Glossary

Adverse Drug Event—an injury resulting from a medication or lack of intended medication.

Affected Systems—identification of pharmacy information/ automation systems as well as hospital information systems that support pharmacy operations and the medication use process. These systems usually consist of the pharmacy information system (PIS), automated dispensing cabinets (ADM), pharmacy robot, TPN compounding machine, pharmacy's intranet and/or hospital's internet sites, admitting/registration system (ADT/registration) for patient access, financial systems, carousel inventory cabinets, bar code medication administration systems (BCMA), clinical decision support (CDS), computerized provider order entry (CPOE), electronic medication administration record (eMAR), clinical results/electronic healthcare record, laboratory information systems, etc.

Alert Fatigue—a state of irritability, exhaustion, or bewilderment triggered in clinicians who have been exposed to too many alerts, or alerts with a perceived history of irrelevance, which cause the user to ignore some or all of the alerts, thereby reducing the safety benefit of the decision support system.

Alert—an urgent notice generated by a computerized clinical decision support system (CDSS). These are usually in the form of a just-in-time, patient-specific message directed to one or more clinicians. It may be a warning regarding a clinician's documented action (or lack thereof) or a documented decision. Or it may be an urgent informational notification of a new clinical condition, circumstance, or change in patient status that requires immediate attention. Some alerts require a response before the clinician can continue.

American National Standards Institute (ANSI)—coordinates the development and use of voluntary consensus standards including Health Level Seven's (HL7) Arden Syntax standard.

Application—software written to work on a computer and designed to perform a specific task, in this context the PIS. It is what the user sees when he opens the PIS.

Arden Syntax Standard—an HL7 standard designed to allow clinicians to program medical logic into a clinical rule or guideline. The American Society for Testing and Materials first approved the Arden Syntax as a standard in 1992 (E-1460-92). Ownership was transferred to HL7 and ANSI in 1999 with the approval of version 2.0 of the standard. The Arden Syntax is the only approved standard for clinicians to encode medical logic into clinical rules known as medical logic modules (MLM).

ASC X12N—Accredited Standards Committee X12; creates standards for the cross industry electronic transmission of business information. ASC X12N standards are used for insurance eligibility and prior authorization communication.

Automated Dispensing Cabinets—secure storage cabinets typically located decentrally on patient care units capable of handling most unit-dose and some bulk (multiple-dose) medications due to storage limitations.

Automation—any technology, machine, or device linked to or controlled by a computer and used to do work. Automation is designed to streamline and improve the accuracy and efficiency of the medication use process.

Bar Code—a series of vertical lines and spaces of varying widths that encode data to be scanned and decoded through a computer.

Bar Code Medication Administration (BCMA)—an inpatient clinical decision support system to assist caregivers with the five rights of medication administration (right patient, right drug, right dose, right route, and right time). BCMA systems provide warnings if any of the five rights are compromised, and many BCMA systems require the nurse to enter an override reason if he/she chooses to proceed. In addition, BCMA systems promote right documentation (some hospitals call this the sixth right of medication administration).

Bar-coding at the Point of Care (BPOC)—a process in which the patient and various patient therapies are documented with a bar code scanner at the bedside.

Business Intelligence—an umbrella term that describes the strategic integration of technology and processes that allow organizations to leverage their data to make better decisions.

Carousel Automation—a medication storage cabinet with rotating shelves used to automate dispensing.

Centers for Medicare and Medicaid Services (CMS)—the federal healthcare programs for the elderly and indigent. For more information go to: http://www.cms.hhs.gov/

Centralized Robotic Dispensing System—centrally located devices designed to automate the entire process of medication dispensing including medication storage, distribution, restocking, and crediting of unit dose medications.

Change Management—a discipline in information systems service that seeks to ensure that standard methods and procedures are used when making changes to information technology infrastructure, attempting to balance the need for change with the potential negative impact changes can produce.

Clinical Advisory—a decision-making tool that is identified for a specific medication. Nursing guidelines are often created as an advisory. An example would be a suggestion by the pump to the user to use a 0.22-micron filter when administering a medication.

Clinical Decision Support (CDS)—providing clinicians or patients with clinical knowledge and patient-related information, intelligently filtered or presented at appropriate times, to enhance patient care. Clinical knowledge of interest could range from simple facts and relationships to best practices for managing patients with specific disease states, new medical knowledge from clinical research, and other types of information.

Clinical Decision Support System (CDSS)—a system (computer or otherwise) intended to provide CDS to clinicians, caregivers, and healthcare consumers. Automated CDSS are usually just-in-time, point-of-care messages in the form of an alert, reminder, recommendation, or informational notification regarding a patient. Automated CDS systems typically include a knowledge base (which contains stored facts and some method of algorithmic logic), an event monitor (to detect data entry or the storage of data from a laboratory or other system), and a communication system to the end user (unidirectional or bidirectional).

Clinical Informatics—the scientific study of the effective analysis, use, and dissemination of information in patient care, clinical research, and medical education.

Clinical Information System—a group of computers that run databases and software applications to effectively provide a comprehensive repository of patient-specific healthcare information. As a general term, this might be a laboratory, pharmacy, nursing documentation, or ordering system.

Clinical Pharmacy Technician—a highly skilled pharmacy technician or "pharmacist assistant" with advanced training and/or pharmacy technician certification completed.

Clinical Reminder—a context-sensitive electronic prompt to the provider to perform an intervention or procedure, based on the patient's specific clinical data as applied to a set of logical conditions.

Computerized Provider Order Entry (CPOE)—automated portion of a clinical information system that enables a patient's care provider to enter an order for a medication, clinical laboratory, radiology test, or procedure directly into the computer. The system then transmits the order to the appropriate department, or individuals, so that it can be carried out.

Corollary Orders—orders entered as adjuncts to a primary order, e.g., orders for laboratory tests to monitor effects of a medication order, orders for special diets in preparation for a medical procedure.

Cost of Downtime—associated costs including: (1) direct costs—staff salary, downtime equipment, lost revenue, downtime supplies, and (2) indirect costs—delays in medication delivery, increase in medication errors, staff stress levels, etc.

Dashboard—common report format used to quickly evaluate the performance of a business process. Dashboards commonly use visuals such as dials, gauges, or stoplights to represent results.

Data Integrity—the accuracy, completeness, consistency, and validity of data.

Data Mining—broad term that encompasses numerous methods used to identify patterns and relationships in data. Examples of data mining techniques include neural networks, rule induction, and genetic algorithms.

Data Warehouse—centralized repository of data from an organization's individual information systems that is organized into integrated subject domains for reporting or data mining. Data warehouses may be implemented with relational or dimensional data models.

Database—a large collection of data organized for rapid search and retrieval by a computer.

Database Query—general term to describe a "search" of a database that returns data for use in reporting or other analyses.

Dataset—the recommended parameters for each medication programmed into the smart pump software such as dose, dosing unit, rate, or concentration.

Dimensional Database Model—an approach to designing databases for the purpose of maximizing end-user friendliness and query performance as well as to preserve data history. These features stand in contrast to the strengths of the relational database model.

Dispenser—term that the Department of Health and Human Services Centers for Medicare & Medicaid Services uses to specify the pharmacy and pharmacist. It is assumed that this includes in addition to the dispensing of prescription medications that the appropriate verifications and patient education is provided by the dispenser.

Downtime—the period of time during which the healthcare facility's computer system is unavailable and electronic order entry is not possible.

Drug Library—list of medications programmed in the smart pump software. The library includes properties such as name, dose, and concentration for each medication listed.

e-Iatrogenesis—patient harm caused at least in part by the application of health information technology.

Electronic Health Record (EHR)—a longitudinal electronic medical record (EMR) of patient health information generated by one or more encounters in any care delivery setting. It contains episodes of care across multiple care delivery organizations (CDOs) within a community, region, or state.

Electronic Medical Record (EMR)—a computerized legal clinical record created in a CDO, such as a hospital or physician's office. It is an application environment composed of the clinical data repository (CDR), clinical decision support (CDS), controlled medical vocabulary (CMV), computerized provider order entry (CPOE), pharmacy, clinical documentation, and other ancillary applications.

Electronic Prescribing, or e-Prescribing—refers to the use of computing devices to enter, modify, review, and output or communicate drug prescriptions and medication regimens for patients. E-Prescribing is one component of CPOE systems.

eMAR—electronic medication administration record.

ePHI—electronically protected health information. Individually identifiable health information stored electronically by healthcare providers.

ePrescription—according to CMS, a prescription is not an ePrescription unless it is transmitted electronically in a standard format. Printed paper prescriptions and electronic faxes are not considered to be ePrescriptions by CMS rule.

Evaluation/Outcomes Measure—post downtime review to determine if existing policies and procedures, planning, and staffing worked, and what needs to be changed.

File Architecture—also referred to as the medication masterfile, a compilation of interconnected files and records that contain data elements that compose the medication and clinical information presented for use in an EHR system.

Fitness for Purpose—a property of data that is appropriate for a given use. In reporting or other data analysis, fitness for purpose is evaluated along dimensions of timeliness and relevancy for the task at hand.

Formulary—a health system's specific list of medications approved for use by its clinicians.

Hard Limit—a dose that serves as the absolute limit (high or low) for drug administration by the pump. Once this hard limit is reached, the dose cannot be overridden, serving as a warning to the pump user that the dose needs to be verified prior to drug administration.

Health Insurance Portability and Accountability Act (HIPAA)—law enacted in 1996 by the U.S. Congress in order to protect patient medical information. Title II of HIPAA, the Administrative Simplification (AS) provisions, requires the establishment of national standards for electronic health care transactions and national identifiers for providers, health insurance plans, and employers to address the security and privacy of health data.

Health Level Seven (HL7)—an important standards development organization for health information technology (HIT). For detailed information, see the HL7 website: http://www.hl7.org

Healthcare Information Technology (HIT)—any computer system designed to automate and/ or enhance a healthcare process or workflow. HIT can be a small apparatus such as an IV infusion pump or a glucometer or a departmental information system such as a pharmacy or laboratory information system. It can be an institutional information system such as an admissions, discharge, and transfer (ADT) system, which may interface or interoperate with other departmental systems. HIT can also be a multi-institutional system, such as a regional health information organization (RHIO), or even a national health information network (NHIN).

Human Factors—physical, mental, or behavioral properties of people that may have critical influence on how people interact with technological systems, organizations, or their environment.

Imager—an electronic device similar to a scanner that analyzes an image, including linear and two dimensional bar codes, and digitally converts it into data.

Implementation—the execution of a plan that, when referring to a technology system, generally encompasses requirements analysis, determination of project scope, integration plan, user training, policy development, and delivery.

Improper Dose Error—administration to the patient of a dose that is greater than or less than the amount ordered by the prescriber or administration of duplicate doses to the patient, i.e., one or more dosage units in addition to those that were ordered.

Informaticist—someone who applies information technology to a specific discipline (e.g., pharmacy informaticist).

Information Systems (IS)—(1) Computerized systems for workflow management such as a pharmacy computer system, or an information retrieval system such as a library. The defining characteristic is a database and specialized features and functions for a dedicated purpose. (2) A department of HIT or computer professionals. When designating a department, IS usually stands for Information Services.

Informational Notice—may be a patient-specific automated rule, such as an MLM, to inform of a change in patient status. This type of informational notice may be urgent (e.g., to report a change in renal function) or non-urgent (e.g., to report a hospital admission of a potential study patient). An informational notice may also be product-specific such as a pop-up box during order entry to announce a look-alike, sound-alike (LASA) drug.

Infusion Pump—a device that administers drugs or nutrition to a patient through intravenous, subcutaneous, intramuscular, intrathecal, epidural, or intra-arterial routes. Infusion pumps can administer fluids in very controlled amounts.

Integrated Systems—when information systems that perform different functions share the same database, application space, and often hardware. They are usually provided as a single solution.

Integration—in information technology, the physical or functional linking of two separate systems in order to achieve a desired new functionality or capability, often through the use of interfaces. (Note: The definition is still a matter of debate in the informatics community.)

Interfaced Systems—when separate information systems (with separate databases) are built to communicate with one another. This requires the development of an interface to normalize information for interpretation by both systems.

Interface—internal communication between two separate entities (i.e., hardware or software) that allows information and resources to be shared without affecting how external entities (i.e., a user) interacts with each system.

IOM—the Institute of Medicine.

Knowledge Base—a collection of stored facts, rules, algorithms, heuristics, and models for problem solving. Knowledge base data may be organized in a database or even a simple table in which explicit relationships exist. Familiar examples of commercial knowledge bases that incorporate databases are drug-drug interaction and drug allergy alerting systems.

Levels of Downtime—duration of downtime that will require different activation of the downtime plan to maintain pharmacy operations, for example: (1) short duration—up to 2 hours, (2) medium duration—2 to 7 hours, and (3) long duration—greater than 8 hours.

Linear Symbology—a one-dimensional bar code consisting of vertical lines and spaces.

Logical Observation Identifiers Names and Codes (LOINC)—a standard to facilitate the exchange of clinical laboratory results. The Regenstrief Institute, Inc., maintains the LOINC database of about 41,000 terms, and its supporting documentation.

Look-Alike, Sound-Alike (LASA)—a medication safety designation to prevent confusion between drugs with similar spelling or pronunciation.

Maintenance—work that must be done to a software program to ensure that the system is updated and accurate.

Medical Logic Module (MLM)—a rule for an Arden Syntax based clinical rules engine. HL7 defines a MLM as an encoded clinical rule that contains enough logic to make a single clinical decision. MLMs in use today have been developed for many purposes, such as clinical alerts, recommendations, reminders, informational notices, interpretations, diagnosis, quality assurance functions, continuous quality improvement, bio-surveillance, administrative support, and for clinical research.

Medication Error—any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the health care professional, patient or consumer.

Medication Management System—an automated system that is often connected to other healthcare systems, that supports patient safety, and that improves the quality of care by reducing practice errors and misuse. A medication management system does so by providing access to medications only by authorized personnel and (usually) only if a validated order exists within the system.

Medication Masterfile—compilation of records that individually contain data elements that compose the medication information presented for use in an EHR system.

Medication Reconciliation—the process of identifying the most accurate list of all medications a patient is taking, including name, dosage, frequency, and route, and using this list to provide correct medications for patients anywhere within the health care system. Reconciliation involves comparing the patient's current list of medications against admission, transfer, and/or discharge orders.

Medication-Use System—a complex system involving multiple individuals, processes and technology to manage the ordering, verifying, procurement, preparing, distribution, monitoring, and education of medication therapy.

Monitoring Error—failure to review a prescribed regimen for appropriateness and detection of problems, or failure to use appropriate clinical or laboratory data for adequate assessment of patient response to prescribed therapy.

NCPDP—National Council for Prescription Drug Programs; an organization that creates and promotes standards for the transfer of data to and from the pharmacy services sector of the healthcare industry. NCPDP is an ANSI-accredited standards development organization that has over 1450 members representing all areas of pharmacy services. NCPDP has developed standards for provider identification and telecommunication standards for pharmacy claims. It has also developed SCRIPT, which consists of multiple standards supporting prescription communication and processing.

National Council for Prescription Drug Programs (NCPDP) Script—is a standard for ambulatory prescription messaging between pharmacies and third party payers. The NCPDP standard has been in use for decades. In 2004, HL7 had started its own efforts to develop a standard for institutional prescription messaging, and decided to create a harmonized mapping between NCPDP's script and HL7's RX messages. Their intention is to ensure interoperability of prescription information across the entire healthcare information environment.

Notification—a patient- and context-sensitive prompt to the ordering provider, attending physician, primary provider, or care team to alert them of new information (i.e., abnormal lab result) or tasks in need of completion (i.e., unsigned order or note).

Omission Error—failure to administer an ordered dose to a patient before the next scheduled dose, if any.

On Line Analytical Processing (OLAP)—a class of applications to support complex queries and analysis across multiple dimensions. OLAP systems often implement a dimensional data model and are closely related to data warehouses.

On Line Transaction Processing (OLTP)—a class of applications designed to support transaction based operational processes such as order entry or packaging. OLTP systems often rely on databases that implement a relational data model.

Open Database Connectivity (ODBC)—standard interface for accessing modern database systems.

Order Menu—a listing of orders from which clinicians may select individual orders, organized to support a specific purpose, ordering environment, or type of order.

Order Set—compilation of medication and procedure orders that can be accessed and ordered from a single source in the EHR. These are analogous to paper pre-printed order forms.

Patient Care Information System (PCIS)—technology system used by a health care professional for the provision of care to a patient, either directly through decision support or in a support role such as informational storage or management of information function. PCIS supports the provision of care for patients.

PDP—Medicare Prescription Drug Plan (PDP) is the prescription drug plan that was created with the Medicare Prescription Drug, Improvement and Modernization Act of 2003.

Personal Health Records (PHR)—an Internet-based set of tools that allows people to access and coordinate their lifelong health information and make appropriate parts of it available to those who need it.

Pharmaceutical Care—the responsible provision of drug therapy for the purpose of achieving outcomes that improve a patient's quality of life.

Pharmacy Information System (PIS)—a system that provides pharmacy staff the necessary application environment to practice the profession of pharmacy; often includes the ordering, procurement, preparation, dispensing, and monitoring portions of the medication use process.

Prescriber—the health practitioner who has the legal authority for ordering ambulatory medications.

Prescribing Error—incorrect drug selection (based on indications, contraindications, known allergies, existing drug therapy, and other factors), dose, dosage form, quantity, route, concentration, rate of administration, or instructions for use of a drug product ordered or authorized by physician (or other legitimate prescriber); illegible prescriptions or medication orders that lead to errors that reach the patient.

Profile—unique set of options and best practice guidelines for a specific patient population.

Protected Health Information (PHI)—this is information about a person that must remain secure, as defined by Health Insurance Portability and Accountability Act (HIPAA).

Quick Order—a pre-configured order in which the components (e.g., medication, dose, route, schedule, amount, number of refills, etc.) are specified, allowing for faster order entry and limiting opportunities for entry errors. These are sometimes referred to as order sentences and may be maintained and standardized across an institution or created by individuals as personal quick orders, user preferences or preference lists. transcribed into the receiving systems. Few current ePrescribing installations currently realize this goal.

Radio Frequency Identification (RFID)—a computerized chip or tag with an antenna capable of storing data in conjunction with a receiving module for purposes of product identification or tracking.

Recommendation—an automated rule, such as an MLM, that suggests a course of action. For example, a patient-specific dosage or a suggestion for a laboratory test. Ideally, all recommendations are evidence-based and institutionally approved.

Recovery Period—time period post downtime for entry of data generated during downtime to update pharmacy information/automations systems that were affected during downtime.

Regional Health Information Organization (RHIO)—proposed definition by the Department of Health and Human Services, BearingPoint, and the National Alliance for Health Information and Technology. A governance entity comprising separate and independent healthcare-related organizations that have come together to improve the quality, safety, and efficiency of healthcare for communities in which it operates and for which it takes responsibility to develop transparent, inclusive processes that enable the interoperable exchange of health information in a manner that protects the confidentiality

Relational Database Model—an approach to designing databases based on mathematical set theory. Proper application of the model helps ensure data integrity is maintained during transactions that update, add, or remove data.

Reminder—an automated rule, such as an MLM, that suggests the clinician has overlooked or forgotten to perform an action such as documenting a decision, event, or finding.

Reporting—the concise presentation of relevant operational or clinical data for decision making or performance review purposes.

RXNORM—a clinical drug nomenclature standard produced by the National Library of Medicine.

Scanner—an electronic device that analyzes an object, such as a linear bar code, and digitally converts it into data.

Scheduled Downtime—system outage that is scheduled for pharmacy information/automation systems allowing for prospective downtime planning; most common reasons include planned hardware or software upgrades.

Server—the heart of a network of computers, providing a centralized and organized location for the PIS, database, and application.

Smart Pump—a computerized infusion device that can be programmed to include a specific set of data.

Soft Limit—similar to hard limits but can be overridden and a dose can be programmed for delivery.

Structured Query Language (SQL)—standard language used to query and manage databases. Pronounced "sequel."

Supply Chain Management—the management of the pharmaceutical order-to-pay process including management of inventory and distribution of supplies throughout the medication use process.

Switch—a company that provides a communication network to support claims adjudication, eligibility checking and electronic prescribing for pharmacies.

Symbology—the pattern represented in a bar code that encode data and allow it to be converted into information with the use of a scanner or imager. A symbology is similar to a computer language.

Systematized Nomenclature of Medicine Clinical Terms (SNOMED CT)—a comprehensive clinical terminology, originally created by the College of American Pathologists. For more information, see the National Library of Medicine Unified Medical Language System website: http://www.nlm.nih.gov/research/umls/Snomed/snomed_main.Html

Technology—anything that is used to replace routine or repetitive tasks previously performed by people, or which extends the capability of people.

Two-dimensional (2D) Symbology—a bar code that may use dots or lines arranged on the vertical and horizontal axes that can contain up to several thousand characters.

Unauthorized Drug Error—administration to the patient of medication not authorized by a legitimate prescriber.

Unscheduled Downtime—system outage that is not scheduled for pharmacy information/automation systems, resulting in no prospective downtime planning. Most common reasons include unplanned hardware or software failures, power outages, and extreme weather conditions.

Workstation—the computer in the pharmacy that a staff member uses to interact with the PIS.

Wrong Dosage-Form Error—administration to the patient of a drug product in a different dosage form than ordered by the prescriber.

Wrong Drug-Preparation Error—drug product incorrectly formulated or manipulated before administration.

Wrong Time Error—administration of medication outside a predefined time interval from its scheduled administration time (this interval should be established by each individual health care facility).