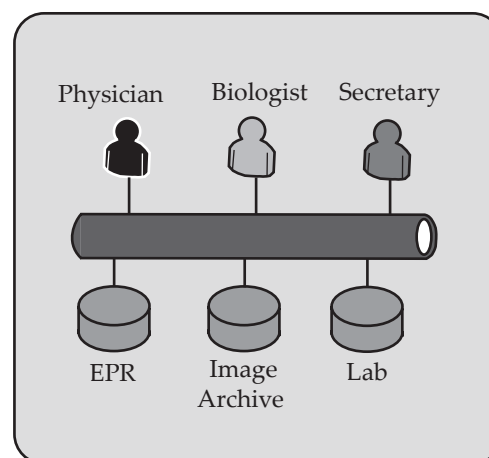


infrastructure requirement in information management that is essential to maintain efficient and effective health care (Chamorro, 2000).

In order to embody computers in daily clinical practise and provide qualitative health care to cancer patients, we have developed a computerized system. It consists of three modules: the EPR Module, the Image Archive Module, and the Lab Module. These modules are tightly integrated through the EPR Module that works as the main platform of the system. The system administrator is responsible for the secure system operation and for the users training as well. The system and the users involved are briefly presented in Figure 1.

## SYSTEM MODULES

### EPR Module

The core of this computerized system is the Electronic Patient Record Module (EPR Module). EPR Module is a relational database, which is accessed by the end users through a friendly interface. EPR data include clinical results (laboratory results, clinical outcome) and physician/patient care orders (orders, requisitions, consultations). It also includes administrative data such as admitting diagnosis, patient location, and follow-up appoint-

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