

Computerized Prescriber Order Entry: Order Verification Process

Institution	Describe Hospital	Are you using CPOE housewide? If not, how far along with implementation is your institution?	Please describe your CPOE program.	What type, if any, clinical pharmacy services do you provide at your institution?	What hours are clinical services provided?	Is CPOE order verification completed only in distributive areas or do your clinical pharmacist have order verification responsibilities?	How does the order verification process differ from shift to shift?	In your institution, how has CPOE changed the pharmacists' role in both distribution and/or clinical setting?
Stanford Medical Center IDX System	431 beds academic teaching hospital	No – Housewide except for ICU's, BMT, and chemo orders. Outpatient clinics are not CPOE.	In theory mandatory, but we still receive a few written orders from the CPOE areas. Integrated. LastWord 4.1 CPOE tied to rest of electronic medical record	Yes, pharmacists available for consultation only, clinical pharmacist also have dispensing responsibilities, pharmacist are the interface for the nursing unit with pharmacy, do have some dispensing. Pharmacists are on the floor 16 hours a day for rounds, TPN, antibiotics, restricted drugs, any consultations. Night pharmacist also provides clinical services.	24/7	Minimal role, usually to facilitate a stat or now, help if the command center is behind and their areas need access to meds	We have a "command Center" that is first line for verification 16 hours a day, the night pharmacist has clinical, distributive, and order verification/entry responsibilities. We staff nights with one tech and one pharmacist. They have no "routine" dispensing, only new or missing orders.	The major change has been from order entry to order verification for the command center pharmacists. The rest of the system was unchanged with the implementation.
Thomas Jefferson University Hospital IDX system	700 bed academic Medical Center	85% CPOE	Mandatory, integrated	All of the above	24/7	Both	The process does not change from shift to shift.	Has allowed R.Ph's to increase time on floors which leads to increased communication with physicians and nurses, increased patient and physician education, and decreased distribution issues.
PeaceHealth IDX system	PeaceHealth is an IDN with 6b acute care hospitals and numerous clinics in the Pacific Northwest.	We have 2 pilots going. One to five Rehab MDs enter all orders on our Rehab unit of 450 beds hospital for over one year. Increased pilots planned as migrate to	We use all of the IDX EMR. In all facilities, everything is electronic except physician orders and progress notes. We are in pilot stage, but plan to roll-out to voluntary physicians until we have a	We have clinical satellite-based pharmacists in our 2 larger hospitals and more central pharmacy oriented in the remaining. Out clinical pharmacists are heavily involved in dispensing duties.	24/7 at our largest hospital and diminishing at the others.	All pharmacists have order verification responsibilities.	Usually the same process.	CPOE has created additional workflow for the pharmacists. Since we have so few, they find it difficult to remember to check the cue. Batch verification is not working.

	Community-based. No residents or interns. – 6 hospital system with a total of 952 beds (largest hospital has 450 beds)	Carecast.	critical mass and then put pressure for mandatory use.					
Montefiore IDX system	1000-1100 beds Academic Medical Center	100% CPOE	Mandatory CPOE, fully integrated	All clinical services are provided.	8-5 M-F	All pharmacists have order verification responsibilities.	Does not change, although overnight some orders are rerouted to other locations where they are verified.	R.Ph's have been able to become much more clinical, i.e. rounding, able to verify at a PC on the nursing unit.
Wake Forest University Baptist Medical Center IDX System	850+ Academic Medical Center	No- Approximately 30% of the total beds are enabled.	The program is mandatory with an ordering structure where most orders are placed by the Residents with smaller numbers of orders being placed by PAs, NPs and, Medical Students. The hospital is using a commercial product (Lastword) for CPOE but still requires major development to meet the needs of our facility. Our CPOE orders are tied to the EMR.	We have clinical pharmacists rounding with approximately 30 services; including, but not limited to, intensive care, hematology/oncology, pediatrics, renal, surgery, cardiology, general medicine and transplant services. They are not currently responsible for verifying CPOE orders.	7AM-5PM M-F (time when clinical pharmacists are available). However, pharmacists 24 hours a day are available to answer questions as they arise.	Currently, CPOE order verification is the responsibility of the distributive pharmacy areas.	The responsibility does not differ from shift to shift. The verification process is the responsibility of the distributive pharmacists 24/7.	In the distributive areas the changes have primarily been related to changing the traditional methods for ensuring that an order is correct. The primary task of interpreting written orders and placing them in the computer has been replaced with reviewing electronically entered orders and determining if the prescriber fully understood the limitations of the computer when they placed the order (eg, Did they mean to schedule doses so closely together? Did they mean to bypass an alert? Did they intentionally disregard the corollary order built into the orderset or did they forget to select it?) The trigger for letting them

								<p>know that an order needs to be processed has changed from an order printing off of the fax machine to a process of reviewing an Unverified Orders screen.</p> <p>The clinical pharmacists role has changed less. They currently are being called on more often for questions related to how to enter orders but are still not relied on for processing routine unverified orders.</p>
<p>Hackensack University Medical Center, affiliated with the University of Medicine and Dentistry of NJ.</p> <p>IDX system</p>	<p>681 bed teaching hospital</p>	<p>No, we are phasing it in slowly throughout the Med/Surg continuum first. We have instituted CPOE in 6 patient care areas, all Med/Surg. This represents 138 of 681 beds on nursing units where CPOE is allowed. We have plans to do another 5 by the end of the year.</p>	<p>We have a VOLUNTARY program for CPOE, and we train all new MDs who request, all current MDs who request, and all APNs, Phys Assistants who request.</p>					
<p>The Johns Hopkins Hospital</p>	<p>Academic, 800+beds, oncology center and pediatric center, peds ED, adult ED, Eye</p>	<p>Just placed 200 Dept. of Medicine beds on old SMS Invision POE system with Eclipsys SCM.</p>	<p>Mandated prescriber order entry – easier at academic center Allergen and orders interface to Pharmacy system (GEMS) as bi-directional to come up in Fall 2005</p>	<p>Pharmacist Care Practice, with pharmacists having space on Nursing units and entering orders, available for rounds and questions during daylight; each spends approximately 1 hour daily in the ops area.</p>	<p>Clinical Specialists involved with rounding – minimal if any dispensing; Residents</p>	<p>Clinical services during business hours Resident and Clinical specialist on call 24X7</p>	<p>Plan is for operational pharmacists to do the verification in the pharmacy application.</p>	<p>Since the current satellite has had POE for 8-10 years – no change. Expect changes when the other pharmacy satellites go live with CPOE.</p>

	Institute, urban		Current ADT (2 different-SMS and EPIC) interface Current LAB interface (site developed) Current RAD interface Current Nutrition hardcopy orders and the same for most of the ancillaries Planned CCOW connection to the Electronic Patient Record (site developed)		and specialty residents available on the Nursing Units – low level of dispensing requirements			
Vanderbilt	880 beds	Yes	Encouraged but still voluntary (75% of all therapy orders input by MDs) Our CPOE is interfaced with all services and it has extensive decision support and an on-line Medical Record for inpatients and outpatients. We developed our own CPOE 11 years ago- 2 years ago we sold our WIZ order system to McKesson and they are marketing this system as Horizon Expert Orders	Inpatient clinical pharmacist round in the Adult ICUS (CCU, MICU, SICU, Trauma ICU, Neurology ICU). Specialist clinical pharmacist are dedicated to Pediatrics, Oncology, Transplant, and Surgery. In the outpatient clinics we have clinical pharmacist working in the medicine clinic and are part of the treatment team focusing on diabetic and post MI patients, and there is a clinical pharmacist for the anticoagulation clinics and the hemophilia clinic.	7 a.m. – 4 p.m. M-F	The verification process involves the CPOE order on the top part of the screen and the pharmacy dispensing order (how the pharmacy system interpreted the CPOE order) differences are highlighted for the pharmacist to check. 50% of the time the CPOE order and the Dispensing order agree and all the pharmacist has to do is hit enter; 45% of the orders require changing the administration time and less than 5% of the time the pharmacist has to change the drug ordered. We have a satellite pharmacy on the 11 th floor and SICU/OR satellite pharmacy on the 3 rd floor. These two satellites verify 90% of all drug orders so they can provide the first dose whether it is provided by Pyxis or prepared by the	Does not differ.	Yes, decision support in our CPOE has really changed the need for pharmacist to round on general care areas- this is why the only rounding is in ICU or specialty services. Also, we documented increasing our efficiency 40% by having the CPOE system interfaced with the Pyxis Med stations.

						satellite. Central pharmacy does some order verification on all shift.		
UHHS	940 bed academic medical center	Yes	Mandatory use; ECLIPSIS is the vendor. Yes, the information is tied to the rest of the record.	Decentralized service since 1994.	24/7	Decentralized Clinical Staff does order verification	No Different	Distribution the same, more clinical involvement.
Virginia Commonwealth University	800 bed Academic Center	Yes	Mandatory use by prescribers; >99% of medication orders entered by prescribers. Cerner Millennium Release 8.0+. CPOE is an integrated product tied to the elements of the medical record (lab, radiology, nursing documentation, dietary, etc.)	Clinical services are provided through clinical pharmacists with mixed assignments (clinical/distributive/teaching) in a main pharmacy and satellite pharmacies (OR,ICU, Cardiology/CCU, Maternal/Child). 14.5 FTE of Specialist Clinical Pharmacist who round with medical, surgical or specialty teams and provide advanced clinical services and a significant teaching load. Specialist clinicians do not have dispensing responsibilities, except when assigned to work weekend and other "mixed" clinical assignments.	24/7, although night staffing makes services "emergency only"	All pharmacist bear some responsibility for order verification; the majority of verification is performed by clinical pharmacist, not clinical specialists. We are working to determine the optimal allocation of this responsibility as we work with a new vendor system.	No change	We have had CPOE from a different vendor since 1978, so changes are specific to the new commercial product now in use. We have noted significant reallocation of time and resources to meet the medication order flow design of the new vendor, including the addition of permanent pharmacist FTE's to address a significantly more complex work design.
Brigham and Women's Hospital in Boston	720 bed tertiary care academic medical center	Yes, includes inpatient, ED and NICU	Self-developed software and requires mandatory entry of all medication orders. It is linked electronically with pharmacy so we are paperless, and the clinical labs, radiology etc.	Pharmacist round in all inpatient care areas, they use wireless laptops for their order review and verification. All dispensing activity is coordinated centrally in the main pharmacy. Unit based staff have minimal dispensing responsibilities, unless they need to obtain an urgent med for a patient.	Rounds participation only occurs on day shift. Clinical services which I believe are medication order review and verification, medication management initiatives, adverse drug event	Clinical pharmacists have full responsibility for all order verification. I believe that this is the one essential clinical function, not rounds.	Same process	To some degree OE has increased our workload versus a manual paper system. This is due to use of order sets, and templates which are setup to contain many more meds than when these were hand written. That said the electronic verification process is much faster and efficient than in paper based systems. Our computer software in pharmacy expedites this review process for our pharmacists.

					prevention occur around the clock.			
University of Alabama Hospital	908 beds University Hospital (academic medical center)	Yes	Mandatory, Commercial product – Eclypsis – which has been highly customized for our institution. CPOE is tied to the rest of the electronic medical record.	Pharmacists assigned decentrally to satellite pharmacy areas for order verification 24/7. Specialty practitioners go to rounds when at all possible. These specialty practitioners also train students and serve as residency preceptors. All pharmacists verify orders and have responsibility for the drug distribution system. To name a few: Drug Information, pharmacists do round and are available for consults	24/7 – Pharmacists are always available on the units – fewer in the evenings and 3 on nights.	Orders are verified by the satellite pharmacists (who may be physically located in the pharmacy satellite or on the nursing unit) for patients in areas serviced by that satellite.	No differences.	Communication and spread of communication is greatly improved. Pharmacists can concentrate on verification, problem solving and not order entry, although about 30% of the physician orders have to be d/c'd and re-entered due to error/formulary issue, etc. Hand written orders are gone, so no more errors due to that. Pharmacists still have the same personal responsibility for identifying, resolving, and preventing drug-related problems.
Yale New Haven Hospital	944 bed Academic Medical Center	Yes, for all inpatient areas and some clinics.	Mandatory CPOE – Eclipsys E7000 – Since 1992. We are currently in the process of upgrading to Eclipsys SCM with order entry to go live in SCM in about 18 months. We have highly customized the E7000 product. It is tied to the e-medical record. The eMAR resides within the CPOE system	Clinical pharmacists in all ICUs and associated step-downs, also on most inpatient units. Low acuity areas (eg, well mom and baby) covered by central pharmacist. Clinical pharmacist do not have dispensing responsibility but do verify orders.	7-4, but limited clinical services continue until 9 p.m.	Clinical pharmacist verify orders as well.	On second shift, order verification is done by the central pharmacy. On third shift it is all done by one pharmacist.	CPOE along with cartless, point of care dispensing, dramatically freed the pharmacist for more advanced clinical function.
Ohio State University Medical Center	3 hospitals Comprehensive Cancer Hospital	All areas except for the community hospital and neuropsych.	Mandatory for all orders to be entered into CPOE. We use a commercial product (Siemens invasion)	Out specialty practice pharmacist go on rounds, attend codes, do kinetics, etc. Our clinical generalists interact with nursing staff and process orders. Staff	Main focus is on days, but we are expanding, for some	Distributive areas.	No change as the same process occurs 24/7	Not much at this time as CPOE orders print in Pharmacy. Our role and time might change when a bi-directional order

Presbyterian Medical Center (part of University of Pennsylvania HealthSystem)	350 bed Teaching Hospital	We just recently went live with Eclipsys Clinical Sunrise Manager CPOE. AT present our Pharmacy System is not integrated with the SCM.	H.O. and attending are required to enter order into Sunrise Clinical Manager. No written orders accepted. CPOE integrated with lab, radiology, admissions and finance. Pharmacy to follow shortly.	We have a Pharmacist Antibiotic Management Program. All pharmacists rotate on our decentralized pharmacy program. They do consults and do have dispensing responsibility but mostly order entry. Decentralized pharmacist on floors act as resource for Nursing and Medical Staff.	M-F 8-6	At present we are not able to verify the order on the MAR. This will occur once integrated.	Same. Orders verified when dispensed.	Right now our pharmacist are very frustrated in that they are re-entering orders which could be directly interfaced between SCM and our Computer System. Once this occurs we will be able to use our pharmacist in much more clinical activities.
Pitt County Memorial Hospital	730 bed academic teaching center	Yes- for nine months. The only population we have used CPOE has been orthopedics. Next month, will go live with Trauma Service.	Siemens is our CPOE system. This does not interface with our Pharmacy system (Cerner), but does interface with medical record. Almost all orthopedic physicians use.	We do not have decentralized services for our CPOE unit. It is serviced by our Main Pharmacy which enters orders, provides therapeutic mentoring and counseling for warfarin pts. Decentralized pharmacy services provided by clinical staff pharmacists (clinical and distribution) and clinical specialists (clinical services only).	Clinical services are generally provided on first shift only.	Clinical and distributive responsibilities	Does not change between three shifts.	Has allowed pharmacy to become more involved with order set generation, pt. counseling and allowed us to work more closely with nursing and M.D.'s. Due to lack of integration between the two systems, it taking longer to process orders, which leads to frustration.
Denver Health Medical Center	300 beds Level 1 trauma, University affiliated teaching hospital	1 year pilot in 24 bed MICU which was rolled out recently to an eight bed step-down unit.	We are using Siemens product that is mandatory in our MICU and step-down unit. It is interfaced to all ancillary services including laboratory and pharmacy computer systems.	Pharmacist is present Monday – Friday 0630-1500. Attends daily rounds. The pharmacist is present on the unit entire shift.	0630-1500-M-F	The MICU pharmacist is responsible for all CPOE orders and clinical services during shift. The pharmacist does not have any distribution responsibilities other than passing along requests to central pharmacy for missing and stat meds	After the clinical pharmacist's leaves for the day, validation/verification responsibilities are transferred to the central pharmacy which provides all pharmacy services after hours and weekends.	Less time spent entering order, has promoted the purchase of mobile computer which allows R.Ph. to round and verify emergency orders. Problem orders are dealt with quicker. Alliance with physicians because pharmacist is the computer expert on the unit. Increased confidence in pharmacists. More interventions.
Hospital of the University of Pennsylvania	700 bed-Academic Medical Center, Level 1 Trauma Center	Yes, except for Emergency Department and most out-patient clinics	Mandatory use for inpatient setting. Sunrise Clinical Manager from Eclipsys. We have most of the inpatient records online. Nurses will keep	All R.Ph's are trained to do Pharmacokinetic monitoring and other drug that we monitor. Decentralized R.Ph's are 2 shifts a day 5 days a week. R.Ph can verify orders from floor. We consider any decentralized R.Ph., a "clinical pharmacist" We do	24/7 if need be. Pharmacist s attends all cod calls. Two pharmacist s cover the	Some of the specialist verify, most are done by the decentralized clinical R.Ph.	No difference	Pluses and minuses. Changes are frustrating to staff, but CPOE has made for better practice by having lab and other departments online. Now looking at some of the clinical warnings and how

Evanston North-western Healthcare						Decentralized clinical pharmacists verifying orders on the 1st and 2nd shifts and the night pharmacist verifying orders on the night shift. This function is not considered part of distribution (although an awareness of distribution e.g. Pyxis vs. satellite dispense vs. central pharmacy dispense; UD vs. compounded IV vs. nonsterile prepack) is needed during the verification process.		
University of Utah	406 bed academic medical center	No – In year 5 of our 2 year implementation plan. Current plans are at least 14 months from completion	Single vendor solution, Cerner. We have implemented Cerner PharmNet and PowerChart and the CPOE product will be tied to everything. It will be mandatory for prescribers.	We have centralized order entry and offer decentralized clinical services. The decentralized pharmacists are primarily focused on direct patient care activities (eg. Rounding, consults)	During the day we have 14 decentralized pharmacists and this is when most of the activity occurs. We cut this back to 5 on the evening shift.	We currently provide double checks on our chemotherapy and neonatal intensive care orders. These orders are verified by both the decentral and central pharmacist. These are the only areas where our decentralized pharmacist have any order entry verification responsibilities.	Our current order process does not change from shift to shift and we plan on using the same format for verification once CPOE is implemented.	CPOE is not functioning yet.
University of Missouri Health Care		CPOE is on our horizon but several years off.						
University of Kentucky Chandler Medical Center	473 bed Academic Medical Center	No, but will be starting this month.	IT is the system that will be used, but hopefully it is what the MDs want to use.	Yes to all	24/7, clinical services and pharmacist services are one in the same, or should	We perform order entry (pharmacy) in all areas. The time to completely separate the terms clinical pharmacy from distributive pharmacy should be over.	Our initial CPOE will not have a direct interface, so we will continue to enter orders for a while.	Too early to tell.

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Georgetown University		No CPOE						
Partners HealthCare, Boston, MA								<p>The verification process under CPOE is often more than "clinical" verification. CPOE systems then require, what I would call, "production" verification. This is the assignment of dispensable unit(s) to an order. These are two different evaluations of an order. Together, I have termed this Order "Perfection". So the follow up to Jennifer's issues is: Is order perfection one step or two? Do your systems support these two processes as separate functions or one function?</p> <p>Is a two step process required, needed or a nice to have function in CPOE systems? A two step process would support clinical verification by one set of pharmacists and then pass the order off for the assignment of dispensable unit to others. Could the assignment of dispensable unit(s) be a tech function?</p>