

REAL-TIME EVENT CHARTING IN AN ELECTRONIC FLOWSHEET

FIELD OF THE INVENTION

This invention relates to information display systems which facilitate data entry of patient information stored in a database of a medical information system. More particularly, the invention is related to a medical information system which facilitates the task of charting a patient record, that is, the task of accessing, entry, and/or storage of patient data in a patient data record.

BACKGROUND OF THE INVENTION

Medical information systems are commonly used by health care facilities for storing patient information in electronic records that replace, for example, paper-based records. An example of such a medical information system is the HP CareVue 9000 system available from the Hewlett-Packard Company of Palo Alto, Calif.

While such systems provide highly satisfactory operation and have many advantages, a problem with conventional medical information systems is the difficulty with which a clinician may access and enter real-time patient data into a patient data record stored in the system. A portion of the patient data record is commonly called a "chart" and the task of accessing, entry, and/or storage of patient data associated with an care event or patient condition is considered to be "charting". Charting that is performed contemporaneously with the respective event will, for the purposes of this description, be considered "real-time charting."

A particular type of patient data record is known as a flowsheet. Flowsheets are records used by care givers to record vital signs, interventions, treatments, and activities pertaining to a patient for a given time interval. Flowsheets may exist in paper or electronic formats; both of the formats are often utilized in a health care facility. Flowsheets can contain various sections that organize patient data in either a tabular format (using a row and column arrangement) or in a graphical format. Most electronic flowsheets that are configured to allow a user to access or enter data stored in a data record are textually-based.

Data entry in a tabular electronic flowsheet is typically performed by locating and selecting a desired event type (typically organized as one of series of rows) and a time to be associated with the event type (typically organized as one of a series of columns). Data entry is performed by either a pointing device or keystrokes followed by entry of the appropriate values that represent the information to be recorded for that event. A sequence of pointing and clicking on a row label may, in some instances, provide access to more detailed information about the row (e.g., when the row was added to the flowsheet, the complete name and dose of a drug, etc.)

Data entry for certain events (e.g., events that occur in clinical environments) may be performed at periodic intervals and need not be recorded in real time. However, there is a need for data entry for certain events or conditions that are affected by the passage of time, such as surgical procedures in an operating room. The latter type of data should be charted in real time. However, due to the responsibilities of the care giver, real-time charting is difficult because the hands and mind of the care giver are usually occupied with other tasks.

The HP CareVue 9000 aids real-time entry of data by use of a charting dialog that is preconfigured to identify the current time. A charting dialog is provided, however, only if the user has already selected an appropriate column on the flowsheet; that is, the column that represents the current time. This procedure forces the user to first ensure that the correct column is displayed, then locate the intersection of the displayed column and the desired row, and then operate the system to obtain the charting dialog. These steps must be undertaken before real-time data entry can be performed.

Furthermore, there is a problem relating to the entry of temporary data which may subsequently be considered unnecessary and therefore be subject to editing or deletion. Users accustomed to a paper-based flowsheet traditionally have adopted a method of entry of temporary notations on an erasable or detachable medium. Paper flowsheets, when complete, are required to be recorded in ink. A user wishing to make such temporary notation will necessarily revise or recopy a paper flowsheet to remove or alter any unwanted notations. Such a practice not only creates clutter but also additional labor for the user. Systems that provide electronic flowsheets generally do not allow a user to leave any temporary notations on the flowsheet without also leaving an audit trail. Accordingly, with respect to the entry of temporary data on either a paper-based or electronic flowsheet, the conventional approaches are regarded as difficult or impractical.

SUMMARY OF THE INVENTION

One aspect of the present invention provides a method and apparatus for real-time charting of data to a patient data record in a data base stored in a medical information system.

Another aspect of the present invention provides a computer display system and method wherein a representation of a flowsheet is obtained from the patient data record and is displayed. This representation includes one or more data elements displayed in the flowsheet. The user positions a cursor on the display using an input unit for the computer and signals the computer of a desired data element. Preferably, the data element is associated with patient data such as a care event that references a patient care procedure or data indicative of the patient's condition. The computer, in response to a signal from the input unit, determines the current date and time and selects the desired data element. If the data element is not present for selection, the computer creates the data element. The computer then accesses the data element and associates the data element with the current date and time. The accessed data element is then modified to reflect the associated current date and time and any data entered by the user for the data element. The modified data element is stored in the data record. As a result, data records may be easily and rapidly accessed and updated to include data elements that are associated with the current date and time. Real time charting of the flowsheet is thereby enabled.

An embodiment of a computer display system constructed in accordance with the invention includes a database in which there is a file for each patient comprising a plurality of data records. The system also includes a processor which is coupled to a display and which controls display information of the display. A memory is coupled to the processor for storing display and other data. An input unit, which may include a keyboard or a cursor control device, is also coupled to the processor. The processor performs arithmetic and logic operations as may be directed by a computer program, accesses the memory to obtain display data rep-