

## INTERACTIVE MEDICATION ORDERING SYSTEM

### BACKGROUND OF THE INVENTION

#### 1. Technical Field

The present invention relates to a medication ordering system and more particularly to such a system that is both flexible and interactive and designed for rapid drug and prescription order entry and which has integrated into the system a resource and communication network providing the user with drug, patient, and prescribing information.

#### 2. Discussion

The process of ordering or prescribing drugs is critically important in the practice of medicine. The choice of drugs requires the physician to draw upon a huge base of information regarding the patient's condition and medical history, knowledge of drugs and pharmacology, and clinical and therapeutic data. The physician's choice of drugs greatly influences the patient's clinical course as well as the overall cost of treatment.

Traditionally, physicians order drugs by writing an order in a chart for hospitalized patients or by writing a drug prescription on a prescription blank for outpatients. The physician typically relies on personal knowledge supplemented by available reference sources (e.g., books, journals, professional consultations, etc.) together with an in depth understanding of the patient's medical condition when formulating a therapeutic drug regimen.

Current computer systems show promise in improving the process of ordering and prescribing drugs. For example, a drug order or prescription could be entered directly into a computer and transmitted electronically thereby reducing the time from when the order is written to when it is received in the pharmacy. Numerous systems have been developed, that focus on order entry.

Generally, there are two types of hospital pharmacy computer systems. The first type is a "stand-alone" system. This is an independent pharmacy computer system that regulates all of the operational tasks such as medication dispensing, billing, inventory, etc. Typically, two separate hospital departments interface the "stand-alone" system. One department oversees patient admissions, transfers and discharges (ADT) and the other department accepts billing and financial transactions.

The second type of pharmacy computer system, the "total hospital system", is functionally similar to the "stand-alone" system but has been incorporated into a computer network that interconnects all departments of the hospital. Each department (e.g., laboratory, radiology, pharmacy, medical records) is accessible from computers located throughout the hospital.

With "stand-alone" systems medication order processing begins with the delivery of written or faxed orders to the pharmacy. Inefficiencies exist such as unnecessary paperwork and task duplication in the handling and delivery process. Orders are then entered into the computer by pharmacists or technicians. Furthermore, problems with medication orders are not quickly resolved because of delays involved from when the order was written, received by the pharmacy, and recognized by the pharmacist.

"Total hospital systems" attempt to improve the efficiency of the ordering process by transferring the responsibility for entering orders into the computer system to the prescriber (i.e., physicians). For example, these orders may include medications, laboratory tests, diets, etc. In these systems, the

prescriber enters the orders directly from computer workstations. The result is a reduction in paperwork and task duplication. However, a number of problems remain. Computer order entry inefficiencies exist due to slow and cumbersome medication ordering pathways. For example, it is customary for pharmacy programs in "total hospital" systems as well as "stand-alone" systems to have rigid order entry pathways requiring numerous steps to accomplish simple tasks.

These pathways generally are of a fixed format entry style forcing the prescriber to follow specific steps (i.e., selecting in sequence the drug, dose, route and frequency) when entering medication orders. Different routes of administration for the same drug must be entered as separate orders. For example, an order for "Phenergan 25 mg PO/IM q6h prn" would require two separate order entries, one for selecting the oral (PO) tablet and the other for selecting the intramuscularly injected (IM) preparation. In addition, more complex orders (e.g., corticosteroid tapers) require extensive entry steps by the prescriber.

Furthermore, existing computerized medication order entry systems do not solve other inefficiencies in the order entry process. For example, relevant patient medication information is often not readily available to the prescriber in a complete, comprehensive and organized format. This includes lists of current and past medications, height, weight, and age, and information on drug allergies and adverse drug reactions. This information is important when making medication choices. Similarly, present systems often do not keep the prescriber informed of formulary information and drug availability, and of policies regarding hospital prescribing guidelines and restrictions. For example, prescribing information with respect to clinical practice guidelines, Medicaid restrictions, multi-disciplinary action plans (MAP's), clinical practice standards or clinical pathways all need to be communicated to the prescriber in an effective manner. Additional shortcomings in existing systems include the need for assistance in calculating drug doses using pharmacokinetic data, and the need for providing the prescriber with updated laboratory data relevant to the use and dosing of certain medications.

Because of these limitations in existing pharmacy computer systems, it would be desirable to provide a computerized medication order entry system that overcomes these inefficiencies and shortcomings. In particular, it would be desirable for such a system to be less rigid and easier to use. Ideally the system would mimic current and customary styles of medication ordering and adapt computerized pathways to process these orders. Furthermore, it would be desirable to provide a system that makes available to the prescriber a variety of information regarding the patient's medication history, allergies, drug interactions, recommended doses, etc. This desired system should alert the prescriber to drug interactions and adverse drug reactions to safeguard against untoward outcomes. This system would also communicate and enforce prescribing restrictions and guidelines as well as provide drug cost information. This desired system would also assist the prescriber in appropriate drug and dose selections based on individual patient information, pharmacokinetic evaluations and laboratory results.

### SUMMARY OF THE INVENTION

The present invention is a system and method for ordering or prescribing medications for a patient. The system includes an improved process for allowing the prescriber to identify