Centricity Enterprise
Pharmacy Tools

Extending medication management beyond the walls of the pharmacy.

Few things in healthcare are more important than patient safety. Patients have entrusted providers, nurses and pharmacists with their lives through managing medications. Now, more than ever these clinicians must be perfectly in synch to provide safe, effective, quality care.
Patient medication safety begins when the provider generates the orders. It continues as the pharmacist verifies medication orders and dispenses those medications, and the nurse administers the medication. With a 25-year history of helping to enhance patient safety, and to deliver efficiency and cost effectiveness through its integrated closed-loop medication management system, Centricity® Enterprise Orders and Pharmacy integrates pharmacists, providers, and nurses – from order entry to dispensing to charting.

Medication Order Entry – the first critical step
Once an order is entered, any gaps or ambiguities in transmitting it to the responsible clinician can cause delays or errors. The integrated Centricity Enterprise solution allows orders to flow efficiently across the transition points of care, increasing efficiency to help improve the safety and quality of patient care. Enterprise Orders and Pharmacy automation streamlines workflow by reducing repetitive and time-consuming tasks and integrating workflows across the healthcare continuum. This robust and extensible ordering system supports all types of orders. It provides checks and balances that preserve the “Seven Rights” of medication administration to help ensure accuracy at every step: the right patient, right medication, right dose, right route, right time, right reason, and right documentation.
Searching for Medications
Enterprise Orders and Pharmacy uses the First DataBank™ (FDB) database extensively to support the medication management process. FDB’s new Multiple Access Points™ (MAPs) provide a standard, stable lexicon of medication descriptions created specifically to provide advanced support for CPOE and Pharmacy operations. Providers can further save time in placing patient orders by creating personal favorite lists of orders and order sets and then adding a complete order to a patient’s profile with a single click.

Order Sets
Order sets, which play a vital role in providers’ acceptance of CPOE, function by grouping fully specified medication and non-medication orders together by medical procedure, treatment protocol, or condition for rapid addition to a patient’s profile. Enterprise Orders and Pharmacy provides a robust function for the creation of order sets, including the ability to nest order sets within order sets, define mutually exclusive orders (for example, pick one of three listed antibiotics), skip order details for fully qualified orders, link orders, require selection for specified orders, pre-select specified orders, and define an order set’s specific reference information.

Medication Indications
Centricity Enterprise Orders and Pharmacy provides general recommendations to prevent drug mix-ups due to name similarities. There are several methods for one or more ICD-9 or SNOMED CT medical terminology indications to be associated with a medication order (depending on the vocabulary implemented). These methods include picking from a list of indications commonly associated with the medication, or picking an indication from the patient’s problem list, which is available on medication order entry screens.

Conflict Checking
Studies have shown that excessive alerting contributes to provider alert fatigue, which leads to increased frustration, and important alerts being missed. Use of sophisticated clinical context rules reduces alert fatigue by allowing the presentation of medication conflicts to be varied by clinical role with appropriate context, to help ensure that the level of alert is appropriate to the clinical role. For example, the institution may decide that ordering providers in cardiology are not required to have their workflow interrupted for certain drug interactions, and the pharmacist instead would be required at verification to view and acknowledge the alert.

Cross-continuum conflict checking
**Drug-drug Interactions**
Active medication orders are screened for possible drug-drug interactions. Where appropriate, the application takes into consideration a medication's elimination half-life and continues to screen for drug interactions for a specified duration of time after the order has been stopped – including inpatient medications against those taken at home and stopped prior to hospital admission.

**Therapeutic Duplications**
Enterprise Orders and Pharmacy screens for possible duplications at the ingredient and therapeutic class level (for example, Angiotensin-Converting Enzyme or ACE Inhibitors). First DataBank has established therapeutic allowances for duplicate classes, which if exceeded, trigger a therapeutic duplicate warning. For example, two anti-hyperlipidemic medications are acceptable to prescribe, but more than two will cause a duplicate alert to display.

**Allergies**
Drug-allergy reactions, which can result in life-threatening repercussions, are known to comprise up to 25 percent of all adverse drug events. Enterprise Orders and Pharmacy screens medication orders for potential allergic reactions and intolerances using FDB’s Drug Allergy Module™. Allergy screening includes cross-sensitivity, idiosyncratic reactions and drug intolerances.

When documenting patient allergens, Enterprise Orders and Pharmacy screens existing active orders to help ensure that the patient is not already on a medication to which he or she is allergic. If a possible allergy is found, the clinician entering the allergy may choose to discontinue the problem order directly from the alert screen.

**Dose Range Screening**
Enterprise Orders and Pharmacy helps to prevent over or under dosing of medications in adult, pediatric, and neonatal patients using FDB’s Dose Range Checking Module™. The application also uses patient-specific data to monitor the appropriateness of drug dosing, and generates warning messages if the prescribed dose falls outside an acceptable dose range, administration frequency, or duration range. Messages are generated to indicate whether dosage adjustments need to be made for creatinine clearance/renal impairment or hepatic impairment. In addition, values can be set to indicate how long serum creatinine results and previously recorded weights should remain valid for the purpose of dose range checking.

**Dose Calculator**
Besides screening orders for possible conflicts, Enterprise Orders and Pharmacy provides a dose calculator function to assist providers to determine medication doses and infusion rates that are appropriate for the patient's age, weight, body surface area, and renal function. The dose calculator uses information from the patient's record to perform its calculations. Information includes height, weight, age, serum creatinine, and gestational age at birth.
Medication Order Verification, Dispensing and Charging

In an environment of skyrocketing costs, shrinking reimbursements, and regulatory pressures, closed-loop medication management is more important than ever. With Enterprise Orders and Pharmacy, pharmacists play a key role in the medication management cycle – monitoring medication treatment and medical outcomes, minimizing adverse events, improving patient safety, and decreasing medication costs.

Medication Order Verification

Enterprise Orders and Pharmacy gives pharmacists the tools needed to efficiently verify provider-entered and technician-entered orders for safety and effectiveness. The application also permits review of the provider’s orders for appropriateness against the patient’s condition, weight, height, and relevant lab values, and findings. If there are problems, issues, or concerns, several activities can be initiated, including the documentation of a pharmacy note and order interventions. Pharmacists see all of the alerts seen by the ordering provider, along with any acknowledgements. Depending on the institution’s setup, the pharmacist can also see alerts that did not interrupt the provider’s workflow.

One of the core capabilities of Enterprise Orders and Pharmacy is its ability to unencumber provider order entry from pharmacy fulfillment, while maintaining a high degree of integration. Providers simply select a medication and specify information required to complete the order. They are not required to specify information needed by the pharmacy to dispense the order, such as the package strength. Enterprise Orders and Pharmacy provides sophisticated algorithms to automatically determine the appropriate package to dispense from the nearest pharmacy location.

In a non-CPOE environment, Enterprise Orders and Pharmacy can be paired with fax connect/handwritten order communication software such as Pyxis® Connect or Omnicell® OmniLinkRx™. In this environment, pharmacists will be able to view the handwritten order and enter the electronic order into Centricity Enterprise Orders and Pharmacy.

Medication Order Dispensing

Enterprise Orders and Pharmacy provides a number of advanced functions to help ensure the pharmacy dispenses the right drug, to the right patient, at the right time. Tight integration between CPOE and pharmacy helps guarantee that the correct drug, form, and strength are dispensed from the proper location based on the provider’s order and location of the patient. Each dispensed medication is tracked at the package level as part of the patient’s permanent medical record. Changes to the package makeup are also tracked. For example, if an order normally is dispensed with one 10 mg tablet, but is changed to two 5 mg tablets because the 10 mg tablets are out of stock, Enterprise Orders and Pharmacy properly records the actual packages dispensed as a part of the order’s history.

Advanced logic is built into the dispensing workflow to help ensure that medications are dispensed from the correct location based on the patient’s current location within the institution. The application allows customers to define a prioritized hierarchy of where medications are dispensed from throughout the institution. Dispense locations that can be defined include pharmacy locations (main and satellite), automated dispensing devices, and floor stock locations. Creating this hierarchical structure allows preferred dispensing locations to be automatically selected based upon organization-defined parameters. If the medication is out of stock at one location, the medication is dispensed from locations lower in the hierarchy where available.

Automated Dispensing Devices

Automated dispensing device technology plays a critical role in the operation of most institutions. Enterprise Orders and Pharmacy provides a full suite of Health Level 7 (HL7)–compliant bi-directional interfaces to support the wide range of devices on the market today – from decentralized cabinets to centralized cart-filling robots and carousel picking systems.

Medications vended from cabinets for emergency purposes without existing orders create special override orders. Because these override orders are often not screened for allergies or drug interactions by the dispensing device, Enterprise Orders and Pharmacy screens them as part of the interface messages and alerts the pharmacist at verification and the nurse at administration of any potential conflicts.
Closing the Loop in Medication Management

CPOE has been broadly recognized as a critical tool for preventing medication errors associated with prescribing and transcription. The final component of the integrated closed-loop medication management system is medication administration, where up to 40 percent of medication errors occur. Centricity Enterprise Orders and Pharmacy offers integrated functionality that can help prevent errors at all stages of the medication cycle.

Barcode Medication Administration

Barcode Medication Administration provides further safeguards at the end of the medication cycle by confirming the “Seven Rights.” If there are any discrepancies, Centricity Enterprise alerts the nurse before the medication is administered. Barcode Medication Administration facilitates the identification of other potential sources of error – such as mispronounced or misspelled prescriptions, drug allergies, drug conflicts, partial/multiple dose errors, or duplicate orders. Scanning the unique barcode on a unit dose of medication enables clinical staff to verify dosage and expiration date. Scanning the patient’s barcoded wristband confirms patient identification and any known allergies to the medication. Medication administration is automatically charted in the system, helping to ensure timely and correct documentation and automatic charge capture. The application also tracks medications that are administered too early or too late, and notes “near-miss” avoided errors.

Medication Reconciliation

The tight integration of orders in Enterprise Orders and Pharmacy allows medication orders and prescriptions to flow seamlessly across transition points of care, greatly facilitating the reconciliation process. Nurses and pharmacists can document a medication history on admission while viewing the prescriptions the patient is taking at home. For example, the nurse might note that the patient indicates he is taking a medication twice a day, instead of the three times a day shown on his prescription profile. The medication history documented is clearly shown on the patient’s prescription profile.

Upon hospital discharge, providers can reconcile a patient’s hospital medications with medications that were taken at home and generate a discharge report that tells the patient which prescriptions to continue taking, new prescriptions to start taking, prescriptions with modified directions, and prescriptions to stop taking. The discharge reconciliation documentation becomes part of the patient’s hospital medication profile.

Medication Charging

Charging in Enterprise Orders and Pharmacy is performed at the time a medication is administered. In the absence of online administration, medications are charged based on dispensing. Multi-use medications are an exception, and are always charged on dispensing. For customers not using the Centricity Enterprise Patient Accounting product, Enterprise Orders and Pharmacy provides an interface for sending charges to third-party billing.
Enterprise Orders and Pharmacy allows pharmacists to document and monitor their interventions quickly and easily via an integrated interdisciplinary professional assessment tool – Clinician Assessments and Noting. The tool uses template-driven workflow in pharmacy-specific configurations to streamline the intervention documentation process and help ensure complete and accurate assessments. Templates are built around the guidelines and best practices of the institution and also allow ad-hoc assessment at any time. Clinician Assessment and Noting supports structured data entry and free text, as well as the ability to bring patient data in from other parts of the Centricity Enterprise system. Pharmacy intervention notes are generated as a by-product of capturing clinical data.

Pharmacists can complete the documentation in any order that is convenient for them. For instance, should it be necessary to pause documentation to enter orders or review results, the note can be saved and finished later. To support complete and thorough documentation, Clinician Assessment and Noting tracks which intervention categories have been addressed and flags any outstanding intervention areas, helping eliminate incomplete, inconsistent, or inadequate documentation.

Clinical Pharmacy and Interdisciplinary Care

Pharmacists have to sift through a massive amount of information to deliver safe, quality care. In addition to finding details of the patient’s medical history, they are also expected to apply the most up-to-date pharmaceutical knowledge to collaborate in the care of the patient. Centricity Enterprise organizes data and displays it in a way that makes sense. It also enables true teamwork by enabling the sharing of information or assignment of tasks across the enterprise, so that every member of the care team has simultaneous access to patient data.

Because time is important, Centricity Enterprise gives pharmacists customizable views of information as soon as it is entered, shaving hours or days off of the usual turnaround time of paper-based processes. Results are maintained as part of a patient’s lifetime electronic medical record, building a comprehensive, cross-continuum record.

Documenting Pharmacist Interventions

The documentation of pharmacy interventions is critical to pharmacy efforts to improve patient care and safety. It also helps promote standardization and performance improvement and provide pharmacy managers with key financial data to quantify and improve their clinical programs and staff.

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Healthcare Re-imagined

GE is dedicated to helping you transform healthcare delivery by driving critical breakthroughs in biology and technology. Our expertise in medical imaging and information technologies, medical diagnostics, patient monitoring systems, drug discovery, and biopharmaceutical manufacturing technologies is enabling healthcare professionals around the world to discover new ways to predict, diagnose and treat disease earlier. We call this model of care “Early Health.” The goal: to help clinicians detect disease earlier, access more information and intervene earlier with more targeted treatments, so they can help their patients live their lives to the fullest. Re-think, Re-discover, Re-invent, Re-imagine.

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