Chapter 12
Overview of the Most Important Open Source Software:
Analysis of the Benefits of OpenMRS, OpenEMR, and VistA

Beatriz Sainz de Abajo
University of Valladolid, Spain

Agustín Llamas Ballestero
University of Valladolid, Spain

ABSTRACT

In this chapter, the authors review software that enables the proper management of EHR. The different types of software share the feature of being open source and offer the best opportunity in health care to developing countries—an overall integrated approach. The authors analyze the main free software programs (technical features, programming languages, places for introduction, etc.). Then they focus on the description and the comparison of the three most important open source software programs EHR (OpenMRS, OpenVistA, and OpenEMR) that are installed on two operating systems (Linux Ubuntu and Windows). Finally, the authors show the results of the various parameters measured in these systems after using different Web browsers. The results show us how the three main EHR applications work depending on which operating system is installed and which web browser is used.

INTRODUCTION

Computer applications are an effective tool to solve many problems, most notably the fast management of medical records. The use of computres for this kind of documents provides a faster search and organization of patient data (Sainz, et al., 2010).

New technology plays a relevant role in areas where pandemics are a major problem. In undeveloped countries, where economic resources are often slender, the budget for health issues is not enough and therefore the right management of such financial resources might save a large number of lives (Fraser, et al., 2006; Noor, et al., 2004; Stansfield, 2005; Tomasi, et al., 2004). From the binomial "lack of financial resources versus epi-

demics" comes the idea and the implementation of Electronic Health Record (EHR) as it solves the problems related to the information management in a fast, efficient way while the deployment budget is not too high (Diero, et al., 2006; Mamlin & Biondich, 2005). The advantages are to save work and to gain faster access to the information about a patient. Far from the disadvantages of deploying a system of medical records management with proprietary software (Biondich, et al., 2003; Fraser, et al., 2005), free software systems avoid the payment for expensive proprietary software licenses for installation, but the services provided by the program are not reduced in any case (Fraser, et al., 2004; Mamlin & Biondich, 2005).

Open source software provides effective support to the research that is carried out in underdeveloped countries, and allows the assessment of new diagnostic procedures, measures to prevent diseases, pandemics, as well as epidemiological and statistical analysis of public health by regions (Häyrinen, et al., 2008; Murray, et al., 2004; Siika, et al., 2005).

This chapter is organized as follows:

In section 2 we review a set of applications, which are all open sources as a common characteristic and enable the proper management of EHR. We briefly analysis the most prominent free software on the market by services (number of managed patients, number of sites that are used and heterogeneity of the clinics, higher level software development, functionalities) or by technical characteristics (technology of the core, programming language that implements the application interface, language of interaction with database).

In sections 3, 4, and 5, we focus on the description of the three most important applications of open source worldwide: OpenMRS, OpenEMR, and VistA. Their importance lies mainly in technological development, rapid evolution, and efficient implementation. Regarding the medical improvements that are introduced, we may highlight the number of modules that allows functionalities both

specific and general, the large number of patients they manage, etc. These applications are mostly used in hospitals and clinics around the world and their current development process suggests that this trend will continue in the foreseeable future.

In section 6, we compare OpenMRS, Vista, and OpenEMR systems according to their historical and technological development and the current state of software.

In section 7, we make a comparison among these three main types of EHR software solution (OpenMRS, OpenVistA, and OpenEMR) installed on two operating systems (Linux Ubuntu and Windows).

Finally, in section 8, we show the conclusions of the chapter.

CHARACTERISTICS OF SOME OPEN SOURCE SOFTWARE

Electronic Health Records (EHR) are applications that came from the use of computing for medical records. There is no universal, compatible format to date. The large amount of technological, cultural—or even philosophical—variants stopped the imposition of a standard so far. In order to support this type of EHR, integrated systems should be considered. These systems must be stable, modular, configurable, versatile, safe, and comprehensive. This second section shows some of the most important Open Source Software and their characteristics.

CHITS

Community Health Information Tracking System (CHITS) is prestigious open source software for medical records management designed for local health centers in the Philippines. It has been developed and managed by the National Telehealth Centre in Manila.

This application generates reports in a standard format weekly and monthly. It can store patient

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