A MICROCOMPUTER E-BOOK
A Database System For Patient Care Experience Using A Personalized Data Dictionary

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ABSTRACT
This paper is a description of a computerized E-book system for maintaining a record of patient care experience. It uses a microcomputer and a specially-written file management program. Its features include a dictionary that is developed by the user to permit easy data entry and retrieval while maintaining compatibility with standard reporting codes. The author of this paper has used this system to maintain a list of more than 3,500 patient contacts during a three year family practice residency at the University of Missouri-Columbia and has found it useful in his education.

Introduction
Recording patient contacts and experiences can be a useful project for medical students and residents in training. Such records are necessary because they can direct individual study efforts and reveal significant gaps in the educational experience. Even more important, these records document the training experience and later can be used when the resident applies for board certification and hospital privileges. The exact nature of the recorded information might vary with the user's educational level and specialty but generally would include information about the demographic characteristics of the patients seen, their diagnoses and the procedures performed. This collection of data is termed an E-book.

Several manual systems exist for maintaining such records. Residents in family practice, surgery, and anesthesiology use cards for each patient seen containing the necessary information, usually bound in a loose-leaf notebook. However, such a system is time-consuming to maintain and difficult to access. A similar criticism may be raised against the system known as "My Practice in My Pocket." Many training programs have computer systems to keep such records but these systems are dependent upon data entry operators to enter the information, removing the student from the opportunity to interact directly with a potentially useful tool. In addition, such systems are frequently unfriendly to the novice, making the information difficult to obtain by the student. Finally, the information is under control of the institution rather than the student user. Therefore, such systems frequently fail.

Hardware
The system described here was designed to run on the IBM Personal Computer, using 64K memory and two floppy disk drives, with a dot matrix printer.

Program
The program consists of a series of overlays written in interpreted PC Basic running under PC DOS. This language allows for easy programming and future changes to the system.

Data
Two types of file formats are used, one for the patient contact data and the other for dictionary codes. The patient information, consisting of patient name, hospital or clinic record number, demographic data, site of the contact, dates of the contacts, list of diagnoses and procedures, and free text comments, is stored in sequential access disk files. One episode of patient contact forms a record in these files and each item of information that describes the contact is a field within that record. This set of records then becomes the data base of patient care experience for the system user.

The dictionary information is stored in a random access disk file unique for each user. This file contains a section for program initialization information and a section for each of the patient information items (fields) that are coded by the dictionary part of the program before being entered into the contact records in the sequential files. The coding allows more efficient access and reporting of the data for the site of contact, diagnosis and procedure fields.

Use
A series of menus directs the user through the program functions. On input, patient data is carefully screened for valid information, e.g. dates, names, ages, for each field. Information entered into coded fields may be typed in string form or the code
numbers may be entered directly. Those strings that are already in the dictionary are coded, while unrecognized items may be added to the dictionary at any time. The patient data files contain only the code number from the dictionary but the meaning of the code number is always displayed for the user. Once data are entered, they may be merged with the existing patient data base, reviewed, or edited.

Once established, the patient data base may be reported in one of two forms. In the first, patient records may be selected by field, sorted if desired and then displayed for review on the screen or printer. In the second, patient records in either the entire main data collection or in a file selected by the first method are tabulated by the program to yield counts of the values in each field. These summary tabulations are then printed.

Dictionary information can also be displayed and a report on the status of the dictionary -- last addition, last sorting operation, and the number of entries in each section -- is always available. The dictionary can be printed or displayed in part or in its entirety. Changes in the entries or codes may be made at any time. Also, the code numbers of more standard systems such as the International Classification of Health Problems in Primary Care.

Conclusion

The E-Book system described here is a potentially valuable and efficient tool for both learners and educators in medicine.

Reference

1. Arnon, Amos. My Practice in My Pocket. Medical University of South Carolina, Department of Community and Family Medicine, 1978.