



## Editorial

# Review of Coding Programs in Iran

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Medical information plays a pivotal role in collecting health information which can be used to determine the main health problems at national and international levels and to change main health policies. Patient management is impossible without having accurate information regarding prevention, treatment and recovery of diseases. Thus, in this issue of International Electronic Journal of Medicine (IEJM), a brief review on coding systems in Iran is published.

Daily increase in the number of hospitalized patients and the high volume of medical information have highlighted the need for information systems to store, maintain, retrieve and analyze information of the patients' records. These systems are potentially helpful in data summarizing and categorizing. Coding software can facilitate these processes and reduce the possibility of errors, costs and time consumption. Still, it seems that currently used software need to be improved. Here we will review the most common coding applications used in Iran.

Advances in computer technology have improved computer applications. Nowadays, many statistical organizations are either doing research on automated coding or using some type of automated or computer assisted coding. Coding is one of the main activities in censuses or surveys such as census of population, census of businesses, labour force surveys and other socio-economic surveys. Manual coding has been burdensome in surveys as well as censuses with its impact on timeliness and quality of data (1). Benefits of coding application include: increased accuracy/quality, increased productivity, increased timeliness of bills, decreased rejected bills and elimination of repetitive coding tasks (2).

Generally, coding software systems are included in the set of hospital applications. This generally is titled hospital information systems or comprehensive hospital systems. (1, 2). Here, we will briefly review the most common coding software in Iran.

**Rayavaran Software:** This software works in internal networks and uses ICD 10 for diagnosis. Codes stored by Rayavaran users can be accessed using Microsoft Access. It requires Microsoft Windows 97 or XP for installation. This software can be used for all operations from admission to discharge of patients.



Since this software is designed to cover all medical and clinical affairs of a hospital, it covers all financial and administrative activities. According to hospital demands, different technologies such as XML, XSL, HTML, DHTML, Jscript, VBScript, Access Reports can be used [2].

Different parts of the comprehensive information system of RAYAVARAN hospital management (HIS) include:

- Comprehensive management system of admission/handling/permission
- Medical diagnosis registration system using the international code of disease (ICD)
- ICD code intelligence search system by conceptual search tools for diseases
- Transformation of ICD code to disease specifications
- Possibility to separate adventitious, congenital, genetic, iatrogenic, idiopathic, assassinations, incident diseases and etc.
- Intensity of disease (acute, chronic, sub-acute, exacerbation of chronic disease)
- Breakdown of primary, differential and final diagnosis
- Categorizing medical diagnosis in terms of time of diagnosis, diagnosis for each patient and time of diagnosis registration etc.

**ADS-9 software:** This software is designed to enter information of admission forms and permission summaries of inpatients. The required information includes: general information of patients, admission and discharge dates, hospitalization departments, physicians and surgeons, death diagnosis and causes for patient death. The most important characteristic of this software is that the user can select the code of the disease, its major cause and death background of patients according to ICD. Also, the outputs of this software can be shared with hospital managements, physicians and researchers. These reports can be collected from around the country by complementary software entitled Hospital Data Collection System (staff version ADS9). This software is designed to integrate information of hospital at hospital level and upper levels such as university, province and nationwide. This program uses two sets of information. The first set is fixed information that is prepared by executive staff and is constant nationwide and includes hospitals, provinces, insurance companies, specialties and ICD tables. The second set is information provided by current hospital programs and transferring them to this program. This program records information in its database and reports can be extracted from these data.

This software is provided at the hospital level with C language and Btrieve database and operated under DOS. At upper levels, the program is provided under windows, Visual Basic languages and Access database.

C programming language is a language that provides high information security and the majority of security programs are written in this format. However, the most important defect of this programming language is that it does not support complex and high volume graphical items.

ADS-9 software is not much user-friendly for this reason compared to programs under windows which cover graphical items.



**Software facilities:** Identity characteristics of patients, admission and discharge date, hospitalization departments, physician and surgeons, death diagnosis and cause of dead from ICD-10, type of insurance and inpatient center code and possibility to develop statistics. The name of patient is mentioned in Persian and English and there is explanation for each patient in Persian. Table -1 shows the characteristics of the applications discussed above.

**Table -1: Characteristics of the discussed applications**

	Speed E Coder	Flash Code	ADS-9	Rayavaran
Numbered list	√	√	√	√
Alphabetic list	√	√		
Type of database	ICD 9	ICD 9	ICD 10	ICD 10
Coding the surgery	-	HCPCS	9 CM	9 CM
External causes	E codes	E codes	Chapter 20- ICD 10	Chapter 20- ICD 10
Appendix	Neoplasms and categorizing drugs	Neoplasms and categorizing drugs	-	-
Other resources	DRG , CPT	DRG, CPT	-	-
Management options	√	√	-	-
Improving disease	√	√	√	√
Number of dead patient for each doctor	√	√	√	-
Total costs	√	√	-	√
Surgery costs	√	√	-	√
Admission and permission accounting	√	√	√	√
Connection to health sectors	√	√		√
User freindly	√	√		√
Backup	√	√	√	√
Upgrading database	√	√		
Help	√	√		√
FAQ	√			
Advance and parallel search	√	√		√
Sharing data	√	√		√
Controlled access	√	√		√



Coding programs in Iran are only used in disease coding and surgeries. These programs are mostly used for researches and providing statistics. It is important to introduce these programs to physicians, hospital managers and other providers. Also, we suggest that the budget of IT should be increased so these applications can be used.

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**Conflicts of interests:**

The authors declared that they have no conflicts of interest

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