Note: Many figures are available in print version, submitted in separate file. These figures are to appear in an on-line only data supplement. Numbers are not sequential due to those figures that appear in print not being present herein.

Figure 5. "Pop-up" options (pane #5) after selecting nitroglycerin order from pane #1 window.

🗟 WizOrder										
7048X ZTE ADC VAAN DISML d Admission »	gual									
"actual weight: 60.000	🕅 🅵 WizOrder Popup 🔀									
Diagnosis »	nitroglycerin sublingual: 0.4 mg subling q5minpm									
Vital signs »	30 modify 30 switch to nitroglycerin 2% ointment: 10 R 30 delete 30 switch to nitroglycerin infusion:) (X)								
Activity/limitations »	Mosby drug reference Mosby drug reference Mosby drug reference Mosby drug reference	orders (PCCU) »								
Allergies »	Im AHFS drug reference	GenRx								
Nursing instructions »		WitzRo								
Diet »	PANE #5	\$0.00								
Medications »		literature.								
-PRN medications »		QMR								
o ma ogy stem submit		antibiotics								
IV fluids »	Back Home	alerts								
Laboratory tests »										
Radiographic studies	Radiographic studies PANE #1 Copyright (C) 2005, Vanderbilt University Medical Center									
print <f1> display <</f1>	42> D/C <f3> renew cosign order sets <f4> oops <f5> help <f6> complex</f6></f5></f4></f3>	sin ≪F7> dane ≪F8>								

Figure 6. Final Accept screen (pane #5) allows user to verify orders at end of ordering session.

< wizunder							المالد.			
7018X ZTES	TDC, Obsv 3015205-2 59	yo M (TRAINIO)								
ADC VAAN DISML dis	play			1. nitroglycerin sublingual: 2. nitroglycerin lingual spray (0.4 mg/spray) sublingual						
"actual weight: 60.000	WizOrder Popup						×I			
Diagnosis » Condition » Vital signs » Activity/limitations »	Orders entered durin NITROGLYCERIN SI accept or	ng this session UBLINGUAL: Ners	n by TRAINIO, TR 0.4 mg subling q modity order	AINING for ZTI Sminpm s, do not exit	ESTDC, O	bsv)) RY) y orders (PCCU) »			
Allergies » Nursing instructions » Diet »							Gent25 Witrio 30.00			
Medications » =PRN medications » o nitroglycerin sublingu	Medications » PANE #5 PRN medications » Proglycerin sublingu						Myenhara GMI andtheitics			
IV fluids »			Horse	Print			alerts			
Radiographic studies	PANE #	1		Copyrig	ght (C) 200	5, Vanderbil	t University Medical Cer			
mint effer dismine ef	2 00 00	-	()	order rate (L1)	and dity	halo dela	complain (ET) down (ED)			

Figure 10: Interrupted / incomplete previous WizOrder CPOE session warning.

Allows user to recover from previously interrupted ordering session.

🗟 WizOrder 📃 🗖 🛛			
	Stations	Services	
WizOrder Popup Playback pending orders? Orders entered during the previous session, interrupted on May 9 08:13, have not been processed completely. Do you want to play them back? If you answer NO, the pending orders will be deleted. yes no	10N ▲ 10S 10SD 11NM 3N/C 4CN 4EN 4EN2 4EST 4NIC 4NIC 4NIC 4NIC 4NIC 5N 5PCU 5S 6A 6N 6S 7A 7B 7C 7N 7SMI 8A 8B 8C 8N 8S 8N	ANS CAR DIA EMR GAS GMD GNS INF NEO NES NEU NUR OBS ONC ORT OTO PCA PCC PED PGS PLS PON PLS PON PFU PSY PU PSY FIS THS TRA	ALS: AVAI BAR: BEY: BED: BRO BRO CAR: CHU: DAV: DRI DAV: DAV: DRI DAV: GRA GRA GRA GRA GRA GRA HAII HAM: HAM: HAM: HAM: HAM: HAM: HAM: HAM:
	9NSM	URO	JOHI
	ADMT		KAI
Modify census	CCL ED/P		KAN KIR

Figure 13a: Clinician-user initially attempted to order "VQ scan" of lung for pulmonary embolism, and WizOrder completer maps to official name of test (item 1 in pane #2), which user then selects by typing choice in pane #4.

& WizOrder										×
ADC VAAN	8007X ZTESTDC, II DISML display	npatient 3015203-	7 34y/o F (TRAINIO)	1. lung nm perfusion & ventilation (vq scan) (radiology)						
Admission »					or maybe					Solicitation of the
Diagnosis »					2. lung nm fu 3. bone scan i	nction (radiolog nm whole body (y) (radiology)			
Condition »					4. brain pet fö 5. brain study	lg (radiology) nm bolus (radio	ology)	PANE #2		
Vital signs »					6. brain study 7. gallium nm	nm (radiology) whole body (ra	diology)			
Activity/limit:	ations »				8. lung nm pe 9. testicular n	rfusion (radiolo m (radiology)	gy)			•
Allergies »					•				Ganthy	•
Nursing instr	uctions »				Select an I	tem from th	e list			
Diet »			PANE #1		or press END	to return to th	e previous lis	E		
Medications	»									
TV fluids »										
Laboratory to	ests »								alerts	
Radiographic	studies							PANE #	4	
Miscellaneou	Miscellaneous orders »					(C) 2005, Va	anderbilt Uni	versity Medic	al Center	
print <f1></f1>	display <f2></f2>	D/C <f3></f3>	renew	cosign	order sets <f4></f4>	oops <f5></f5>	help <f6></f6>	complain <f7></f7>	done <f8></f8>	

Figure 13b: Selecting lung scan order from Figure 12a launches Anticoagulation Adviser in WizOrder, helps clinician select appropriate diagnostic workup and therapy for suspected or confirmed deep venous thrombosis (DVT) or pulmonary embolism (as well as DVT prophylaxis, and therapy for other disorders such as acute coronary syndrome).

Adult Low Molecular Weight (LMW) Heparin / uidelines Regarding Enoxaparin (LMW Heparin): The resource utiliz ased on studies demonstrating equal or improved efficacy and safety for i edicitable dose-response curve and lack of costs associated with need f anal insufficiency (GFR < 30), those who are obese (>160kg), or those w Review Clinical Data: Last Serum Creatinine: No iselect appropriate indication, test, and/or heparin to	Unfractionated Heparin ation committee recommends the us DVT prophylaxis, DVT/PE treatment or monitoring, MOTE: Unfractionat here reversibility in under 12 ho ne available () Estimat rose from the list below	e of low molect and acute corone and acute corone of heparin may be requi ed Creatinin	llatio ular we ary syn prefer red. e Cle	n Treatment eight heparin (end drome. Enoxaparin i red over LMVH in s arance: Unkno	Advisor (Revised 9/1/03) xaparin) over unfractionated heparin s more cost effective because of its elected patients, including those with pwn mL/min	
2) Pick an Indication	3 Pick a Test to or	der	4	Pick a Hepa	rinoid (if applicable)	
(pick ONE from below)	LE Venous Doppler	V/Q Scan	LI	/W Heparin	Unfractionated Heparin	
DVT prophylaxis	N/A	N/A		Click Here fo	r DVT Prophylaxis Advisor	
DVT or PE, suspected (initial workup)		N/A	0	(Recommended)	0	
PE suspected (with negative bilateral LE Doppler)	N/A		0	(Recommended)	٢	
PE suspected and LE Doppler negative AND V/Q Scan inconclusive	Consider chest CT (helpful only if positive), pulmonary arteriogram, or pulmonary consult			(Recommended)	0	
Massive PE suspected and patient in shock	Start with CT Ch	Consider thrombolytics or invasive radiological embolector				
DVT or PE, confirmed	N/A	N/A	0	(Recommended)	۲	
Acute Coronary Syndrome	N/A	N/A	0	(Recommended)	۲	
Atrial Fibrillation or Prosthetic Valve				0	(Recommended)	
Other Indications for Heparin use	N/A	N/A		٢	۲	
Diagnostic test only (Not for acute DVT/PE workup)				N/A	N/A	
Verify / enter patient weight: Image: Second sec	B Copyright (n. Patient weight is not e	C) 2005, Va ntered.	ande	rbilt Univers	ity Medical Center	
Major Contraindications to All Forms of Heparin Therapy More Information and Recommendations - Intracranial hemorrhage diagnostic tests to confirm or exclude the diagnosis of DVT - active internal bleeding diagnostic tests to confirm or exclude the diagnosis of PE - bleeding peptic ulcer acute coronary syndrome (MLNQWMLUSA.and CP) - heparin-induced thrombocytopenia anytime in the past medical therapy of acute DVT - concern for spontaneous bleeding medical therapy of acute PE - imminent surgery/invasive procedure planned or likely Low molecular weight heparin - malignant hypertension heparin induced thrombocytopenia						

Figure 15: After completing gentamicin order (seen in left panel, pane #1), system offers selectable gentamicin monitoring orders (in upper right panel, pane #2) as "one click away" for convenience (suggesting best practice, but not requiring it).

送 Wiz Order						_ 🗆 ×
8000-B YTKINPTST, Blu One 3002245-3 54y/o F (TRAINIO)		GENTAMIC	IN MONITOR	RING		^
ADC VAAN DISML display Admission		1. gentami 2. gentami 3. gentami	cin peak level a cin trough level cin level	fter 3rd dose before 3rd dos	e	
Diagnosis		4. « Return	ı to previous lis	t		
Condition						
Vital signs						
Activity/limitations PANE #1					PANE #2	
Allergies						-
Nursing instructions		•				
Diet		Select an	item from tl	ne list		GenRx
Medications =Antibiotics		or enter ano or press <u>EN</u>	ther order to return to t	he previous lis	st	WizRx
¤ gentamicin inj: garamycin 200 mg iv q24h						Bioraturo
TV fluids						QMR
Laboratory tests						antibiotics
=One time labs lpha comprehensive metabolic panel x1 ; start on 4/14 at 0800						alerts
Radiographic studies						
a chest pa & lat xr xl Is the patient program 2 n						
- Is the patient pregnant / It - Reason/history: xxx	-	Copyright	(C) 2005, Va	Inderbilt Univ	ersity Medica	I Center
rint <f1> display <f2> D/C <f3> renew co</f3></f2></f1>	isign	order sets <f4></f4>	oops <f5></f5>	help <f6></f6>	complain <f7></f7>	done <f8></f8>

Figure 17: User (from Figure 15) requests assistance in specifying RASS score;

web-based advisor makes assists user with data collection and score calculation.

Figure 18: Display of recent laboratory test results while ordering new tests: passive graphs of last 7 days of lab results (if test ordered and result completed)

1	Bilirubin, total	Bilirubin, conjugated	SOPT/ALT		
Select test(s) Bili, total Bili, conj. SGPT/ALT AlkPhos GGT SGOT/AST Amylase ¹ Lipase ¹ LDH	1.2 0. <u>8</u> 0.2 0.8.5	9.4 0.0 0.8-0	No Data Available		
	Alkaline Phospatase	GammaGlutTrans (GGT) No Data Available	SGOT/AST 00 2 10 10 6 days 3 days now		
	Amylase (serum)	Lipase (serum)	LDH		
Graph color of	No Data Available	No Data Available	No Data Available		
OTE(S): 1 inge	neral, it is duplicative to follow <u>BOTH</u> Anylase and Lipase	especially after establishing one or both is elevated.	- 27		
2 Select timi once, in once, no once, no once at	ng/urgency am 05, routine w, routine w, stat 06/13/05 11:56 (® stat) (© routine)	(3) Go to anot Go to LB Go to Ca Go to Ca Go to Ca	ther page or exit C6 PANE #5 Phos Meins, Lipids, Uric Acid rdiac Muscle Enzymes		

Figure 19: Clinician prescribed cyclosporine while a currently active order for gentamicin was in place. Following a drug interaction alert (upper right panel, pane #2), user clicks on item 1, pane #2 to request evidence basis for what is known about the drug interaction (displayed in pop-up window, pane #5).

🚭 Wiz Ore	ler								_ & ×	
	8021X ZTESTP	AC, Reagon 1498664-0 3	3y/o M (TRAINIO)		Pharmacy warnin	ng for CYCLOSPOI	RINE INJ: SANDI	MMUNE:		
ADC VA Admissio o "proto o day 0 f o weight: o weight: Diagnosi	AN DISML display n col: gyhd (csa and mtx)" or bmt: 3/5/99 6:00 54.885kg/121lb; height: 55.000kgs/121lb; s	152cm/60.0in; ibw: 5	0.0kg/110.2lb; bsa	• : 1.51m2; adjust« ANE #1	 1. Aminoglycosides may potentiate cyclosporine nephrotoxicity 2. Avoid aminoglycosides + cyclosporine in renal transplant pts PANE #2 					
Condition Vital sign Activity/I Allergie	a iss imitations WizOrder Popup			×	4					
ivursin;	Aminoglycosides may pob	entiate cyclosporine n	ephrotoxicity PA	NE #5						
Diet Medica	Aminoglycoside antibiotics been shown to have addit severity of this reaction pr	when used in combi- ive nephrotoxicity whe obably depends on the standard trans- tr	nation with cyclospo in used in combinati le duration of combin plant patients on dr	rine a have on. The ned use and wolffs or	Pharmacy warning Gen					
=Annoi cefazo c genta =Sched nicard =PRN 1	 Anchin the diagnosis of the patient. Bone marrow transplant patients on dr wolff's or dr green's service should generally. Not "receive the two drugs in combination since therapy with an aminoglycoside in these patients can be expected to be prolonged due to profound neutropenia. In cardiac & renal transplant patients the potential for toxicity may be offset by the benefit of aminoglycoside therapy. PRN 1 				a order it anyway b don't order it or select an item to display more information					
IV fluid d5 1/2	or in a patient of dr's gree about the potential for inc of the night, however-leav	r, wolff, or stein then r reased nephrotoxicity e a note for the day p	hotify the physician . Don't call in the mic harmacist to follow u	tdle Ip**					QMR antibiotics	
Labora	B	ack Home							alerts	
Radiogra Miscella Bells and	Radiographic studies Miscellaneous orders Bells and whistles a					2) 2005 1/	al a ale ita 1 factore		0	
		1	1		Copyright ((C) 2005, Van	derbilt Unive	rsity Medical	Center	
print <	F1> display <f2></f2>	D/C <f3></f3>	renew	cosign	order sets <f4></f4>	oops <f5></f5>	help <f6></f6>	comments <f7></f7>	done <f8></f8>	
Start	🥌 🕾 🖄 👻 📃 💻 Mi	crosoft Pow 🛛	Wizorder Dae	🖉 wizscr07.b	mp 👹 Wiz Oro	ler		4	🔇 1:54 PM	

Figure 20: Clinician user begins to order "selenium blood" level (pane #2), prompting a pop-up warning (pane #5) that stops workflow and demands attention. Pop-up explains that the test is sent to a reference laboratory and takes 3 days to perform. User is notified that reimbursement may be compromised if patient is discharged before result is known. Pop-up provides instructions for alternative ordering mechanisms (that can be selected directly from pop-up) if clinician believes that obtaining the result of the order is not urgent / emergent for the current patient.

🦉 Wi	zOrder									_ 🗆 🗙
	7	20M-C ZTRAINADI	M, Belinda 155696	1-9 33y/o F (TRAIN	10)					^
ADC	VAAN	DISML display	у		-	1. selenium b	old (reference lat))		
[🛃 Wiz	Order Popup					×	poo: shamp	00	
Adn	Notice	from the Reso	ource Utilizatio	n Committee.						
Dia ch	The test turnaro	st SELENIUM B	LD is not perform s test result is 3 (ned at ∨UMC, bi day(s), and the	ut sent to a refer cost of performir	ence laboratory. g the test is \$12	The expected 0.00.			
Con fai Vita	You mu conside tests th	ust discuss orde er ordering it on lat do not have i MC reference la	ring this test with a subsequent or results back at til h policy.	the primary VU utpatient visit, if ne of inpatient o	MC Attending. It appropriate, sind discharge. <u>Click f</u>	is recommended e many payors v nere for more inf	l that you will not cover ormation about			
vit	Please	use the "compla nts. Please indic	ain" button in Wiz ate the reason.	Order if you thi	nk this test is alw	ays appropriate	to order on	F	PANE #2	
aci	Click o	n one of the follo	wing actions:							•
Alle	1) Ask	nurse to sched	lule patient at dis	charge for SEL	ENIUM BLD test	as outpatient.		list		GenRx
all	0.000									WizRx
Nur	2 <u>) Gan</u>	cel (Du nui urui	er test.),					previous li	st	\$0.00
blc	3 <u>) Ord</u>	er test now (At	tending MD appi	roved this test in	n discussion with	me.)				literaturo
no					PAN	IE #5				inter on in c
sal										OMR
sal			E	ack Home	Print			-		antibiotics
						1				alerts
Diet sodi	ium cont	rolled diet 200	0 gm na daily n	ow »Aug 22 07	:55					
Med IV fh ◀	ications 1ids					Copyright	(C) 2005, Vai	nderbilt Uni	versity Medica	al Center
print	<f1></f1>	display <f2></f2>	D/C <f3></f3>	renew	cosign	order sets <f4></f4>	oops <f5></f5>	help <f6></f6>	complain <f7></f7>	done <f8></f8>
			2A 3				Sort by beds			KIRC