A Web-Based Family Health Record
Supporting Genealogical Clinical Anamnesis

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Abstract
We developed “Family Pathology”, a Web-based system that allows recording and evaluating the clinical data of a patient and his/her relatives. The goal is to enable a physician to identify not only an occurred disease and the prescribed medications, but also its possible recurrence within the patient’s family in order to highlight possible genealogical pathologies and risk factors.

Introduction
The great development of information technologies for health care is giving healthcare professionals a significant support in the accomplishment of their duties. In particular, electronic health records (EHR) provide a fundamental aid in collecting, orderly storing, and querying patient personal and clinical data1,2. However, generally EHR focus on individual patients without providing specific support to manage and analyze patient’s family data. To this end, we developed a Web-based “family” EHR system, called Family Pathology, whose main purpose is to help physicians in orderly recording clinical data of patients and their relatives, and easily consulting thereafter. Moreover, it aims to allow cross-analysis of similar data of patient’s relatives in order to detect possible common disorders among family members, and the therapies that have been administered.

Material and Methods
Family Pathology is based on two Microsoft Access relational databases, and has a graphic user interface implemented as Web pages by using Active Server Page technology, JavaScript and VBScript languages, and Hyper Text Markup Language. Standard Query Language was used to connect to the databases. One of them stores personal data of the Web system users, organized according to a three level structure of user access privileges based on user role (administrator, physician, or patient). In the other database, clinical information of patient and patient’s relatives is recorded and organized according to information type (e.g. allergies, vaccinations, blood tests, medical imaging tests, medications, surgical procedures) and patient family tree. Separation of personal and clinical data in two distinct databases complies with privacy and security requirements for healthcare data.

Results and Discussion
The developed Web system is organized in three sections, one for each considered user’s role, giving every role the specific required functions. Administrators can manage Web system users by recording new users, deleting recorded ones, or temporarily disabling their access to the system. Physicians can manage clinical information of patients and their relatives. Each doctor is aided in recording new data by developed tools that both recall similar values previously selected, like a drug or pathology name, and ensure that the same information is not inserted twice in the database. Patients can query the system to view their clinical data in Web pages specifically built to display the particular type of retrieved information. Moreover, they can compare their clinical information to similar data of their relatives.

The Web system graphic user interface was designed to ease better comprehension of displayed information. For example, graphs are shown to easily detect possible abnormalities, or periodic course, of numeric data. Data sorting according to different criteria is provided in order to highlight individual or familial recurrences of specific events.

Conclusions
The Family Pathology Web-based system that we developed allows the ordered collection query, analysis and comparison of all clinical data of an individual patient and his/her family members. Thus, it supports familial anamnesis, diagnosis, treatment definition, and epidemiological analysis of a patient and his/her relatives with the aim of identifying possible genealogical pathologies and risk factors.

References