(MAR). Typically, a single nurse is responsible for many patients throughout a shift, and is constantly receiving, discharging, and transferring patients. Accordingly, medical records may lack the specificity required for a pharmacist to fully verify that there are no undesired drug interactions.

Accordingly, there is a need to provide a system for health care professionals to view an accurate representation of a patient's infusion map in real time. Likewise, there is a need to provide a system that aids clinicians in accurately recording the patient's infusion map in his or her medical record. Likewise, there is a need to provide a system that models infusion setups to aid decision making and execution by clinicians to reduce medication errors and save time.

SUMMARY

A patient information software system with infusion map addresses these needs. The system provides an accurate and up-to-date representation of each patient's infusion map, and allows clinicians to easily modify the presented map. The system further updates the patient's electronic medical record to reflect changes made to the infusion map, thus assisting the clinicians with their record-keeping requirements. Further, the present system aids clinicians in verifying the infusion setup before administering a drug to a patient, thus helping to reduce errors and save time.

In one aspect there is provided a patient information software system comprising: a memory located in a computerized device storing at least infusion mapping instructions; a processor located in the computerized device that, when executing the infusion mapping instructions, performs operations including: a displaying function that displays at least a portion of an electronic medical record associated with a patient , and graphically displays the electronic medical record as an infusion map interactively illustrating associated infusion system components; a diagramming function that receives the electronic medical record and generates the infusion map showing all intravenous drugs being administered to the patient, wherein, for each of the drugs, the infusion map further illustrating a route of administration for the drug; a building function that builds a graphical representation

of the infusion map using the display device by interactively establishing links between the drug and the associated infusion system components; an order administering function that allows a user to alter the infusion map having the drug and the associated infusion system components using the computerized device; and a record updating function of automatically updating the electronic medical record to correspond to the altered infusion map, and automatically recording a history of the updated electronic medical record in the memory based on the altered infusion map using the computerized device.

In another aspect, there is provided infusion mapping process comprising: retrieving and displaying at least a portion of an electronic medical record associated with a patient on a display device of a computerized device; graphically displaying the electronic medical record as an infusion map interactively illustrating associated infusion system components on the display device generating the infusion map, using the display device, schematically showing all intravenous drugs being administered to the patient based on the retrieved electronic medical record, wherein for each of the drugs the schematic diagram illustrates a route of administration for the drug; building a graphical representation of the infusion map using the display device by interactively establishing links between the drug and the associated infusion system components; receiving a new order that alters the infusion map having the drug and the associated infusion system components; and automatically updating said electronic medical record to correspond to the altered infusion map, and automatically recording a history of the updated electronic medical record based on the altered infusion map using the computerized device.

In still another aspect, there is provided a hospital information system comprising: an electronic medical record server maintaining a plurality of patient electronic medical records; a display device of a computerized device that displays at least a portion of the plurality of patient electronic medical records associated with a patient, and graphically displaying the plurality of patient electronic medical records as an infusion map interactively illustrating associated infusion system components; an infusion mapping device in communication with said electronic medical record server, said infusion mapping device performing operations including: retrieving at

least a portion of one or more of said plurality of patient electronic medical records, including a portion specifying intravenous drugs being administered to the patient and hospital equipment associated with the administration of the drugs; for each of said one or more retrieved medical records, displaying the infusion map that schematically represents said portion specifying intravenous drugs being administered and the associated infusion system components; building a graphical representation of the infusion map using the display device of the computerized device by interactively establishing links between the drug and the associated infusion system components; modifying said infusion map having the drug and the associated infusion system components using the computerized device; automatically updating said electronic medical record based on said modified infusion map using the computerized device; and automatically saving said updated electronic medical record to said electronic medical record server based on said modified infusion map using the computerized device.

~~In a first aspect,~~ Herein disclosed is a patient information software system that includes a memory storing at least infusion mapping instructions, and a processor that executes the stored instructions. When the processor executes the infusion mapping instructions, the infusion map system performs a displaying function that displays at least a portion of an electronic medical record associated with a patient, and a diagramming function that receives the electronic medical record and generates an infusion map showing all intravenous drugs being administered to the patient. For each of the drugs, the infusion map further illustrates a route of administration for the drug. An order administering function performed by the system allows a user to alter the infusion map, and a record updating function of annotating the electronic medical record to correspond to the altered infusion map.

~~In another aspect,~~ Also disclosed is an infusion mapping process includes retrieving and displaying at least a portion of an electronic medical record associated with a patient, and generating an infusion map schematically showing all intravenous drugs being administered to the patient based on the retrieved electronic medical record. For each of the drugs, the schematic diagram illustrates a route of administration for the drug. The process further includes receiving a new order that alters the infusion map, and updating the electronic medical record to correspond to the altered infusion map.

~~In still another aspect,~~There is also provided a hospital information system that includes an electronic medical record server maintaining a plurality of patient electronic medical records, and an infusion mapping device in communication with the electronic medical record server. The infusion mapping device performs operations including retrieving at least a portion of one or more of the plurality of patient electronic medical records, including a portion specifying intravenous drugs being administered to the patient and hospital equipment associated with the administration of the drugs. For each of the one or more retrieved medical records, the infusion mapping device displays an infusion map that schematically represents the portion of the medical record specifying intravenous drugs being administered and associated hospital equipment. The device modifies the infusion map and updates the electronic medical record based on the modified infusion map. Finally, the device saves the updated electronic medical record to the electronic medical record server.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a schematic diagram of a patient information software system with infusion map; and

FIGs. 2-46 show example screenshots of the patient information software system with infusion map of FIG. 1.

DETAILED DESCRIPTION

A patient information software system with infusion map is generally designated 10. The system 10 includes a computerized device 12, having at least a memory 14, a processor 16, an input device 18, a network communication interface

Claims:

1. A patient information software system ~~[10]~~ comprising:

a memory ~~[14]~~ located in a computerized device storing at least infusion mapping instructions;

a processor ~~[16]~~ located in the computerized device that, when executing the infusion mapping instructions, performs operations including:

a displaying function that displays at least a portion of an electronic medical record ~~[30, 32, 34]~~ associated with a patient , and graphically displays the electronic medical record as an infusion map interactively illustrating associated infusion system components;

a diagramming function that receives the electronic medical record and generates ~~an~~ the infusion map ~~[38]~~ showing all intravenous drugs being administered to the patient, wherein, for each of the drugs, the infusion map further ~~illustrates~~ illustrating a route of administration for the drug;

a building function that builds a graphical representation of the infusion map using the display device by interactively establishing links between the drug and the associated infusion system components;

an order administering function that allows a user to alter the infusion map ~~[38]~~ having the drug and the associated infusion system components using the computerized device; and

a record updating function of ~~annotating~~ automatically updating the electronic medical record to correspond to the altered infusion map, and automatically recording a history of the updated electronic medical record in the memory based on the altered infusion map using the computerized device.

2. The patient information software system of claim 1, wherein said infusion map ~~[38]~~ schematically represents a list of drugs being administered to the patient intravenously and, for each of the drugs being administered, stores at least a catheter port at which the drug is entering the patient's body and an indication of tubing connecting the drug to the catheter port.

3. The patient information software system of claim 1, wherein said order administration function further comprises:

receiving order information for a new order ~~[32]~~ that would alter the infusion map ~~[38]~~;

determining compatibility of the new order with the infusion map ~~[38]~~; and

updating the infusion map ~~[38]~~ as specified in the new order.

4. The patient information software system of claim 3, wherein said determining compatibility comprises:

comparing the received order information ~~[32]~~ with patient allergy information stored in the electronic medical record associated with the patient;

determining whether there are any physical incompatibilities between the received order information and the infusion map ~~[38]~~; and

checking for mass flow balance errors in the received order information ~~[32]~~.

5. The patient information software system of claim 3, wherein said updating comprises automatically generating one or more changes to the infusion map ~~[38]~~ based on the received order information ~~[32]~~.

6. The patient information software system of claim 3, wherein said updating comprises:

generating a list ~~[74, 76, 78]~~ of one or more components for use with the new order information ~~[32]~~;

presenting said list ~~[74, 76, 78]~~ of one or more components to a user;

receiving a user selection from among said one or more listed components; and

updating said infusion map ~~[38]~~ to include said selected component.

7. The patient information software system of claim 3, wherein said updating comprises:

receiving bar code information from a code reader ~~[18]~~;

comparing said received bar code information with an equipment database to determine which piece of equipment was scanned; and

updating said infusion map ~~[38]~~ to include said scanned equipment.

8. An infusion mapping process comprising:

retrieving and displaying at least a portion of an electronic medical record ~~[30, 32, 34]~~ associated with a patient on a display device of a computerized device;

graphically displaying the electronic medical record as an infusion map interactively illustrating associated infusion system components on the display device

generating ~~an~~ the infusion map ~~[38]~~, using the display device, schematically showing all intravenous drugs being administered to the patient based on the retrieved electronic medical record, wherein for each of the drugs the schematic diagram illustrates a route of administration for the drug;

building a graphical representation of the infusion map using the display device by interactively establishing links between the drug and the associated infusion system components;

receiving a new order ~~[32]~~ that alters the infusion map ~~[38]~~ having the drug and the associated infusion system components; and

automatically updating said electronic medical record to correspond to the altered infusion map, and automatically recording a history of the updated electronic medical record based on the altered infusion map using the computerized device.

9. The infusion mapping process of claim 8, further comprising checking compatibility of said received new order information ~~[32]~~ with said infusion map ~~[38]~~, wherein said update is performed if it is determined that there is no

compatibility problem between said received new order information ~~[32]~~ and said infusion map ~~[32]~~.

10. The infusion mapping process of claim 8, wherein, for each of the drugs being administered, said infusion map ~~[38]~~ stores information regarding at least a catheter port at which the drug is entering the patient's body and associated equipment connecting the drug to the catheter port

11. The infusion mapping process of claim 10, wherein said new order ~~[32]~~ includes new order information specifying a drug to be administered to the patient and equipment for connecting the drug to the patient, and wherein said updating comprises adding equipment to the infusion map based on said received new order information.

12. The infusion mapping process of claim 10, wherein said new order ~~[32]~~ includes new order information specifying a drug to be administered to the patient, and wherein said updating comprises:

creating a list of equipment ~~[74, 76, 78]~~;

receiving user input selecting one or more pieces of equipment from said list; and

adding said one or more selected pieces of equipment to said infusion map.

13. The infusion mapping process of claim 10, wherein said updating comprises:

maintaining a database storing a plurality of pieces of equipment and, for each said piece of equipment, associating an identifying code therewith;

receiving, input data from a code reader ~~[18]~~;

comparing the received data with said plurality of identifying codes stored in said database;

selecting a piece of equipment on the basis of said received data matching said identifying code associated therewith; and

adding said selected piece of equipment to said infusion map ~~[38]~~.

14. The infusion mapping process of claim 10, wherein said new order ~~[32]~~ includes new order information specifying a drug to be discontinued, and wherein said updating comprises deleting said drug and said associated equipment from said infusion map ~~[38]~~.

15. The infusion mapping process of claim 8, wherein said retrieving retrieves said at least a portion of the electronic medical record ~~[30, 32, 34]~~ associated with the patient from a hospital information system.

16. A hospital information system ~~[10]~~ comprising:

an electronic medical record server ~~[24]~~ maintaining a plurality of patient electronic medical records;

a display device of a computerized device that displays at least a portion of the plurality of patient electronic medical records associated with a patient, and graphically displaying the plurality of patient electronic medical records as an infusion map interactively illustrating associated infusion system components;

an infusion mapping device ~~[12]~~ in communication with said electronic medical record server, said infusion mapping device performing operations including:

retrieving at least a portion of one or more of said plurality of patient electronic medical records ~~[30, 32, 34]~~, including a portion specifying intravenous drugs being administered to the patient and hospital equipment associated with the administration of the drugs;

for each of said one or more retrieved medical records, displaying ~~an~~ the infusion map ~~[38]~~ that schematically represents said portion specifying intravenous drugs being administered and ~~associated hospital equipment~~the associated infusion system components;

building a graphical representation of the infusion map using the display device of the computerized device by interactively establishing links between the drug and the associated infusion system components;

modifying said infusion map ~~[38]~~ having the drug and the associated infusion system components using the computerized device;

automatically updating said electronic medical record based on said modified infusion map using the computerized device; and

automatically saving said updated electronic medical record to said electronic medical record server based on said modified infusion map using the computerized device.

17. The hospital information system of claim 16, wherein access to each of said patient electronic medical records stored on said electronic medical record server ~~[24]~~ is permitted for a particular set of one or more user names,

wherein infusion mapping further performs operations of receiving at least a user name and password, and

wherein said retrieving retrieves only those medical records which the received username is permitted to access.

18. The hospital information system of claim 16, wherein said infusion mapping device ~~[12]~~ communicates with said electronic medical record server using a wireless communication interface ~~[20]~~.

19. The hospital information system of claim 16, wherein infusion mapping further performs operations of receiving an order ~~[32]~~, said order including at least information regarding a drug to be administered to a patient, and wherein said modifying modifies said infusion map ~~[38]~~ based on said received order.

20. The hospital information system of claim 16, wherein said infusion mapping device further facilitates access to training and instructional content ~~[112]~~.