

## *Quick Guide for the Pharmacy Student*

**Neehr Perfect EHR** is an educational version of the EHR system that is currently used in the Veteran Affairs (VA) Centers across the country. Neehr Perfect utilizes **CPRS** (Computerized Patient Record System) and **VistA** (Veterans Health Information Systems and Technology Architecture). CPRS is the traditional EHR component that enables you to enter, review, and continuously update all the information connected with any patient. With CPRS, you can order lab tests, medications, diets, radiology tests and procedures, record a patient's allergies or adverse reactions to medications, request and track consults, document progress notes and assessments, diagnoses, and treatments for each encounter, and enter discharge summaries. In addition, CPRS supports clinical decision-making and enables you to review and analyze patient data.

**VistA** is considered the "original" electronic health record. Most EHR systems in clinics and hospitals today have roots that can be traced back to the technology that started VistA and CPRS. In Neehr Perfect, VistA is the data management area or "back-end" of CPRS. VistA is a text-based utility that only works with keyboard prompts. As a pharmacy student, you'll likely use both CPRS and VistA for different functions. Within each, any action you're able to do is based on your own role or set of permissions. This is the way data and structures are protected in practice.

The applications and data within VistA are organized within structured branch-like tables. One table opens a menu of options, and each menu includes sub-tables, and so on. This is because the data structure of the EHR is written in a healthcare & financial IT language called MUMPS which is built as an array of data.

### Required prerequisites

#### **For using the Neehr Perfect EHR (CPRS)**

1. Level I Scavenger Hunts – EHR Orientation
2. Level II Scavenger Hunt – Essential Skills and Usability

#### **For using VistA**

3. VistA Scavenger Hunt Level I: Using a Terminal Emulator
4. VistA Scavenger Hunt Level II: The VistA EHR Terminal

## Terminology used in CPRS and VistA

**Active Order** - Any order which has not expired or been completed or discontinued. Active orders also include any orders that are on hold or on call.

**Additive** - A drug that is added to an IV solution for the purpose of parenteral administration. An additive can be an electrolyte, a vitamin or other nutrient, or an antibiotic.

**Admixture** - An admixture is a type of intravenously administered medication comprised of any number of additives (including zero) in one solution. It is given at a specified flow rate; when one bottle or bag is empty, another is hung.

**BCMA** - A component within CPRS called Bar Code Medication Administration. This is where medications are administered with a barcode scanner or manually through mouse-clicks. The BCMA validates medications against active orders and only allows meds to be given when they are due. In Neehr Perfect, it is often referred to as the eMAR (Electronic Medication Administration Record) and is accessed through the Tools Menu in the patient chart.

**Complex Order** - An order that is created from CPRS using the Complex Order dialog and consists of one or more associated Inpatient Medication orders, known as “child” orders. Inpatient Medications receives the parent order number from CPRS and links the child orders together. If an action of FN (Finish), VF (Verify), DC (Discontinue), or RN (Renew) is taken on one child order, the action must be taken on all of the associated child orders.

**Continuous IV Order** - Inpatient Medications IV order not having an administration schedule. This includes the following IV types: Hyperals, Admixtures, Non-Intermittent Syringe, and Non-Intermittent Syringe or Admixture Chemotherapy.

**Continuous Syringe** - A syringe type of IV that is administered continuously to the patient, similar to a hyperal IV type. This type of syringe is commonly used on outpatients and administered automatically by an infusion pump.

**CPRS** - Computerized Patient Record System, a.k.a. the Neehr Perfect EHR. CPRS is an application in VistA that allows the user to enter all necessary orders and other chart data for a patient. All pending orders that appear in the Unit Dose and IV modules are initially entered through the CPRS package.

**Dispense Drug** - The Dispense Drug is how the drug is dispensed to be administered. It includes the name of the medication and the strength attached to it (e.g., Acetaminophen 325 mg). Depending on the medication order, a dispense drug may need to be administered more than once to fulfill the order. For example, an order of Acetaminophen 650 mg would need two dispensed drugs at the 325 mg strength to complete the order. The name alone without a strength attached is the Orderable Item name.

**Delivery Times** - The time(s) when IV orders are delivered to the wards.

**Dosage Ordered** - After the user has selected the drug during order entry, the dosage ordered prompt is displayed.

**Duration** - The length of time between the Start Date/Time and Stop Date/Time for an Inpatient Medications order. The default duration Inpatient Medication orders in Neehr Perfect is 100 days.

**Electrolyte** - An additive that disassociates into ions (charged particles) when placed in solution.

**Infusion Rate** - The designated rate of flow of IV fluids into the patient.

**Intermittent Syringe** - A syringe type of IV that is administered periodically to the patient according to an administration schedule.

**IV Duration** - The duration of an order may be entered in CPRS at the IV DURATION OR TOTAL VOLUME field in the IV Fluids order dialog. The duration may be specified in terms of volume (liters or milliliters), or time (hours or days). Inpatient Medications uses this value to calculate a default stop date/time for the order at the time the order is finished.

**Medication Routes/Abbreviations** - Route by which medication is administered (e.g., oral). The abbreviation cannot be longer than five characters to fit on labels and the MAR. The user can add new routes and abbreviations as appropriate.

**Non-Verified Orders** - Any order that has been entered in the Unit Dose or IV module that has not been verified (made active) by a nurse and/or pharmacist.

**Orderable Item** - An Orderable Item is the name of the drug that's used in the medication order. Generally, the name has no strength attached to it (e.g., Acetaminophen).

**Patient Profile** - A listing of a patient's active and non-active Unit Dose and IV orders. The patient profile also includes basic patient information, including the patient's name, social security number, date of birth, diagnosis, ward location, date of admission, reactions, and any pertinent remarks.

**Pending Order** - A pending order is one that has been entered by a provider through CPRS without Pharmacy or Nursing finishing the order. Once Nursing signed the order in CPRS or Pharmacy has verified the order in Vista, it will become active.

**Piggyback** - Small volume parenteral solution for intermittent infusion. A piggyback is comprised of any number of additives, including zero, and one solution; the mixture is made in a small bag. The piggyback is given on a schedule (e.g., Q6H). Once the medication flows in, the piggyback is removed; another is not hung until the administration schedule calls for it.

**Profile** - The patient profile shows a patient's orders. The Long profile includes all the patient's orders, sorted by status: active, non-verified, pending, and non-active. The Short profile will exclude the patient's discontinued and expired orders.

**Provider** - Another term for the physician/clinician involved in the prescription of an IV or Unit Dose order for a patient.

**Schedule** - The frequency of administration of a medication (e.g., QID, QDAILY, QAM, STAT, Q4H).

**Schedule Type Codes** include:

- **O** - one time (i.e., STAT - only once)
- **P** - PRN (as needed; no set administration times)
- **C** - continuous (given continuously for the life of the order; usually with set administration times)
- **R** - fill on request (used for items that are not automatically put in the cart - but are filled on the nurse's request. These can be multidose items (e.g., eye wash, kept for use by one patient and is filled on request when the supply is exhausted)
- **OC** - on call (one time with no specific time to be given, e.g., 1/2 hour before surgery).

**Scheduled IV Order** - Inpatient Medications IV order having an administration schedule. This includes the following IV Types: IV Piggyback, Intermittent Syringe, IV Piggyback Chemotherapy, and Intermittent Syringe Chemotherapy.

**Self-Med** - Medication that is to be administered by the patient to himself.

**Standard Schedule** - Standard medication administration schedules stored in the ADMINISTRATION SCHEDULE file

**Status** -

- |                                      |                                     |
|--------------------------------------|-------------------------------------|
| • <b>A</b> – active                  | • <b>U</b> – unreleased             |
| • <b>E</b> – expired                 | • <b>P</b> – pending                |
| • <b>R</b> - renewed (or reinstated) | • <b>O</b> – on call                |
| • <b>D</b> – discontinued            | • <b>DE</b> – discontinued edit     |
| • <b>H</b> - on hold                 | • <b>RE</b> – reinstated            |
| • <b>I</b> – incomplete              | • <b>DR</b> – discontinued renewal. |
| • <b>N</b> - non-verified            |                                     |

**Stop Date/Time** - The date and time an order is to expire.

**Syringe** - Type of IV that uses a syringe rather than a bottle or bag. The method of infusion for a syringe-type IV may be continuous or intermittent.

**Syringe Size** - The syringe size is the capacity or volume of a particular syringe. The size of a syringe is usually measured in number of cubic centimeters (ccs).



**TPN** - Total Parenteral Nutrition. The intravenous administration of the total nutrient requirements of the patient. The term TPN is also used to mean the solution compounded to provide those requirements.

**Units per Dose** - The number of Units (tablets, capsules, etc.) to be dispensed as a Dose for an order. Fractional numbers will be accepted.

## Route of Medication

The EHR will allow you to free-text the route of the medication order. You may write it out or abbreviate it. Some common routes are listed below.

Order – written out	Order - Abbreviation	Order – written out	Order - Abbreviation
<b>BOTH EARS</b>	AU	<b>MISCELLANEOUS</b>	MISC
<b>BOTH EYES</b>	OU	<b>NASAL</b>	NASAL
<b>BUCCAL</b>	BUCC	<b>NG TUBE</b>	NG
<b>EPIDURAL</b>	ED	<b>OPHTHALMIC</b>	OPH
<b>G TUBE</b>	G TUBE	<b>ORAL</b>	PO
<b>GARGLE</b>	GARGLE	<b>PERCUTANEOUS</b>	PER
<b>INHALATION</b>	INHL	<b>RECTAL</b>	RTL
<b>INTRADERMAL</b>	ID	<b>RIGHT EAR</b>	AD
<b>INTRAMUSCULAR</b>	IM	<b>RIGHT EYE</b>	OD
<b>INTRAOCULAR</b>	IO	<b>SUBCUTANEOUS</b>	SC, SQ
<b>INTRAVENOUS</b>	IV	<b>SUBLINGUAL</b>	SL
<b>IRRIGATION</b>	IRRG	<b>TOPICAL</b>	TOP
<b>IV PIGGYBACK</b>	IVPB	<b>TRACH</b>	TRACH
<b>IV PUSH</b>	IVP	<b>TRANSDERMAL</b>	TRANSDERMAL
<b>J TUBE</b>	J TUBE	<b>URETHRAL</b>	URH
<b>LEFT EAR</b>	AS	<b>VAGINAL</b>	VAG
<b>LEFT EYE</b>	OS	<b>VAGINAL TOPICAL</b>	VAG TOP

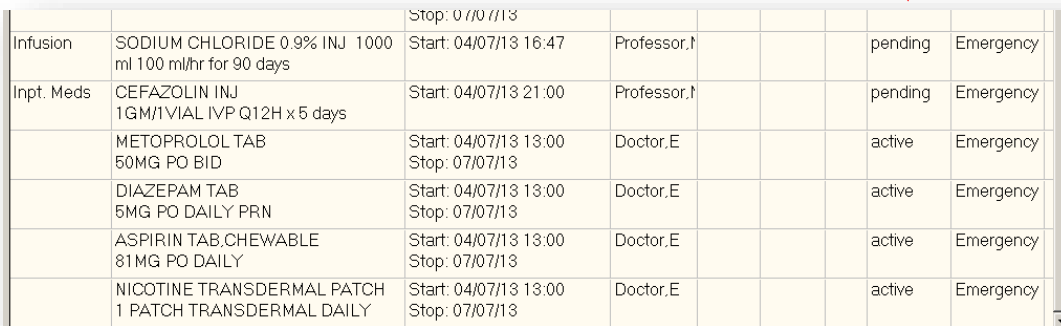
## Frequency of administration

The frequency for a medication order cannot be free-texted. It is a set route that has standard administration times associated with it. Below is a reference table. When placing an order in CPRS in a patient chart, you can create what is called a “complex” order that will allow you to customize the days and times you want a medication administered. For example, you can set a medication order to be given on Mon-Wed-Fri at 0900 and 1500.

Frequency	Standard Administration Times	Frequency	Standard Administration Times
BID	09-17	Q4H	01-05-09-13-17-21
DAILY	09	Q6H	06-12-18-24
MO-WE-FR	09	Q8H	05-13-21
NOW		QAC	07-12-17
ONCE	1600	QAM	09
Q12H	09-21	QHS	2100
Q15MIN		QID	09-13-17-21
Q2-4H		QOD	09
Q24H	09	QPC	08-12-17
Q2H	04-06-08-10-12-14-16-18-20-22-	STAT	
Q3H	01-04-07-10-13-16-19-22	TID	09-13-17
Q4-6H		TID AC	

## The Auto-Pharmacist Program in Neehr Perfect

In Neehr Perfect there is a built in program called the **Auto-Pharmacist**. When an order is placed and signed in the chart, the Auto-Pharmacist is running in the background to verify and release the order in seconds so that it may be administered and documented in the eMAR without human intervention. This is very helpful for the clinical student, such as a nursing student, who is waiting to administer the ordered medication. With a simple 'refresh' of the chart an order goes from pending to active and is ready to be administered by the clinical student through the EHR's eMAR (BCMA) system.



		Stop: 07/07/13					
Infusion	SODIUM CHLORIDE 0.9% INJ 1000 ml 100 ml/hr for 90 days	Start: 04/07/13 16:47	Professor.T			pending	Emergency
Inpt. Meds	CEFAZOLIN INJ 1GM/1VIAL IVP Q12H x 5 days	Start: 04/07/13 21:00	Professor.T			pending	Emergency
	METOPROLOL TAB 50MG PO BID	Start: 04/07/13 13:00 Stop: 07/07/13	Doctor.E			active	Emergency
	DIAZEPAM TAB 5MG PO DAILY PRN	Start: 04/07/13 13:00 Stop: 07/07/13	Doctor.E			active	Emergency
	ASPIRIN TAB,CHEWABLE 81MG PO DAILY	Start: 04/07/13 13:00 Stop: 07/07/13	Doctor.E			active	Emergency
	NICOTINE TRANSDERMAL PATCH 1 PATCH TRANSDERMAL DAILY	Start: 04/07/13 13:00 Stop: 07/07/13	Doctor.E			active	Emergency

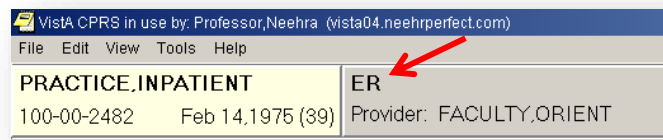
For the pharmacy student, having the Auto-Pharmacist turned on and working can be beneficial when you are first building your knowledge and skills. But at some point your instructors may want that Auto-Pharmacist program turned off so that you can experience manual order verification as you would in practice. The instructor has control over when the Auto-Pharmacist is enabled or disabled depending on the objectives of the assignment. ***This information has been provided to you so that you understand how the pharmacy components of this educational EHR function.***



## Inpatient and Outpatient

In the Neehr Perfect EHR a single chart can be an inpatient or an outpatient chart depending on where the patient has been admitted. For the pharmacy student, knowing the location of the chart will assist you in determining your role with the medication order. You will learn that no actions in the EHR can be taken without first identifying the location of a chart.

In the chart notice the location of the patient at the top of the chart. In this example it is an **Inpatient** chart, located in the ER.



On the **Meds** tab active Inpatient Medications default to the top.

Vista CPRS in use by: Professor\_Neehra (vista05.neehrperfect.com)

File Edit View Action Tools Help

**PRACTICE.INPATIENT**    **ER**    Primary Care Team Unassigned  
 100-01-1242    Apr 17,1919 (95)    Provider: PROFESSOR.NEEHRA    Attending: Doctor,One

Action	Inpatient Medications	Stop Date	Status
	WARFARIN TAB Give: 5MG PO QHS	11/02/14	Active
	TAMSULOSIN CAP,ORAL Give: 0.4MG PO QHS (cont. of outpatient meds)	11/02/14	Active
	LABETALOL TAB Give: 100MG PO Q8H PRN (SBP>170 or DBP>105)	11/02/14	Active
	CALCIUM/VITAMIN D TAB Give: 500MG PO DAILY	11/02/14	Active
	SIMVASTATIN TAB Give: 40MG PO QHS	11/02/14	Active
	OMEPRAZOLE CAP,EC Give: 20MG PO DAILY	11/02/14	Active
	LOSARTAN TAB Give: 25MG PO DAILY	11/02/14	Active
	ASPIRIN TAB Give: 325MG PO DAILY	11/02/14	Active

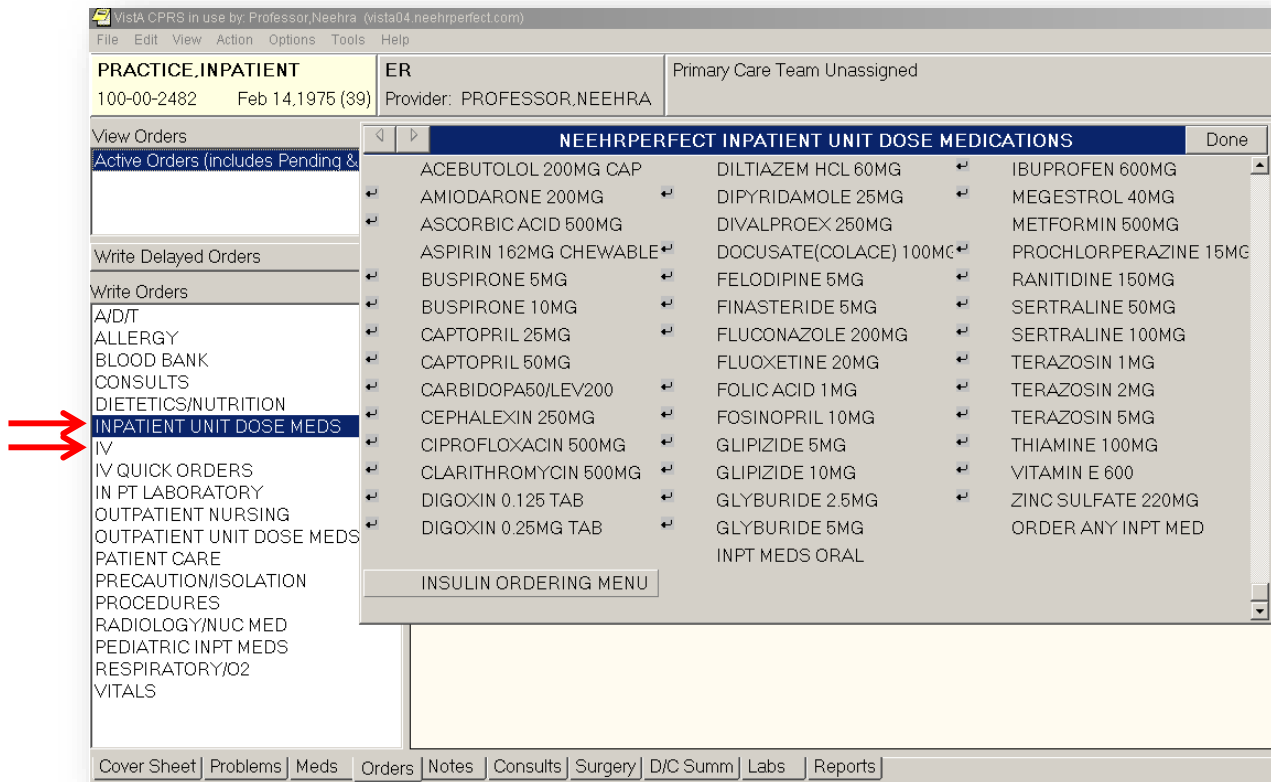
Action	Non-VA Medications	Start Date	Status

Action	Outpatient Medications	Expires	Status

Cover Sheet | Problems | Meds | Orders | Notes | Consults | Surgery | D/C Summ | Labs | Reports

For inpatient charts, medications are ordered using the **Inpatient Unit Dose Meds** and **IV** ordering menus on the Orders tab.



Vista CPRS in use by Professor.Neehra (vista04.neehrperfect.com)

File Edit View Action Options Tools Help

**PRACTICE.INPATIENT** ER Primary Care Team Unassigned  
 100-00-2482 Feb 14,1975 (39) Provider: PROFESSOR.NEEHRA

View Orders

Active Orders (includes Pending & ...)

Write Delayed Orders

Write Orders

A/D/T

ALLERGY

BLOOD BANK

CONSULTS

DIETETICS/NUTRITION

**INPATIENT UNIT DOSE MEDS**

IV

IV QUICK ORDERS

IN PT LABORATORY

OUTPATIENT NURSING

OUTPATIENT UNIT DOSE MEDS

PATIENT CARE

PRECAUTION/ISOLATION

PROCEDURES

RADIOLOGY/NUC MED

PEDIATRIC INPT MEDS

RESPIRATORY/O2

VITALS

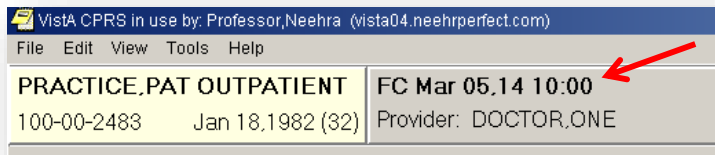
**NEEHRPERFECT INPATIENT UNIT DOSE MEDICATIONS** Done

ACEBUTOLOL 200MG CAP	DILTIAZEM HCL 60MG	IBUPROFEN 600MG
AMIODARONE 200MG	DIPYRIDAMOLE 25MG	MEGESTROL 40MG
ASCORBIC ACID 500MG	DIVALPROEX 250MG	METFORMIN 500MG
ASPIRIN 162MG CHEWABLE	DOCUSATE(COLACE) 100MG	PROCHLORPERAZINE 15MG
BUSPIRONE 5MG	FELODIPINE 5MG	RANITIDINE 150MG
BUSPIRONE 10MG	FINASTERIDE 5MG	SERTRALINE 50MG
CAPTOPRIL 25MG	FLUCONAZOLE 200MG	SERTRALINE 100MG
CAPTOPRIL 50MG	FLUOXETINE 20MG	TERAZOSIN 1MG
CARBIDOPA50/LEV200	FOLIC ACID 1MG	TERAZOSIN 2MG
CEPHALEXIN 250MG	FOSINOPRIL 10MG	TERAZOSIN 5MG
CIPROFLOXACIN 500MG	GLIPIZIDE 5MG	THIAMINE 100MG
CLARITHROMYCIN 500MG	GLIPIZIDE 10MG	VITAMIN E 600
DIGOXIN 0.125 TAB	GLYBURIDE 2.5MG	ZINC SULFATE 220MG
DIGOXIN 0.25MG TAB	GLYBURIDE 5MG	ORDER ANY INPT MED
	INPT MEDS ORAL	

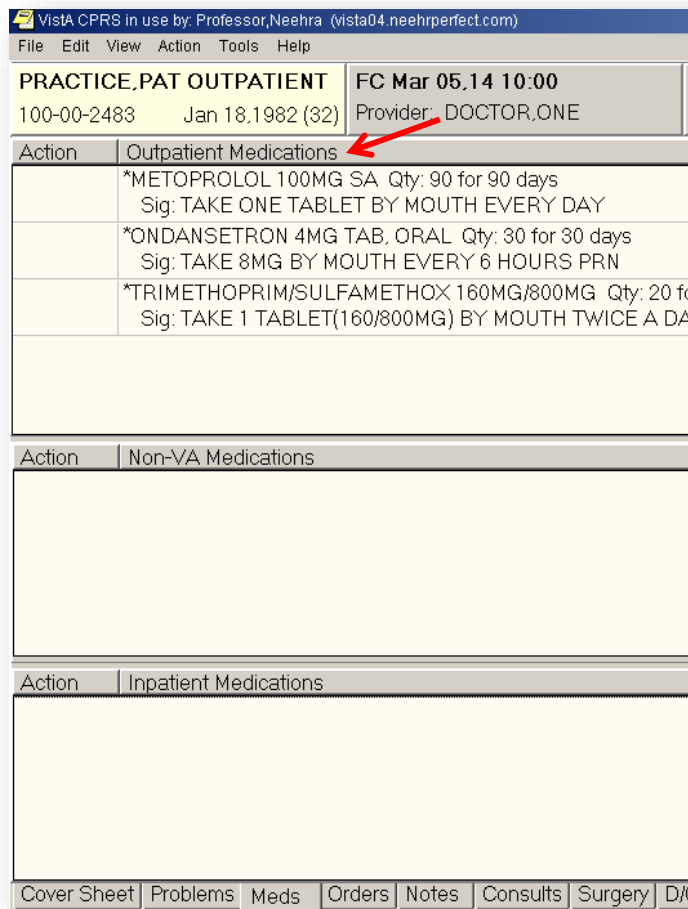
INSULIN ORDERING MENU

Cover Sheet | Problems | Meds | Orders | Notes | Consults | Surgery | D/C Summ | Labs | Reports

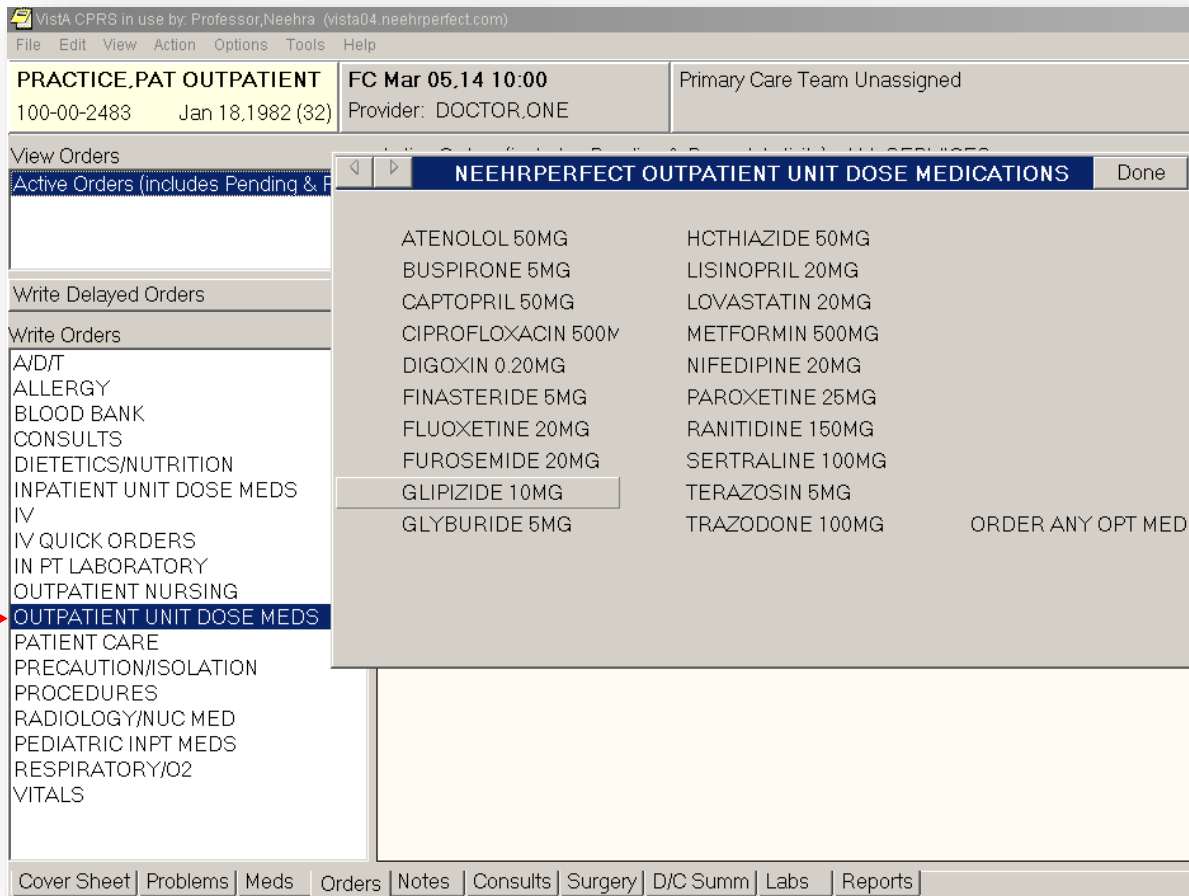
Here is an **Outpatient** chart. In this example the chart is located in the Family Clinic.



With the active Outpatient medication orders (prescriptions) defaulting to the top of the **Meds** tab.



On outpatient charts, medications are ordered using the **Outpatient Unit Dose Meds** ordering menu on the Orders tab. Ordering medications in an Outpatient chart is similar to writing a paper script or transmitting a patient prescription electronically to a retail pharmacy.



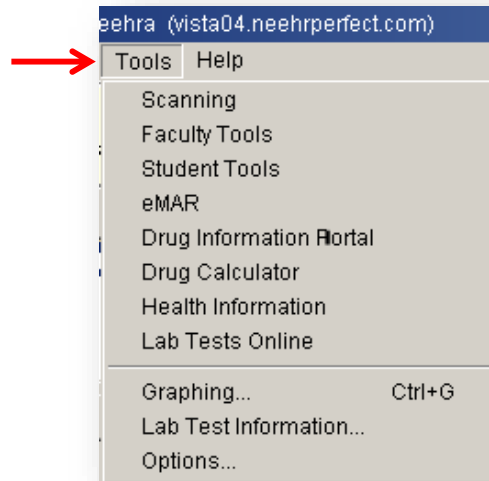
The screenshot shows a software window titled "Vista CPRS in use by: Professor, Neehra (vista04.neehrperfect.com)". The main window displays patient information for "PRACTICE, PAT OUTPATIENT" (ID: 100-00-2483, DOB: Jan 18, 1982 (32)) and a visit on "FC Mar 05, 14 10:00" with "Provider: DOCTOR, ONE". A "View Orders" menu is open, showing "OUTPATIENT UNIT DOSE MEDS" selected with a red arrow. A secondary menu, "NEEHRPERFECT OUTPATIENT UNIT DOSE MEDICATIONS", is displayed, listing various medications in two columns:

ATENOLOL 50MG	HCTHIAZIDE 50MG
BUSPIRONE 5MG	LISINAPRIL 20MG
CAPTOPRIL 50MG	LOVASTATIN 20MG
CIPROFLOXACIN 500M	METFORMIN 500MG
DIGOXIN 0.20MG	NIFEDIPINE 20MG
FINASTERIDE 5MG	PAROXETINE 25MG
FLUOXETINE 20MG	RANITIDINE 150MG
FUROSEMIDE 20MG	SERTRALINE 100MG
GLIPIZIDE 10MG	TERAZOSIN 5MG
GLYBURIDE 5MG	TRAZODONE 100MG
	ORDER ANY OPT MED

The bottom of the window features a navigation bar with tabs: Cover Sheet, Problems, Meds, Orders, Notes, Consults, Surgery, D/C Summ, Labs, Reports.

## Additional Tools and Resources for you

From any place in the patient chart you can access the **Tools Menu**. The Tools Menu includes access to the eMAR (BCMA), and external links to the Drug Information Portal, Medline Plus and Lab Tests Online.



Also available is the searchable Help contents within the EHR (**Help Menu**).

