# DOSING ORDER CHECK
# User Manual

## March 2014

Department of Veterans Affairs
Product Development

# Revision History

Each time this manual is updated, the Title Page lists the new revised date and this page describes the changes. If the Revised Pages column lists "All," replace the existing manual with the reissued manual. If the Revised Pages column lists individual entries (e.g., 25, 32), either update the existing manual with the Change Pages Document or print the entire new manual.

| Date | Revised Pages | Patch Number | Description |
|------|---------------|--------------|-------------|
| 03/2014 | All Pages | MOCHA 2.0: PSJ*5*252, PSJ*5*257, PSO*7*372, PSO*7*416, PSS*1*160, PSS*1*173 | New document (C. Powell, PM, K. Kapple, Tech Writer) |

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Dosing Order Check
User Manual

# Preface

This user manual describes the functional characteristics of Dosing Order Checks. It is intended for pharmacists and technicians who are familiar with the functioning of Outpatient Pharmacy, Inpatient Medications, Pharmacy Data Management (PDM), and Computerized Patient Record System (CPRS) in a Veterans Affairs Medical Center (VAMC).

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# Table of Contents

# 1 Introduction

Medication Order Check Healthcare Application (MOCHA) v2.0 implements the first increment of Dosing Order Checks and introduces the Maximum Single Dose Order Check for simple and complex orders for Outpatient Pharmacy, Inpatient Medications applications, and Computerized Patient Record System (CPRS). MOCHA v2.0 uses the same interface to First Databank (FDB) as MOCHA v1.0.

- Implements Maximum Single Dose Order Check for simple and complex orders in Outpatient Pharmacy and Inpatient Medications applications

- Provides error messages with reasons at the order level when a Maximum Single Dose Order Check cannot be performed for pharmacy users

- Provides a generic error message at the order level when a Maximum Single Dose Order Check cannot be performed for CPRS users

- Adds a check during installation to see if Pre-Release setup work – mapping of  Local Medication Routes and population of Numeric Dose and Dose Unit fields for Local Possible Dosages has been completed

- Adds new fields to the ADMINISTRATION SCHEDULE file (#51.1) to support the ability to exclude a schedule from all Dosing Order Checks or just from a Daily Dose Order Check

- Modifies the *Standard Schedule Edit* [PSS SCHEDULE EDIT] option to allow editing of the new dosing exclusion fields

- Modifies the *Administration Schedule File Report* [PSS SCHEDULE REPORT] option to display data entered in the new dosing exclusion fields

- Applies the 'all Dosage Checks exclusion' for a schedule when processing outpatient and inpatient medication orders

- Creates a new Pharmacy Data Management (PDM) option called *Lookup Dosing Check Info for Drug* [PSS DRUG DOSING LOOKUP] so that a user can view all data that can affect Dosing Order Checks for a drug

- Adds new entries to the VistA DOSE UNITS file (#51.24)

- Creates and auto enables new DOSING_INFO web service

- Provides option to enable/disable Dosing Order Checks called *Enable/Disable Dosing Order Checks* [PSS DOSING ORDER CHECKS]

- Provides notification via email when Dosing Order Checks enabled/disabled

- Provides audit trail for enabling/disabling of Dosing Order Checks

- Provides option to identify drug names with trailing spaces called *Drug Names with Trailing Spaces* [PSS TRAILING SPACES REPORT]

- Modifies *Check Vendor Database Link* [PSS CHECK VENDOR DATABASE LINK] option to show Domain Name Service name for the MOCHA server when displaying the connection status

- Provides a new field in the CLINIC DEFINITION file (#53.46) to allow the entry of the number of days that discontinued/expired IMO orders will be included in Enhanced Order Checks (Drug Interactions and Therapeutic Duplications)

## 1.1  Documentation Conventions

This Dosing Order Checks User Manual includes documentation conventions, also known as notations, which are used consistently throughout this manual. Each convention is outlined below.

| Convention | Example |
|---|---|
| Menu option text is italicized. | There are eight options on the *Archiving* menu. |
| Screen prompts are denoted with quotation marks around them. | The "Dosage:" prompt displays next. |
| Responses in bold face indicate user input. | Select Orders by number: (1-6): **5** |
| **<Enter>** indicates that the Enter key (or Return key on some keyboards) must be pressed.<br>**<Tab>** indicates that the Tab key must be pressed. | Type **Y** for Yes or **N** for No and press **<Enter>**.<br>Press **<Tab>** to move the cursor to the next field. |
| Indicates especially important or helpful information. | Up to four of the last LAB results can be displayed in the message. |
| Indicates that options are locked with a particular security key. The user must hold the particular security key to be able to perform the menu option. | This option requires the security key PSOLOCKCLOZ. |

## 1.2  Getting Help

One, two or three question marks (?, ??, ???) can be entered at any of the prompts for online help. One question mark elicits a brief statement of what information is appropriate for the prompt. Two question marks provide more help, plus the hidden actions, and three question marks will provide more detailed help, including a list of possible answers, if appropriate.

## 1.3  Related Manuals

The following manuals are located on the VistA Documentation Library (VDL) at: http://www.va.gov/vdl.

**Main Package Documentation:**

- *Outpatient Pharmacy V. 7.0 Release Notes*
- *Outpatient Pharmacy V. 7.0 Manager's User Manual*
- *Outpatient Pharmacy V. 7.0 Pharmacist's User Manual*
- *Outpatient Pharmacy V. 7.0 Technician's User Manual*
- *Outpatient Pharmacy V. 7.0 User Manual – Supplemental*
- *Outpatient Pharmacy V. 7.0 Technical Manual/Security Guide*
- *Dosing Order Check User Manual*

- *VistA to MOCHA Interface Document*

- *Inpatient Medications V. 5.0 Nurse's User Manual*

- *Inpatient Medications V. 5.0 Pharmacist's User Manual*

- *Inpatient Medications V. 5.0 Supervisor's User Manual*

- *Inpatient Medications V. 5.0 Technical Manual/Security Guide*

- *Pharmacy Data Management V.1.0 User Manual*

- *Pharmacy Data Management V. 1.0 Technical Manual/Security Guide*

- *MOCHA V. 2.0 Installation Guide*

- *MOCHA V. 2.0 Release Notes*

- *MOCHA V. 2.0 FAQ Document*

**Additional Documentation:**

Additional documentation related to specific projects is also located on the VDL. For example, there may be several different Release Notes documents, which apply to specific projects. Also, there may be several sets of "Change Page" documents, which apply to changes made only for a specific package patch.

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# 2 Enhanced Order Checks and Dosing Order Checks Process
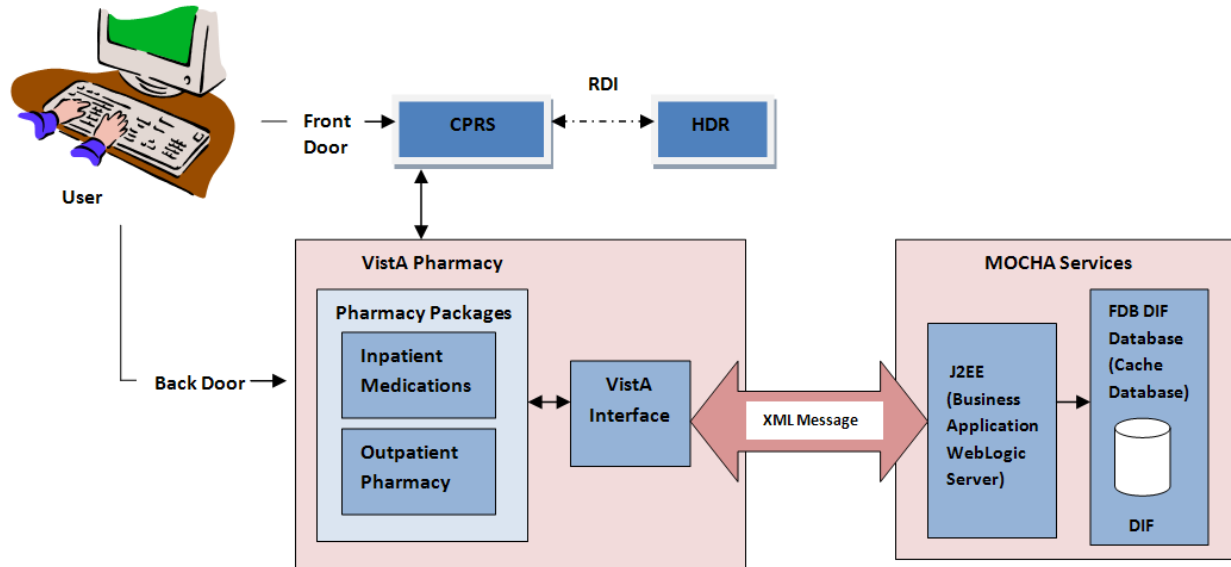


This diagram depicts the basic flow of order check data for Drug Interactions and Duplicate Therapy Order Checks as introduced with MOCHA v1.0 and continued in MOCHA v2.0 with the Maximum Single Dose Order Check.

When a VistA application, such as Outpatient Pharmacy or Inpatient Medications requests an order check, the data required to perform the check will be sent from VistA to FDB using the Health*e*Vet Web Services Client in the form of an extensible mark-up language (XML) message. The MOCHA services will receive and validate the format of the request. Provided the format is correct, the MOCHA services will triage the request, interacting with FDB's MedKnowledge Framework (formerly Drug Information Framework) to perform the requested check, and return the results.

The way Remote Data Interoperability (RDI) works has not changed. For Duplicate Therapy and Drug Interaction Order Checks, the remote information is bundled with local information for the patient as the order check request. With the implementation of MOCHA v1.0, another step was added in the process. Instead of the order checks (i.e. Drug Interactions, Duplicate Therapy) being performed all within VistA, now the order checks are performed by FDB's MedKnowledge Framework.

## 2.1 Dosing Order Checks Exclusions

No Dosing Order Checks will be performed on supply items. A supply item is identified by either a VA Drug Class code that begins with an 'XA' or that contains an 'S' in the DEA, SPECIAL HDLG field in the DRUG file .

A dosage form is excluded from Dosing Order Checks if the EXCLUDE FROM DOSAGE CHECKS field in the DOSAGE FORM file is set to 'Yes'. If the drug ordered is associated with a dosage form (i. e. cream, ointment) that is excluded from Dosing Order Checks and the value in the OVERRIDE DF DOSE CHK EXCLUSION field in the VA PRODUCT file is blank or set to 'No' for the VA Product the drug is matched to, no Dosing Order Checks will be performed. If the drug ordered is associated with a dosage

form that is NOT excluded from Dosing Order Checks and the value in the OVERRIDE DF DOSE CHK EXCLUSION field in the VA PRODUCT file is set to 'Yes' for the VA Product that the drug is matched to, no Dosing Order Checks will be performed. An example of such a drug would be a Placebo Tab.

The table below shows all the different combinations of values for the EXCLUDE FROM DOSAGE CHECK field in the DOSAGE FORM file and the OVERRIDE DF DOSE CHK EXCLUSION field in the VA PRODUCT file and whether or not those combinations result in Dosing Order Checks being performed.

| Dosage Form Field – EXCLUDE FROM DOSAGE CHECKS | VA Product Field – OVERRIDE DF DOSE CHK EXCLUSION | Dosing Order Checks Performed? (Y/N) |
|---|---|---|
| Yes | No | No |
| Yes | Yes | Yes |
| No | No | Yes |
| No | Yes | No |

No Maximum Single Dose Order Check will be performed for a simple medication order or individual dosing sequence within a complex order that contains a schedule that has been excluded from all Dosing Order Checks. No message will be displayed to the user informing them that a Maximum Single Dose Order Check will not be performed.

Non-VA medication orders are excluded from Dosing Order Checks. A majority of Non-VA medication orders will have incomplete dosing information. This dosing information is needed to perform a Maximum Single Dose Order Check. Had Non-VA medication orders been included in Dosing Order Checks, in most cases this would have resulted in an error message being displayed to the user stating that the Maximum Single Dose Order Check could not be performed.

## 2.2 Display Sequence for Order Checks

Order checks are displayed in the same sequence for both Outpatient Pharmacy and Inpatient Medications applications. There may be some order checks displayed in one application and not the other, but for those order checks shared between both applications, the order sequence is the same. The table below lists the order check and error display sequence for both applications.

| Outpatient Pharmacy | Inpatient Medications |
|---|---|
| System Errors | System Errors |
| Duplicate Drug | |
| Clozapine | |
| Allergy/ADR (local and remote) or Non-Assessment | Allergy/ADR (local and remote) |
| CPRS Order Checks (i.e. Aminoglycoside Ordered; Dangerous Meds for Patients>64; Glucophage Lab Results) | CPRS Order Checks (i.e. Aminoglycoside Ordered; Dangerous Meds for Patients>64; Glucophage Lab Results) |
| Drug Level Errors | Drug Level Errors |
| Local and Remote Critical Drug Interactions | Inpatient, Local and Remote Outpatient Critical Drug Interactions |
| Local and Remote Significant Drug Interactions | Inpatient, Local and Remote Outpatient Significant Drug Interactions |
| Local and Remote Duplicate Therapy | Inpatient, Local and Remote Outpatient Duplicate Therapy |
| Order Level Errors | Order Level Errors |
| Maximum Single Dose Order Check | Maximum Single Dose Order Check |

For Drug Interaction Order Checks, local outpatient orders include all active, non-verified, pending and Non-VA medication orders. Remote outpatient orders include all active orders. For Duplicate Therapy Order Checks, local outpatient orders include all active, expired (Exp Date + 120), discontinued (Cancel Date + Days Supply +7), non-verified, pending and Non-VA Medication orders. Remote outpatient orders include all active, expired (Exp Date +30) and discontinued (Cancel Date +30).

Inpatient medication orders include all active, non-verified, pending orders for both IV and Unit Dose modules.

## 2.3 Order Check Triggers

The following table lists the order entry actions that will trigger order checks to be performed through the pharmacy backdoor options for both Outpatient Pharmacy and Inpatient Medications - IV and Unit Dose modules.

| Order Action | Outpatient Pharmacy | Inpatient Medications | |
|---|---|---|---|
| | | Unit Dose | IV |
| New Order | ✓ | ✓ | ✓ |
| New Order using Order Sets | | ✓ | |
| Finish | ✓ | ✓ | ✓ |
| Renew | ✓ | ✓ | ✓ |
| Copy | ✓ | ✓ | ✓ |

| Order Action | Outpatient Pharmacy | Inpatient Medications | |
|---|---|---|---|
| | | Unit Dose | IV |
| Reinstate DC | ✔ | | |
| Verify | ✔ | ✔ [4] | ✔ [4] |
| Edit Orderable Item | ✔ | ✔ | |
| Edit Dispense Drug | ✔ | | |
| Edit Dispense Units Per Dose/Units Per Dose | ✔ | ✔ | |
| Edit IV Additive field (Additive, Strength or Bottle) | | | ✔ |
| Edit IV Solution field (Solution or Volume) | | | ✔ [3] |
| Edit Dosage/Dosage Ordered | ✔ | ✔ | |
| Edit Route | ✔ | ✔ | ✔ |
| Edit Schedule | ✔ | ✔ | ✔ [1] |
| Edit Infusion Rate | | | ✔ [2] |
| Edit Conjunction (complex order) | ✔ | | |

**[1] Intermittent type IV orders only**

**[2] Continuous type IV orders only**

**[3] If Volume is edited, IV Solution must not be marked as PreMix and not Intermittent type IV order**

**[4] The VERIFY action must be the only action taken within the order session that triggers the Order Checks**

If a new order is created due to an order entry action taken, all order checks will be performed for the drug ordered. Dosing Order Checks will be performed and displayed last.

When editing the schedule for an IV order, only intermittent IV orders will generate a Maximum Single Dose Order Check. The IV type must be a 'Piggyback', 'Intermittent Syringe', 'Chemotherapy Piggyback', or 'Chemotherapy Intermittent Syringe' for Dosing Order Checks to occur. Although the schedule does not affect the single dose amount, the business rule established is to execute both the Maximum Single Dose Order Check and the Daily Dose Range Order Check when the schedule is edited. In MOCHA v2.0, only the results of the Maximum Single Dose Order Check are displayed to the user.

When editing the infusion rate for an IV order, only continuous IV orders will generate a Maximum Single Dose Order Check. The IV type must be an 'Admixture', 'Hyperal', 'Chemotherapy Admixture', 'Continuous Syringe' or 'Chemotherapy Continuous Syringe' for Dosing Order Checks to occur.

If the volume of an IV Solution is edited that is not marked as a PreMix within an IV order with an IV type of 'Piggyback', 'Intermittent Syringe', 'Chemotherapy Piggyback', or 'Chemotherapy Intermittent Syringe', no Maximum Single Dose Order Check will be performed. In all other cases, a Maximum Single Dose Order Check will be executed.

The MOCHA 1 Enhancements 1 project (PSJ*5.0*260) made a change in the Inpatient Medications application to allow for the triggering of order checks to occur when the verification action was being taken on unit dose and IV orders. The only condition is that the Verify action is the only action taken during the order session. For example, if auto verification was turned off and a user was finishing an order, order checks would only be displayed once during the finish action and not twice during finish and verification if both actions were taken during a single order session. If the same user within a separate

order session, selected a non-verified order from the patient profile and then took the verify action without taken any other action on the order, order checks would be performed.

## 2.4 FDB Dosing Record Information

FDB Dosing Order Checks are unique by age, dose type (i.e. single dose, maintenance dose) and route. Dose types and routes will be discussed in more detail in the next section of this document. Gender does not come into play with Dosing Order Checks.

FDB has specific age group categories defined for their dosing records. The two categories that come into play for most of our medication orders are the ADULT and ELDERLY categories. The ADULT age category is defined as 18 years old up to but not including 65 years old. The ELDERLY age category is defined as 65 years old up to and including 110 years old.

Sometimes when Dosing Order Checks are performed, a message may be displayed that no dosing information is available for a specific drug. It could be that the age of the patient is outside any of the age ranges defined for a drug's dosing records. It may also be that the combination of data sent in for the order check did not match a defined dosing record for that particular drug.

On other occasions you may see different maximum values in the warning message for different patients. Different values may be designated for different age ranges. For example, if you enter an order for a maintenance dose of 10mg for WARFARIN for a 70 year old patient, you will get a Maximum Single Dose warning. The limit for that age is 7.5mg. If you enter that same maintenance dose of 10mg for a 60 year old patient, you will not get an alert. The limit for the 60 year old is 10mg.

The dose type may also come into play. A higher dose may be allowed for a one time (single dose). The maximum of 10mg can be given for a one time dose of WARFARIN for a 70 year old, while a maximum of 15mg can be given for a one time dose for a 60 year old.

## 2.5  Data Required for Dosing Order Checks

In order for Dosing Order Checks (Maximum Single Dose and Daily Dose) to be performed, the following information is required:

- Patient Parameters: (Age, Weight and Body Surface Area (BSA in $m^2$))
- Drug
- Single Dose Amount
- Dose Unit (FDB Equivalent)
- Dose Rate
- Dose Route (FDB Equivalent)
- Dose Type
- Frequency
- Duration
- Duration Rate

### 2.5.1 Patient Parameters

The three patient parameters that are required to perform Dosing Order Checks are:

- Age (in days)
- Weight (in Kg)
- Body Surface Area (BSA in $m^2$)

The age of the patient is found in the PATIENT file. Should the age of the patient not be available, a Maximum Single Dose Order Check will not be performed and an error message will be displayed to the user as shown below.

| |
|---|
| Maximum Single Dose Check could not be performed for Drug: GABAPENTIN 600MG TAB<br> Reason(s): One or more required patient parameters unavailable: AGE |

The Dubois formula is used to calculate the Body Surface Area (BSA). It is as follows:

**BSA (m²) = 0.20247 x Height(m)$^{0.725}$ x Weight(kg)$^{0.425}$**

The most recent values for height and weight found in the GEN. MED. REC. – VITALS V. 5.0 application are used to calculate the BSA in m$^2$ for a patient. If a BSA or weight is required for a specific drug/age combination as determined by FDB in order to perform Dosing Order Checks and no value is found, an error message as shown below will be displayed indicating that a Maximum Single Dose Order Check could not be performed.

| |
|---|
| Maximum Single Dose Check could not be performed for Drug: LOMUSTINE 100MG CAP<br> Reason(s): Body surface area required |

  Or

| |
|---|
| Maximum Single Dose Check could not be performed for Drug: GENTAMICIN 40MG/ML 2ML INJ<br> Reason(s): Weight required |

## 2.5.2 Drug

In order to communicate with FDB, a VistA drug has to be mapped to an equivalent drug in the FDB database. The GCNSEQNO for the VA Product that the local dispense drug is matched to, is used to map a VistA drug to a drug in the FDB database. For IV orders, the dispense drug associated with the IV Additive or the IV Solution (marked as a PreMix) will be used to obtain the GCNSEQNO. If a dispense drug is not matched to NDF, a GCNSEQNO cannot be obtained and therefore Drug Interactions, Duplicate Therapy or Dosing Order Checks cannot be executed. In some instances, the drug may be matched to NDF, but the VA Product that it is matched to may not have a GCNSEQNO defined. These should be reported to the NDF National Manager for correction. Users can log a Remedy ticket or a mail message can be sent to the Outlook mail group VHAPBH NDF.

If a local prospective or profile drug is not matched to NDF, the following error message will be displayed to the pharmacy user. The software, within this error message text, will distinguish an inpatient versus an outpatient medication order when processing inpatient medication orders. The inpatient order will have the text 'Local Drug:' displayed before the drug name, whereas the outpatient order will have the text 'Local Outpatient Drug:' displayed before the drug name.

**Not Matched to NDF**

| |
|---|
| Enhanced Order Checks cannot be performed for Local Drug: EZOGABINE 200MG TAB<br> Reason(s): Drug not matched to NDF |

  Or

**Not Matched to NDF**

| |
|---|
| Enhanced Order Checks cannot be performed for Local Outpatient Drug: EZOGABINE 200MG TAB<br> Reason(s): Drug not matched to NDF |

In MOCHA v2.0 when an inpatient medication order is edited and only Dosing Order Checks are performed and the drug within the order is not matched to NDF, the message that the Pharmacy user will see is shown below.

**Not Matched to NDF for Dosing Order Checks when editing Inpatient Order**

Maximum Single Dose Check could not be performed for Drug:<DRUG NAME>
 Reason(s): Drug not matched to NDF.

If the drug is matched to NDF, but the VA Product that it is matched to does not have a GCNSEQNO and the EXCLUDE DRG-DRG INTERACTION CK field for the VA Product is blank, the following error message will be displayed to the pharmacy user for a prospective drug.

**No GCNSEQNO (prospective drug)**

Order Checks could not be done for Drug: EZOGABINE 200MG TAB please complete a manual check for Drug Interactions, Duplicate Therapy and appropriate Dosing.

The text referencing Dosing is removed for a profile drug.

**No GCNSEQNO (profile drug)**

Order Checks could not be done for Drug: EZOGABINE 200MG TAB please complete a manual check for Drug Interactions and Duplicate Therapy.

A remote order will have the text 'Remote Drug:' displayed before the drug name and will not have the text referencing Dosing.

**No GCNSEQNO (remote drug)**

Order Checks could not be done for Remote Drug: EZOGABINE 200MG TAB please complete a manual check for Drug Interactions and Duplicate Therapy.

If the EXCLUDE DRG-DRG INTERACTION CK field for the VA Product is set to 'Yes', no error message will be displayed. A generic message is displayed to the CPRS user when a drug is not matched to NDF or if no GCNSEQNO exists for the VA Product the drug is matched to. The text referencing Dosing is removed for a profile drug. A remote order will have the text 'Remote Drug:' displayed before the drug name and will not have the text referencing Dosing.

**No GCNSEQNO or drug not matched to NDF for a prospective drug**

Order Checks could not be done for Drug: EZOGABINE 200MG TAB please complete a manual check for Drug Interactions, Duplicate Therapy and appropriate Dosing.

**No GCNSEQNO or drug not matched to NDF for a profile drug**

Order Checks could not be done for Drug: EZOGABINE 200MG TAB please complete a manual check for Drug Interactions and Duplicate Therapy.

**No GCNSEQNO or drug not matched to NDF for a remote profile drug**

Order Checks could not be done for Remote Drug: EZOGABINE 200MG TAB please complete a manual check for Drug Interactions and Duplicate Therapy.

In MOCHA v2.0 when an inpatient medication order is edited and only Dosing Order Checks are performed and a GCNSEQNO number cannot be obtained for the drug within the order, the message that the CPRS and Pharmacy user will see is shown below. The same message will be seen by CPRS users when the drug is not matched to NDF.

### No GCNSEQNO for Dosing Order Checks when editing Inpatient Order

Maximum Single Dose Check could not be done for Drug: <DRUG NAME>, please complete a manual check for appropriate Dosing.

When Enhanced Order checks are performed against outpatient or unit dose profile drugs through pharmacy backdoor options, and a pending order is found on the profile for which an active dispense drug cannot be assigned, the pharmacy user will see the following error message.

### Profile Pending Order without Active Dispense Drug (Pharmacy User)

Enhanced Order Checks cannot be performed for Orderable Item: <OI NAME >
 Reason(s): No Dispense Drug found.

CPRS users will also see an error message, but a reason will not be displayed.

### Profile Pending Order without Active Dispense Drug (CPRS User)

Order Checks could not be done for Drug: <Drug Name>, please complete a manual check for Drug Interactions and Duplicate Therapy.

If an order is entered through the IV Fluid dialog in CPRS for which an active IV Additive or IV Solution (marked as PreMix) cannot be found and Dosing Order Checks cannot be performed, the CPRS user will see the following message:

### Prospective drug – No Active IV Additive or IV Solution (marked as PreMix) Found

Maximum Single Dose Check could not be done for Drug.: <DRUG NAME>, please complete a manual check for appropriate Dosing.

## 2.5.3 Dosage Ordered

The dosage ordered provides the single dose amount and Dose Unit for most inpatient unit dose and outpatient medication orders. The single dose amount is the numeric representation of the dosage ordered. The Dose Unit is the unit that is associated with the numeric dosage ordered. An FDB Dose Unit equivalent must be determined. A lookup is done against the NAME, SYNONYM or FIRST DATABANK DOSE UNIT fields of the DOSE UNITS file. Each entry in the VistA DOSE UNITS file is mapped to a FDB Dose Unit.

| Dosage Ordered | Single Dose Amount | Dose Unit | 1FDB Dose Unit |
|---|---|---|---|
| 325MG | 325 | MG | MILLIGRAMS |
| 0.5GM | 0.5 | GM | GRAMS |
| 1 TABLET | 1 | TABLET(S) | TABLET(S) |
| 20MEQ | 20 | MEQ | MILLIEQUIVALENTS |
| 10ML | 10 | ML | MILLILITERS |

The table above shows some examples of dosages ordered and how the single dose amount and Dose Unit would be derived.

In the sections that follow, examples of dosages ordered and how the single dose amount and Dose Unit are derived will be reviewed.

## 2.5.3.1 Possible Dosage Selection

**Example 1: Possible Dosage selection**
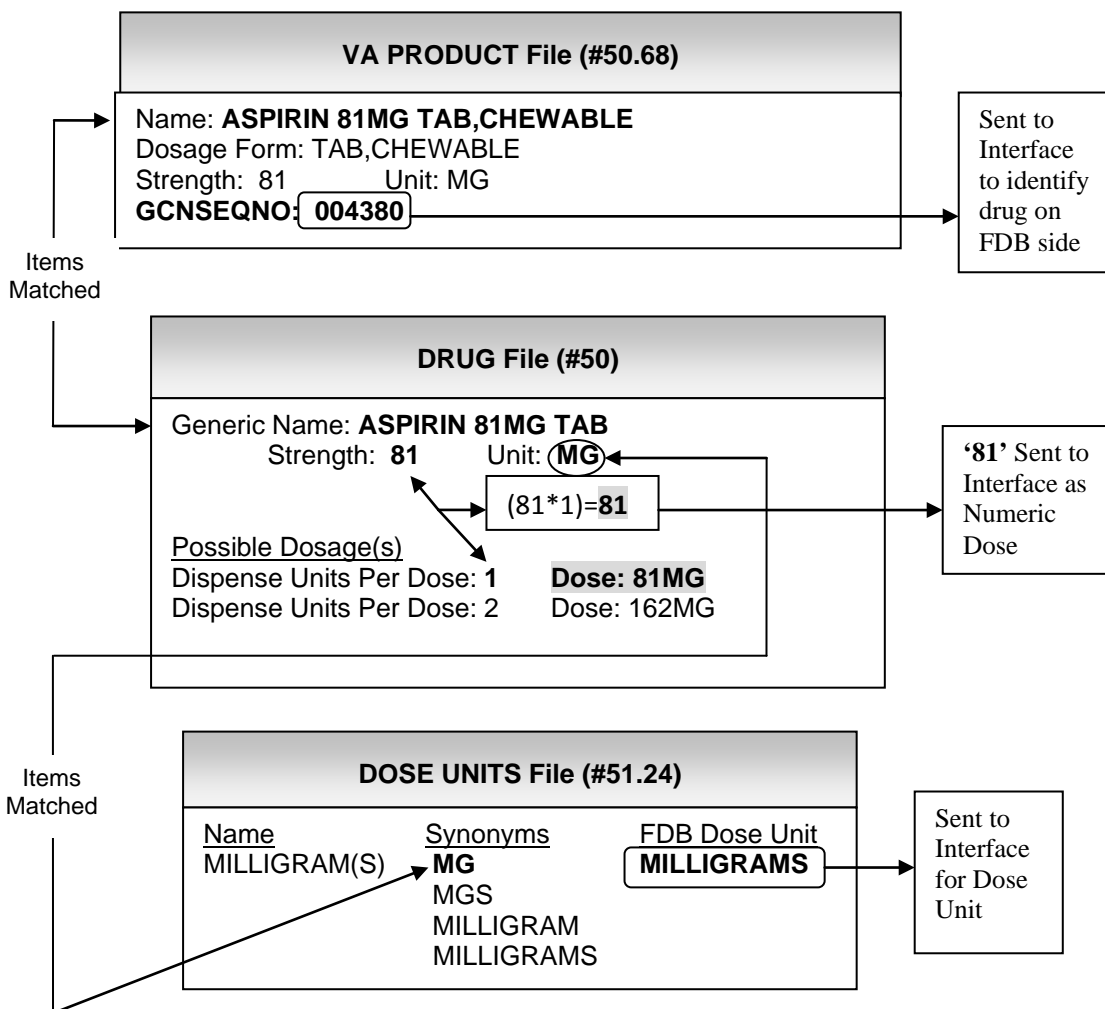


Here is an example of an inpatient medication order where a Possible Dosage has been selected for the Orderable Item, ASPIRIN TAB. The dispense drug ASPIRIN 81MG TAB has been assigned to the order. If a Possible Dosage of '81MG' is ordered, the software will use the unit identified in the DRUG file and do a lookup in the DOSE UNITS File on the NAME, SYNONYM or FIRST DATABANK DOSE UNIT fields. Once a match is found, the software will take the corresponding FDB Dose Unit and send that to the interface. The Numeric Dose sent to the interface will be calculated by multiplying the Dispense Units per Dose by the Strength specified in the Drug File. The drug will be identified by the GCNSEQNO of the VA Product to which it is matched.

## 2.5.3.2 Local Possible Dosage for Single Ingredient Product

**Example 2: Local Possible Dosage selected for Single Ingredient Product**

### VA PRODUCT File (#50.68)

Name: **TIMOLOL MALEATE 0.5% SOLN, OPH**
Dosage Form: SOLN,OPH
Strength: 0.5      Units: %
**GCNSEQNO:** 007856

Sent to Interface to identify drug

Items Matched

### DRUG File (#50)

Generic Name: **TIMOLOL MALEATE 0.5% OPH SOLN**
      Strength: 0.5      Unit: %

| Local Possible Dosage(s) | Dose Unit | Numeric Dose |
| --- | --- | --- |
| 1 DROP | DROP(S) | 1 |
| **2 DROPS** | **DROP(S)** | 2 |

Sent to Interface for Numeric Dose

Items Matched

### DOSE UNITS File (#51.24)

| Name: | Synonyms | FDB Dose Unit |
| --- | --- | --- |
| **DROP(S)** | DROP | **DROP(S)** |
|  | DROPS |  |
|  | DRP |  |
|  | DRPS |  |
|  | GTT |  |
|  | GTTS |  |

Sent to Interface for Dose Unit

Here is an example of an outpatient medication order where a Local Possible Dosage has been selected for a single ingredient product. The software will identify the drug Timolol Maleate 0.5% Oph Soln to the FDB database by passing in the GCNSEQNO found for the VA product that the drug Timolol Maleate 0.5% Oph Soln is matched to. For the Local Possible Dosage of '2 DROPS' the user selected DROP(S) from the DOSE UNITS file as the Dose Unit and entered a '2' for the corresponding Numeric Dose which will be sent to the interface. The corresponding FDB Dose Unit 'DROP(S)' will be sent to the interface.

## 2.5.3.3 Local Possible Dosage for multi ingredient Product

**Example 3: Local Possible Dosage Selected for Multi-Ingredient Product**
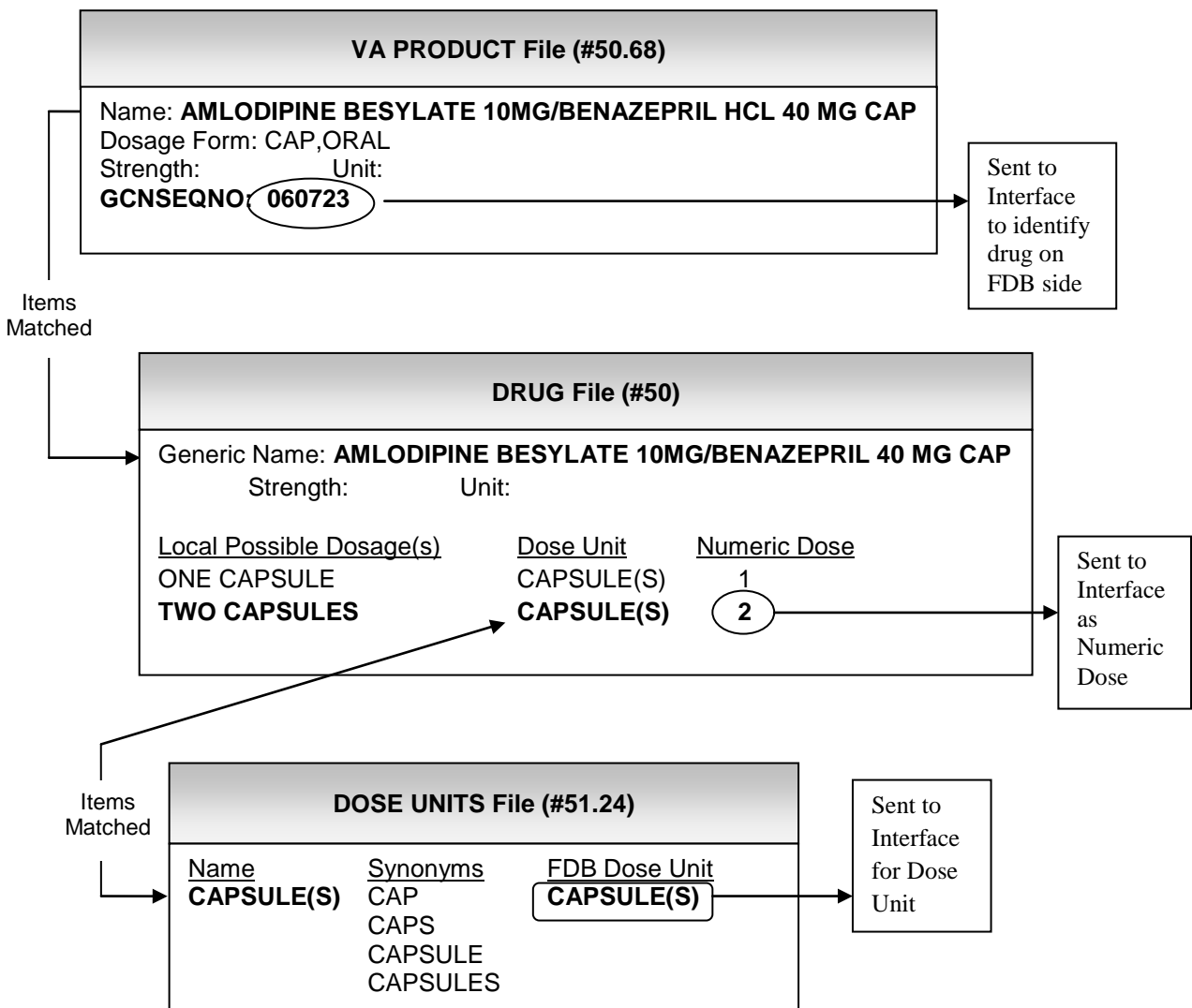


Here is an example of an outpatient medication order where a Local Possible Dosage has been selected for a multiple ingredient product. For a combination product, Amlodipine Besylate 10mg/Benazepril 40mg cap, the GCNSEQNO that is sent to the interface identifies the drug and strength. So when the software sends '2' for the Numeric Dose and 'CAPSULE(S)' for the Dose Unit to the interface, it is understood what '2 CAPSULE(S)' represents.

## 2.5.3.4  Local Possible Dosage with different Dose Units

**Example 4: Local Possible Dosage(s) with Different Dose Units defined for Same Drug**

```
┌─────────────────────────────────────────────────────────┐
│              VA PRODUCT File (#50.68)                     │
├─────────────────────────────────────────────────────────┤
│  Name: ACETAMINOPHEN 160MG/5ML ELIXIR                    │        ┌──────────────┐
│  Dosage Form: ELIXIR                                     │        │ Sent to      │
│  Strength: 160      Unit: MG/5ML                         │───────▶│ Interface    │
│  GCNSEQNO: [004481]                                      │        │ to identify  │
│                                                          │        │ drug         │
└─────────────────────────────────────────────────────────┘        └──────────────┘

Items
Matched
┌─────────────────────────────────────────────────────────┐
│                 DRUG File (#50)                          │
├─────────────────────────────────────────────────────────┤
│  Generic Name: ACETAMINOPHEN ELIX. 160MG/5ML 4OZ         │        ┌──────────────┐
│  Strength: 160    Unit: MG/5ML                           │        │ Sent to      │
│                                                          │        │ Interface    │
│  Local Possible Dosage(s)   Dose Unit      Numeric Dose  │        │ for          │
│  ONE TEASPOONFUL      ──▶ MILLIGRAM(S)        (160)──────│───────▶│ Numeric      │
│  ONE TABLESPOONFUL    ──▶ TABLESPOONFUL(S)     (1)───────│───────▶│ Dose         │
└─────────────────────────────────────────────────────────┘        └──────────────┘

Items
Matched
┌─────────────────────────────────────────────────────────┐
│               DOSE UNITS File (#51.24)                   │
├─────────────────────────────────────────────────────────┤
│  Name            Synonyms        FDB Dose Unit           │        ┌──────────────┐
│  MILLIGRAM(S)    MG              [MILLIGRAMS]────────────│───────▶│ Sent to      │
│                  MGS                                     │        │ Interface    │
│                  MILLIGRAM                               │        │ for Dose     │
│                  MILLIGRAMS                              │        │ Unit         │
│  TABLESPOONFUL(S) TABLESPOONFUL  [TABLESPOONFULS]────────│───────▶│              │
│                  TABLESPOONFULS                          │        └──────────────┘
└─────────────────────────────────────────────────────────┘
```

Here is an example of a drug with two Local Possible Dosages defined. However, the Dose Unit that has been assigned to each of the Local Possible Dosages is not the same. In some cases, more than one Dose Unit can be specified for a Local Possible Dosage. Let's look at the first Local Possible Dosage defined, 'ONE TEASPOONFUL'. In this case the user could select a 'TEASPOONFUL(S)' or 'MILLIGRAM(S)' as a Dose Unit. Either would be acceptable, as long as the Numeric Dose is entered correctly for that Dose Unit. In the example above the user chose 'MILLIGRAM(S)' for the Dose Unit with a corresponding Numeric Dose of '160'. For the second Local Possible Dosage defined, 'ONE TABLESPOONFUL', the user could select 'TABLESPOONFUL(S)' or 'MILLIGRAM(S)'. In this case, the user selected 'TABLESPOONFUL(S)' for the Dose Unit and assigned '1' as the Numeric Dose. For the second Local Possible Dosage, since 'TABLESPOONFUL(S)' was selected, the GCNSEQNO will identify the drug and strength within the FDB database, in order to be able to evaluate the dosage prescribed. For the first Local Possible Dosage, since 'MILLIGRAM(S)' was selected, the GCNSEQNO is needed to identify the drug, but not the strength.

Whatever Dose Unit is selected for a Local Possible Dosage, should a warning message be returned indicating that the dose was too high after Dosing Order Checks are performed; the message will contain

the Dose Unit sent into the interface. For example, if high doses of ACETAMINOPHEN (1440 MILLIGRAMS and 9 TABLESPOONFULS respectively) were sent into the interface, the following messages would have been returned and displayed to the clinician when two different Dose Units were defined:

For 1440 MILLIGRAMS, where 1440 was the single dose amount and MILLIGRAMS is the Dose Unit sent into the interface:

```
ACETAMINOPHEN ELIX.160MG/5ML 4OZ: Single dose amount of 1,440 MILLIGRAMS
exceeds the maximum single dose amount of 1,000 MILLIGRAMS.
```

For 9 TABLESPOONFULS , where 9 was the single dose amount and TABLESPOONFULS is the Dose Unit sent into the interface:

```
ACETAMINOPHEN ELIX.160MG/5ML 4OZ: Single dose form amount of 9
TABLESPOONFULS exceeds the maximum single dose form amount of 2.08334
TABLESPOONFULS.
```

The message using the 'MILLIGRAMS' Dose Unit may be more meaningful to the clinician versus the 'TABLESPOONFULS' Dose Unit. This should be kept in mind when defining the Dose Unit for Local Possible Dosages.

## 2.5.3.5 Strength Mismatch

**Example 5: Strength Mismatch (DRUG file vs. VA PRODUCT File)**
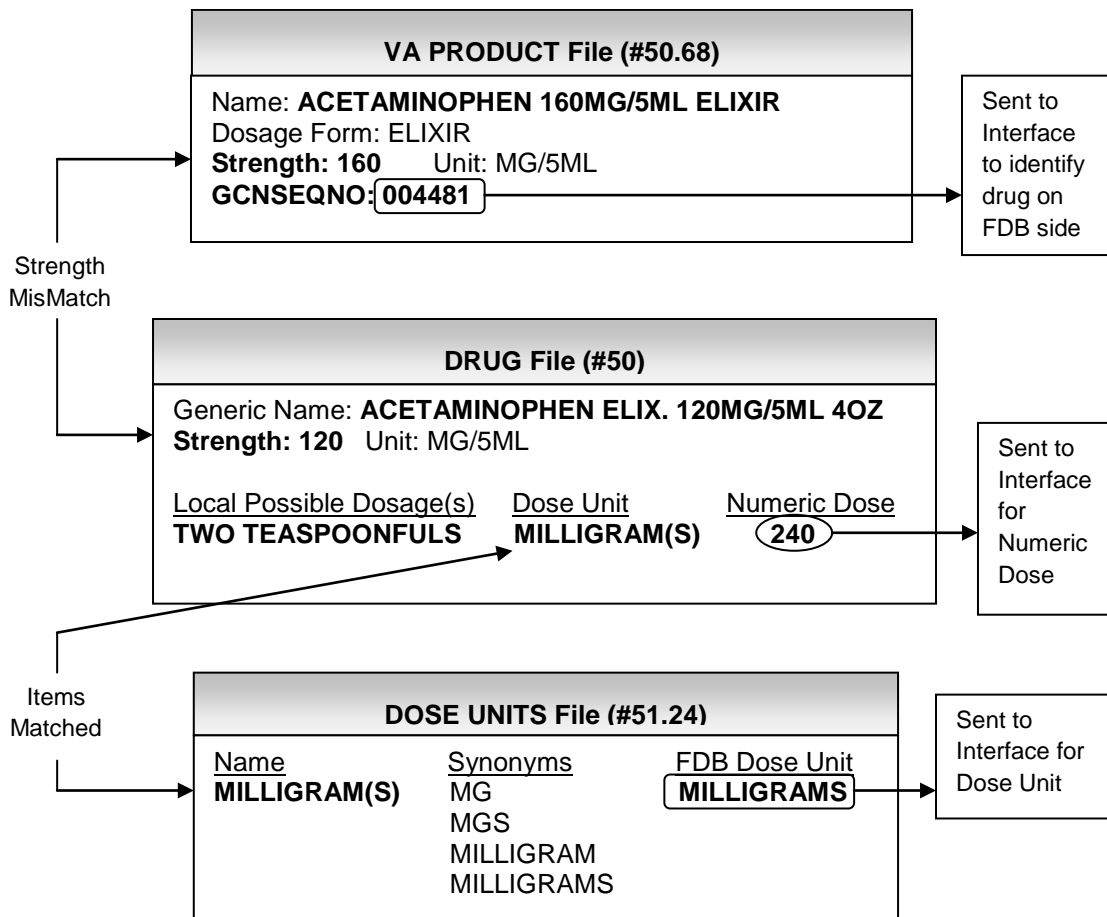


Here is an example of an outpatient medication order where a Local Possible Dosage is ordered for a drug where a strength mismatch exists between the strength in the DRUG File and the strength of the VA Product the drug is matched to. Users need to be very careful when populating the Dose Unit and Numeric Dose fields for such a drug. The Numeric Dose should reflect the strength that is defined for the drug in the DRUG file. Although for the Local Possible Dosage of 'TWO TEASPOONFULS' the user can assign a Dose Unit of 'TEASPOONFUL(S)' or 'MILLIGRAM(S)', it is recommended that 'MILLIGRAM(S)' be selected with '240' entered as the Numeric Dose in order to have the Dosing Order Check evaluated correctly. The reason for this is that the GCNSEQNO that is passed in for the VA Product that the dispense drug is matched to reflects a different strength. If the user had assigned 'TEASPOONFUL(S)' as the Dose Unit with a corresponding Numeric Dose of '2', the GCNSEQNO passed into the interface would identify the drug and strength as ACETAMINOPHEN 160MG/5ML ELIXIR and evaluate '2 TEASPOONFULS' as '320MG' instead of '240MG'.

## 2.5.3.6 Free Text Dosages

This section will review the free text logic that the software uses in MOCHA v2.0 to try to evaluate free text dosages.

### 2.5.3.6.1 Free Text Dosage – No Dispense Drug Assigned to Order

The logic used by the MOCHA v2.0 software to evaluate a free text dosage when no dispense drug is assigned to the order is described in this section. This can only occur with an order entered through CPRS because a medication order will always have a dispense drug when entered or processed through the pharmacy backdoor when the Maximum Single Dose Order Check is performed. This free text logic can only be applied to a dosage ordered for a single ingredient drug. There also must be more than one dispense drug eligible for Dosing Order Checks that is associated with the Orderable Item being ordered. As a general rule, any order entered through CPRS for a multi-ingredient product with a free text dosage when a dispense drug is not assigned to the order and multiple dispense drugs are associated with the Orderable Item will not have any Dosing Order Checks performed successfully. If only one dispense drug exists for an Orderable Item and a user enters a free text dosage, CPRS WILL NOT automatically assign the one dispense drug to the order. A Maximum Single Dose Order Check however will occur if that one dispense drug is eligible for Dosing Order Checks. This will be discussed in more detail further in the documentation.

If a CPRS order passes the initial set of criteria specified at the top of Diagram 1, the free text dosage is evaluated using a set of logic. The first check is labeled Logic 1 Check 1 in Diagram 1.

**Diagram 1: Free Text Dosage with No Dispense Drug - Logic 1 Check 1**

**CPRS Order**
- No Dispense Drug assigned to order
- Single Ingredient Product
- More than one eligible Dispense Drug Associated to Orderable Item
- Free text dosage entered

**LOGIC 1 CHECK 1**

- 'XY' or 'X<sp>Y' where 'X' represents numeric value and 'Y' represents dose unit
- No space or only one space allowed between X and Y
- Commas and decimals allowed in the numeric part (X)
- The Dose Unit (Y) must match either the Name, Synonym or FDB Unit of an entry in Dose Units (#51.24) file.
- If match found, Dose form indicator field must be set to No (metric type of dose unit)

**Met LOGIC 1 CHECK 1?** → **NO** → **EXECUTE CHECK 2**

**YES**

**Dosing Checks Performed**

Logic 1 Check 1 expects the free text dosage to be in the format of 'XY' or 'X<space>Y' where 'X' represents a numeric value. The numeric value can have commas and decimals. The 'Y' represents the Dose Unit. No spaces or only one space is allowed between the 'X' and 'Y'. The Dose Unit 'Y' must match the NAME, SYNONYM or FIRST DATABANK DOSE UNIT of any entry in the DOSE UNITS file. If a match is found, the DOSE FORM INDICATOR field must be set to 'No' to indicate that the Dose Unit is of a metric type. If the free text dosage passes the criteria for Logic 1 Check 1, then Dosing Order Checks will be performed. For MOCHA v2.0 that means that the Maximum Single Dose Order Check will be performed. If the free text dosage does not pass Logic 1 Check 1, the software moves on to check the free text dosage against the second set of logic when no dispense drug is assigned to a CPRS order.

**Example 6: Free Text Dosage for Logic 1 Check 1**
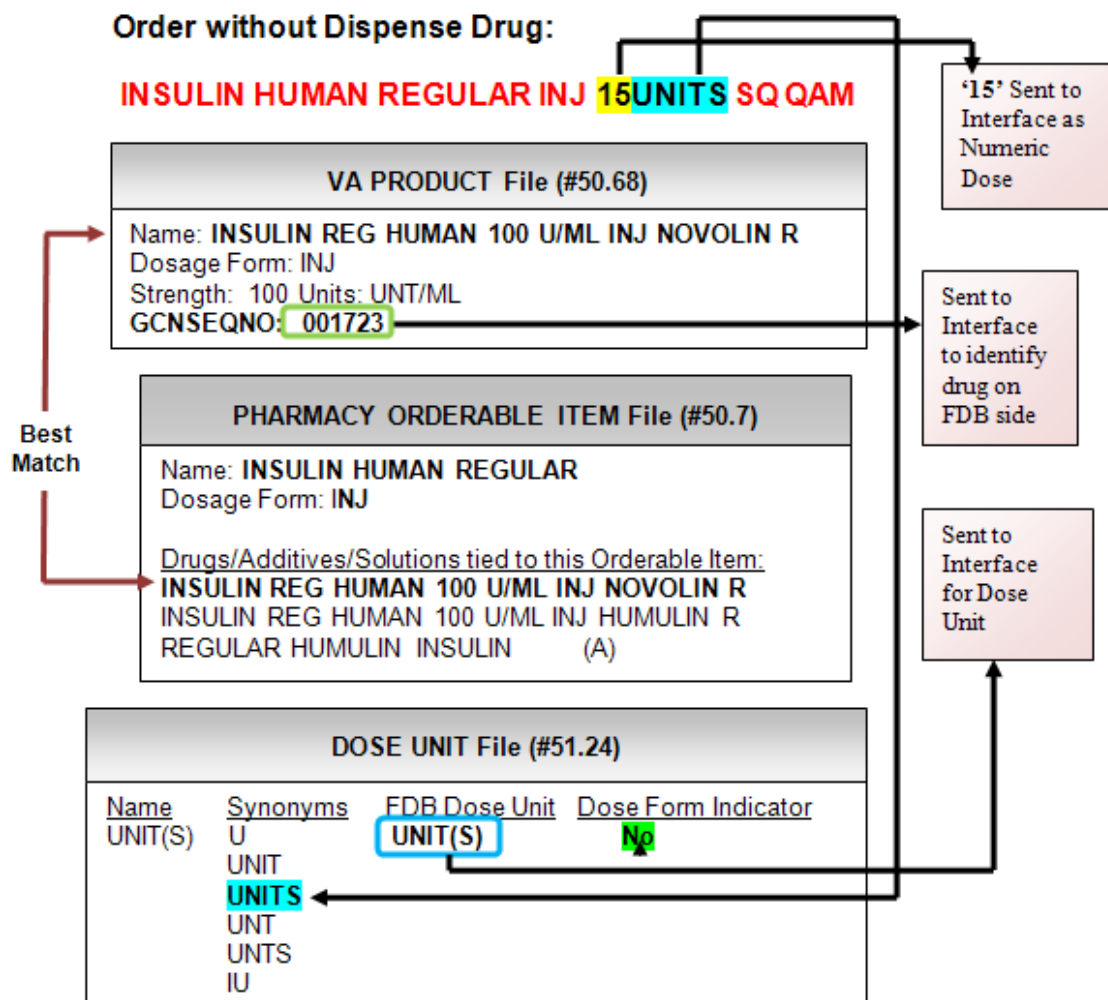


Here is an example of a free text dosage ordered for an inpatient medication order through CPRS. The Orderable Item selected was INSULIN HUMAN REGULAR INJ for 15UNITS SQ QAM. No dispense drug was assigned to the order. Looking at the Pharmacy Orderable Item, we see two eligible dispense drugs, INSULIN REG HUMAN 100U/ML INJ NOVOLIN R and INSULIN REG HUMAN 100U/ML INJ HUMULIN R are associated with the Orderable Item. The criteria used to determine eligibility of dispense drugs for Dosing Order Checks and how a dispense drug is selected to be used for Dosing Order Checks when no dispense drug has been assigned to the order by the application will be discussed later in this document.

In Example 6, the dispense drug selected to be used for the Dosing Order Check is INSULIN REG HUMAN 100U/ML INJ NOVOLIN R. It is matched to a VA Product with a GCNSEQNO of '001723' which will identify the VistA drug in FDB. Regardless of the concentration of the injection selected for the dispense drug of the order, the dosage of 15UNITS reflects the exact dose that should be administered to the patient. 15UNITS fits our free text logic format of" 'XY', where 'X' is a numeric and 'Y' is free text. 'X' represents '15', the single dose amount and 'Y' represents 'UNITS', the Dose Unit. A lookup is done on the DOSE UNITS file to find a FDB equivalent which is UNIT(S). In this case, the Dose Unit that is sent into the interface for Dosing Order Checks must have the DOSE FORM INDICATOR field in the DOSE UNITS file set to 'No'. A setting of 'No' indicates a metric type of unit. The entry UNIT(S)

has a 'No' in the DOSE FORM INDICATOR field. 'UNIT(S)' will be sent into the interface for the Dose Unit.

If the free text dosage ordered had been '0.15ML' that has a unit of 'ML' which has a dose form indicator of 'Yes' the software would not have performed Dosing Order Checks because the Dose Unit is ambiguous and does not precisely reflect the dosage to be administered without knowing the strength of the drug. The logic cannot presume to know what strength of the drug (or in this case concentration) the provider had in mind when ordering the drug. The CPRS user would have been displayed an error message stating that the Maximum Single Dose Order Check could not be performed.

Regardless of which dose had been ordered, the pharmacist when finishing the order would have had to associate the order with a dispense drug. In either case, the Maximum Single Dose Order Check would have been performed.

**Diagram 2: Free Text Dosage with No Dispense Drug - Logic 1 Check 2**
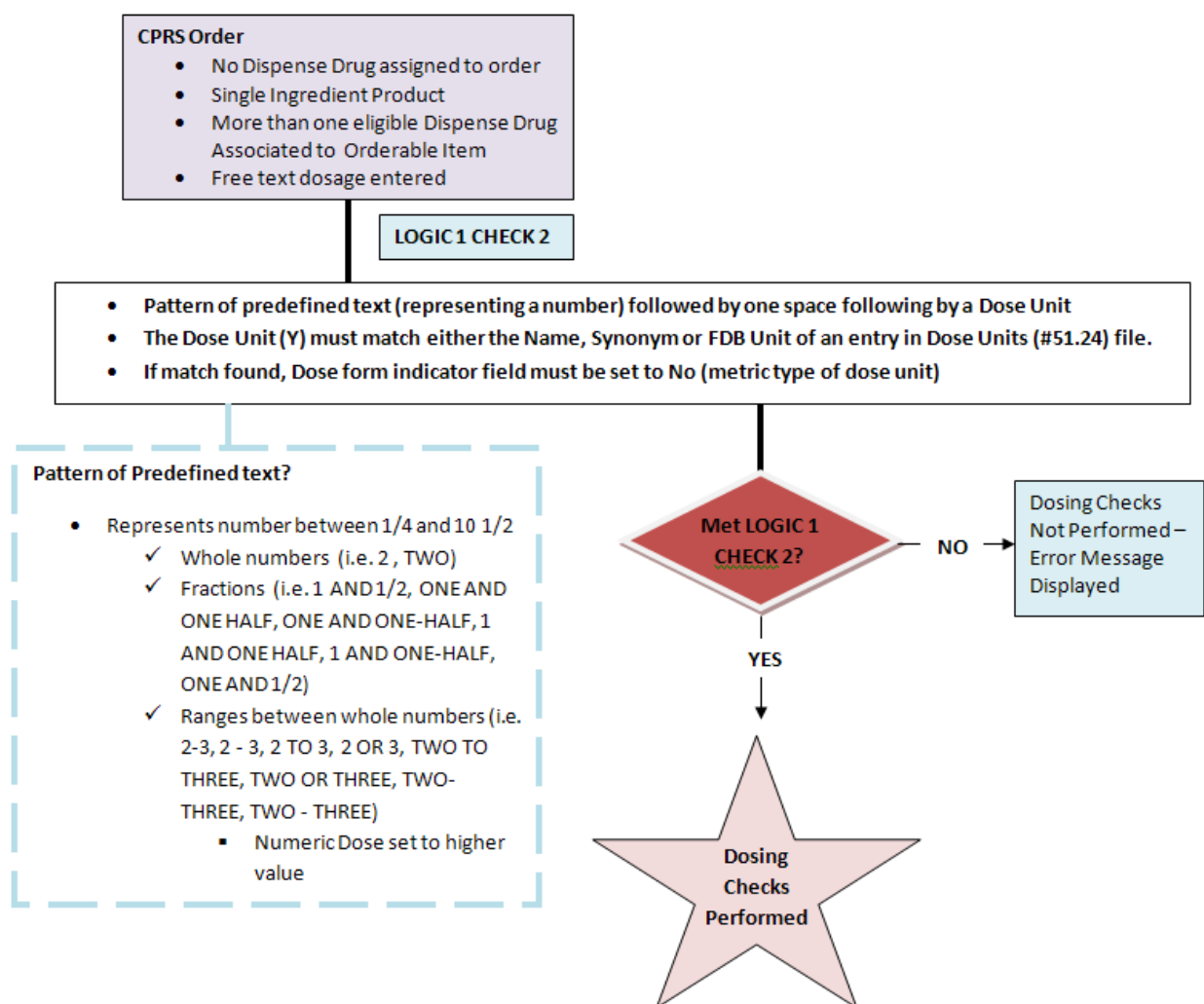


The second check for the logic that the software uses to evaluate a free text dosage when no dispense drug is assigned to the order is illustrated in Diagram 2. As stated earlier, this logic can only be applied to an order entered through CPRS. A medication order entered or processed through pharmacy backdoor options will always have a dispense drug associated with the order when the Maximum Single Dose Order Check is performed. This free text logic can only be applied to a dosage ordered for a single

ingredient drug. There also must be more than one dispense drug eligible for Dosing Order Checks that is associated with the Orderable Item being ordered.

In Diagram 1 the CPRS order criteria was met, but the Logic 1 Check 1 was not met by the free text dosage, so the software moves on to execute Logic 1 Check 2 as shown in Diagram 2. The logic expects the free text dosage to be in the format of 'X<space>Y' where X represents a numeric value in the form of a pattern of predefined text. Examples are shown in the box outlined with broken lines. A whole number can be represented using a numeric value such as '2' or text – 'TWO'. Fractions can be represented by a combination of numbers and text or just text. Ranges between whole numbers can be represented by numbers, text, or a combination of numbers and text. Numbers within the range must be sequential; 2-3 or 3-4 and not 2-4 or 3-5. Numbers within the range start with '1/2' and go up to '10'.

The pattern of predefined text representing a number is followed by one space which is followed by a Dose Unit 'Y'. The Dose Unit 'Y' must match the NAME, SYNONYM or FIRST DATABANK DOSE UNIT of any entry in the DOSE UNITS file. If a match is found, the DOSE FORM INDICATOR field must be set to 'No' to indicate that the Dose Unit is of a metric type. If the free text dosage passes Logic 1 Check 2 then Dosing Order Checks will be performed. For MOCHA v2.0 that means that the Maximum Single Dose Order Check will be performed. If the free text dosage does not pass Logic 1 Check 2, Dosing Order Checks are not performed and a message stating that the Maximum Single Dose Order Check could not be performed and that a manual check for appropriate dosing should be done is displayed.

**Example 7 – Free Text Dosage for Logic 1 Check 2**
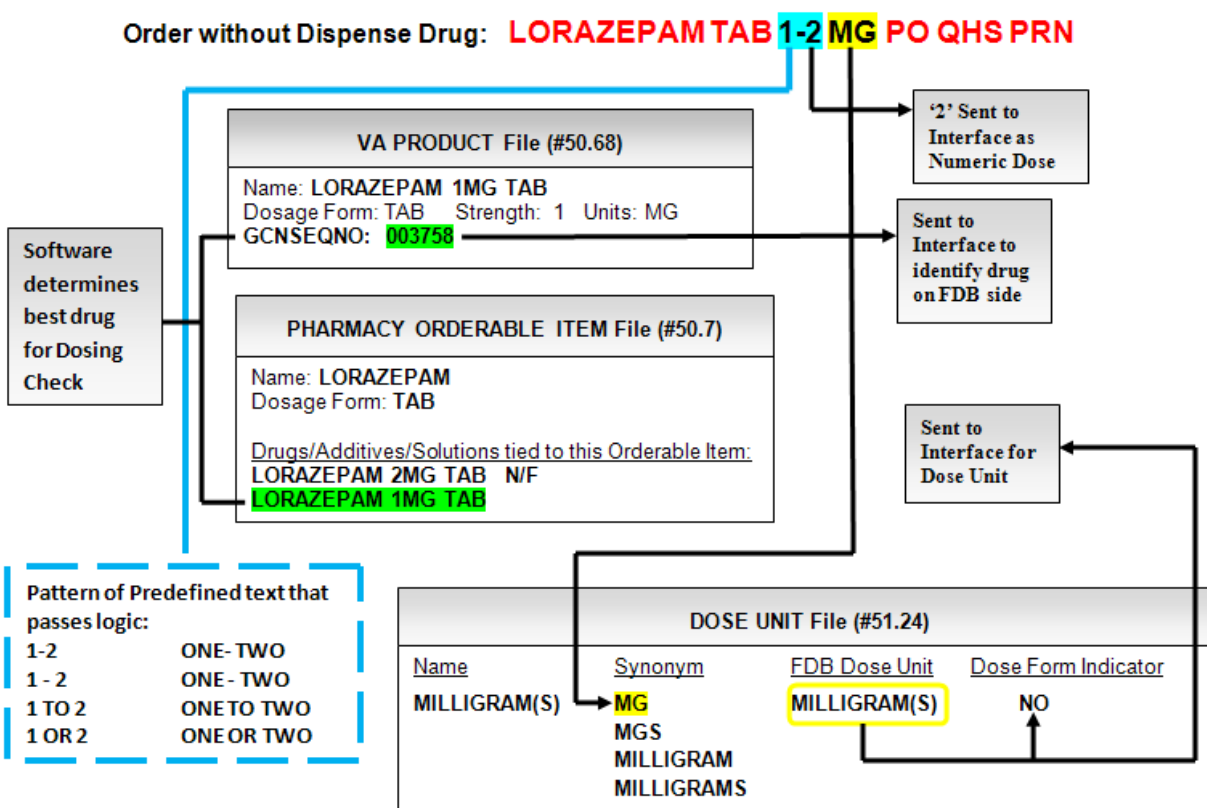


Example 7 illustrates a free text dosage ordered for an inpatient medication order through CPRS. The Orderable Item selected was LORAZEPAM TAB for 1-2 MG PO QHS PRN. No dispense drug was assigned to the order. Looking at the Pharmacy Orderable Item, we see two eligible dispense drugs, LORAZEPAM 2MG TAB and LORAZEPAM 1MG TAB are associated with the Orderable Item. The

software determines the best drug for the Dosing Order Checks based on criteria. We will discuss the criteria later in the documentation. The best drug selected is LORAZEPAM 1MG TAB. This dispense drug is matched to a VA Product with a GCNSEQNO of '003758' which will identify the VistA drug in FDB.

Example 7 illustrates how the software breaks down the free text dosage, '1-2 MG'. The logic states that a space separates the numeric representation from the Dose Unit. Therefore, '1-2' represents the number and 'MG' represents the Dose Unit. Looking at the various patterns of predefined text we find the range '1-2'. The higher number will be sent into the interface for a range. In this case that is '2'. The software finds 'MG' in the DOSE UNITS file in the SYNONYM field for 'MILLIGRAM(S)'. The dose form indicator is set to 'No'. A setting of 'No' indicates a metric type of unit. 'MILLIGRAMS', the FDB Dose Unit equivalent is sent to the interface for the Dose Unit.

The free text dosage in Example 7 passes the Logic 1 Check 2 and a Maximum Single Dose Order Check will be performed.

**Example 8: Free Text Dosage fails Logic 1 Check 2**
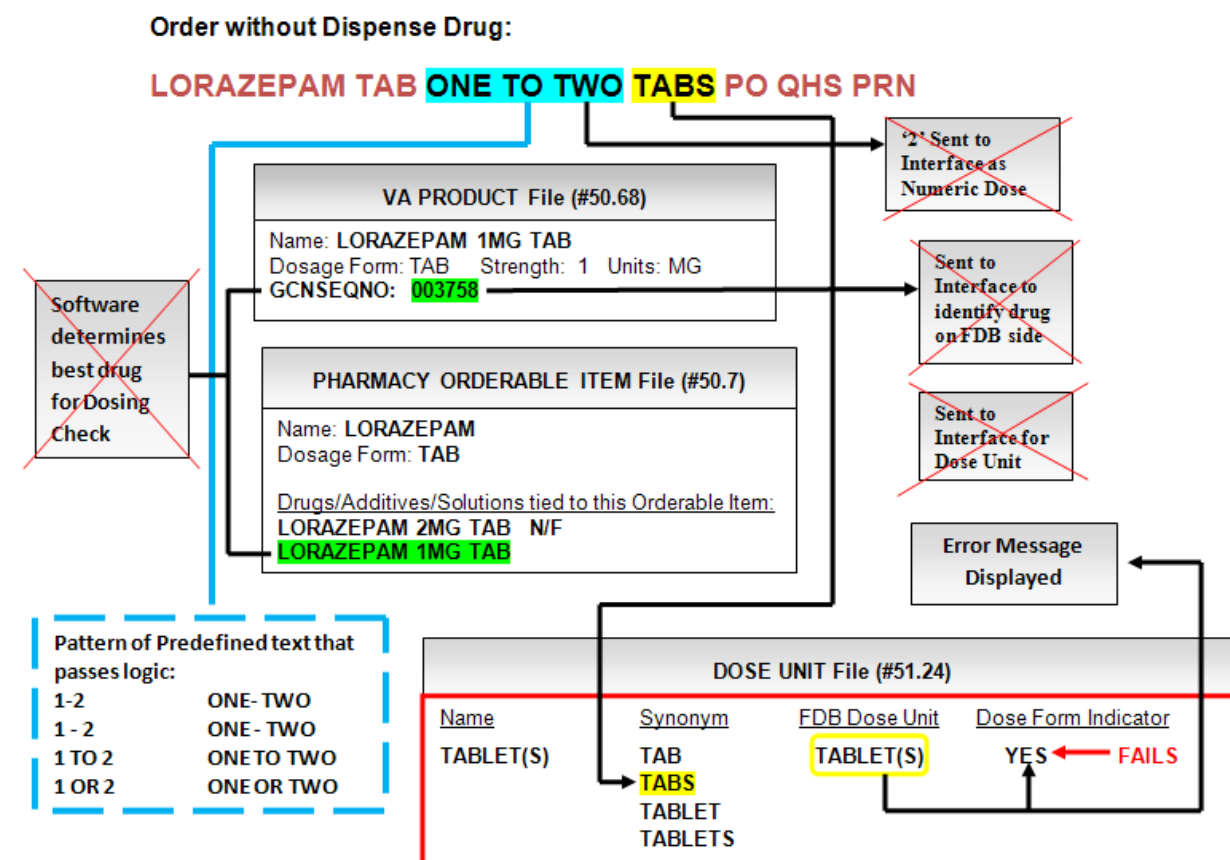


Example 8 shows a free text dosage that fails for Logic 1 Check 2. A CPRS inpatient order was entered for LORAZEPAM TAB ONE TO TWO TABS PO QHS PRN. The free text dosage is 'ONE TO TWO TABS'.

The logic states that a space separates the numeric representation from the Dose Unit. Therefore, 'ONE TO TWO' represents the number and 'TABS' represents the Dose Unit. Looking at the various patterns of predefined text (box with broken lines) we find the range 'ONE TO TWO'. The higher number will be sent into the interface for a range. In this case that is '2'. The software finds 'TABS' in the DOSE UNITS file in the SYNONYM field for 'TABLET(S)'. The dose form indicator is set to 'Yes'. A setting of 'Yes'

indicates a non-metric type of unit. Since the logic requires the Dose Unit to be of a metric type, the free text dosage fails and no Dosing Order Checks are performed and a message stating that fact is displayed.

**Diagram 3: Free Text Dosage with No Dispense Drug RECAP (Logic 1 Checks 1-2)**

If multiple Dispense Drugs Tied to Orderable Item



- Single Ingredient
- Free Text Dosage
  - Metric Dose Unit
    - Found in Dose Units file
  - Meets formats
    - Format 1 – 'XY' or 'X<sp>Y'
    - Format 2 – 'X<sp>Y'
  - Numeric Dose
    - Format 1 - Number – only commas, decimals allowed
    - Format 2 - Represented by patterns of Predefined Text
      - ✓ Whole numbers
      - ✓ Fractions
      - ✓ Ranges – whole numbers, sequential

Diagram 3 recaps what needs to be in place for a Maximum Single Dose Order Check to be performed when a free text dosage is entered through CPRS, no dispense drug is assigned to the order, and multiple dispense drugs are tied to the Orderable Item being ordered. The Orderable Item selected must represent a single ingredient. The Maximum Single Dose Order Check will not be performed if a multi ingredient is ordered. Second, the Dose Unit entered has to be metric (i.e. 'MG'). Entry of dose form type units such as TABLET, CAPSULE will result in a Maximum Single Dose Order Check not being performed.

The free text dosage must meet one of two formats. For format 1, the free text dosage must be in the format of 'XY' or 'X<space>Y' where 'X' represents the Numeric Dose and 'Y' represents the Dose Unit. For format 1, 'X' can only be a number. The numeric portion can only contain commas or decimals. For format 2, the free text dosage must be in the format of 'X<space>Y', where 'X' represents the Numeric Dose and 'Y' represents the Dose Unit. The numeric portion, 'X' must match a pattern of predefined text which can consist of whole numbers, fractions or ranges. A whole number can be represented using a numeric value such as '2' or text – 'TWO'. Fractions can be represented by a combination of numbers and text or just text. Ranges between whole numbers can be represented by numbers, text, or a combination of numbers and text. Numbers within the range must be sequential; 2-3 or 3-4 and not 2-4 or 3-5. Range numbers start with '1/2' and end with '10'. Ranges such as '325-650' will result in no Maximum Single Dose Check being performed.

### 2.5.3.6.2 Best Drug Match

One of the previous examples discussed the best drug match for Dosing Order Checks when a dispense drug is not assigned to an order when a free text dosage is selected. Criteria have been established to determine which dispense drugs are eligible for Dosing Order Checks. The first is that the dispense drug tied to the Orderable Item being ordered must be active. The second is that the dispense drug must not be exempt from Dosing Order Checks. The third is that the dispense drug must be matched to NDF and the VA Product match must have a valid GCNSEQNO. And lastly, the APPLICATION PACKAGES' USE field values match the CPRS order dialog. For example, the drug must be marked for outpatient use if the order is placed using the CPRS outpatient dialog.

If the software determines a list of equally eligible dispense drugs based on the criteria that are tied to the Orderable Item, a random selection is made by the software if more than one drug is on the list. If only one dispense drug is on the list, that dispense drug will be utilized for Dosing Order Checks.

## 2.5.3.6.3 Free Text Dosage – Dispense Drug Assigned to Order

**Diagram 4: Free Text Dosage with Dispense Drug – Logic 2 Check 1**
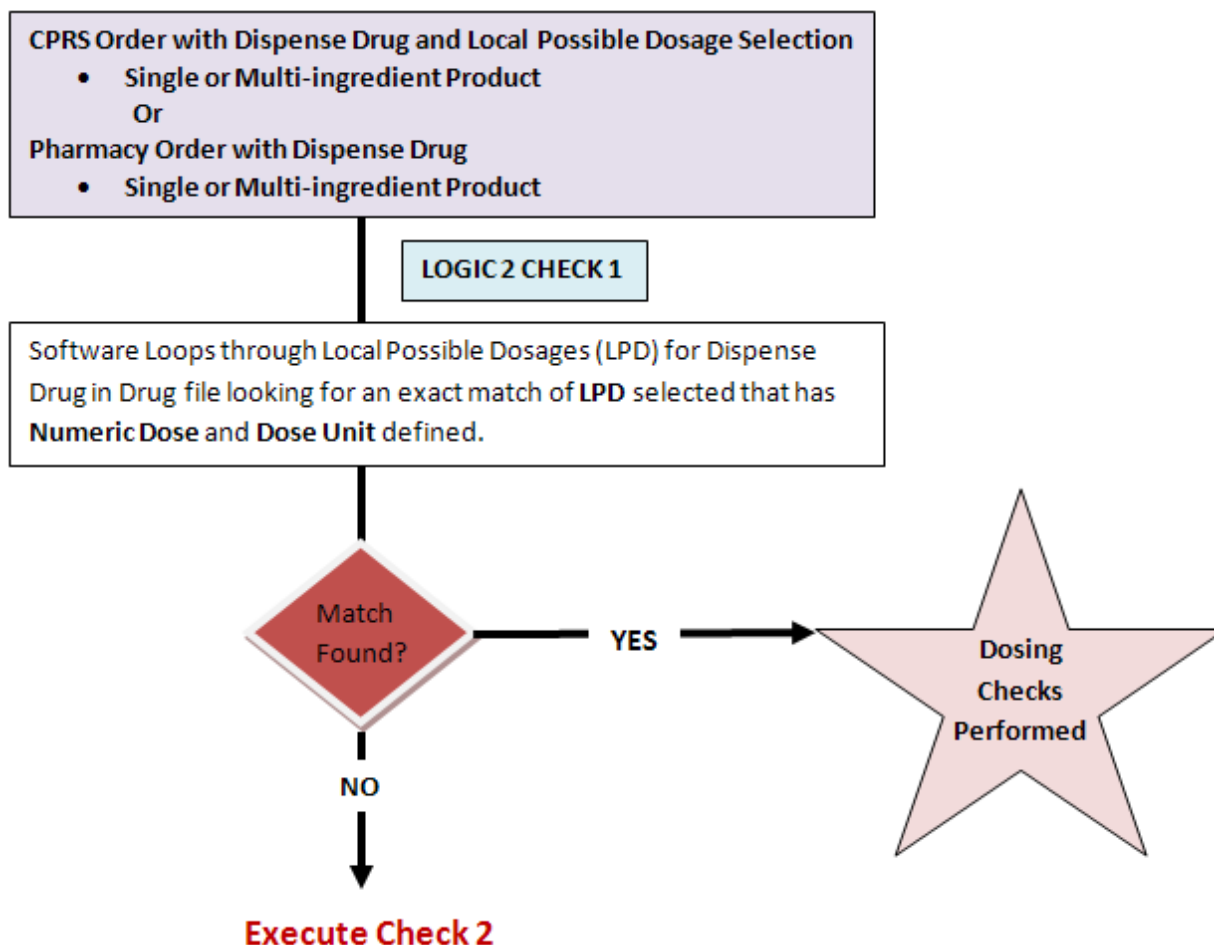


The sections that follow will discuss the free text logic (LOGIC 2) when a dispense drug is assigned to an order. This could be a CPRS order when a Local Possible Dosage selection is made when ordering a single or multi-ingredient product or a Pharmacy backdoor order with a dispense drug for a single or multi-ingredient product that was assigned when entering a new order or when finishing a pending order from CPRS.

For Check 1, the software loops through all the Local Possible Dosages that are defined for the dispense drug assigned to the order looking for an exact match of the dosage ordered. If a match is found, the software looks to see that a Numeric Dose and Dose Unit are defined. If yes, those values are used for Dosing Order Checks and in MOCHA v2.0, the Maximum Single Dose Order Check will be performed. If no match is found, the software goes on to execute the next check.

**Example 9: Free Text Dosage for Logic 2 Check 1**
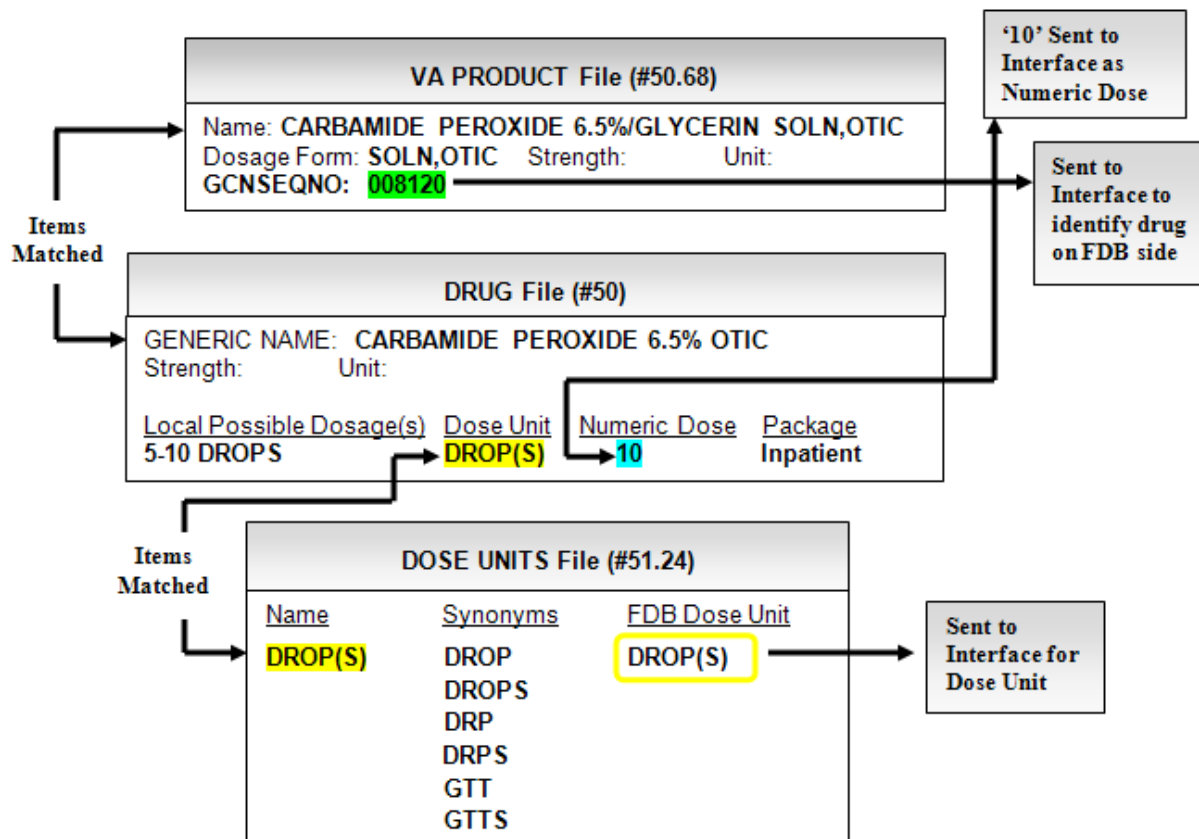


In Example 9, an outpatient medication order is entered through CPRS for CARBAMIDE PEROXIDE 5-10 DROPS IN LEFT EAR BID. When the pharmacist selects the order to finish, the software automatically assigns CARBAMIDE PEROXIDE 6.5% OTIC SOLN as the dispense drug for the order. As stated earlier, the first check in the free text logic (LOGIC 2) when a dispense drug is assigned to the order is to loop through all the Local Possible Dosages defined for the dispense drug assigned to the order. In this case, the only Local Possible Dosage defined for CARBAMIDE PEROXIDE 6.5% OTIC SOLN is 5-10 DROPS and it is an exact match for the free text dosage that was entered through CPRS for the outpatient order. The Local Possible Dosage is marked for Inpatient use. A Numeric Dose of '10' and Dose Unit of 'DROP(s)' are defined for the Local Possible Dosage. The '10' will be sent into the interface for the single dose amount and the FDB equivalent 'DROP(S)' will be sent into the interface for the Dose Unit to perform the Maximum Single Dose Order Check. The GCNSEQNO of '8120' will be sent into the interface to identify the drug.

**Diagram 5: Free Text Dosage with Dispense Drug – Logic 2 Check 2**
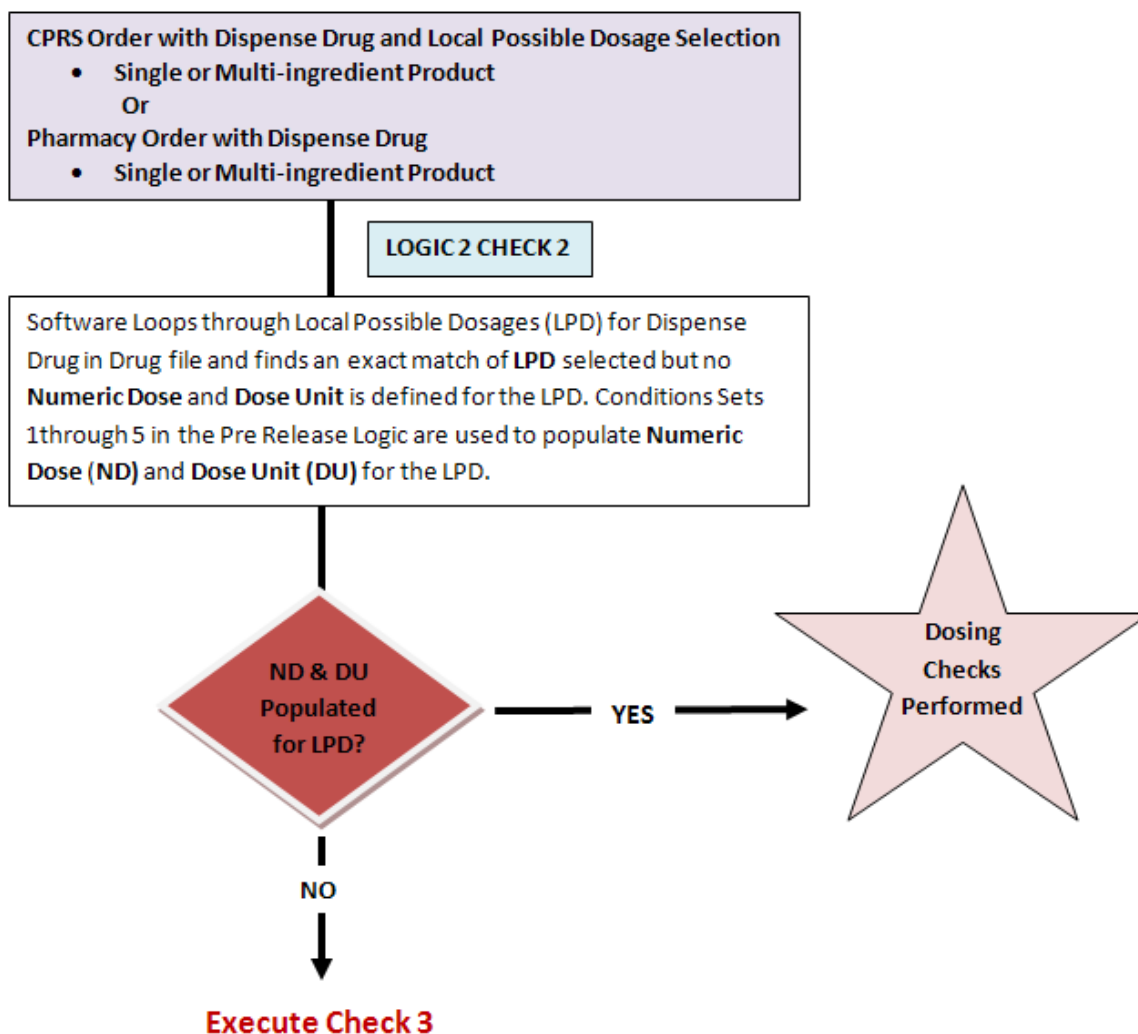


Diagram 5 illustrates the second check for the free text logic when a dispense drug is assigned to the order. The software does the second check when the first check has failed. If the software does not find a Numeric Dose and Dose Unit defined for the Local Possible Dosage match, the Pre-Release Logic (PSS*1*129) is used to define those fields for the Maximum Single Dose Order Check. If the Pre-Release Logic fails to define those fields, the software moves on to execute the third check.

**Example 10: Free Text Dosage for Logic 2 Check 2**

Example 10 illustrates the second check in the free text logic when a dispense drug is assigned to the order. The inpatient order is for ALBUTEROL 90MCG/IPRAPTROPIUM BR 18MCG/SPRAY INHALER for 1-2 PUFFS QID. The dosage ordered is 1-2 PUFFS. The software loops through the Local Possible Dosages for the dispense drug to find a match for 1-2 PUFFS. The drug has three Local Possible Dosages defined, but none have the Dose Unit or Numeric Dose defined. The software uses the Pre-Release Logic to try to define the fields. In this example, the software was able to define the Numeric Dose as '2' and the Dose Unit as 'INHALATION(S)' using condition set #4 in the Pre-Release Logic in the bottom box with broken lines in Example 10. The Numeric Dose of '2' is sent into the interface for the single dose amount and the FDB equivalent 'INHALATIONS for the Dose Unit of 'INHALATION(S)' is sent into the interface for the Dose Unit. The GCNSEQNO of '29123' is sent into

the interface to identify the drug. The Maximum Single Dose Order Check can be performed using those values.

**Diagram 6 – Free Text Dosage for Logic 2 Check 3**
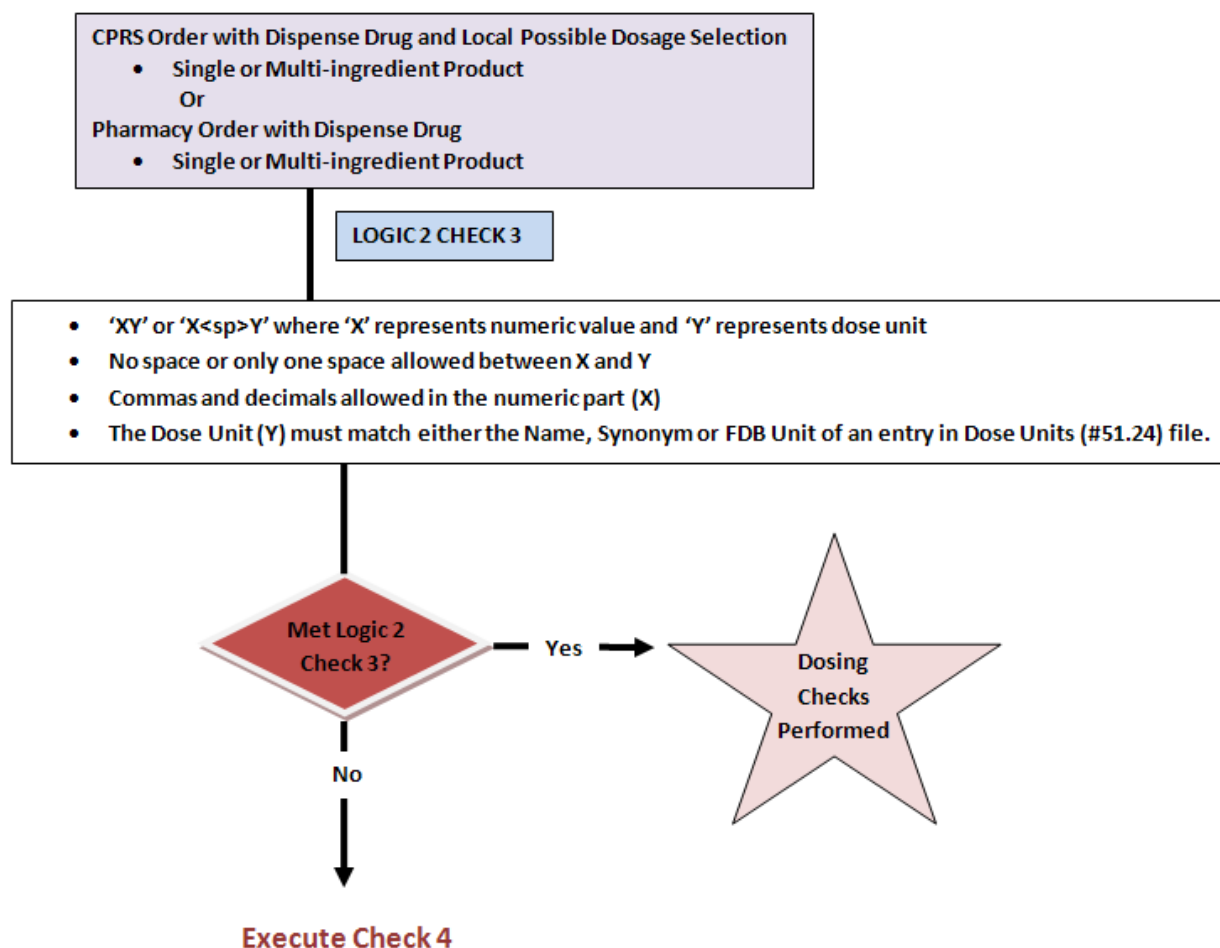


Diagram 6 illustrates the third check in the free text logic when a dispense drug is associated with an order. This is similar to Check 1 of the free text logic (Logic 1) when no dispense drug is associated with the order. The logic looks for the free text dosage being in the format of 'XY' or 'X<space>Y' where X represents a numeric value. The numeric value can have commas and decimals. The 'Y' represents the Dose Unit. No spaces or only one space is allowed between the 'X' and 'Y'. The Dose Unit 'Y' must match the NAME, SYNONYM or FIRST DATABANK DOSE UNIT of any entry in the DOSE UNITS file. The difference here is that the dose form indicator does not come into play. It can be set to 'Yes' or 'No'. It does not matter. As with the other free text dosage logic checks, if the free text dosage passes Check 3, then Dosing Order Checks will be performed. For MOCHA v2.0 that means that the Maximum Single Dose Order Check will be performed. If the free text dosage does not pass the Logic 2 Check 3, the software moves on to the fourth and last check of the free text logic when a dispense drug is assigned to a medication order.

**Example 11: Free Text Dosage fails Logic 2 Check 3**



Order with Dispense Drug:

ACETAMINOPHEN 325MG TAB 325-650MG PO Q6H PRN

VA PRODUCT File (#50.68)

Name: ACETAMINOPHEN 325MG TAB
Dosage Form: TAB   Strength: 325   Units: MG
GCNSEQNO:  004489

Items Matched

DRUG File (#50)

Generic Name: ACETAMINOPHEN 325MG TAB
Strength: 325          Unit: MG

| Local Possible Dosage(s) | Dose Unit | Numeric Dose |
|---|---|---|
| 1 – 2 TABLETS | TABLET(S) | 2 |

325-650MG

Software Interprets Free Text Dosage

Numeric Dose

Dose Unit

Lookup in DOSE UNITS file (#51.24) FAILS

Dosing Check Cannot Be Performed – Error Message

Example 11 displays an inpatient pending order for ACETAMINOPHEN 325MG TAB 325-650MG PO Q6H PRN.

The logic states that the dosage can be in the format 'XY' or 'X<space>Y'; where 'X' represents a number and 'Y' represents the Dose Unit. No spaces or only one space is allowed between 'X' and 'Y'. There are no spaces in the dosage ordered of '325-650MG'. Since 'X' represents the numeric portion, the software determines that to be '325' with '-650MG' as the Dose Unit. Remember only commas and decimals are allowed in the numeric part; not dashes. The software does not find '-650MG' in the DOSE UNITS file in the NAME, SYNONYM or FIRST DATABANK DOSE UNIT fields for any entry. Since the lookup fails and an FDB equivalent for the Dose Unit cannot be determined, the Maximum Single Dose Order Check will not be performed.

**Diagram 7: Free Text Dosage for Logic 2 Check 4**
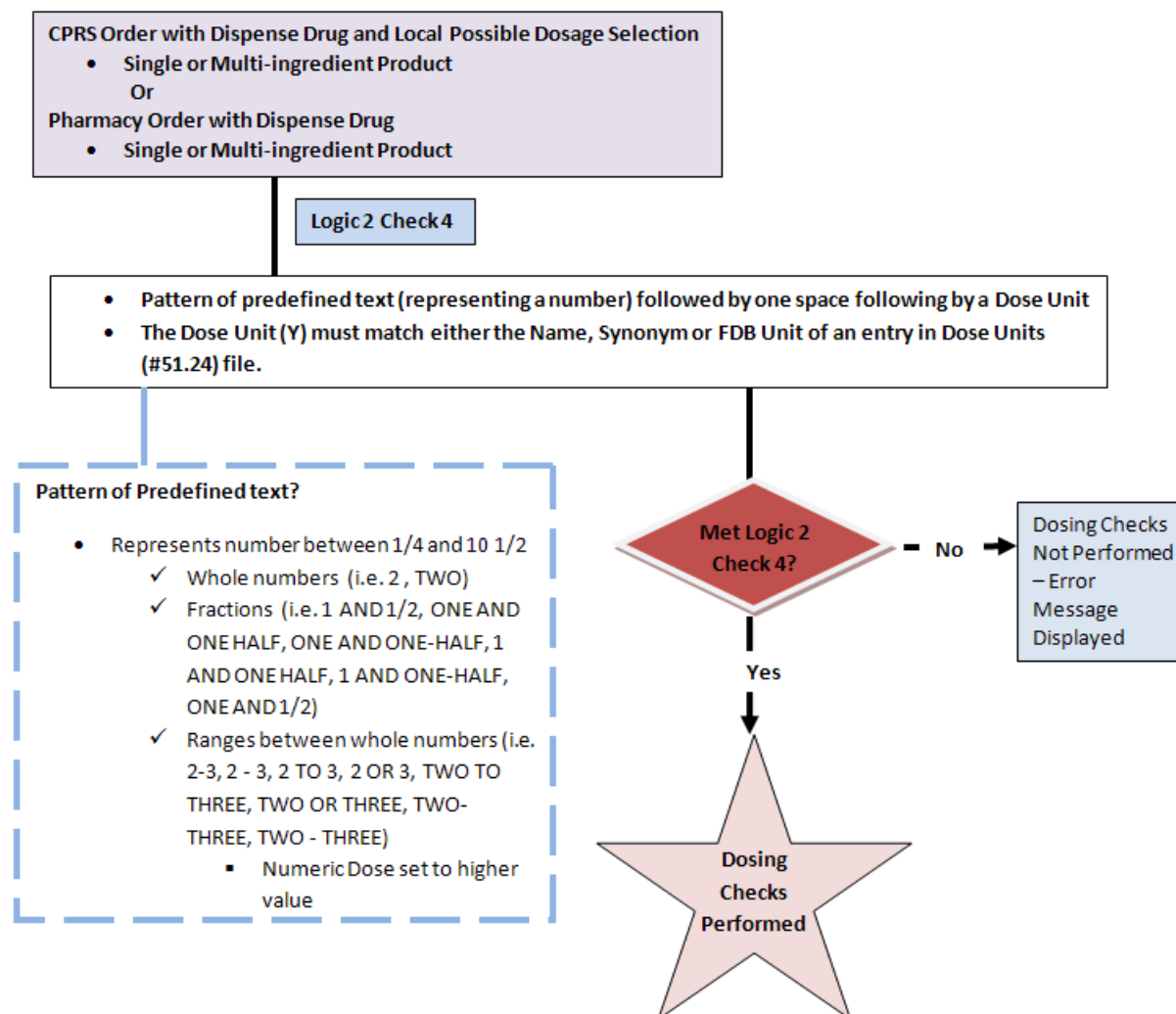


Diagram 7 illustrates the fourth and final check in the free text logic when a dispense drug is associated with an order. This is similar to Check 2 of the free text logic (Logic 1) when no dispense drug is associated with the order.

The logic looks for the free text dosage being in the format of 'X<space>Y' where 'X' represents a numeric value in the form of a pattern of predefined text. Examples are shown in the box outlined with broken lines on the bottom left of the diagram. A whole number can be represented using a numeric value such as '2' or text – 'TWO'. Fractions can be represented by a combination of numbers and text or just text. Ranges between whole numbers can be represented by numbers, text, or a combination of numbers and text. Numbers within the range must be sequential; 2-3 or 3-4 and not 2-4 or 3-5. Numbers in the range start with '1/2' and continue up to and including '10'.

The pattern of predefined text representing a number is followed by one space which is followed by a Dose Unit 'Y'. The Dose Unit 'Y' must match the NAME, SYNONYM or FIRST DATABANK DOSE UNIT of any entry in the DOSE UNITS file The difference in this check is that if a match is found, it does not matter what the dose form indicator is set to. The software does not take it into consideration. If the free text dosage passes the check, Dosing Order Checks will be performed. For MOCHA v2.0 that means that the Maximum Single Dose Order Check will be performed. If the free text dosage does not pass Check 4, Dosing Order Checks are not performed and a message stating that the Maximum Single

Dose Order Check could not be performed and that a manual check for appropriate dosing should be done is displayed.

**Example 12: Free Text Dosage for Logic 2 Check 4**
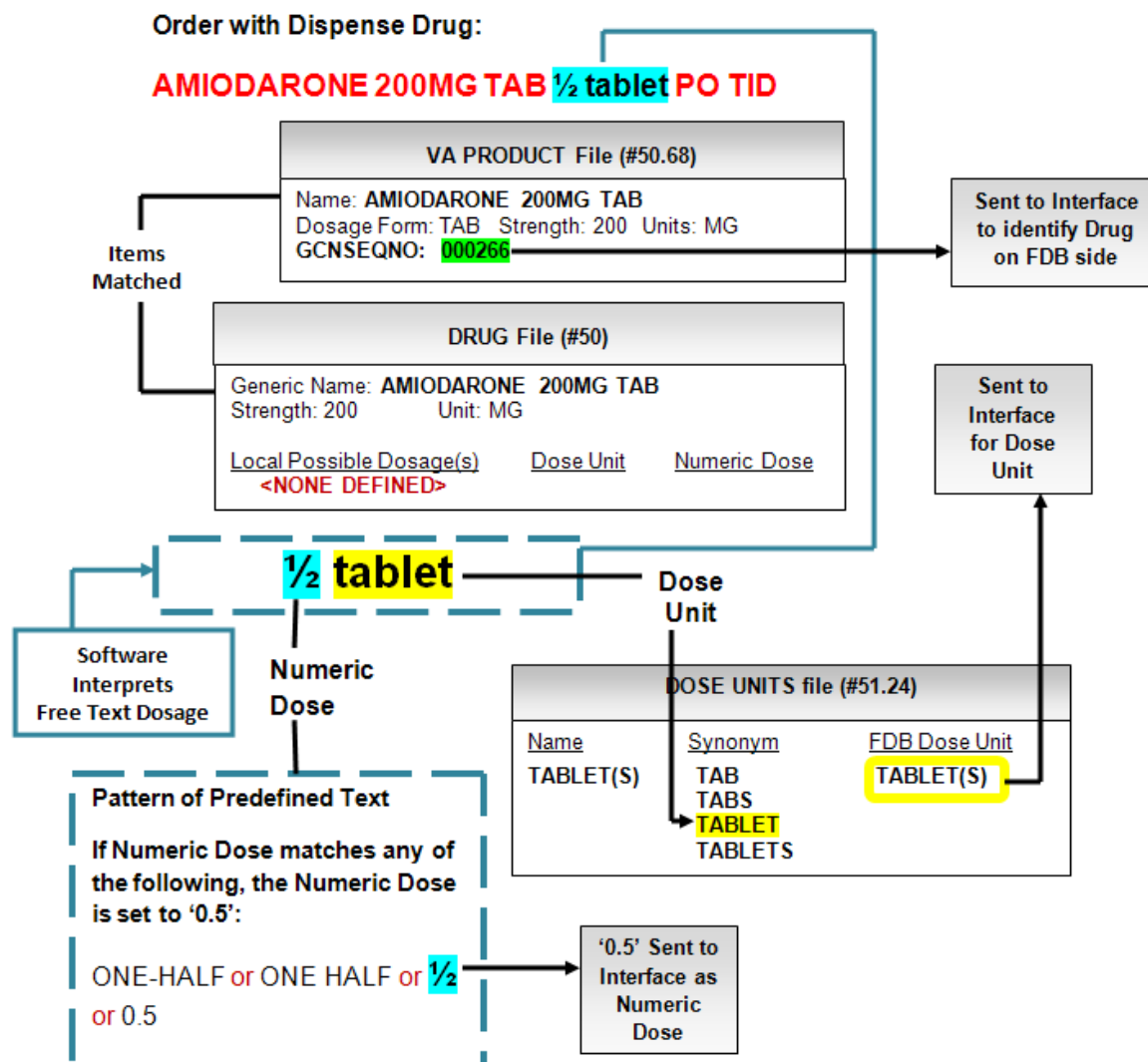


Example 12 shows an outpatient medication order for AMIODARONE ½ TABLET PO TID.

Evaluating the free text dosage, '1/2 TABLET', the logic states that the free text dosage can contain a pattern of predefined text which represents a number followed by one space which is followed by the Dose Unit. The software would determine '1/2' to be the numeric portion and will find '1/2' in the pattern of predefined text in the box at the bottom left in Example 12. The software finds 'TABLET' in the DOSE UNITS file in the SYNONYM field for the entry 'TABLET(S)'. For this check, it does not matter what the dose form indicator is set to since a dispense drug is assigned to the order and we have a strength. The free text dosage passes the logic and the Maximum Single Dose Order Check will be performed in MOCHA v2.0.

**Diagram 8: Free Text Dosage with Dispense Drug RECAP (Logic 2 Checks 1-4)**

If multiple Dispense Drugs Tied to Orderable Item



- **Single Ingredient**
- **Free Text Dosage**
  - **Local Possible Dosages**
    - Numeric Dose & Dose Unit defined
    - Pre-Release Logic used if undefined
  - **Dose Unit – Metric or Dose Form Type**
    - Found in Dose Units file
  - **Meets formats**
    - Format 1 – 'XY' or 'X<sp>Y'
    - Format 2 – 'X<sp>Y'
  - **Numeric Dose**
    - Format 1 - Number – only commas, decimals allowed
    - Format 2 - Represented by patterns of Predefined Text
      - ✓ Whole numbers

Diagram 8 recaps what needs to be in place for a Maximum Single Dose Order Check to be performed when a free text dosage is entered through either CPRS or Pharmacy backdoor options; a dispense drug is assigned to the order; and more than one dispense drug is tied to the Orderable Item being ordered. In this case, the Orderable Item can either represent a single ingredient or multi ingredient.

Since a dispense drug is assigned to the order, the software can look through all the Local Possible Dosages that are defined for the dispense drug to find a match for the free text dosage entered. If a match is found, the software looks to see if a Numeric Dose and Dose Unit fields have been populated to use for the Maximum Single Dose Order Check. If the Numeric Dose and Dose Unit fields are not populated, the Pre-Release Logic is used to define those fields for the Maximum Single Dose Order Check.

Since we have a dispense drug assigned to the order, the Dose Unit does not have to be a metric type. It can be either a metric or dose form type. The Dose Unit just has to be found in the DOSE UNITS file so that a FDB equivalent can be determined.

The free text dosage must meet the same two formats that must be used when a dispense drug is not assigned to the order. For format 1, the free text dosage must be in the format of 'XY' or 'X<space>Y' where 'X' represents the Numeric Dose and 'Y' represents the Dose Unit. For format 1, 'X' can only be a number. The numeric portion can only contain commas or decimals. For format 2, the free text dosage must be in the format of 'X<space>Y', where 'X' represents the Numeric Dose and 'Y' represents the Dose Unit. The numeric portion, 'X' must match a pattern of predefined text which can consist of whole numbers, fractions or ranges. A whole number can be represented using a numeric value such as '2' or text – 'TWO'. Fractions can be represented by a combination of numbers and text or just text. Ranges between whole numbers can be represented by numbers, text, or a combination of numbers and text. Numbers within the range must be sequential; 2-3 or 3-4 and not 2-4 or 3-5. Numbers for the ranges can start with '1/2' and go up to and including '10'. Ranges such as '325-650' will result in no Maximum Single Dose Order Check being performed.

## 2.5.3.6.4 Free Text Dosage – Logic 1 and Logic 2 Combination
**Diagram 9: Free Text Dosage without Dispense Drug for Logic 1 and Logic 2 Combination**
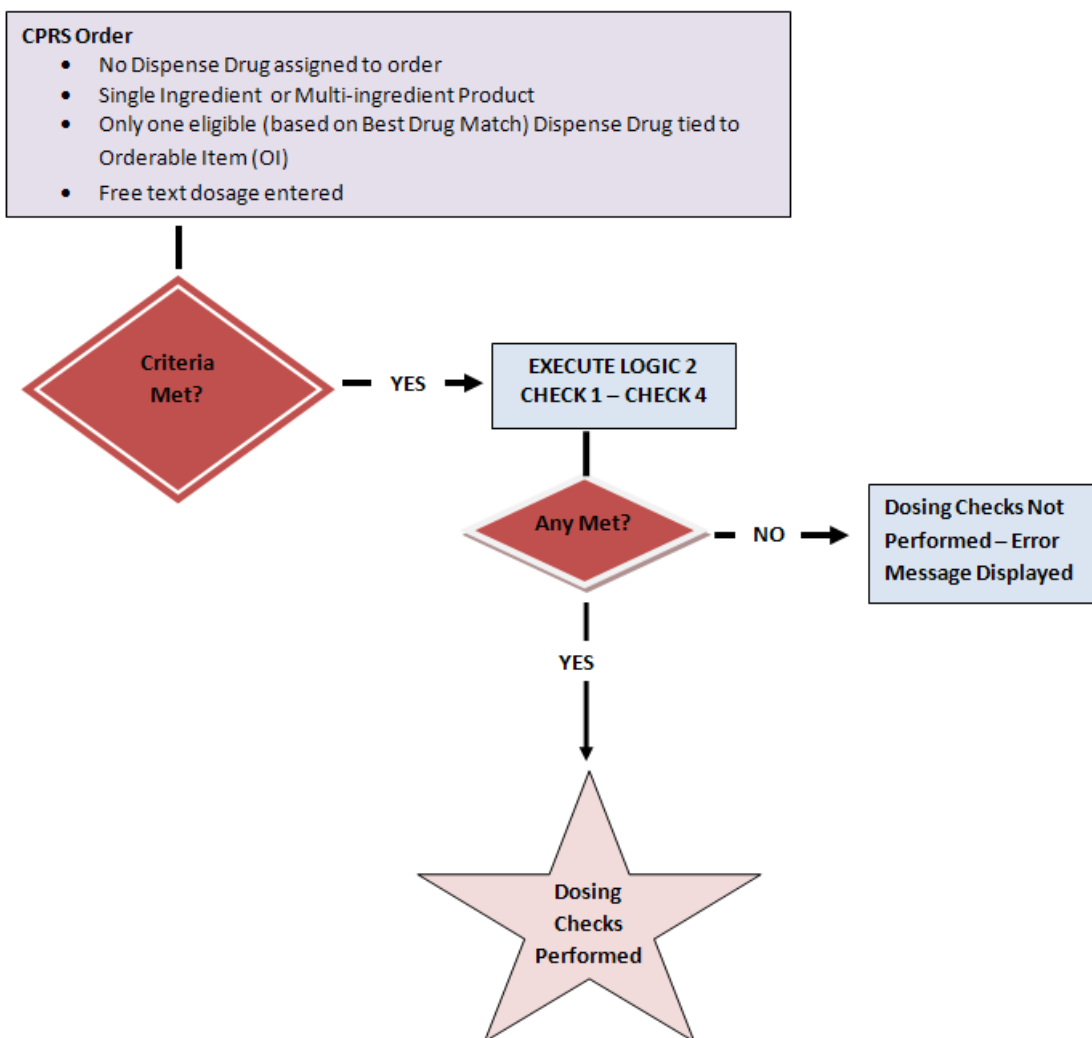


The third free text dosage scenario is somewhat of a combination of the Logic 1 and Logic 2 scenarios that were reviewed. The order criterion is similar to Logic 1 where we have an order with no dispensed drug assigned. This can only occur with a CPRS order. The drug ordered can be either a single or multi-ingredient. There is only one eligible dispense drug tied to the Orderable Item being ordered for Dosing Order Checks. And of course a free text dosage is entered. If the order meets the criteria, the software executes free text Logic 2, Checks 1 through 4. If any of the checks are met, the Dosing Order Checks will be performed. If not, the CPRS user will be informed that the Maximum Single Dose Order check will not be performed and to do a manual check.

What should be noted is that although a dispense drug is not assigned to the CPRS order when only one eligible dispense drug is tied to the Orderable Item, the software uses that dispense drug to perform Dosing Order Checks.

**Example 13: Free Text Dosage for Logic 1 and Logic 2 Combination**

**Order with Dispense Drug:**

**ACETAMINOPHEN/CODEINE TAB 2 TABLETS PO Q4H PRN FOR PAIN**

‘2’ Sent to Interface as Numeric Dose

**VA PRODUCT File (#50.68)**

Name: CODEINE 30MG/ACETAMINOPHEN 300MG TAB
Dosage Form: TAB   Strength:        Units:
GCNSEQNO:  004165

Sent to Interface to identify drug on FDB side

Items Matched

**DRUG File (#50)**

Generic Name: ACETAMINOPHEN 300MG/COD 30MG TAB
Strength:        Unit:

Local Possible Dosage(s)     Dose Unit     Numeric Dose
<NONE DEFINED>

**PHARMACY ORDERABLE ITEM File (#50.7)**

Orderable Item -> ACETAMINOPHEN/CODEINE
Dosage Form   -> TAB

Dispense Drugs:
--------------
ACETAMINOPHEN 300MG/COD 30MG TAB

Only one Dispense Drug tied to Orderable Item

**DOSE UNITS File (#51.24)**

| Name | Synonym | FDB Dose Unit |
|------|---------|---------------|
| TABLET(S) | TAB | TABLET(S) |
|  | TABS |  |
|  | TABLET |  |
|  | TABLETS |  |

Sent to Interface for Dose Unit

Example 13 illustrates an order that would have failed the free text logic when no dispense drug is assigned to the order. It is not only a multi-ingredient, but the Dose Unit is a non-metric type (dose form indicator is set to Yes). An outpatient order was entered for ACETAMINOPHEN/CODEINE TAB 2 TABLETS PO Q4H as needed for pain. Only one dispense drug is eligible and tied to the Orderable Item.

Since this order meets the criteria, and the only dispense drug tied to the Orderable Item is eligible for Dosing Order Checks, the dispense drug will be used to perform the Maximum Single Dose Order Check. The free text dosage of ‘2 TABLETS’ will be evaluated using one of the four Checks in Logic 2. In this case, the free text dosage passes Check 3 and the Maximum Single Dose Order Check will be performed.

Dosing Order Check
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**Diagram 10: Free Text Dosage without Dispense Drug for Logic 1 & Logic 2 Combination RECAP**

If Single Dispense Drug Tied to Orderable Item (1:1 relationship)

- **Single Ingredient or Multi Ingredient**
- **Free Text Dosage**
  - **Local Possible Dosages**
    - Numeric Dose & Dose Unit defined
    - Pre-Release Logic used if undefined
  - **Dose Unit – Metric or Dose Form Type**
    - Found in Dose Units file
  - **Meets formats**
    - Format 1 – 'XY' or 'X<sp>Y'
    - Format 2 – 'X<sp>Y'
  - **Numeric Dose**
    - Format 1 - Number – only commas, decimals allowed
    - Format 2 - Represented by patterns of Predefined Text
      - ✓ Whole numbers
      - ✓ Fractions
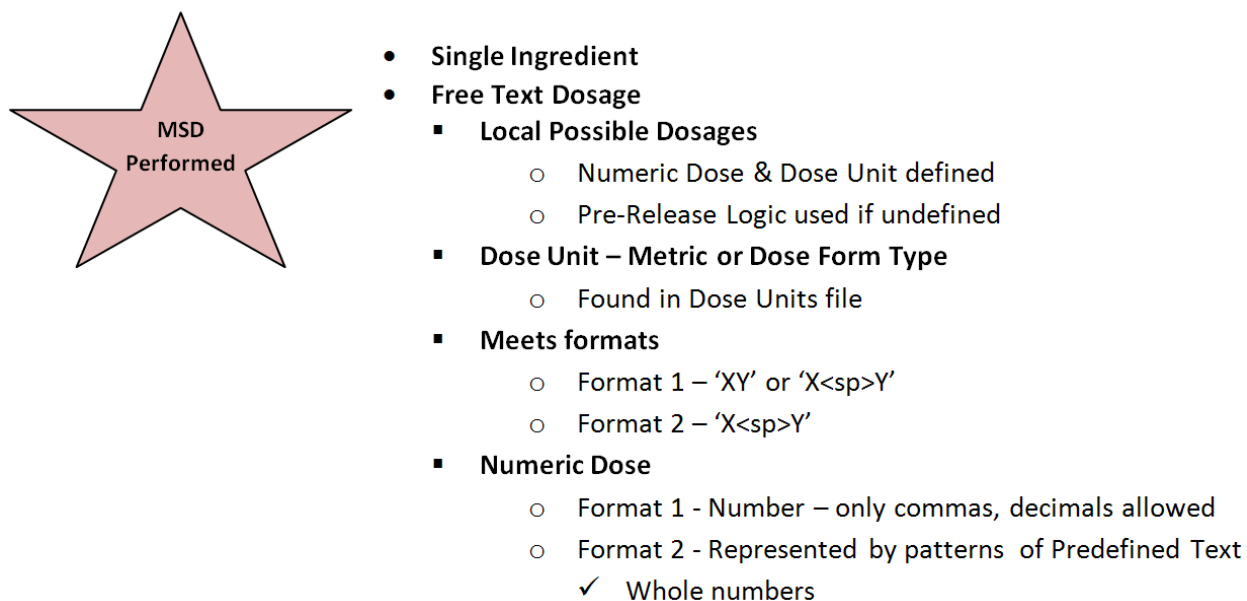      - ✓ Ranges – whole numbers, sequential

Diagram 10 recaps what needs to be in place for a Maximum Single Dose Order Check to be performed when a free text dosage is entered through either CPRS or Pharmacy backdoor options; no dispense drug is assigned to the order; and only one dispense drug is tied to the Orderable Item being ordered. Because there is a 1:1 relationship between the dispense drug and the Orderable Item, the dispense drug will be used for the Maximum Single Dose Order Check. It will not be automatically assigned to the order, however.

The rules to derive a Numeric Dose and Dose Unit from the free text dosage will be the same as if a free text dosage was entered for an order where a dispense drug is assigned.

The software will first look through all the Local Possible Dosages that are defined for the dispense drug to find a match for the free text dosage entered. If a match is found, the software looks to see if a Numeric Dose and Dose Unit have been populated to use for the Maximum Single Dose Order Check. If the Numeric Dose and Dose Unit fields are not populated, the Pre-Release Logic is used to define those fields for the Maximum Single Dose Order Check.

The Dose Unit can be either a metric or dose form type. The Dose Unit just has to be found in the DOSE UNITS file so that a FDB equivalent can be determined.

The free text dosage must meet the same two formats that we have already discussed. For format 1, the free text dosage must be in the format of 'XY' or 'X<space>Y' where 'X' represents the Numeric Dose and 'Y' represents the Dose Unit. For format 1, 'X' can only be a number. The numeric portion can only contain commas or decimals. For format 2, the free text dosage must be in the format of 'X<space>Y', where 'X' represents the Numeric Dose and 'Y' represents the Dose Unit. The numeric portion, 'X' must match a pattern of predefined text which can consist of whole numbers, fractions or ranges. A whole number can be represented using a numeric value such as '2' or text – 'TWO'. Fractions can be represented by a combination of numbers and text or just text. Ranges between whole numbers can be represented by numbers, text, or a combination of numbers and text. Numbers within the range must be

sequential; 2-3 or 3-4 and not 2-4 or 3-5. Numbers within the range start at '1/2' and go up to and including '10'. Ranges such as '325-650' will result in no Maximum Single Dose Order Check being performed.

**Example 14: Dosage entered in Provider Comment Field**

### *2.5.3.6.5 Dosage Text in Provider Comments*



As a general rule, if dosages are entered in comment fields, as in Example 14, Dosing Order Checks will not be performed. The user will see a message displayed in MOCHA v2.0 that the Maximum Single Dose Order Check could not be performed and to do a manual check for appropriate dosing.

If a free text dosage cannot be evaluated, a message will be displayed to both the Pharmacy and CPRS user. For the pharmacy user the message will read: 'Maximum Single Dose Order Check could not be performed for Drug: <DRUG NAME> Reason(s): Free Text Dosage could not be evaluated.'

For the CPRS user the message will read: 'Maximum Single Dose Order Check could not be done for Drug: <DRUG NAME>, please complete a manual check for appropriate Dosing.' This is a generic message with no specific reason.

## 2.5.3.7 IV Orders

IV orders are a bit more complicated and the derivation of the single dose amount and Dose Unit is based on various business rules. The single dose amount and Dose Unit can be derived from an IV Solution volume, an IV Additive strength/unit, infusion rate, or calculated via a formula. Some examples are shown in Tables 1 and 2.

**Table 1: Examples of Single Dose Amount and Dose Unit derived from IV Additive**

**IV Additives**

| Strength | Drug Unit | Single Dose Amount | FDB Dose Unit |
|---|---|---|---|
| 20 | MEQ | 20 | MILLIEQUIVALENTS |
| 0.5 | GM | 0.5 | GRAMS |
| 2 | MU | 2 | MILLIONUNIT(S) |
| 30 | IU | 30 | UNIT(S) |

**Table 2: Examples of Single Dose Amount and Dose Unit derived from IV Solution**

**IV Solution marked as PreMix**

| IV Type | Volume | Infusion Rate | Drug Unit | Single Dose Amount | FDB Dose Unit |
|---|---|---|---|---|---|
| Piggyback | 20 | | ML | 20 | MILLILITERS |
| Admixture | | 125ML/HR | ML | 125 | MILLILITERS |

Table 1 displays some examples of IV orders where the single dose amount and Dose Unit are derived from the strength and unit of the IV Additive. The single dose amount is derived from the strength of the IV Additive. A lookup is done in the VistA DOSE UNITS file using the drug unit for the IV Additive to find the FDB Dose Unit equivalent.

In Table 2, there are two IV orders with just an IV Solution that is marked as a PreMix. In the first example, the IV type of the order is Piggyback. It is an intermittent order. In this case, the volume of the IV Solution is used to derive the single dose amount and Dose Unit. The single dose amount will be '20' and the FDB Dose Unit equivalent for 'ML'; which is 'MILLILITERS' will be sent into the interface for the Dose Unit.

In the second example, we have another IV order with only an IV Solution that is marked as a PreMix. The IV type of the order is Admixture. It is a continuous order. In this case, the infusion rate of the order is used to derive the single dose amount and Dose Unit. The single dose amount will be '125' and the FDB Dose Unit equivalent for 'ML'; which is 'MILLILITERS' will be sent into the interface for the Dose Unit.

In some cases a formula will be used to calculate the single dose amount for an IV order. The IV order must be continuous and only have one IV Additive and one IV Solution that is not marked as a PreMix. The software will check FDB dosing records for the dispense drug associated with the IV Additive to see whether or not it can be administered via a continuous FDB dose route. Continuous FDB routes will be discussed later on in the documentation in more detail. If the answer is 'No', the IV Additive strength and drug unit are used to calculate the single dose amount and Dose Unit. If the answer is 'Yes', then the formula is used to calculate the single dose amount. The IV Additive drug unit will be used to derive the Dose Unit. The formula used is as follows:

**Single Dose Amount/Dose Rate = (IV Additive Strength & Unit/ Volume of the IV Solution) * Infusion rate (ML/HR)**

**Example 15: Single Dose Amount calculated using formula**

| |
|---|
| IV Order: Heparin 25,000 units in D5W 250ml to run 10ml/hr. |
| Example: (25000Units/250ML) * 10ML/HR = 1000 Units/HR |
| Single Dose Amount = 1000 |
| Dose Units = Units (FDB EQUIVALENT is UNIT(S)) |
| Dose Rate Unit = HOUR |

In Example 15, the continuous IV order is for Heparin 25,000 units in D5W 250ml to run 10ml/hr. Heparin can be administered via a continuous FDB dose route. The formula is used to calculate the single dose amount. We take the 25,000 units and divide by 250ml and multiply by 10ml/hr for a result of 1000 units/hr. The single dose amount is '1000', the FDB Dose Unit equivalent is 'UNIT(S)' and the dose rate which we have not yet discussed is 'HOUR'.

Examples of IV orders and the business rules that are applied to determine the single dose amount and Dose Unit will be reviewed in the sections that follow.

## 2.5.3.7.1 IV Additive Strength and Drug Unit
**IV Example 1: Intermittent IV Type Order – One IV Additive/One IV Solution (not PreMix)**
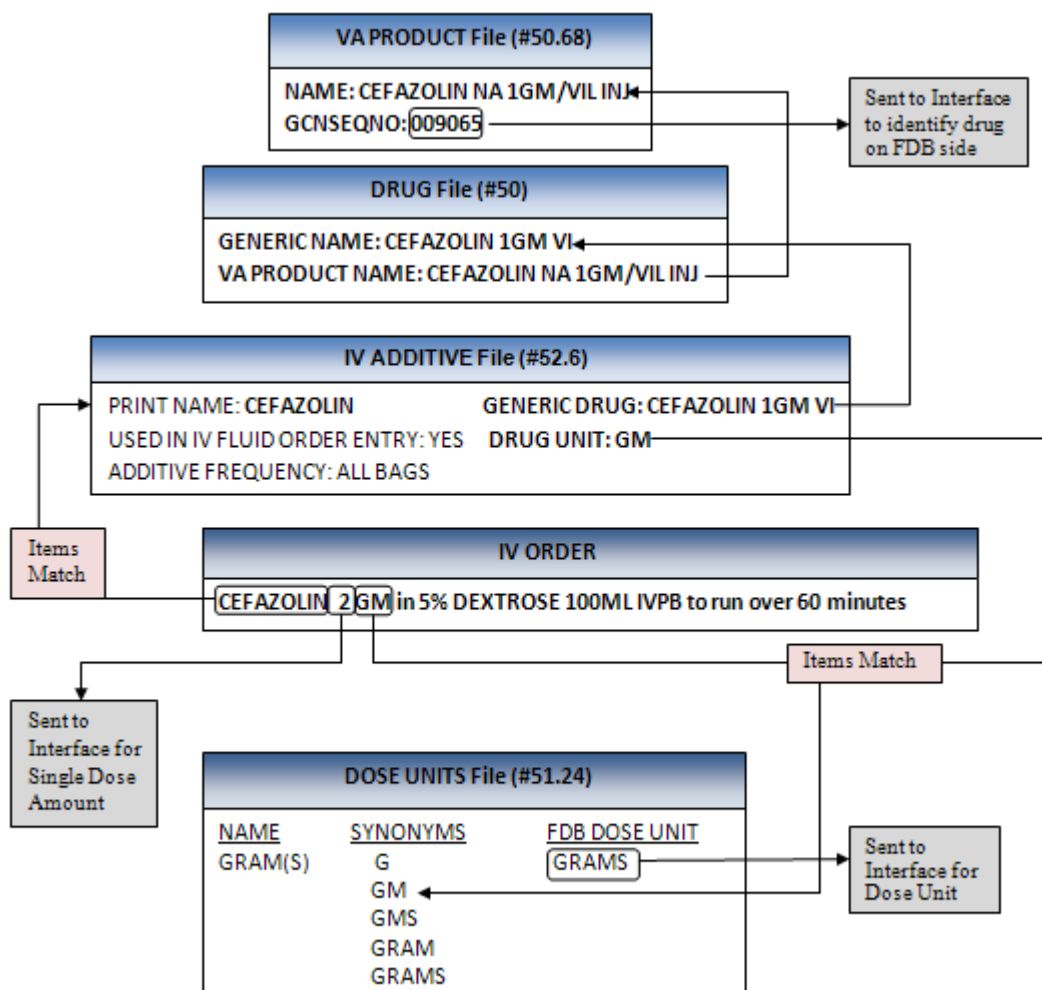


IV Example 1 shows an intermittent IV order with an IV type of Piggyback with one IV Additive (CEFAZOLIN) and one IV Solution (5% DEXTROSE) that is not a PreMix. In this case, the single dose amount and Dose Unit are derived from the IV Additive strength/unit. The single dose amount will equal the strength '2' and the drug unit of the IV Additive 'GM' will be looked up in the DOSE UNITS file to find the FDB Dose Unit equivalent which is 'GRAMS'. The GCNSEQNO of '9065' is identified by looking at the VA Product for the dispense drug that is associated with the IV Additive.

## 2.5.3.7.2 IV Solution (PreMix) – Infusion Rate

**IV Example 2: Continuous IV type with only an IV Solution (PreMix)**
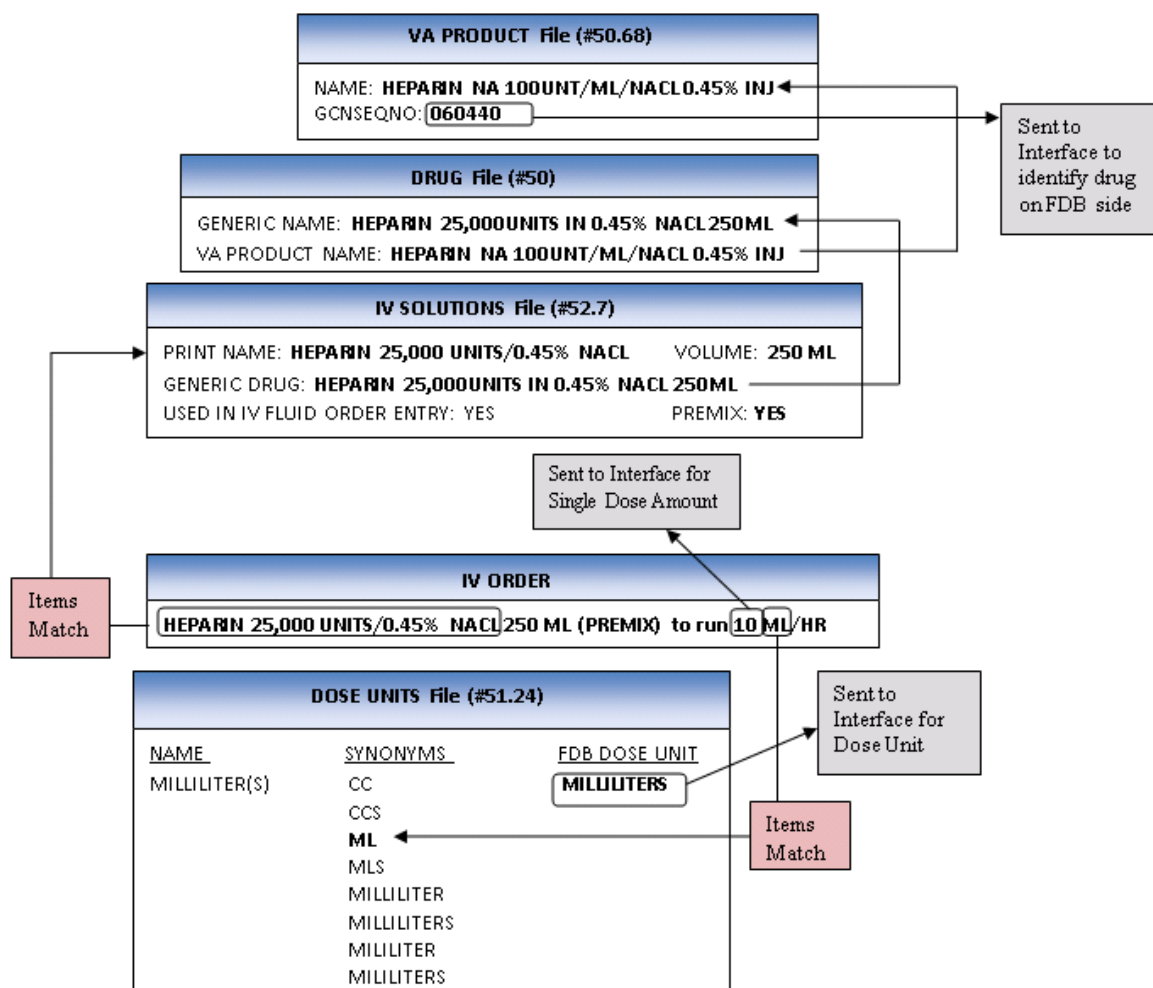


IV Example 2 shows a continuous IV order with an IV type of Admixture with only an IV Solution (HEPARIN 25,000 UNITS/0.45% NACL) that is marked as a PreMix. In this example, the infusion rate is used to determine the single dose amount and Dose Unit. The '10' will be sent in for the single dose amount and the FDB equivalent of 'ML' which is 'MILLILITERS' will be sent into the interface for the Dose Unit. The GCNSEQNO of '60440' is identified by looking at the VA Product for the dispense drug that is associated with the IV Solution.

Entry through backdoor pharmacy options require that the infusion rate be entered in the format of 'ML/HR', however the provider through CPRS may enter infusion rates in other formats and the order may be finished through pharmacy in those formats. Let us take a look at some free text infusion rate formats that the software will recognize and for which a Maximum Single Dose Order Check will be performed.

If the infusion rate is in the format of 'XML/HR' or XML/HR@N', where 'X' represents a numeric value and the single dose amount; and 'N' represents a numeric value for the number of IV labels to be generated. The FDB equivalent of 'ML' which is 'MILLILITERS' will be sent to the interface for the

Dose Unit. 'HOUR' will be sent for the Dose Rate Unit/Duration Rate. This format applies to IV orders that may be entered through CPRS or Pharmacy backdoor options.

Examples that meet this format are shown in the Table 3.

**Table 3: Infusion Rate Examples for 'XML/HR' or 'XML/HR@N' formats**

| Infusion Rate | Single Dose Amount | Drug Unit | FDB Dose Unit |
|---|---|---|---|
| 125ML/HR | 125 | ML | MILLILITERS |
| 100ML/HR@1 | 100 | ML | MILLILITERS |
| 167ML/HR@0 | 167 | ML | MILLILITERS |

The single dose amount will be derived from the numeric portion of the infusion rate and the FDB equivalent of the drug unit 'ML' which is 'MILLILITERS' will be sent to the interface for the Dose Unit. 'HR' represents the Dose Rate/Duration Rate and will be sent into the interface as 'HOUR'.

Let us take a look at another infusion rate format that specifies a patient parameter. If we look at format 'XY/P/R@N' or 'X<space>Y/P/R@N'; where 'X' represents the Numeric Dose; 'Y' represents the Dose Unit; 'P' represents a patient parameter; and 'N' represents a numeric value for the number of IV labels to be generated. The software will only consider two values for 'P' and they are 'KG' or 'M$^2$'. The software will multiply the parameter value for the patient by the Numeric Dose to calculate the single dose amount to send into the interface.

'R' represents the Dose Rate/Duration Rate. Acceptable values for 'R' are 'MIN' or 'MINUTE'; 'HR' or 'HOUR'; and 'DAY'. The software will send in a Dose Rate/Duration Rate equal to 'MINUTE', 'HOUR' or 'DAY' respectively.

This format only applies to orders entered through CPRS and two examples are shown below in Table 4.

**Table 4: Infusion Rate Examples for 'XY/P/R@N' or 'X<sp>Y/P/R@N' formats**

| Infusion Rate | Single Dose Amount | Drug Unit | FDB Dose Unit |
|---|---|---|---|
| 50MCG/KG/MIN@0 | 50 * Patient's weight in KG | MCG | MICROGRAM(S) |
| 1.5MG/M$^2$/DAY@1 | 1.5 * Patient's BSA in M$^2$ | MG | MILLIGRAM(S) |

Evaluating the first Infusion Rate of '50MCG/KG/MIN@0' listed in Table 4, the Numeric Dose is '50'; the drug unit is 'MCG'; the patient parameter is 'KG' and the Dose Rate Unit/Duration Rate is 'MIN'. The single dose amount will be calculated by looking up the patient's latest weight in 'KG' and multiplying by '50'. If the patient was 70KG, the single dose amount would be calculated to be '3500'. The software does a lookup into the DOSE UNITS file for the drug unit of 'MCG' to find the FDB equivalent of 'MICROGRAM(S)' to send into the interface. 'MINUTE' will be sent into the interface for our Dose Rate/Duration Rate.

Evaluating the second Infusion Rate of '1.5MG/M$^2$/DAY@1' listed in Table 4, the Numeric Dose is '1.5'; the drug unit is 'MG'; the patient parameter is 'M$^2$'; and the Dose Rate/Duration Rate is 'DAY'. The single dose amount will be calculated by looking up the patient's latest weight and height and using the DUBOIS formula to calculate the Body Surface Area (BSA). If the patient had a BSA of '1.5', the single dose amount would be calculated to be '2.25'. The software does a lookup into the DOSE UNITS file for the drug unit of 'MG' to find the FDB equivalent of 'MILLIGRAMS' to send into the interface. 'DAY' will be sent into the interface for the Dose Rate/Duration Rate.

This infusion rate format will not be recognized if a new order is placed through backdoor pharmacy options. A message will be displayed to the pharmacy user that the Maximum Single Dose Order Check could not be performed because the free text infusion rate could not be evaluated.

Let's take a look at another infusion rate format of 'XY/R@N' or 'X<space>Y/R@N'. The 'X' represents the Numeric Dose or single dose amount; the 'Y' represents a free text value which in this case is the

Dose Unit; the 'R' represents the Dose Rate/Duration Rate and the 'N' represents a numeric value for the number of IV labels to be generated. This format only applies to orders entered through CPRS.

If the values for 'R' are 'MIN' or 'MINUTE'; 'HR' or 'HOUR'; and 'DAY', the software shall set the Dose Rate/Duration Rate equal to 'MINUTE', 'HOUR' or 'DAY' respectively.

This infusion rate format will not be recognized if a new order is placed through backdoor pharmacy options. A message will be displayed to the pharmacy user that the Maximum Single Dose Order Check could not be performed because the free text infusion rate could not be evaluated.

**Table 5: Infusion Rate Examples for 'XY/R@N' or 'X<SP>Y/R@N' formats**

| Infusion Rate | Single Dose Amount | Drug Unit | FDB Dose Unit |
|---|---|---|---|
| 8MG/HR@1 | 8 | MG | MILLIGRAM(S) |
| 1000UNITS/HR@0 | 1000 | UNITS | UNIT(S) |

Evaluating the first Infusion Rate listed in Table 5, the Numeric Dose or single dose amount is '8', the drug unit is 'MG', and the Dose Rate Unit/Duration Rate is 'HR'. The software does a lookup into the DOSE UNITS file for the drug unit of 'MG' to find the FDB equivalent of 'MILLIGRAMS' to send into the interface. 'HOUR' will be sent into the interface for our Dose Rate/Duration Rate.

Evaluating the second Infusion Rate listed in Table 5, the Numeric Dose or single dose amount is '1000', the drug unit is 'UNITS' and the Dose Rate/Duration Rate is 'HR'. The software does a lookup into the DOSE UNITS file for the drug unit of 'UNITS' to find the FDB equivalent of 'UNIT(S)' to send into the interface. 'HOUR' will be sent into the interface for the Dose Rate/Duration Rate.

Additional text can now be entered in the infusion rate field; TITRATE AT and START AT when entering a continuous IV order through CPRS. Acceptable formats would be 'TITRATE AT 10u/kg/min@0' or 'START AT 10ml/hr@0'.

If the format cannot be interpreted for the free text infusion entered, a message will be displayed to the pharmacy user informing them that the Maximum Single Dose Order Check could not be performed and the reason why.

Maximum Single Dose Check could not be performed for Drug: DOBUTAMINE 1000MG IN D5W 250 ML

  Reason(s): Free Text Infusion Rate could not be evaluated.

## 2.5.3.7.3 IV Solution (PreMix) – Volume

**IV Example 3: Intermittent order with only IV Solution (PreMix)**
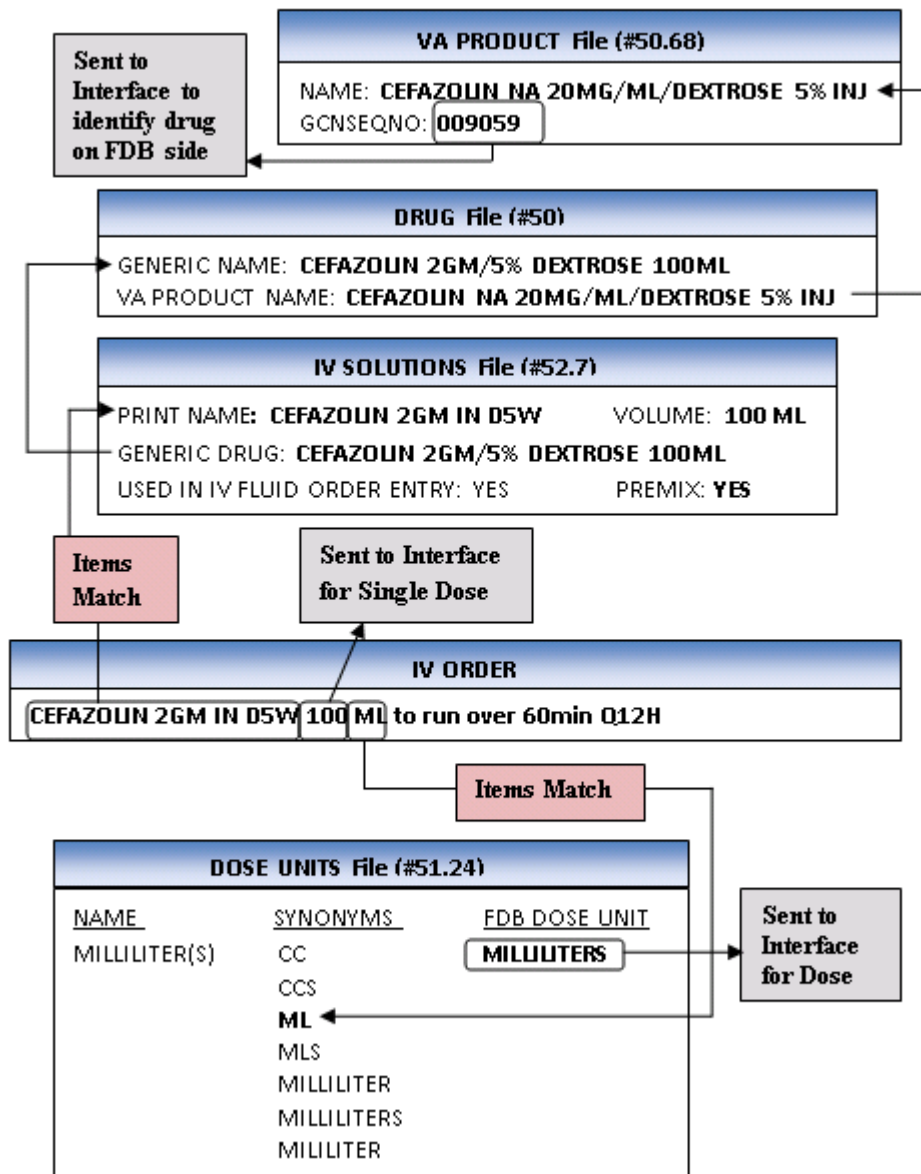


IV Example 3 is an intermittent IV order with an IV type of Piggyback with only an IV Solution (CEFAZOLIN 2GM IN D5W) that is marked as a PreMix. In this example, the volume of the IV Solution will be used to determine the single dose amount and the Dose Unit. The '100' will be the single dose amount and the FDB equivalent of 'ML' which is 'MILLILITERS' will be sent into the interface for the Dose Unit. The GCNSEQNO of '9059' is identified by looking at the VA Product for the dispense drug that is associated with the IV Solution.

## 2.5.3.7.4 Calculated Formula - Single Dose & Dose Unit

**Diagram 8a: Step 1 - Does IV Order Meet Criteria?**
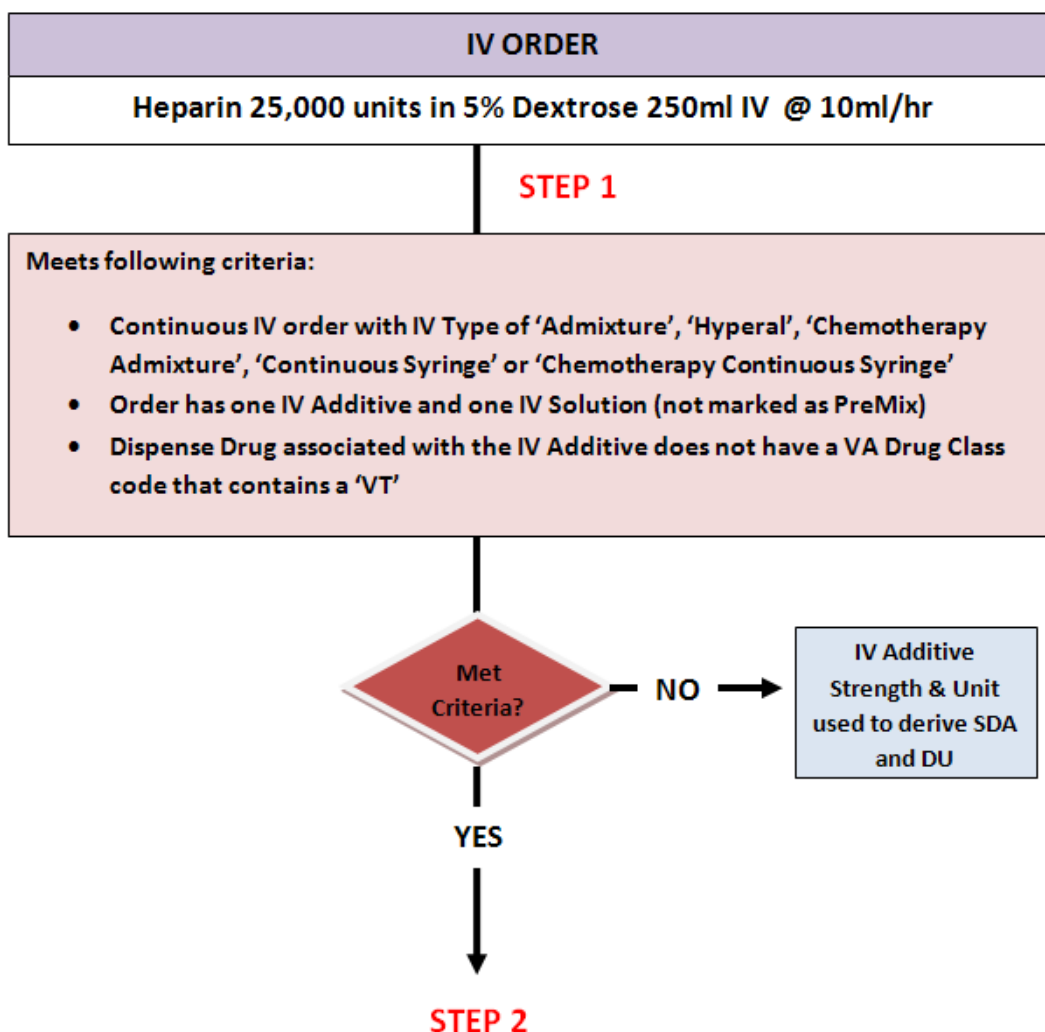


The IV order in Diagram 8a is a continuous IV order with an IV type of Admixture with one IV Additive (HEPARIN) and one IV Solution (5% DEXTROSE) not marked as a PreMix. The dispense drug associated with the HEPARIN IV Additive is HEPARIN 10,000 units/ml 5ml vial. The VA Drug Class is BL110. For this type of order before Dosing Order Checks can be performed, it needs to be determined how the single dose amount and Dose Unit will be derived. They can either be derived from the strength and unit of the IV Additive or from the following formula which has already been discussed:

**(IV Additive Strength & Unit/Volume of IV Solution) * Infusion rate (ML/HR) = Dose/Dose Rate**

In Step 1 it needs to be determined if the order meets certain criteria. For all continuous IV orders entered through CPRS or pharmacy IV orders that have an IV Type of 'Admixture', 'Hyperal', 'Chemotherapy Admixture', 'Continuous Syringe' or 'Chemotherapy Continuous Syringe' that have one IV Additive and one IV Solution not marked as a PreMix and the Dispense Drug associated with the IV Additive does not have a VA Drug Class code that contains a 'VT', the software will send an inquiry over to the FDB database to determine if the drug can be administered via a 'CONTINUOUS' FDB Dose route. If the IV order does not meet the criteria, the single dose amount and Dose Unit are derived using the IV Additive

strength and drug unit. If the IV order meets the criteria, as it does in this case, the inquiry to the FDB database is performed as illustrated in Step 2 of Diagram 8b.

**Diagram 8b: Step 2 – Query Made To FDB Database**

Software queries FDB for list of drug's FDB dose routes. Check list to see if any continuous FDB dose routes listed below returned:

CONT INTRAARTER INF        CONTINUOUS INFUSION
CONT INTRATHECAL INF        CONT INTRAOSSEOUS
CONT NEBULIZATION        CONT CAUDAL INFUSION
CONT SUBCUTAN INFUSI        CONTINUOUS INFILTRAT
CONTINUOUS EPIDURAL

**STEP 2**

RESULTS for HEPARIN 10,000 UNITS/ML 5ML VI

FDB ROUTES RETURNED:

       CONTINUOUS INFUSION
         INTRAVENOUS
         SUBCUTANEOUS

Cont FDB dose route(s) returned? — **NO** → IV Additive Strength & Unit used to derive SDA and DU

**YES**

**STEP 3**

A list of FDB continuous Dose Routes is shown at the top of Diagram 8b. The IV order and drug met the criteria in Diagram 8a and an inquiry is made to the FDB database in STEP 2 on Diagram 8b to retrieve a list of FDB Dose Routes found in dosing records for the dispense drug associated with the IV Additive.

The second box in the diagram displays the query results for HEPARIN 10,000 units/ml 5ml vial. The FDB dose routes that are returned are CONTINUOUS INFUSION, INTRAVENOUS, and SUBCUTANEOUS. The 'CONTINOUS INFUSION' route is listed as one of the continuous FDB Dose Routes in the box at the top of the diagram. Since there is one continuous FDB Dose Route returned Step 3 is executed in Diagram 8c.

Had no continuous FDB Dose Routes been returned, the IV Additive strength and drug unit would have been used to derive the single dose amount and Dose Unit for the Dosing Order Checks.

**Diagram 8c: Comparison between Query Results and IV Order Route**



Checks if any continuous FDB dose routes returned for drug matches continuous FDB route associated with Standard Medication Route below:

| STANDARD ROUTE | FDB DOSE ROUTE |
| --- | --- |
| INTRA-ARTERIAL | CONT INTRAARTER INF |
| INTRATHECAL | CONT INTRATHECAL INF |
| NEBULIZATION | CONT NEBULIZATION |
| SUBCUTANEOUS | CONT SUBCUTAN INFUSI |
| EPIDURAL | CONTINUOUS EPIDURAL |
| INTRAVENOUS | CONTINUOUS INFUSION |
| INTRAOSSEOUS | CONT INTRAOSSEOUS |
| INTRACAUDAL | CONT CAUDAL INFUSION |
| INFILTRATION | CONTINUOUS INFILTRAT |

The Standard Medication Route used in the comparison is the one that the Local Medication Route within the IV order is mapped to.

RESULTS for HEPARIN 10,000 UNITS/ML 5ML VI

FDB ROUTES RETURNED:

CONTINUOUS INFUSION
INTRAVENOUS
SUBCUTANEOUS

**STEP 3**

Match Found?

NO → IV Additive Strength & Unit used to derive SDA and DU

YES

Use formula to derive single dose amount and dose unit below:

(IV Additive Strength & Unit/Volume of IV Solution) * Infusion rate (ML/HR) = dose/dose rate

25,000 units/250ml * 10ml/hr = 1000 units/hr

Single Dose Amount (SDA) = 1000   Dose Unit (DU) = UNITS   Dose Rate Unit = HOUR

If the drug can be administered via a 'CONTINUOUS' FDB Dose route, the software checks the list of continuous FDB Dose routes that are returned for the drug and compares them against the list of continuous FDB dose routes and their associated Standard Medication Routes shown in the diagram 8c. If the Local Medication Route found in the IV order is mapped to any of those Standard Medication Route(s), then the single dose amount and Dose Unit will be derived using the formula shown in Diagram 8c. If no matches are found, the single dose amount and the Dose Unit will be derived using the IV Additive strength and unit.

In this case the Local Medication Route was 'IV' and it was mapped to a Standard Medication Route of 'INTRAVENOUS'. The Standard Medication Route 'INTRAVENOUS' maps to the continuous FDB Dose route of 'CONTINUOUS INFUSION'. The continuous FDB Dose Route returned for the drug was 'CONTINUOUS INFUSION'. We have a match. The formula will be used to derive the single dose amount and Dose Unit.

**IV Example 4: Continuous IV order with one IV Additive and one IV Solution (not a PreMix)**
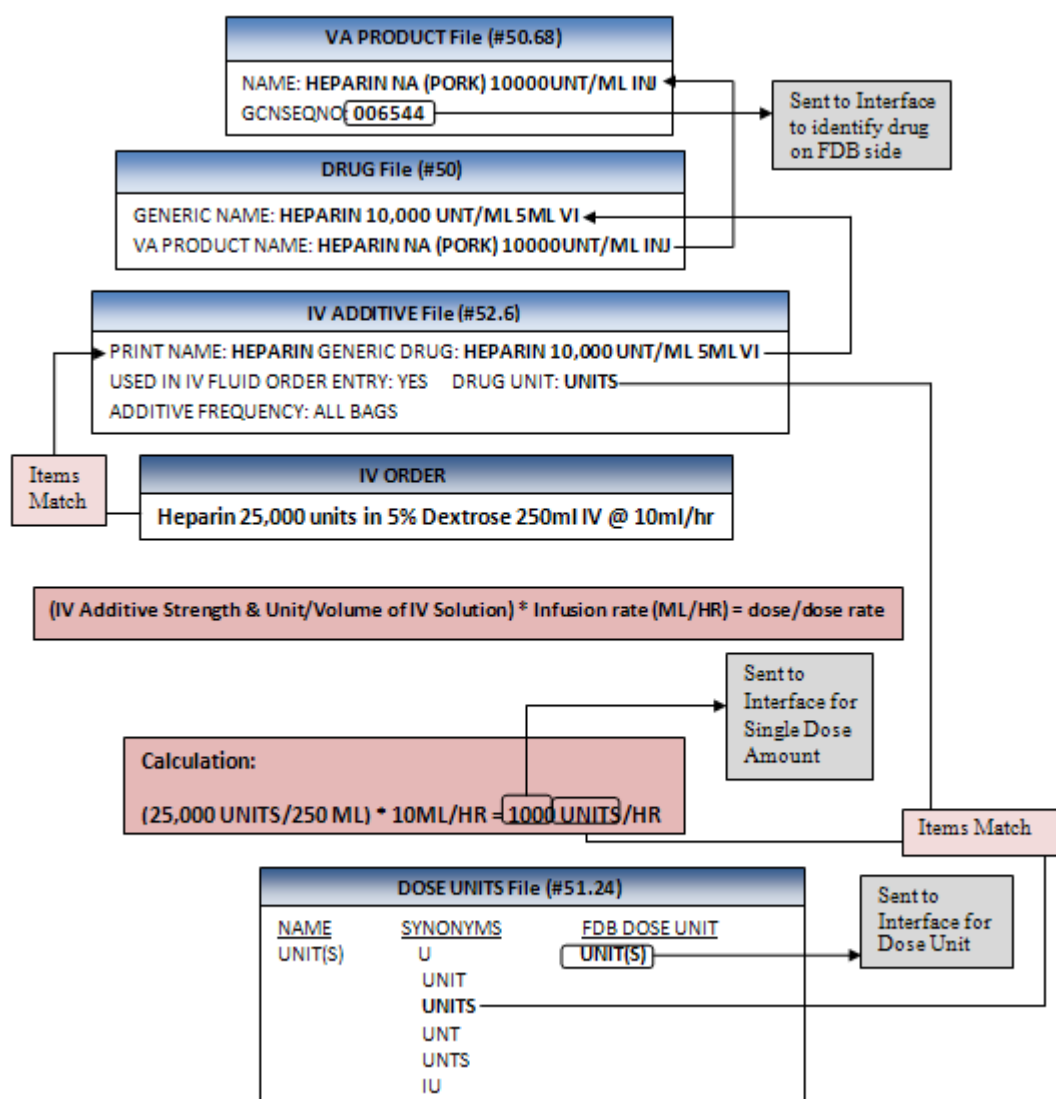


IV Example 4 shows a continuous IV order with an IV type of 'Admixture' that has one IV Additive (HEPARIN 25,000units) and one IV Solution that is not marked as a PreMix (D5W 250ml) to run at 10ml/hr. The Local Medication Route of 'INTRAVENOUS' assigned to the order is mapped to the Standard Medication Route of 'INTRAVENOUS'. For this order a determination has to be made as to how the single dose amount and Dose Unit will be derived; using the IV Additive Strength or Drug Unit or using the formula. The order meets the criteria for making an inquiry to the FDB database to see if the drug associated with the IV Additive can be administered via a continuous FDB route.

In this case, the list of FDB dose routes that are returned for the dispense drug HEPARIN 10,000 UNT/ML 5ML VI which is associated with the IV Additive HEPARIN are: 'Continuous Infusion', 'Intravenous' and 'Subcutaneous'. The continuous FDB Dose route 'Continuous Infusion' is associated with the Standard Medication Route of 'Intravenous'. The Local Medication Route, 'Intravenous' within the order, is mapped to the Standard Medication Route of 'Intravenous'. Since there is a match, the single dose amount and Dose Unit will be derived using the formula.

For the Dosing Order Checks, the GCNSEQNO of '6544' is identified by looking at the VA Product for the dispense drug that is associated with the IV Additive.

Using the formula:

**(IV Additive Strength & Unit/Volume of IV Solution) * Infusion rate (ML/HR) = Dose/Dose Rate**

The calculation would be:

25,000 UNITS / 250 ML * 10ML/HR = 1000 UNITS/HOUR

The single dose amount is calculated to be '1000', the Dose Unit is the FDB equivalent of 'UNITS' which is 'UNIT(S)' and the Dose Rate (which we have not yet discussed) is 'HOUR'.

### 2.5.3.7.5 Single Dose Adjustments

In certain situations, IV Orders meeting specific criteria (i.e. having a frequency that requires rounding or if an IV bag infuses longer than the order duration), may require single dose adjustments. Let us look at some examples of IV orders that would require single dose adjustments when a Maximum Single Dose Order Check is performed.

> **IV Example 5:** IV Admixture of Thiamine 1000mg (all bags) in 0.9% Sodium Chloride 1000ml to run 100ml/hr. Order to start 6/29@1500 and to end 6/29@2400.

IV Example 5 shows a continuous IV order with one IV Additive (THIAMINE) and IV Solution (0.9% SODIUM CHLORIDE) not marked as a PreMix with an order duration of 9 hours. One IV bag of fluids will run 10 hours (1000ML/100ML/HR). The dispense drug (THIAMINE INJ 100MG/ML 10ML) that is associated with the IV Additive has a VA Drug Class code of VT105. This IV order does not meet the criteria for querying the FDB database to see whether or not the drug is administered via a continuous FDB Dose Route. Normally in this situation, if the single bag of the IV order was able to complete before the order ended, we would have calculated the single dose amount from the IV Additive strength which would have been '1000' and determined the FDB Dose Unit equivalent from looking up the drug unit 'MG' in the DOSE UNITS file. However, in this example, a single bag of the IV order will not complete before the order ends, so the single dose amount is adjusted to 900mg; the amount that will infuse over 10 hours.

As a general rule, if an IV order is processed through pharmacy backdoor options and meets the following criteria, the software will adjust the single dose amount sent into the interface of the IV Additive using the formula,

**Adjusted Single Dose Amount (SDA) = (SDA/Volume of IV Solution) * Infusion Rate (ML/HR) * Duration of order (in hours)':**

- IV Order has an IV type of 'Admixture', 'Hyperal', 'Chemotherapy Admixture', 'Continuous Syringe', or 'Chemotherapy Continuous Syringe'
- The IV Additive is NOT administered via a continuous FDB Dose Route
- Additive is to be administered in all IV bags
- Order duration is less than 24 hours
- Volume of solution (equivalent to '1' bag dispensed) will not finish infusing over order duration

In IV Example 5, the dose of 900mg exceeds the maximum single dose amount and the user will see the warning message displayed below. The user will also see a message preceding the warning. This message will inform the user that the single dose amount has been adjusted and the amount of fluid that will be administered over the duration of the order.

```
PLEASE NOTE: The single dose of the IV Additive has been adjusted to reflect the amount of drug
infused over the duration of the order or 24 hours; whichever is less (900 ML over 10 hours).

 THIAMINE 1000 MG: Single dose amount of 900 MILLIGRAMS exceeds the maximum single dose amount
 of 100 MILLIGRAMS.
```

**IV Example 6:** An IV Admixture of Thiamine 1000mg in 0.9% Sodium Chloride 1000ml IV to infuse 62ml/hr.

IV Example 6 shows a continuous IV order with one IV Additive (THIAMINE) and IV Solution (0.9% SODIUM CHLORIDE) not marked as a PreMix. One IV bag of fluids will infuse over 16.12 hours (1000ML / 62ML/HR). The frequency is rounded to '16' because the result is not a whole number. The dispense drug (THIAMINE INJ 100MG/ML 10ML) that is associated with the IV Additive has a VA Drug Class code of 'VT105'. This IV order does not meet the criteria for querying the FDB database to see whether or not the drug is administered via a continuous FDB Dose route. Normally in this situation, if the frequency of administration of one IV fluid bag resulted in a whole number, we would have calculated the single dose amount from the IV Additive strength which would have been '1000'. However, in this example, the single dose amount is adjusted to 992mg; the amount that will infuse over 16 hours.

As a general rule, if an IV order is processed through pharmacy backdoor options and meets the following criteria, the software will adjust the single dose amount sent into the interface of the IV Additive using the formula,

 **'Adjusted Single Dose Amount (SDA) = (SDA/Volume of IV Solution) * Infusion Rate (ml/hr) * Frequency value[1]':**

- Order has a IV type of 'Admixture', 'Hyperal', 'Chemotherapy Admixture', 'Continuous Syringe', or 'Chemotherapy Continuous Syringe'
- The IV Additive is NOT administered via a continuous FDB Dose Route
- IV Solution Volume/Infusion Rate does not result in a whole number
- IV Additive is to be administered in all bags
- Order duration is greater or equal to 24 hours

[1]If the rounded frequency value of the IV order is less than 24, as in this case, the rounded frequency value will be used in the calculation. If the rounded frequency value of the IV order is equal to or greater than 24, the frequency value of '24' shall be used in the calculation. The calculation would be:

(1000MG/1000ML) * 62ML/HR * 16 HR = 992MG

If a Maximum Single Dose warning is generated, a message preceding the warning will be displayed to the user stating how much IV fluid volume was infused over the duration of the order. See example below.

```
PLEASE NOTE: The single dose of the IV Additive has been adjusted to reflect the amount of drug
infused over the nearest whole number of hours (992 ML over 16 hours).

 THIAMINE 1000 MG: Single dose amount of 992 MILLIGRAMS exceeds the maximum single dose amount
 of 100 MILLIGRAMS.
```

## 2.5.4 Dose Rate Unit

The value of the Dose Rate Unit will be determined by the software. It must be in terms of a 'DAY', 'HOUR' or 'MINUTE'.

In almost all cases, for unit dose, outpatient and intermittent IV orders, the Dose Rate Unit will be set to 'DAY'. Only continuous IV orders will use 'HOUR' or 'MINUTE and only if the drug can be given via a continuous FDB Dose Route.

If the dose rate unit is undefined or invalid, an order level error message will be displayed to the user.

> Maximum Single Dose Check could not be performed for Drug: HEPARIN 25000 UNITS/0.45% NACL 250 ML
>  Reason(s): Invalid or Undefined Dose Rate

## 2.5.5 Dose Route (FDB)

The Dose Route represents the Local Medication Route specified within the order. The FDB dose route that the Local Medication Route is mapped to via the Standard Medication Route will be passed to the interface. Pharmacy Data Management (PDM) options have been provided for sites to map each Local Medication Route that is marked for 'All Packages' to an active Standard Medication Route. Reports have also been provided to review the mappings. See examples in the table below:

| **Local Med Route** → mapped to | **Standard Med Route** → mapped to | **FDB Dose Route** |
|---|---|---|
| G-TUBE | ORAL | ORAL |
| NASAL | NASAL | INTRANASAL |
| HHN | NEBULIZATION | NEBULIZATION |

**Example:**

## Order SIG: INSTILL 2 DROP(S) in <u>BOTH EYES</u> TWICE DAILY
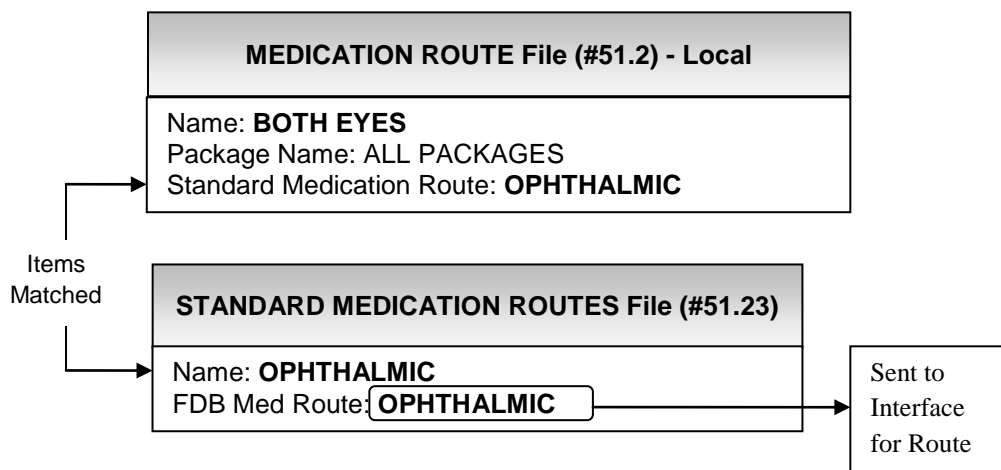


The software will look at the Local Medication Route that is in the medication order and find the Standard Medication Route that it is mapped to. It will then look in the STANDARD MEDICATION ROUTES File to locate the equivalent FDB Dose Route to send to the interface.

If the Local Medication Route is not mapped, a Maximum Single Dose Order Check will not be performed. The user entering the order will be informed that the Maximum Single Dose Order Check was not performed and the reason why as displayed below.

Maximum Single Dose Check could not be performed for Drug: GABAPENTIN 600MG TAB
  Reason(s): Invalid or Undefined Dose Route

If a Local Medication Route cannot be mapped because a corresponding Standard Medication Route is not available, visit the New Term Rapid Turnaround (NTRT) Home web site (http://vista.med.va.gov/ntrt/) to request a new Standard Medication Route or change an existing one.

There are two instances when the software automatically assigns a continuous FDB Dose Route when performing Dosing Order Checks. The first is when we have a continuous IV order with an IV type of either 'Admixture', 'Hyperal', 'Chemotherapy Admixture', 'Continuous Syringe', or 'Chemotherapy Continuous Syringe' and only one IV Solution marked as a PreMix is defined within the order.

The second is when we have a continuous IV order with an IV type of either 'Admixture', 'Hyperal', 'Chemotherapy Admixture', 'Continuous Syringe', or 'Chemotherapy Continuous Syringe' and one IV Additive and one IV Solution not marked as a PreMix is defined within the order. The dispense drug associated with the IV Additive does NOT have a VA Drug Class code assigned that starts with a 'VT' and can possibly be administered via a continuous FDB Dose Route.

If any IV order meets the second set of criteria above, the software queries the FDB database to get a list of all FDB Dose Routes for the dispense drug associated with the IV Additive. The software also checks whether the Local Medication Route specified for the IV order is mapped to one of the Standard Medication Routes in the table below. If yes, and the corresponding continuous FDB Dose Route in the table below is returned in the list of all FDB Dose Routes for the dispense drug associated with the IV Additive, the continuous FDB dose route associated with the Standard Medication Route will be sent into the interface for the Dosing Order Checks. The software makes this determination in the background; pharmacy users do not have to make any adjustments to their Local Medication Route mapping.

| STANDARD ROUTE | FDB DOSE ROUTE |
|---|---|
| INTRA-ARTERIAL | CONT INTRAARTER INF |
| INTRATHECAL | CONT INTRATHECAL INF |
| NEBULIZATION | CONT NEBULIZATION |
| SUBCUTANEOUS | CONT SUBCUTAN INFUSI |
| EPIDURAL | CONTINUOUS EPIDURAL |
| INTRAVENOUS | CONTINUOUS INFUSION |
| INTRAOSSEOUS | CONT INTRAOSSEOUS |
| INTRACAUDAL | CONT CAUDAL INFUSION |

## 2.5.6  Dose Type

Dose Type is required for Dosing Order Checks to be performed. For all medication orders within VistA only two dose types will be used; Single Dose or Maintenance.

If the schedule type within a Unit Dose order is designated as one time or on call or a schedule within any type of medication order is designated as one time or on call, a Dose Type of 'Single Dose' will be sent into the interface.

All IV Orders assigned a continuous FDB Dose Route will be assigned a dose type of 'Maintenance'.

For all other orders, a Dose Type of Maintenance will be sent into the interface. The software makes this determination in the background.

If a Dose Type is undefined or invalid; an error message will be generated and displayed to the user.

Maximum Single Dose Check could not be performed for Drug: GABAPENTIN
600MG TAB
 Reason(s): Invalid or Undefined Dose Type

## 2.5.7  Frequency

The frequency is used to perform a Daily Dose Order Check. More information will be forthcoming in a future MOCHA version when the Daily Dose Range Order Check is introduced.

## 2.5.8  Duration

The duration is used to perform a Daily Dose Order Check. More information will be forthcoming in a future MOCHA version when the Daily Dose Range Order Check is introduced.

## 2.5.9  Duration Rate

The duration rate is used to perform a Daily Dose Order Check. More information will be forthcoming in a future MOCHA version when the Daily Dose Range Order Check is introduced.

# 3 Order Entry

## 3.1 Outpatient Pharmacy

With the release of MOCHA v2.0, a Maximum Single Dose Order Check has been introduced. During order entry this Dosing Order Check will be performed with other existing order checks when the pharmacy user takes various order entry actions.

### 3.1.1 New Simple Medication Order

In Example 1 below, a new simple outpatient medication order is entered through the pharmacy backdoor and generates a Maximum Single Dose Order Check warning.

**Entering a new simple outpatient medication order**

```
Medication Profile        Sep 30, 2011@09:39:39      Page: 1 of 1
PSOPATIENT,ONE                                              <A>
 PID: 666-00-0359                        Ht(cm): _____ (_____)
 DOB: MAY 1,1955 (56)                    Wt(kg): _____ (_____)
 SEX: MALE
                                            ISSUE LAST REF DAY
 # RX #  DRUG                            QTY ST DATE  FILL REM SUP

This patient has no prescriptions



  Enter ?? for more actions
PU Patient Record Update  NO New Order
PI Patient Information   SO Select Order
Select Action: Quit// NO New Order

Eligibility: SERVICE CONNECTED 50% to 100% SC%: 60
RX PATIENT STATUS: OPT NSC//
DRUG: GABA
 Lookup: GENERIC NAME
GABAPENTIN 600MG TAB  CN900
  ...OK? Yes// (Yes)


Now doing remote order checks. Please wait...


Remote data not available - Only local order checks processed.
Now doing allergy checks.  Please wait...


Now Processing Enhanced Order Checks!  Please wait...

VERB: TAKE Available Dosage(s)
 1. 600MG
 2. 1200MG

Select from list of Available Dosages, Enter Free Text Dose
or Enter a Question Mark (?) to view list: 2400MG 2400MG

You entered 2400MG is this correct? Yes// YES
VERB: TAKE
DISPENSE UNITS PER DOSE(TABLET(S)): 4// 4
Dosage Ordered: 2400MG
```

```
NOUN: TABLETS
ROUTE: ORAL// ORAL
Schedule: TID (THREE TIMES A DAY)
LIMITED DURATION (IN DAYS, HOURS OR MINUTES):
CONJUNCTION:

Press Return to continue,'^' to exit:



 GABAPENTIN 600MG TAB: Single dose amount of 2400 MILLIGRAMS exceeds the maximum
 single dose amount of 1800 MILLIGRAMS.
```

After the pharmacy user bypasses the conjunction prompt, a Maximum Single Dose Order Check will be performed. If the dosage ordered exceeds the FDB recommended maximum single dose, a warning message will be displayed to the user. The warning message will be indented and the drug name will precede the message.

```
Do you want to Continue? Y// ES

Do you want to Process or Cancel medication?

GABAPENTIN 600MG TAB: P// CANCEL MEDICATION
RX DELETED


Another New Order for PSOPATIENT,ONE? YES//

***********OR************************

GABAPENTIN 600MG TAB: P// ROCESS MEDICATION

Enter your Current Signature Code: SIGNATURE VERIFIED

Now creating Pharmacy Intervention
for GABAPENTIN 600MG TAB

PROVIDER: RESIDENT,NEW
RECOMMENDATION: NO CHANGE

See 'Pharmacy Intervention Menu' if you want to delete this
intervention or for more options.


Would you like to edit this intervention ? N// O
.
.
. ***********OR*****************
.
.
Do you want to Continue? Y// N NO
RX DELETED


Another New Order for PSOPATIENT,ONE? YES//
```

If a Maximum Single Dose Order Check warning is displayed, the user will be prompted with 'Do you want to Continue?' If the user accepts the default of 'Yes', the program will prompt the user if they wish to Process or Cancel the medication order. If the user decides to 'Cancel' the medication order, the order is deleted. If the user takes the default to 'Process', the program proceeds with the intervention dialog. A user will always be required to log an intervention if the dosage has been exceeded. The intervention type is set to 'MAX SINGLE DOSE'.

If a user does not hold the 'PSORPH' key, he/she will not be asked to enter an intervention. The program will just continue on with the order entry dialog.

If an error message is displayed because the Maximum Single Dose Order Check could not be performed, the user will not be asked to enter an intervention to continue.

If the schedule within the order has been marked to be excluded from all Dosing Order Checks, no Maximum Single Dose Order Check will be performed. In this case, no message will be displayed to the user informing them of this.

If the user responds 'No' to the 'Do you want to Continue?' prompt, the order will be deleted.

## 3.1.2 New Complex Medication Order

In Example 2, a new complex outpatient medication order with four dosing sequences is entered. Three of the dosing sequences will generate a Maximum Single Dose Order Check warning.

Entering a new complex Outpatient Medication order

```
Another New Order for PSOPATIENT,ONE? YES//

Eligibility: SERVICE CONNECTED 50% to 100% SC%: 60
RX PATIENT STATUS: OPT NSC//
DRUG: HALOPERIDOL
 Lookup: GENERIC NAME
 1 HALOPERIDOL 10MG S.T.   CN709
 2 HALOPERIDOL 1MG S.T.   CN709
 3 HALOPERIDOL 20MG TAB   CN709
 4 HALOPERIDOL 2MG S.T.   CN709
 5 HALOPERIDOL 5MG S.T.   CN709
Press <RETURN> to see more, '^' to exit this list, '^^' to exit all lists, OR
CHOOSE 1-5: 3 HALOPERIDOL 20MG TAB   CN709


Now doing remote order checks. Please wait...


Remote data not available - Only local order checks processed.
Now doing allergy checks.  Please wait...


Now Processing Enhanced Order Checks!  Please wait...

VERB: TAKE
Available Dosage(s)
 1. 20MG

Select from list of Available Dosages, Enter Free Text Dose
or Enter a Question Mark (?) to view list: 40MG 40MG

You entered 40MG is this correct? Yes// YES
VERB: TAKE
DISPENSE UNITS PER DOSE(TABLET(S)): 2// 2
Dosage Ordered: 40MG

NOUN: TABLETS
ROUTE: ORAL// ORAL
Schedule: QAM (EVERY MORNING)
LIMITED DURATION (IN DAYS, HOURS OR MINUTES):
CONJUNCTION: AND
```

```
VERB: TAKE
Available Dosage(s)
 1. 20MG

Select from list of Available Dosages, Enter Free Text Dose
or Enter a Question Mark (?) to view list: xxx xxx

You entered xxx is this correct? Yes// YES
VERB: TAKE
Schedule: qnoon (QNOON)
LIMITED DURATION (IN DAYS, HOURS OR MINUTES):
CONJUNCTION: a AND


Maximum Single Dose Check could not be performed for Drug: HALOPERIDOL
20MG TAB
 Reason(s): Free Text Dosage could not be evaluated

VERB: TAKE
Available Dosage(s)
 1. 20MG

Select from list of Available Dosages, Enter Free Text Dose
or Enter a Question Mark (?) to view list: 60MG 60MG

You entered 60MG is this correct? Yes// YES
VERB: TAKE
DISPENSE UNITS PER DOSE(TABLET(S)): 3// 3
Dosage Ordered: 60MG

NOUN: TABLETS
Schedule: QPM (EVERY EVENING)
LIMITED DURATION (IN DAYS, HOURS OR MINUTES):
CONJUNCTION: AND

Press Return to continue,'^' to exit:


 HALOPERIDOL 20MG TAB: Single dose amount of 60 MILLIGRAMS exceeds the
 maximum single dose amount of 40 MILLIGRAMS.

Do you want to Continue? Y// ES

VERB: TAKE
Available Dosage(s)
 1. 20MG

Select from list of Available Dosages, Enter Free Text Dose
or Enter a Question Mark (?) to view list: 80MG 80MG

You entered 80MG is this correct? Yes// YES
VERB: TAKE
DISPENSE UNITS PER DOSE(TABLET(S)): 4// 4
Dosage Ordered: 80MG

NOUN: TABLETS
Schedule: QHS (AT BEDTIME)
LIMITED DURATION (IN DAYS, HOURS OR MINUTES):
CONJUNCTION:

Press Return to continue,'^' to exit:
```

```
 HALOPERIDOL 20MG TAB: Single dose amount of 80 MILLIGRAMS exceeds the
 maximum single dose amount of 40 MILLIGRAMS.
```

After the pharmacy user bypasses the conjunction prompt, a Maximum Single Dose Order Check will be performed as we saw with a simple order in Example 1. For complex orders, a Maximum Single Dose Order Check will be performed on each individual dosing sequence.

If a Maximum Single Dose Order Check warning is displayed, the user will be prompted with 'Do you want to Continue?' This prompt will be displayed for every dosing sequence that generates a Maximum Single Dose Order Check warning. If the user takes the default of 'Yes' and a value has been entered for the conjunction, the program will continue with entry of the next dosing sequence.

If an error message is displayed because the Maximum Single Dose Order Check could not be performed, the user will not be prompted with 'Do you want to Continue?' for that specific dosing sequence.

If the user responds 'No' to any of the 'Do you want to Continue?' prompts for any of the dosing sequences that generated a dosage warning while entering the complex order, the order will be deleted at that point.

No Maximum Single Dose Order Check will be performed for a dosing sequence within a complex outpatient medication order that contains a schedule that has been excluded from all Dosing Order Checks. No message will be displayed to the user informing them that a Maximum Single Dose Order Check will not be performed for that dosing sequence.

```
 DOSING CHECK SUMMARY:

 DOSE SEQ 2:
 Maximum Single Dose Check could not be performed for Drug: HALOPERIDOL
 20MG TAB
 Reason(s): Free Text Dosage could not be evaluated

 DOSE SEQ 3:
 HALOPERIDOL 20MG TAB: Single dose amount of 60 MILLIGRAMS exceeds the
 maximum single dose amount of 40 MILLIGRAMS.

 DOSE SEQ 4:
 HALOPERIDOL 20MG TAB: Single dose amount of 80 MILLIGRAMS exceeds the
 maximum single dose amount of 40 MILLIGRAMS.

Do you want to Continue? Y// ES

Do you want to Process or Cancel medication?

HALOPERIDOL 20MG TAB: P// ROCESS MEDICATION

Enter your Current Signature Code: SIGNATURE VERIFIED

Press Return to continue,'^' to exit:




Now creating Pharmacy Intervention
for HALOPERIDOL 20MG TAB

PROVIDER: RESIDENT,NEW
RECOMMENDATION: NO CHANGE
```

```
See 'Pharmacy Intervention Menu' if you want to delete this
intervention or for more options.


Would you like to edit this intervention ? N// O


PATIENT INSTRUCTIONS:
```

For a complex order, if the number of dosing sequences is greater than three (3), a summary of error messages, and/or warning messages will be redisplayed after the last dosing sequence has been entered. Each error message/warning will be preceded by a dosing sequence indicator to remind the user entering the order for which dosing sequence the error or warning occurred.

Once all dosing sequences have been entered for the complex order, and assuming the user takes the default of 'Yes' for all dosing sequences that may have generated a Maximum Single Dose warning, the program will proceed with the intervention dialog after the last dosing sequence has been entered and any warnings, error messages or dosing summary is displayed.

If the user chooses to 'Cancel' the order instead of processing the medication order, the medication order will be deleted.

A pharmacist will always be asked to log an intervention if at least one of the dosing sequences within the complex order has generated a Maximum Single Dose Order Check warning for a dose that has exceeded the recommended dose in the FDB database. Only one pharmacy intervention will be required to be logged if multiple Maximum Single Dose warnings are displayed. The intervention type shall be set to 'MAX SINGLE DOSE'.

As with a simple order, if a user does not hold the 'PSORPH' key, he/she will not be asked to enter an intervention. The program will just continue on with the order entry dialog.

## 3.1.3  Finishing a Pending Order

Example 3 illustrates finishing a pending outpatient order that was entered through CPRS that will generate several different order checks including a Maximum Single Dose warning.

```
Medication Profile          Sep 30, 2011@12:21:58        Page: 1 of 1
PSOPATIENT,ONE                                              <A>
 PID: 666-00-0359                          Ht(cm): _____ (_____)
 DOB: MAY 1,1955 (56)                      Wt(kg): _____ (_____)
 SEX: MALE

                                             ISSUE LAST REF DAY
 # RX #       DRUG                        QTY ST  DATE  FILL REM SUP


-----------------------------------ACTIVE----------------------------------
 1 100002147 GABAPENTIN 600MG TAB            360 A   09-30 09-30 5  30
 2 100002148 WARFARIN 10MG TAB               30 A    09-30 09-30 5  30
-----------------------------------PENDING---------------------------------
 3 ASPIRIN 325MG TAB             QTY: 100          ISDT: 09-30 REF: 1




  Enter ?? for more actions
PU Patient Record Update     NO New Order
PI Patient Information       SO Select Order
Select Action: Quit//3
```

```
Pending OP Orders (ROUTINE)    Sep 30, 2011@12:22:33     Page: 1 of 3
PSOPATIENT,ONE                                                    <A>
 PID: 666-00-0359                          Ht(cm): _____  (_____)
 DOB: MAY 1,1955 (56)                      Wt(kg): _____  (_____)

CPRS Order Checks:
 Duplicate Therapy: Order(s) exist for {WARFARIN 10MG TAB [ACTIVE]} in the
 same therapeutic categor(ies): Antiplatelet and Antithrombotic Drugs
 Overriding Provider: PROVIDER,ONE
 Overriding Reason: TESTING

 ASPIRIN TAB : Single dose amount of 3000 MILLIGRAMS exceeds the maximum
 single dose amount of 1950 MILLIGRAMS.
 Overriding Provider: PROVIDER,ONE
 Overriding Reason: TESTING

 SIGNIFICANT drug-drug interaction: ASPIRIN TAB and WARFARIN 10MG TAB
 [ACTIVE] - The concurrent use of anticoagulants and salicylates may result
 in increased INR values and increase the risk of bleeding. - Monograph
+  Enter ?? for more actions
BY Bypass     DC Discontinue     FL Flag/Unflag
ED Edit       FN Finish
Select Item(s): Next Screen// FN Finish


Now doing remote order checks. Please wait...


Remote data not available - Only local order checks processed.
Now doing allergy checks.  Please wait...

Now Processing Enhanced Order Checks!  Please wait...


-------------------------------------------------------------------------------
***Significant*** Drug Interaction with Prospective Drug:
                 ASPIRIN 325MG TAB and

       Local RX#: 100002148
           Drug: WARFARIN 10MG TAB (Active)
            SIG: TAKE ONE TABLET BY MOUTH EVERY EVENING
 Processing Status: Not released locally (Window)
 Last Filled On: 09/30/11

 *** Refer to MONOGRAPH for SIGNIFICANT INTERACTION CLINICAL EFFECTS

Display Interaction Monograph? No// NO

Do you want to Intervene? Y// NO



===============================================================================
*** THERAPEUTIC DUPLICATION(S) *** ASPIRIN 325MG TAB with

      Local RX#: 100002148
      Drug: WARFARIN 10MG TAB (Active)
       SIG: TAKE ONE TABLET BY MOUTH EVERY EVENING
       QTY: 30                              Days Supply: 30
 Processing Status: Not released locally (Window)
 Last Filled On: 09/30/11

Class(es) Involved in Therapeutic Duplication(s): Antiplatelet and
```

```
Antithrombotic Drugs
===============================================================================

Press Return to continue:



Discontinue Rx #100002148 WARFARIN 10MG TAB Y/N ? NO
===============================================================================




 ASPIRIN 325MG TAB: Single dose amount of 3000 MILLIGRAMS exceeds the
 maximum single dose amount of 1950 MILLIGRAMS.

Do you want to Continue? Y// ES

Do you want to Process or Cancel medication?

ASPIRIN 325MG TAB: P// ROCESS MEDICATION

Enter your Current Signature Code: SIGNATURE VERIFIED

Now creating Pharmacy Intervention
for ASPIRIN 325MG TAB

PROVIDER: RESIDENT,NEW
RECOMMENDATION: NO CHANGE

See 'Pharmacy Intervention Menu' if you want to delete this
intervention or for more options.


Would you like to edit this intervention ? N// O


Rx # 100002149  09/30/11
PSOPATIENT,ONE    #100
TAKE 3000MG BY MOUTH EVERY 4 HOURS

ASPIRIN 325MG TAB
PROVIDER,ONE  PHARMACIST,ONE
# of Refills: 1


 SC Percent: 60%
 Disabilities: NONE STATED

Was treatment for a Service Connected condition? NO//
```

Upon selection of the pending order for Aspirin 325mg Tab to finish, the Dosing Order Checks displayed to the provider during order entry via CPRS have been added to the 'CPRS Order Checks' section of the screen. When the user selects to finish the order, several order checks are generated; a Drug Interaction, Duplicate Therapy and Maximum Single Dose Order Check. We see that the Drug Interaction between Aspirin and Warfarin was displayed first, followed by the Duplicate Therapy Order Check between Aspirin and Warfarin and lastly the Maximum Single Dose Order Check warning.

Dosing Order Checks will be performed with all other order checks when the user takes the following actions on an outpatient medication order:

- Finish
- Renew
- Copy
- Reinstate
- Verify (PSORPH key holders only)

Dosing Order Checks will be the last order checks displayed to the user.

If the user responds 'No' to the 'Do you want to Continue?' prompt after the Maximum Single Dose Order Check warning is displayed, the user will be returned to the order screen where the action was initiated. In this case the user is returned to the Pending order screen as shown below.

If the user takes the default of Yes when finishing a simple order, a pharmacist will be forced to log an intervention.

```
Do you want to Continue? Y// NO


Pending OP Orders (ROUTINE)      Sep 30, 2011@12:25:40          Page: 1 of 3
PSOPATIENT,ONE                                                        <A>
 PID: 666-00-0359                                   Ht(cm): _____ (_____)
 DOB: MAY 1,1955 (56)                               Wt(kg): _____ (_____)

CPRS Order Checks:
 Duplicate Therapy: Order(s) exist for {WARFARIN 10MG TAB [ACTIVE]} in the
 same therapeutic categor(ies): Antiplatelet and Antithrombotic Drugs
 Overriding Provider: PROVIDER,ONE
 Overriding Reason: TESTING

 ASPIRIN TAB : Single dose amount of 3000 MILLIGRAMS exceeds the maximum
 single dose amount of 1950 MILLIGRAMS.
 Overriding Provider: PROVIDER,ONE
 Overriding Reason: TESTING

 SIGNIFICANT drug-drug interaction: ASPIRIN TAB and WARFARIN 10MG TAB
 [ACTIVE] - The concurrent use of anticoagulants and salicylates may result
 in increased INR values and increase the risk of bleeding. - Monograph
+  Enter ?? for more actions
AC Accept    ED Edit   DC Discontinue
Select Item(s): Next Screen//
```

## 3.1.4 Editing an Order

Example 4 will show the editing of a dosage for an order which results in a number of order checks to be generated.

```
OP Medications (ACTIVE)          Sep 30, 2011@13:21:06          Page: 1 of 2
PSOPATIENT,ONE                                                        <A>
 PID: 666-00-0359                                   Ht(cm): _____ (_____)
 DOB: MAY 1,1955 (56)                               Wt(kg): _____ (_____)

        (2)      Drug: WARFARIN 10MG TAB
        (3)  *Dosage: 10 (MG)
              Verb: TAKE
     Dispense Units: 1
              Noun: TABLET
            *Route: ORAL (BY MOUTH)
         *Schedule: QPM
 (4)Pat Instructions:
           SIG: TAKE ONE TABLET BY MOUTH EVERY EVENING
```

```
   (5) Patient Status: OPT NSC
   (6)     Issue Date: 09/30/11              (7) Fill Date: 09/30/11
        Last Fill Date: 09/30/11 (Window)
+   Enter ?? for more actions
DC Discontinue  PR Partial  RL Release
ED Edit    RF Refill  RN Renew
Select Action: Next Screen// 3

Select from list of Available Dosages, Enter Free Text Dose
or Enter a Question Mark (?) to view list: 10MG// 40 40MG

You entered 40MG is this correct? Yes// YES
VERB: TAKE// TAKE
DISPENSE UNITS PER DOSE(TABLET(S)): 4// 4
Dosage Ordered: 40MG

NOUN: TABLETS// TABLETS
ROUTE: ORAL (BY MOUTH)// ORAL (BY MOUTH)
Schedule: QPM// (EVERY EVENING)
LIMITED DURATION (IN MONTHS, WEEKS, DAYS, HOURS OR MINUTES):
CONJUNCTION:


Now doing remote order checks. Please wait...


Remote data not available - Only local order checks processed.
Now doing allergy checks.  Please wait...

Now Processing Enhanced Order Checks!  Please wait...

Press return to continue:



--------------------------------------------------------------------------------
***Significant*** Drug Interaction with Prospective Drug:
   WARFARIN 10MG TAB and

      Local RX#: 100002151
           Drug: ASPIRIN BUFFERED 325MG TAB (Non-Verified)
            SIG: TAKE TEN TABLETS BY MOUTH EVERY 4 HOURS
 Processing Status: Not released locally (Window)
 Last Filled On: 09/30/11

 *** Refer to MONOGRAPH for SIGNIFICANT INTERACTION CLINICAL EFFECTS

Display Interaction Monograph? No// NO

Do you want to Intervene? Y// NO



================================================================================



================================================================================
*** THERAPEUTIC DUPLICATION(S) *** WARFARIN 10MG TAB with

     Local RX#: 100002150
          Drug: ASPIRIN 325MG TAB (Discontinued)
           SIG: TAKE 3000MG BY MOUTH EVERY 4 HOURS
```

```
        QTY: 100                                    Days Supply: 30
 Processing Status: Not released locally (Window)
 Last Filled On: 09/30/11
-------------------------------------------------------------------------------

     Local RX#: 100002151
          Drug: ASPIRIN BUFFERED 325MG TAB (Non-Verified)
           SIG: TAKE TEN TABLETS BY MOUTH EVERY 4 HOURS
           QTY: 1800                                 Days Supply: 30
 Processing Status: Not released locally (Window)
 Last Filled On: 09/30/11

Class(es) Involved in Therapeutic Duplication(s): Antiplatelet and
Antithrombotic Drugs
===============================================================================


Press Return to continue:



Discontinue Rx #100002151 ASPIRIN BUFFERED 325MG TAB Y/N ? NO
===============================================================================


AC Accept     ED Edit

New OP Order (ROUTINE)          Sep 30, 2011@13:19:27          Page: 1 of 2
PSOPATIENT,ONE                                                        <A>
 PID: 666-00-0359                               Ht(cm): _____ (_____)
 DOB: MAY 1,1955 (56)                           Wt(kg): _____ (_____)

 Orderable Item: WARFARIN TAB
 (1)          Drug: WARFARIN 10MG TAB
 (2) Patient Status: OPT NSC
 (3)     Issue Date: SEP 30,2011              (4) Fill Date: SEP 30,2011
 (5) Dosage Ordered: 40 (MG)
               Verb: TAKE
     Dispense Units: 4
               Noun: TABLETS
              Route: ORAL (BY MOUTH)
           Schedule: QPM
 (6)Pat Instruction:
                SIG: TAKE FOUR TABLETS BY MOUTH EVERY EVENING
 (7)    Days Supply: 30                        (8) QTY ( ): 30
 (9) # of Refills: 5                           (10) Routing: WINDOW
+  This change will create a new prescription!
AC Accept     ED Edit
Select Action: Next Screen// AC Accept




 WARFARIN 10MG TAB: Single dose amount of 40 MILLIGRAMS exceeds the maximum
 single dose amount of 10 MILLIGRAMS.

Do you want to Continue? Y// ES

Do you want to Process or Cancel medication?

WARFARIN 10MG TAB: P// ROCESS MEDICATION

Enter your Current Signature Code: SIGNATURE VERIFIED
```

```
Now creating Pharmacy Intervention
for WARFARIN 10MG TAB

PROVIDER:
```

A Maximum Single Dose Order Check will be performed when the following fields are edited in an order:

- Orderable Item

- Dispense Drug

- Dosage Ordered

- Dispense Units per Dose

- Route

- Schedule

- Conjunction (if complex order)

A Maximum Single Dose Order Check will be performed after the user accepts the medication order after all edits have been made. If there are any other order checks generated such as Drug Interactions or Duplicate Therapy, they will be displayed before the user accepts the order.

If editing a complex order, all error messages and/or Maximum Single Dose Order Check warnings will be displayed all at one time after all changes are made and the user accepts the order.

## 3.1.5 Renewing an Order

Example 5 illustrates renewing an outpatient medication order for a drug that requires a patient weight in order to perform the Maximum Single Dose Order Check. An error message is generated.

```
OP Medications (ACTIVE)          Oct 26, 2011@11:04:57            Page: 1 of 2
PSOPATIENT,ONE                                                        <A>
 PID: 666-03-7777                               Ht(cm): _____  (_____)
 DOB: JAN 12,1930 (81)                          Wt(kg): _____  (_____)

               Rx #: 3232
 (1) *Orderable Item: MELPHALAN TAB
 (2)            Drug: MELPHALAN 2MG TAB
 (3)         *Dosage: 10 (MG)
                Verb: TAKE
     Dispense Units: 5
                Noun: TABLETS
              *Route: ORAL
           *Schedule: QAM
 (4)Pat Instructions:
                 SIG: TAKE FIVE TABLETS BY MOUTH EVERY MORNING
 (5)  Patient Status: SC
 (6)      Issue Date: 10/26/11              (7) Fill Date: 10/26/11
 Last Fill Date: 10/26/11 (Window)
+  Enter ?? for more actions
DC Discontinue  PR Partial  RL Release
ED Edit   RF Refill  RN Renew
Select Action: Next Screen// RN Renew
FILL DATE: (10/26/2011 - 10/26/2012): TODAY// (OCT 26, 2011)
MAIL/WINDOW: WINDOW// WINDOW
METHOD OF PICK-UP:
Nature of Order: WRITTEN// W
WAS THE PATIENT COUNSELED: NO// NO
```

```
Do you want to enter a Progress Note? No// NO

Now Renewing Rx # 3232 Drug: MELPHALAN 2MG TAB



Now doing remote order checks. Please wait...


Remote data not available - Only local order checks processed.
Now doing allergy checks.  Please wait...

Now Processing Enhanced Order Checks!  Please wait...

Press return to continue:



 Maximum Single Dose Check could not be performed for Drug: MELPHALAN 2MG
 TAB
 Reason(s): Weight required.


3232A MELPHALAN 2MG TAB    QTY: 150
# OF REFILLS: 3 ISSUED: 10-26-11
SIG: TAKE FIVE TABLETS BY MOUTH EVERY MORNING
FILLED: 10-26-11
ROUTING: WINDOW PHYS: PROVIDER,ONE


 SC Percent: %
 Disabilities: NONE STATED

Was treatment for a Service Connected condition? NO//
```

In Example 5, the patient does not have a height or weight defined. During the renewal process, an order level error message is generated telling the user that the Maximum Single Dose Order Check could not be performed because a weight is required. After the error message is displayed, the order dialog continues on. The user is not asked if they wish to continue as they would be if a warning was displayed. The user is not required to enter an intervention.

### 3.1.6  Copying an Order

Example 6 illustrates copying an outpatient medication order where the Standard Medication Route matched to the Local Medication Route is not an FDB Dose Route assigned to the drug being acted upon.

```
Another New Order for PSOPATIENT,ONE? YES//

Eligibility: SC LESS THAN 50% SC%: 30
RX PATIENT STATUS: SC//
DRUG: FENTANUL ??
DRUG: FENTANY
 Lookup: GENERIC NAME
 1 FENTANYL 100MCG/HR PATCH  CN101
 2 FENTANYL 25MCG/HR PATCH   CN101
 3 FENTANYL 50MCG/HR PATCH   CN101
 4 FENTANYL 75MCG/HR PATCH   CN101
 5 FENTANYL CITRATE 200MCG ORAL LOZENGE  CN101
Press <RETURN> to see more, '^' to exit this list, '^^' to exit all lists, OR
CHOOSE 1-5:
 6 FENTANYL CITRATE 50MCG/ML 2ML CARPUJECT   CN101
 7 FENTANYL CITRATE 50MCG/ML INJ 5ML AMP   CN101
```

```
CHOOSE 1-7: 1 FENTANYL 100MCG/HR PATCH  CN101
Now doing remote order checks. Please wait...


Remote data not available - Only local order checks processed.
Now doing allergy checks.  Please wait...

Now Processing Enhanced Order Checks!  Please wait...

VERB: APPLY
Available Dosage(s)
 1. 1 PATCH
 2. 2 PATCHES

Select from list of Available Dosages, Enter Free Text Dose
or Enter a Question Mark (?) to view list: 2 2 PATCHES

You entered 2 PATCHES is this correct? Yes// YES
VERB: APPLY
ROUTE: TOPICAL// TOPICAL
Schedule: Q72H (Q72H)
LIMITED DURATION (IN DAYS, HOURS OR MINUTES):
CONJUNCTION:

Press Return to continue,'^' to exit:




 Dosing Checks could not be performed for Drug: FENTANYL 100MCG/HR PATCH
 Reason(s): FDB dosing information is not available for this drug.
```
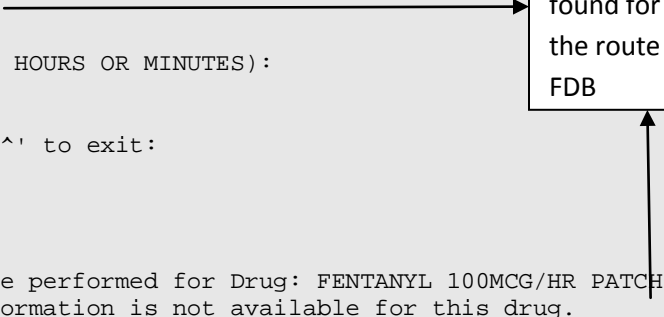

No dosing records found for this drug with the route of TOPICAL in FDB

The Local Medication Route of 'TOPICAL' is mapped to the Standard Medication Route of 'TOPICAL'. The Standard Medication Route of 'TOPICAL' is mapped to a FDB Dose Route of 'TOPICAL'. The reason the error message is generated is because there are no FDB dosing records for FENTANYL 100MCG/HR PATCH with a 'TOPICAL' dose route.

If a different Local Medication Route of 'TRANSDERMAL' which is mapped to the Standard Medication Route of 'TRANSDERMAL' is assigned to this drug order for which FDB dosing records exist, a Maximum Single Dose Order Check will be performed. The Standard Medication Route of 'TRANSDERMAL' is mapped to a FDB Dose Route of 'TRANSDERMAL' and FDB dosing records exist for this drug under that dose route.

```
Another New Order for ZZZRETFIVESIXTYSEVEN,PATIENT? YES//

Eligibility: SC LESS THAN 50% SC%: 30
RX PATIENT STATUS: SC//
DRUG: FENTANUL ??
DRUG: FENTANYL
 Lookup: GENERIC NAME
 1 FENTANYL 100MCG/HR PATCH  CN101
 2 FENTANYL 25MCG/HR PATCH   CN101
 3 FENTANYL 50MCG/HR PATCH   CN101
 4 FENTANYL 75MCG/HR PATCH   CN101
 5 FENTANYL CITRATE 200MCG ORAL LOZENGE  CN101
Press <RETURN> to see more, '^' to exit this list, '^^' to exit all lists, OR
CHOOSE 1-5: 1 FENTANYL 100MCG/HR PATCH  CN101
Now doing remote order checks. Please wait...


Remote data not available - Only local order checks processed.
Now doing allergy checks.  Please wait...
```

```
Now Processing Enhanced Order Checks!  Please wait...

VERB: APPLY
Available Dosage(s)
 1. 1 PATCH
 2. 2 PATCHES

Select from list of Available Dosages, Enter Free Text Dose
or Enter a Question Mark (?) to view list: 2 2 PATCHES

You entered 2 PATCHES is this correct? Yes// YES
VERB: APPLY
ROUTE: TOPICAL// TRANSDERMAL TRANSDERMAL
Schedule: Q72H (Q72H)
LIMITED DURATION (IN DAYS, HOURS OR MINUTES):
CONJUNCTION:

Press Return to continue '^' to exit:




 FENTANYL 100MCG/HR PATCH: Single dose form amount of 2 PATCHES exceeds the
 maximum single dose form amount of 1.1 PATCHES.


Do you want to Continue? Y// NO
RX DELETED
```

Example 6 illustrates the need for a new PDM option brought in with MOCHA v2.0 called Lookup Dosing Check Info for Drug. This new option displays dosing information for a drug that may affect whether a Dosing Order Check will be performed or can be performed. One piece of information provided is the FDB Dose Routes used for the drug selected. In this case, had we looked up the drug FENTANYL 100MCG/HR PATCH it would have displayed that the FDB Dose Route used is 'TRANSDERMAL'.

### 3.1.7  Discontinuing an Active Order

Order checks including Dosing Order Checks are not performed when discontinuing an active order.

### 3.1.8  Reinstate an Order

Examples 7 and 8 illustrate reinstating an order. This can be done in two ways, using the DC action within the Patient Prescription Processing option on a discontinued order or by using the Discontinue Prescription(s) option.

#### 3.1.8.1  DC Action on Discontinued Order

Example 7, as explained in Section 3.1.8, is shown below.

```
OP Medications (DISCONTINUED)     Dec 18, 2012@13:46:19          Page: 1 of 2
PSOPATIENT,ELEVEN
 PID: 666-11-7777                                  Ht(cm): _____ (_____)
 DOB: MAY 10,1944 (68)                             Wt(kg): _____ (_____)

 (3)          *Dosage: 0.75 (MG)
                 Verb: TAKE
       Dispense Units: 3
                 Noun: TABLETS
```

```
                  *Route: ORAL
              *Schedule: QAM
  (4)Pat Instructions:
                    SIG: TAKE THREE TABLETS BY MOUTH EVERY MORNING
  (5)   Patient Status: SC
  (6)      Issue Date: 12/18/12                    (7) Fill Date: 12/18/12
        Last Fill Date: 12/18/12 (Window)
+  Enter ?? for more actions
DC Discontinue  PR (Partial)  RL Release
ED Edit   RF (Refill)  RN Renew
Select Action: Next Screen// DC Discontinue

Are you sure you want to Reinstate? NO// YES

Comments: DISCONTINUED IN ERROR
Nature of Order: SERVICE CORRECTION// S
===============================================================================

3363 DIGOXIN 0.25MG TAB


Now doing remote order checks. Please wait...


Remote data not available - Only local order checks processed.
Now doing allergy checks. Please wait...


Now Processing Enhanced Order Checks! Please wait...

 DIGOXIN 0.25MG TAB: Single dose amount of 0.75 MILLIGRAMS exceeds the
 maximum single dose amount of 0.5 MILLIGRAMS.

Do you want to Continue? Y// ES

Do you want to Process or Cancel medication?
DIGOXIN 0.25MG TAB: P// ROCESS MEDICATION

Enter your Current Signature Code: SIGNATURE VERIFIED

Now creating Pharmacy Intervention
for DIGOXIN 0.25MG TAB

PROVIDER: PROVIDER, ONE PROVIDER,ONE OP
RECOMMENDATION: NO CHANGE

See 'Pharmacy Intervention Menu' if you want to delete this
intervention or for more options.


Would you like to edit this intervention ? N// O



Prescription #3363 REINSTATED!
 Prescription #3363:
               Filled: DEC 18, 2012 Printed: Released:

 Either print the label using the reprint option
 or check later to see if the label has been printed.

Press Return to continue...:
```

```
Medication Profile         Dec 18, 2012@13:47:58                    Page: 1 of 1
PSOPATIENT,ELEVEN
 PID: 666-11-7777                                Ht(cm): _____ (_____)
 DOB: MAY 10,1944 (68)                           Wt(kg): _____ (_____)
 SEX: MALE
                                                       ISSUE LAST REF DAY
# RX #      DRUG                                 QTY ST DATE  FILL REM SUP

-----------------------------------ACTIVE-----------------------------------
 1 3363  DIGOXIN 0.25MG TAB                      270 A   12-18 12-18 3  90
 2 3361  FOLIC ACID 1MG TAB                       90 A   12-18 12-18 3  90
--------------------------------DISCONTINUED--------------------------------
 3 3362  GABAPENTIN 600MG TAB                    1080 DC  12-18 12-18 3  90



  Enter ?? for more actions
PU Patient Record Update   NO New Order
PI Patient Information    SO Select Order
Select Action: Quit//
```

## 3.1.8.2 Discontinue Prescription(s) Option

Example 8, as explained in Section 3.1.8, is shown below.

```
Select Rx (Prescriptions) <TEST ACCOUNT> Option: discontinue Prescription(s)


Discontinue/Reinstate by Rx# or patient name: (R/P): r RX NUMBER

Discontinue/Reinstate Prescription(s)#: 3363 DIGOXIN 0.25MG TAB

RX: 3363  PATIENT: PSOPATIENT,ELEVEN (666-11-7777)

 STATUS: Discontinued
    DRUG: DIGOXIN 0.25MG TAB
     QTY: 270                     90 DAY SUPPLY
     SIG: TAKE THREE TABLETS BY MOUTH EVERY MORNING
  LATEST: 12/18/2012     # OF REFILLS:     3 REMAINING: 3
  ISSUED: 12/18/12           PROVIDER:
  LOGGED: 12/18/12            CLINIC: NOT ON FILE
 EXPIRES: 12/19/13          DIVISION: HINES (499)
     CAP: SAFETY            ROUTING: WINDOW
ENTRY BY: PROVIDER,ONE    VERIFIED BY:

FILLED: 12/18/12 PHARMACIST:   LOT #:
 DISPENSED: 12/18/12  RELEASED:


ACTIVITY LOG:
# DATE REASON RX REF  INITIATOR OF ACTIVITY
============================================================================

1 12/18/12 DISCONTINUED ORIGINAL RPH, ONE
COMMENTS: demonstration

ACTIVITY LOG:
# DATE REASON RX REF  INITIATOR OF ACTIVITY
============================================================================

2 12/18/12 REINSTATE ORIGINAL PROVIDER,ONE
COMMENTS: DISCONTINUED IN ERROR
3 12/18/12 DISCONTINUED ORIGINAL RPH,ONE
```

```
COMMENTS: error

Are you sure you want to Reinstate? NO// y YES

Comments: discontinued in error
Nature of Order: SERVICE CORRECTION// S
================================================================================

3363 DIGOXIN 0.25MG TAB


Now doing remote order checks. Please wait...


Remote data not available - Only local order checks processed.
Now doing allergy checks. Please wait...


Now Processing Enhanced Order Checks! Please wait...

 DIGOXIN 0.25MG TAB: Single dose amount of 0.75 MILLIGRAMS exceeds the
 maximum single dose amount of 0.5 MILLIGRAMS.

Do you want to Continue? Y// ES

Do you want to Process or Cancel medication?
DIGOXIN 0.25MG TAB: P// ROCESS MEDICATION

Enter your Current Signature Code: SIGNATURE VERIFIED

Now creating Pharmacy Intervention
for DIGOXIN 0.25MG TAB

PROVIDER: provider,one PROVIDER,ONE OP
RECOMMENDATION: NO CHANGE

See 'Pharmacy Intervention Menu' if you want to delete this
intervention or for more options.


Would you like to edit this intervention ? N// O



Prescription #3363 REINSTATED!
 Prescription #3363:
 Filled: DEC 18, 2012 Printed: Released:

 Either print the label using the reprint option
 or check later to see if the label has been printed.

Press Return to continue...:
```

## 3.1.9  Technician Entered Order

Example 9 illustrates the verification changes to incorporate the Maximum Single Dose Order Check. In
this example a medication order is entered by a non-pharmacist (not holding the PSORPH key) with the
outpatient site parameter set to 'Yes' for VERIFICATION.

```
Medication Profile        Sep 30, 2011@13:49:10              Page: 1 of 1
PSOPATIENT,ONE                                                        <A>
 PID: 666-00-0359                              Ht(cm): _____ (_____)
```

```
 DOB: MAY 1,1955 (56)                          Wt(kg): _____ (_____)
 SEX: MALE
                                                       ISSUE LAST REF DAY
# RX #       DRUG                                  QTY ST DATE  FILL REM SUP

------------------------------------ACTIVE-----------------------------------
 1 12147 GABAPENTIN 600MG TAB                      360 A   09-30 09-30 5  30
 2 12148 WARFARIN 10MG TAB                          30 A   09-30 09-30 5  30
---------------------------------DISCONTINUED--------------------------------
 3 12150 ASPIRIN 325MG TAB                         100 DC  09-30 09-30 1  30
---------------------------------NON-VERIFIED--------------------------------
 4 12151 ASPIRIN BUFFERED 325MG TAB               1800 N   09-30 09-30 5  30




   Enter ?? for more actions
PU Patient Record Update  NO New Order
PI Patient Information    SO Select Order
Select Action: Quit// NO New Order

Eligibility: SERVICE CONNECTED 50% to 100% SC%: 60
RX PATIENT STATUS: OPT NSC//
DRUG: CIMETIDINE
 Lookup: GENERIC NAME
 1 CIMETIDINE 150MG/ML 8ML INJ  GA301
 2 CIMETIDINE 200MG TAB  GA301
 3 CIMETIDINE 300MG TAB  GA301
 4 CIMETIDINE 300MG/5ML SOL (OZ)  GA301
CHOOSE 1-4: 3 CIMETIDINE 300MG TAB  GA301


Now doing remote order checks. Please wait...


Remote data not available - Only local order checks processed.
Now doing allergy checks.  Please wait...

Now Processing Enhanced Order Checks!  Please wait...

Press return to continue:


-----------------------------------------------------------------------------
***Critical*** Drug Interaction with Prospective Drug:
   CIMETIDINE 300MG TAB and

      Local RX#: 100002148
           Drug: WARFARIN 10MG TAB (Active)
            SIG: TAKE ONE TABLET BY MOUTH EVERY EVENING
 Processing Status: Not released locally (Window)
  Last Filled On: 09/30/11

 The pharmacologic effects of warfarin may be increased resulting in severe
 bleeding.

Display Interaction Monograph? No// NO
VERB: TAKE
Available Dosage(s)
 1. 300MG
 2. 600MG
```

```
Select from list of Available Dosages, Enter Free Text Dose
or Enter a Question Mark (?) to view list: 1200MG 1200MG

You entered 1200MG is this correct? Yes// YES
VERB: TAKE
DISPENSE UNITS PER DOSE(TABLET(S)): 4// 4
Dosage Ordered: 1200MG

NOUN: TABLETS
ROUTE: ORAL (BY MOUTH)// ORAL (BY MOUTH)
Schedule: Q6H// (EVERY 6 HOURS)
LIMITED DURATION (IN DAYS, HOURS OR MINUTES):
CONJUNCTION:

Press Return to continue,'^' to exit:




 CIMETIDINE 300MG TAB: Single dose amount of 1200 MILLIGRAMS exceeds the
 maximum single dose amount of 800 MILLIGRAMS.



PATIENT INSTRUCTIONS:

(TAKE FOUR TABLETS BY MOUTH EVERY 6 HOURS)

DAYS SUPPLY: (1-90): 30//
QTY ( TAB ) : 480// 480 Greater Than Current Inventory! Below Reorder Level.
COPIES: 1// 1
# OF REFILLS: (0-5): 5//
PROVIDER: RESIDENT,NEW
CLINIC:
MAIL/WINDOW: WINDOW// WINDOW
METHOD OF PICK-UP:
REMARKS:
ISSUE DATE: TODAY// (SEP 30, 2011)
FILL DATE: (9/30/2011 - 9/30/2012): TODAY// (SEP 30, 2011)
Nature of Order: WRITTEN// W

Rx # 100002152  09/30/11
PSOPATIENT,ONE    #480
TAKE FOUR TABLETS BY MOUTH EVERY 6 HOURS

CIMETIDINE 300MG TAB
RESIDENT,NEW  PSOTECH,ONE
# of Refills: 5


 SC Percent: 60%
 Disabilities: NONE STATED

Was treatment for a Service Connected condition? NO
Is this correct? YES//

Another New Order for PSOPATIENT,ONE? YES// N
```

When the VERIFICATION outpatient site parameter is set to 'Yes', Dosing Order Check warnings will be displayed to a user who does not hold the PSORPH key when entering a new outpatient medication order through the pharmacy backdoor or when finishing a pending order.

When the VERIFICATION outpatient site parameter is set to 'No', Dosing Order Check warnings will be displayed to a user who does not hold the PSORPH key when entering a new outpatient medication order through the pharmacy backdoor. In this instance, the user will not be allowed to finish a pending order.

A user who does not hold the PSORPH key, regardless of how the VERIFICATION outpatient site parameter is set to, will not be prompted to take any intervention action on a Dosing Order Check warning.

If the VERIFICATION outpatient site parameter is set to 'Yes', a prescription (Rx) warning label is generated to inform the pharmacist that a critical Drug Interaction and/or Maximum Single Dose warning has occurred for an outpatient medication order entered by a user who does not hold the PSORPH key. The bottle label will not be printed.

Changes have been made in MOCHA v2.0 to the warning label(s) shown below to incorporate notification that a dosing check warning has also occurred.

**Critical Drug Interaction and Maximum Single Dose Order Check**
```
499 (5/ ) SEPT 30,2011@13:50
Rx# 12152 has caused a DRUG-DRUG INTERACTION with the following prescription(s):
12148 CRITICAL INTERACTION WARFARIN 10MG TAB
DOSAGE EXCEEDS MAX SINGLE DOSE
This prescription was entered by: PSOTECH,ONE
This prescription requires intervention by a pharmacist
SEPT 30,2011 Fill 1 of 5
PSOPATIENT,ONE 00-0359
TAKE FOUR TABLETS BY MOUTH EVERY 6 HOURS
Qty: 480 PSOTECH,ONE
Tech_____RPh_____
CIMETIDINE 300MG TAB
Routing: WINDOW
Days supply: 90 Cap: SAFETY
Isd: SEPT 30,2011 Exp: SEPT 30,2012
Stat SC Clinic: UNKNOWN


Maximum Single Dose Check Only
499 (5/ ) SEPT 30,2011@13:50
DOSAGE EXCEEDS MAX SINGLE DOSE
This prescription was entered by: PSOTECH,ONE
This prescription requires intervention by a pharmacist
SEPT 30,2011 Fill 1 of 5
PSOPATIENT,ONE 00-0359
TAKE ONE CAPSULE BY MOUTH EVERY 8 HOURS
Qty: 270 PSOTECH, ONE
Tech_____RPh_____
INDINAVIR 400MG CAP
Routing: WINDOW
Days supply: 90 Cap: SAFETY
Isd: SEPT 30,2011 Exp: SEPT 30,2012
Last Fill: N/A
Pat. Stat SC Clinic: UNKNOWN
```

If the VERIFICATION outpatient site parameter is set to 'No' and there are Drug Interactions and/or Maximum Single Dose warnings for the outpatient medication order, both the warning label and the bottle label will print.

All order checks that are normally displayed during order entry will be executed for the order being processed and in the same sequence. Edits to any of the following fields will result in the Maximum Single Dose Order Check being executed again:

- Orderable Item
- Dispense Drug

- Dosage
- Dispense Units per Dose
- Route
- Conjunction (complex order)

The status of the order will remain non-verified until all Drug Interactions and Dosing Order Checks have been processed for an order.

## 3.1.10    Verification of an Order

This section will illustrate various options that can be used to verify an outpatient medication order.

### 3.1.10.1    Patient Prescription Processing

In Example 10, a pharmacist will verify the order from Example 9 using the Patient Prescription Processing option. The order has both a critical Drug Interaction and a Maximum Single Dose Order Check to process.

```
Medication Profile          Sep 30, 2011@14:07:51                   Page: 1 of 1
PSOPATIENT,ONE                                                            <A>
 PID: 666-00-0359                          Ht(cm): _____ (_____)
 DOB: MAY 1,1955 (56)                      Wt(kg): _____ (_____)
 SEX: MALE
                                                      ISSUE LAST REF DAY
# RX #      DRUG                                QTY ST DATE  FILL REM SUP

---------------------------------ACTIVE---------------------------------
 1 12147 GABAPENTIN 600MG TAB                   360  A  09-30 09-30 5  30
 2 12148 WARFARIN 10MG TAB                       30  A  09-30 09-30 5  30
------------------------------DISCONTINUED------------------------------
 3 12150 ASPIRIN 325MG TAB                      100  DC 09-30 09-30 1  30
-------------------------------NON-VERIFIED-----------------------------
 4 12151 ASPIRIN BUFFERED 325MG TAB            1800  N  09-30 09-30 5  30
 5 12152 CIMETIDINE 300MG TAB                   480  N  09-30 09-30 5  30




  Enter ?? for more actions
PU Patient Record Update        NO New Order
PI Patient Information          SO Select Order
Select Action: Quit// 5

OP Medications (NON-VERIFIED)   Sep 30, 2011@14:06:35         Page: 1 of 2
PSOPATIENT,ONE                                                      <A>
 PID: 666-00-0359                          Ht(cm): _____ (_____)
 DOB: MAY 1,1955 (56)                      Wt(kg): _____ (_____)

             Rx #: 12152
 (1) *Orderable Item: CIMETIDINE TAB
 (2)          Drug: CIMETIDINE 300MG TAB
 (3)       *Dosage: 1200 (MG)
             Verb: TAKE
    Dispense Units: 4
             Noun: TABLETS
           *Route: ORAL (BY MOUTH)
        *Schedule: Q6H
 (4)Pat Instructions:
             SIG: TAKE FOUR TABLETS BY MOUTH EVERY 6 HOURS
 (5)  Patient Status: OPT NSC
 (6)     Issue Date: 09/30/11              (7) Fill Date: 09/30/11
    Last Fill Date: 09/30/11 (Window)
```

```
+  Enter ?? for more actions
DC Discontinue      PR (Partial)      RL (Release)
ED Edit             RF (Refill)       RN (Renew)
Select Action: Next Screen// VF VF


PSOPATIENT,ONE     ID#: 666-00-0359 RX: 12152


RX: 12152 PATIENT: PSOPATIENT,ONE (666-00-0359)

  STATUS: Non-Verified
    DRUG: CIMETIDINE 300MG TAB
     QTY: 480 30 DAY SUPPLY
     SIG: TAKE FOUR TABLETS BY MOUTH EVERY 6 HOURS
  LATEST: 09/30/2011   # OF REFILLS: 5        REMAINING: 5
  ISSUED: 09/30/11         PROVIDER:
  LOGGED: 09/30/11          CLINIC: NOT ON FILE
 EXPIRES: 09/30/12        DIVISION: ALBANY (500)
     CAP: SAFETY           ROUTING: WINDOW
ENTRY BY: PSOTECH,ONE   VERIFIED BY:


LABEL LOG:
# DATE RX REF   PRINTED BY
===============================================================================

1 09/30/11 ORIGINAL    PSOTECH, ONE
COMMENTS: From RX number 12152 Drug-Drug interaction
EDIT: (Y/N/P): N// O


Press return to continue:



PSOPATIENT,ONE     ID#:666-00-0359 RX#: 12152


                                               ISSUE LAST REF DAY
# RX #      DRUG                          QTY ST  DATE  FILL REM SUP
-------------------------------------------------------------------------
--------------------------------ACTIVE-----------------------------------
 1 12147 GABAPENTIN 600MG TAB               360 A   09-30 09-30 5  30
 2 12148 WARFARIN 10MG TAB                   30 A   09-30 09-30 5  30
-----------------------------DISCONTINUED--------------------------------
 3 12150 ASPIRIN 325MG TAB                  100 DC  09-30 09-30 1  30
-----------------------------NON-VERIFIED--------------------------------
 4 12151 ASPIRIN BUFFERED 325MG TAB        1800 N   09-30 09-30 5  30
 5 12152 CIMETIDINE 300MG TAB               480 N   09-30 09-30 5  30

Press Return to continue:



Now doing remote order checks. Please wait...


Remote data not available - Only local order checks processed.
Now doing allergy checks.  Please wait...

Now Processing Enhanced Order Checks!  Please wait...
```

```
--------------------------------------------------------------------------------
***Critical*** Drug Interaction with Prospective Drug:
                CIMETIDINE 300MG TAB and

      Local RX#: 12148
           Drug: WARFARIN 10MG TAB (Active)
            SIG: TAKE ONE TABLET BY MOUTH EVERY EVENING
 Processing Status: Not released locally (Window)
 Last Filled On: 09/30/11

 The pharmacologic effects of warfarin may be increased resulting in severe
 bleeding.

Display Interaction Monograph? No// NO

Do you want to Continue? Y// ES

Do you want to Process or Cancel medication?
Rx #100002152 Drug: CIMETIDINE 300MG TAB: PROCESS//

Enter your Current Signature Code: SIGNATURE VERIFIED

Now creating Pharmacy Intervention
for CIMETIDINE 300MG TAB

PROVIDER: RESIDENT,NEW
RECOMMENDATION: NO CHANGE

See 'Pharmacy Intervention Menu' if you want to delete this
intervention or for more options.


Would you like to edit this intervention ? N// O


Press return to continue:




 CIMETIDINE 300MG TAB: Single dose amount of 1200 MILLIGRAMS exceeds the
 maximum single dose amount of 800 MILLIGRAMS.

Do you want to Continue? Y// ES

Do you want to Process or Cancel medication?

CIMETIDINE 300MG TAB: P// ROCESS MEDICATION

Enter your Current Signature Code: SIGNATURE VERIFIED

Now creating Pharmacy Intervention
for CIMETIDINE 300MG TAB

PROVIDER: RESIDENT,NEW
RECOMMENDATION: NO CHANGE

See 'Pharmacy Intervention Menu' if you want to delete this
intervention or for more options.


Would you like to edit this intervention ? N// O
```

```
VERIFY FOR PSOPATIENT,ONE ? (Y/N/Delete/Quit): Y// ES



Medication Profile               Sep 30, 2011@14:13:34                Page: 1 of 1
PSOPATIENT,ONE                                                            <A>
 PID: 666-00-0359                                 Ht(cm): _____ (_____)
 DOB: MAY 1,1955 (56)                             Wt(kg): _____ (_____)
 SEX: MALE
                                                        ISSUE LAST REF DAY
# RX #      DRUG                                  QTY ST DATE  FILL REM SUP

--------------------------------------ACTIVE-----------------------------------
 1 12152 CIMETIDINE 300MG TAB                     480 A   09-30 09-30 5   30
 2 12147 GABAPENTIN 600MG TAB                     360 A   09-30 09-30 5   30
 3 12148 WARFARIN 10MG TAB                         30 A   09-30 09-30 5   30
------------------------------------DISCONTINUED------------------------------
 4 12150 ASPIRIN 325MG TAB                        100 DC  09-30 09-30 1   30
------------------------------------NON-VERIFIED------------------------------
 5 12151 ASPIRIN BUFFERED 325MG TAB              1800 N   09-30 09-30 5   30



  Enter ?? for more actions
PU Patient Record Update          NO New Order
PI Patient Information            SO Select Order
Select Action: Quit//
```

### 3.1.10.2    Process Order Checks

Example 11 illustrates a pharmacist verifying an outpatient medication order using the Process Order
Check option for the drug Erythromycin which has several Drug Interactions and a Maximum Single
Dose Order Check warning.

```
Select Outpatient Pharmacy Manager Option: PROCESS Order Checks

Select RX with Order Checks: 3334 ERYTHROMYCIN 250MG CAP PSOPATIENT,NINETEEN    666-
55-0123


PSOPATIENT,NINETEEN   ID#: 666-55-0123 RX: 3334

RX: 3334  PATIENT: PSOPATIENT,NINETEEN (666-55-0123)

   STATUS: Non-Verified
     DRUG: ERYTHROMYCIN 250MG CAP
      QTY: 800 10 DAY SUPPLY
      SIG: TAKE 20 CAPSULES BY MOUTH FOUR TIMES A DAY
   LATEST: 08/09/2012  # OF REFILLS: 3    REMAINING: 3
   ISSUED: 08/09/12        PROVIDER:
   LOGGED: 08/09/12          CLINIC: NOT ON FILE
  EXPIRES: 08/10/13        DIVISION: HINES (499)
      CAP: SAFETY           ROUTING: WINDOW
 ENTRY BY: PSTECH,ONE   VERIFIED BY:

   FILLED: 08/09/12 PHARMACIST:   LOT #:
DISPENSED: 08/09/12  RELEASED:



LABEL LOG:
# DATE RX REF    PRINTED BY
==============================================================================
```

```
1 08/09/12 ORIGINAL    PSTECH,ONE
COMMENTS: From RX number 3334 Drug-Drug interaction
EDIT: (Y/N/P): N// O


PSOPATIENT,NINETEEN    ID#:666-55-0123 RX#: 3334


                                                   ISSUE LAST REF DAY
# RX #      DRUG                             QTY ST DATE  FILL REM SUP
--------------------------------------------------------------------------
----------------------------------ACTIVE----------------------------------
 1 3326  CIMETIDINE 300MG TAB                  90 A   08-09 08-09 3   90
 2 3333  FOLIC ACID 1MG TAB                  9000 A   08-09 08-09 3   90
 3 3335  KETOCONAZOLE 200MG TAB             2700 A   08-09 08-09 3   90
 4 3329  THEOPHYLLINE/ 200MG S.A. TAB        120 A   08-09 08-09 3   30
-------------------------------DISCONTINUED-------------------------------
 5 3327  THEOPHYLLINE 300MG S.A. TAB         180 DF  08-09 08-09 3   90
-------------------------------NON-VERIFIED-------------------------------
 6 3334  ERYTHROMYCIN 250MG CAP              800 N   08-09 08-09 3   10


Now doing remote order checks. Please wait...

Remote data not available - Only local order checks processed.
Now doing allergy checks. Please wait...

Now Processing Enhanced Order Checks! Please wait...
--------------------------------------------------------------------------
***Critical*** Drug Interaction with Prospective Drug:
            ERYTHROMYCIN 250MG CAP and

    Local RX#: 3329
         Drug: THEOPHYLLINE/ 200MG S.A. TAB (Active)
          SIG: TAKE TWO TABLETS BY MOUTH TWICE A DAY
 Processing Status: Released locally on 8/9/12@12:05:08 (Window)
 Last Filled On: 08/09/12

 The concurrent administration of xanthine derivatives and some macrolides
 may result in elevated levels and increased clinical and adverse effects of
 the xanthine derivatives. The serum levels of erythromycin may be
 decreased.

Display Interaction Monograph? No// NO
--------------------------------------------------------------------------
***Significant*** Drug Interaction with Prospective Drug:
                ERYTHROMYCIN 250MG CAP and

      Local RX#: 3335
           Drug: KETOCONAZOLE 200MG TAB (Active)
            SIG: TAKE SEVEN AND ONE-HALF TABLETS BY MOUTH THREE
                TIMES A DAY
 Processing Status: Not released locally (Window)
 Last Filled On: 08/09/12

 *** Refer to MONOGRAPH for SIGNIFICANT INTERACTION CLINICAL EFFECTS


Display Interaction Monograph? No// NO

Do you want to Continue? Y// ES

Do you want to Process or Cancel medication?
Rx #3334 Drug: ERYTHROMYCIN 250MG CAP: PROCESS//
```

```
Enter your Current Signature Code: SIGNATURE VERIFIED

Now creating Pharmacy Intervention
for ERYTHROMYCIN 250MG CAP

PROVIDER: PROVIDER,ONE
RECOMMENDATION: NO CHANGE

See 'Pharmacy Intervention Menu' if you want to delete this
Intervention or for more options.

Would you like to edit this intervention ? N// O



 ERYTHROMYCIN 250MG CAP: Single dose amount of 5000 MILLIGRAMS exceeds the
 maximum single dose amount of 1000 MILLIGRAMS.

Do you want to Continue? Y// ES

Do you want to Process or Cancel medication?
ERYTHROMYCIN 250MG CAP: P// ROCESS MEDICATION

Enter your Current Signature Code: SIGNATURE VERIFIED

Now creating Pharmacy Intervention
for ERYTHROMYCIN 250MG CAP

PROVIDER: PROVIDER,ONE
RECOMMENDATION: NO CHANGE

See 'Pharmacy Intervention Menu' if you want to delete this
intervention or for more options.

Would you like to edit this intervention ? N// O

PSOPATIENT,NINETEEN    ID#:666-55-0123 RX#: 3334
ERYTHROMYCIN 250MG CAP

VERIFY FOR PSOPATIENT,NINETEEN ? (Y/N/Delete/Quit): Y// ES

Label Printer: Rx Label DEVICE
LABEL: QUEUE/CHANGE PRINTER/HOLD/SUSPEND or '^' to bypass Q// UEUE

LABEL(S) QUEUED TO PRINT

Select RX with Order Checks:
```

### 3.1.10.3     List of Non-Verified Scripts

Example 12 displays the List of Non-Verified Scripts option. The option provides a list of outpatient medication orders that have a status of non-verified sorted by patient or clerk. The prescription number, date issued, drug and the Internal Entry Number (IEN) of the person who entered the order are displayed. A '#' in front of the drug name indicates that the non-verified order has a critical Drug Interaction and/or Maximum Single Dose Order Check that require processing.

```
Select Verification Option: LIST Non-Verified Scripts
Sort By Patient or Clerk: P// ATIENT
DEVICE: HOME// Local SSH Device Right Margin: 80//
```

```
   NON-VERIFIED PRESCRIPTIONS
   AS OF AUG 9,2012@13:08:12
    SORTED BY PATIENT
   (# indicates Order Check)
 Patient name       Page: 1
Rx #  Issued Drug       Entry By
---------------------------------------------------------------------------

 PSOPATIENT,NINETEEN
3332  08/09/12 #KETOCONAZOLE 200MG TAB   222222317
3333  08/09/12 #FOLIC ACID 1MG TAB    222222317
3334  08/09/12 #ERYTHROMYCIN 250MG CAP   222222317
```

### 3.1.10.4      Rx Verification by Clerk

Example 13 illustrates a pharmacist verifying an order using the Rx Verification by Clerk option. All non-verified outpatient orders entered by a clerk are presented for processing.

```
Select Verification Option: RX Verification by Clerk

Enter Clerk Name: PSTECH,ONE OPT

RX: 3332  PATIENT: PSOPATIENT,NINETEEN (666-55-0123)

   STATUS: Non-Verified
     DRUG: KETOCONAZOLE 200MG TAB
      QTY: 2700         90 DAY SUPPLY
      SIG: TAKE TEN TABLETS BY MOUTH THREE TIMES A DAY
  LATEST: 08/09/2012  # OF REFILLS: 3    REMAINING: 3
  ISSUED: 08/09/12          PROVIDER:
  LOGGED: 08/09/12           CLINIC: NOT ON FILE
 EXPIRES: 08/10/13        DIVISION: HINES (499)
     CAP: SAFETY          ROUTING: WINDOW
 ENTRY BY: PSTECH,ONE   VERIFIED BY:


LABEL LOG:
# DATE RX REF   PRINTED BY
============================================================================

1 08/09/12 ORIGINAL   PSTECH,ONE
COMMENTS: From RX number 3332 Drug-Drug interaction
EDIT: (Y/N/P): N// YES


OP Medications (NON-VERIFIED)    Aug 09, 2012@13:15:19         Page: 1 of 2
PSOPATIENT,NINETEEN
 PID: 666-55-0123                           Ht(cm): _____ (_____)
 DOB: FEB 19,1920 (92)                      Wt(kg): _____ (_____)

             Rx #: 3332
 (1) *Orderable Item: KETOCONAZOLE TAB
 (2)          Drug: KETOCONAZOLE 200MG TAB
 (3)        *Dosage: 2000 (MG)
              Verb: TAKE
     Dispense Units: 10
              Noun: TABLETS
            *Route: ORAL
         *Schedule: TID
 (4)Pat Instructions:
               SIG: TAKE TEN TABLETS BY MOUTH THREE TIMES A DAY
```

```
 (5) Patient Status: SC
 (6)     Issue Date: 08/09/12               (7) Fill Date: 08/09/12
      Last Fill Date: 08/09/12 (Window)
+  Enter ?? for more actions
DC (Discontinue)     PR (Partial)     RL (Release)
ED Edit              RF (Refill)      RN (Renew)
Select Action: Next Screen// 3

Select from list of Available Dosages, Enter Free Text Dose
or Enter a Question Mark (?) to view list: 2000MG// 1500MG 1500MG

You entered 1500MG is this correct? Yes// YES
VERB: TAKE// TAKE
DISPENSE UNITS PER DOSE(TABLET(S)): 7.5// 7.5
Dosage Ordered: 1500MG

NOUN: TABLETS// TABLETS
ROUTE: ORAL// ORAL
Schedule: TID// (THREE TIMES A DAY)
LIMITED DURATION (IN MONTHS, WEEKS, DAYS, HOURS OR MINUTES):
CONJUNCTION:



Press return to continue:



Now doing remote order checks. Please wait...


Remote data not available - Only local order checks processed.
Now doing allergy checks. Please wait...


Now Processing Enhanced Order Checks! Please wait...


-------------------------------------------------------------------------------
***Critical*** Drug Interaction with Prospective Drug:
              KETOCONAZOLE 200MG TAB and

     Local RX#: 3328
          Drug: WARFARIN 5MG TAB (Active)
           SIG: TAKE ONE TABLET BY MOUTH ON MONDAY,WEDNESDAY AND
                FRIDAY EXCEPT TAKE TWO TABLETS ON TUESDAYS AND
                THURSDAYS
 Processing Status: Released locally on 8/9/12@12:05:08 (Mail)
 Last Filled On: 08/09/12

 The anticoagulant effect of warfarin may be increased.


Display Interaction Monograph? No// NO

-------------------------------------------------------------------------------
***Significant*** Drug Interaction with Prospective Drug:
                  KETOCONAZOLE 200MG TAB and

       Local RX#: 3326
            Drug: CIMETIDINE 300MG TAB (Active)
             SIG: TAKE ONE TABLET BY MOUTH AT BEDTIME
 Processing Status: Released locally on 8/9/12@12:05:08 (Window)
```

```
 Last Filled On: 08/09/12

 *** Refer to MONOGRAPH for SIGNIFICANT INTERACTION CLINICAL EFFECTS

Display Interaction Monograph? No// NO

---------------------------------------------------------------------------
***Significant*** Drug Interaction with Prospective Drug:
                 KETOCONAZOLE 200MG TAB and

      Local RX#: 3334
             Drug: ERYTHROMYCIN 250MG CAP  (Non-Verified)
              SIG: TAKE 20 CAPSULES BY MOUTH FOUR TIMES A DAY
 Processing Status: Not released locally (Window)
 Last Filled On: 08/09/12

 *** Refer to MONOGRAPH for SIGNIFICANT INTERACTION CLINICAL EFFECTS

Display Interaction Monograph? No// NO

Do you want to Continue? Y// ES

Do you want to Process medication
KETOCONAZOLE 200MG TAB: P// ROCESS

Enter your Current Signature Code: SIGNATURE VERIFIED

Remote data not available - Only local order checks processed.


Press return to continue:


Now creating Pharmacy Intervention
for KETOCONAZOLE 200MG TAB

PROVIDER:
RECOMMENDATION: NO CHANGE

See 'Pharmacy Intervention Menu' if you want to delete this
intervention or for more options.


Would you like to edit this intervention ? N// O


New OP Order (ROUTINE)          Aug 09, 2012@13:17:37          Page: 1 of 2
PSOPATIENT,NINETEEN
 PID: 666-55-0123                                    Ht(cm): _____ (_____)
 DOB: FEB 19,1920 (92)                               Wt(kg): _____ (_____)

     Orderable Item: KETOCONAZOLE TAB
 (1)          Drug: KETOCONAZOLE 200MG TAB
 (2) Patient Status: SC
 (3)     Issue Date: AUG 9,2012          (4) Fill Date: AUG 9,2012
 (5) Dosage Ordered: 1500 (MG)
              Verb: TAKE
    Dispense Units: 7.5
              Noun: TABLETS
             Route: ORAL
          Schedule: TID
 (6)Pat Instruction:
```

```
                 SIG: TAKE SEVEN AND ONE-HALF TABLETS BY MOUTH THREE TIMES
                      A DAY
 (7)    Days Supply: 90                    (8) QTY ( ): 2700
+  This change will create a new prescription!
AC Accept      ED Edit
Select Action: Next Screen// AC Accept


 KETOCONAZOLE 200MG TAB: Single dose amount of 1500 MILLIGRAMS exceeds the
 maximum single dose amount of 1000 MILLIGRAMS.

Do you want to Continue? Y// ES

Do you want to Process or Cancel medication?
KETOCONAZOLE 200MG TAB: P// ROCESS MEDICATION

Enter your Current Signature Code: SIGNATURE VERIFIED

Now creating Pharmacy Intervention
for KETOCONAZOLE 200MG TAB

PROVIDER:
RECOMMENDATION: NO CHANGE

See 'Pharmacy Intervention Menu' if you want to delete this
intervention or for more options.


Would you like to edit this intervention ? N// O

Nature of Order: SERVICE CORRECTION// S
WAS THE PATIENT COUNSELED: NO// NO

Do you want to enter a Progress Note? No// NO

Rx # 3335  08/09/12
PSOPATIENT,NINETEEN  #2700
TAKE SEVEN AND ONE-HALF TABLETS BY MOUTH THREE TIMES A DAY

KETOCONAZOLE 200MG TAB
PROVIDER,ONE  RPH,ONE
# of Refills: 3


 SC Percent: %
 Disabilities: NONE STATED

Was treatment for a Service Connected condition? NO//
Is this correct? YES// ...




Label Printer: NULL DEVICE
LABEL: QUEUE/CHANGE PRINTER/HOLD/SUSPEND or '^' to bypass Q// UEUE

LABEL(S) QUEUED TO PRINT


PROFILES MUST BE SENT TO PRINTER !!

Select PROFILE DEVICE: HOME// NULL NULL DEVICE NULL DEVICE
```

```
PROFILE IS QUEUED TO PRINT


PROFILE(S) QUEUED to PRINT



 NAME   SSN  ID ORDER
 PSOPATIENT,NINETEEN 666550123
 PSOPATIENT,NINETEEN 666550123  A
 PSOPATIENT,NINETEEN 666550123  B
 PSOPATIENT,NINETEEN 666550123  C

Please advise the patient that the above ID # and/or ORDER Letter
will be displayed with his/her name on the Bingo Display



Select Verification Option: RX Verification by Clerk

Enter Clerk Name: PSTECH,ONE OPT


RX: 3333  PATIENT: PSOPATIENT,NINETEEN (666-55-0123)

   STATUS: Non-Verified
     DRUG: FOLIC ACID 1MG TAB
      QTY: 25            10 DAY SUPPLY
      SIG: TAKE 25 TABLETS BY MOUTH EVERY MORNING
   LATEST: 08/09/2012  # OF REFILLS: 3   REMAINING: 3
   ISSUED: 08/09/12       PROVIDER:
   LOGGED: 08/09/12         CLINIC: NOT ON FILE
  EXPIRES: 08/10/13       DIVISION: HINES (499)
      CAP: SAFETY          ROUTING: WINDOW
 ENTRY BY: PSTECH,ONE  VERIFIED BY:


LABEL LOG:
# DATE RX REF    PRINTED BY
============================================================================

1 08/09/12 ORIGINAL   PSTECH,ONE
COMMENTS: From RX number 3333 Drug-Drug interaction
EDIT: (Y/N/P): N// O


PSOPATIENT, NINETEEN   ID#:666-55-0123 RX#: 3333


                                              ISSUE LAST REF DAY
# RX #        DRUG                     QTY ST  DATE  FILL REM SUP
-------------------------------------------------------------------------------
-----------------------------------ACTIVE--------------------------------------
 3326  CIMETIDINE 300MG TAB                     90 A   08-09 08-09 3   90
 3335  KETOCONAZOLE 200MG TAB               2700 A   08-09 08-09 3   90
 3329  THEOPHYLLINE/ 200MG S.A. TAB         120 A   08-09 08-09 3   30
 3328  WARFARIN 5MG TAB                      210 A   08-09 08-09 0   30
-------------------------------DISCONTINUED------------------------------------
 3327  THEOPHYLLINE 300MG S.A. TAB          180 DF  08-09 08-09 3   90
--------------------------------NON-VERIFIED-----------------------------------
 3334  ERYTHROMYCIN 250MG CAP               800 N   08-09 08-09 3   10
 3333  FOLIC ACID 1MG TAB                   250 N   08-09 08-09 3   90
```

```
Now doing remote order checks. Please wait...

Remote data not available - Only local order checks processed.
Now doing allergy checks. Please wait...

Now Processing Enhanced Order Checks! Please wait...


 FOLIC ACID 1MG TAB: Single dose amount of 25 MILLIGRAMS exceeds the
 maximum single dose amount of 20 MILLIGRAMS.

Do you want to Continue? Y// ES

Do you want to Process or Cancel medication?
FOLIC ACID 1MG TAB: P// ROCESS MEDICATION

Enter your Current Signature Code: SIGNATURE VERIFIED

Now creating Pharmacy Intervention
for FOLIC ACID 1MG TAB

PROVIDER: PROVIDER,ONE
RECOMMENDATION: NO CHANGE

See 'Pharmacy Intervention Menu' if you want to delete this
intervention or for more options.


Would you like to edit this intervention ? N// O

PSOPATIENT,NINETEEN    ID#:666-55-0123 RX#: 3333
FOLIC ACID 1MG TAB

VERIFY FOR PSOPATIENT,NINETEEN ? (Y/N/Delete/Quit): Y// ??

Enter Y (or return) to verify this prescription
N to leave this prescription non-verified and to end this session of verification
D to delete this prescription

 Select one of the following:

  Y  YES
  N  NO
  D  DELETE
  Q  QUIT

VERIFY FOR PSOPATIENT,NINETEEN ? (Y/N/Delete/Quit): Y// ES
```

## 3.2 Inpatient Medications

With the release of MOCHA v2.0, a Maximum Single Dose Order Check has been introduced. During order entry this Dosing Order Check will be performed with other existing order checks when the pharmacy user takes various order entry actions as specified below:

- Entering a new IV or Unit Dose medication order
- Finishing a pending IV or Unit Dose medication order
- Renewing an IV or Unit Dose order
- Creating a new Unit Dose order when editing the orderable item (to a new orderable item)
- When editing the IV Additive fields (changing existing additive or adding new additive) for an IV order
- When editing the IV Solution fields (changing existing solution or adding a new solution) for an IV order - This applies only to IV Solutions marked as a PreMix.
- Entering a new Unit Dose medication order using order sets
- Copying an IV or Unit Dose medication order, thereby creating a new order.
- Editing the following for a Unit Dose order:
  - Dosage Ordered
  - Units per Dose (for Dispense Drug)
  - Med Route
  - Schedule
- Editing the following for an IV order
  - Infusion rate (only applies to IV types of 'Admixture', 'Hyperal', 'Chemotherapy Admixture', 'Continuous Syringe' or 'Chemotherapy Continuous Syringe')
  - Schedule (only applies to IV types of 'Piggyback', 'Intermittent Syringe', 'Chemotherapy Piggyback', or 'Chemotherapy Intermittent Syringe')
  - Med Route
  - Volume (does not apply to orders with IV types of 'Piggyback', 'Intermittent Syringe', 'Chemotherapy Piggyback', or 'Chemotherapy Intermittent Syringe' with IV Solution not marked as PreMix)
- Verifying a non-verified IV or Unit Dose order (only if separate process from an action that would also trigger any other Order Checks)

Dosage checks are the last order check that is performed.

### 3.2.1 Unit Dose Module

### 3.2.1.1 New Unit Dose Order

In Example 1 below, a new unit dose order is entered through the pharmacy backdoor and generates a Maximum Single Dose Order Check warning.

**New Unit Dose Order via backdoor pharmacy**
```
PU Patient Record Update  NO New Order Entry
Select Action: Quit// NO New Order Entry


Select DRUG: SIMVASTATIN
 Lookup: GENERIC NAME
 1 SIMVASTATIN 20MG TAB  CV350
 2 SIMVASTATIN 80MG TAB  CV350
CHOOSE 1-2: 2 SIMVASTATIN 80MG TAB  CV350
 Restriction/Guideline(s) exist. Display? : (N/O): No// NO
```

```
Enter RETURN to continue or '^' to exit:



Remote data not available - Only local order checks processed.



Now Processing Enhanced Order Checks!  Please wait...


Press Return to continue...


Available Dosage(s)
 1. 80MG
 2. 160MG

Select from list of Available Dosages or Enter Free Text Dose: 120MG

You entered 120MG is this correct? Yes// YES
UNITS PER DOSE: 1// 1.5 1.5
MED ROUTE: ORAL// PO
 1 ORAL PO
 2 ORAL ORAL
CHOOSE 1-2: 1 ORAL PO
SCHEDULE: BID// QPM 2100
SCHEDULE TYPE: CONTINUOUS// CONTINUOUS
ADMIN TIMES: 2100//
SPECIAL INSTRUCTIONS:
START DATE/TIME: NOV 3,2011@10:48// NOV 3,2011@10:48
STOP DATE/TIME: NOV 17,2011@10:48// NOV 17,2011@10:48
Expected First Dose: NOV 3,2011@21:00
PROVIDER: PROVIDER,ONE//

NON-VERIFIED UNIT DOSE          Nov 03, 2011@10:49:03        Page: 1 of 2
PSJPATIENT,FOUR                        Ward: 5NM
 PID: 666-08-5555           Room-Bed:              Ht(cm): 170.00 (05/10/10)
 DOB: 01/02/47 (64)                                Wt(kg): 90.00 (05/10/10)

 (1)Orderable Item: SIMVASTATIN TAB                                <DIN>
     Instructions:
 (2)Dosage Ordered: 120MG
        Duration:                              (3)Start: 11/03/11 10:48
 (4)     Med Route: ORAL
                                               (5) Stop: 11/17/11 10:48
 (6) Schedule Type: CONTINUOUS
 (8)       Schedule: QPM
 (9)   Admin Times: 2100
 (10)      Provider: PROVIDER,ONE
 (11) Special Instructions:

 (12) Dispense Drug                        U/D           Inactive Date
     SIMVASTATIN 80MG TAB                  1.5

+  Enter ?? for more actions
ED Edit      AC ACCEPT
Select Item(s): Next Screen// AC ACCEPT

 SIMVASTATIN 80MG TAB: Single dose amount of 120 MILLIGRAMS exceeds the
 maximum single dose amount of 40 MILLIGRAMS.
```

```
Do you want to Continue? NO//
No order created.

Select DRUG:
.
.
.

  *****OR*********

Do you want to Continue? NO// YES

Now creating Pharmacy Intervention
For SIMVASTATIN 80MG TAB

PROVIDER:
RECOMMENDATION: NO CHANGE

See 'Pharmacy Intervention Menu' if you want to delete this
intervention or for more options.


Would you like to edit this intervention? N// O

NATURE OF ORDER: WRITTEN// W

...transcribing this non-verified order....
```

When entering a new Unit Dose order through the pharmacy backdoor, a Maximum Single Dose Order Check will be performed after the user accepts the order. If the dosage ordered exceeds the FDB recommended maximum single dose a warning message will be displayed to the user. The warning message will be indented and the drug name will precede the warning message.

If a Maximum Single Dose Order Check warning is displayed, the user will be prompted with 'Do you want to Continue?' If the user accepts the default of 'No', the software will take them back to the 'Select DRUG:' prompt. If the user responds 'Yes', the program will proceed with the intervention dialog.

If the schedule within the order has been marked to be excluded from all Dosing Order Checks, no Maximum Single Dose Order Check will be performed. In this case, no message will be displayed to the user informing them of this.

If a Maximum Single Dose Order Check cannot be performed, an error message is displayed. The user will not be asked to enter an intervention to continue.

### 3.2.1.2 New Unit Dose Order Using an Order Set

In Example 2, new unit dose orders are being entered via pharmacy options using an order set.

**New Unit Dose Order via pharmacy backdoor options using Order Set**
```
Select Action: View Profile// NO New Order Entry

Select DRUG: S.DT DEMO (ORDER SET)
NATURE OF ORDER: WRITTEN// W

...entering INDOMETHACIN.....


Remote data not available - Only local order checks processed.



Now Processing Enhanced Order Checks!  Please wait...
```

```
NON-VERIFIED UNIT DOSE           Mar 21, 2008@09:35:40            Page: 1 of 2
PSJPATIENT,ONE                      Ward: 3AS                                 A
 PID: 666-00-0000                  Room-Bed:            Ht(cm): 187.96 (07/05/94)
 DOB: 01/01/45 (63)                                     Wt(kg): 77.27 (07/05/94)


 (1)Orderable Item: INDOMETHACIN CAP,ORAL
     Instructions:
 (2)Dosage Ordered: 25MG
         Duration:                                (3)Start: 03/21/08 08:00
  (4)     Med Route: ORAL
                                                  (5) Stop: 06/19/08 24:00
  (6) Schedule Type: CONTINUOUS
  (8)      Schedule: TID
  (9)   Admin Times: 08-12-16
 (10)      Provider: PSJPROVIDER,ONE [w]
 (11) Special Instructions:

 (12) Dispense Drug                    U/D                    Inactive Date
      INDOMETHACIN 25MG CAP             1
+  Enter ?? for more actions
DC Discontinue                   ED Edit             AL Activity Logs
HD (Hold)                        RN (Renew)
FL Flag                          VF Verify
Select Item(s): Next Screen// VF Verify
...a few moments, please.....

...entering FAMOTIDINE.....


Remote data not available - Only local order checks processed.



Now Processing Enhanced Order Checks!  Please wait...


NON-VERIFIED UNIT DOSE           Mar 21, 2008@09:30:36            Page: 1 of 2
PSJPATIENT,ONE                      Ward: 3AS                                 A
 PID: 666-00-0000                  Room-Bed:            Ht(cm): 187.96 (07/05/94)
 DOB: 01/01/45 (63)                                     Wt(kg): 77.27 (07/05/94)


 (1)Orderable Item: FAMOTIDINE TAB                                      <DIN>
     Instructions:
 (2)Dosage Ordered: 20MG
         Duration:                                (3)Start: 03/21/08 09:00
  (4)     Med Route: ORAL
                                                  (5) Stop: 06/19/08 24:00
  (6) Schedule Type: CONTINUOUS
  (8)      Schedule: BID
  (9)   Admin Times: 09-17
 (10)      Provider: PSJPROVIDER,ONE [w]
 (11) Special Instructions:

 (12) Dispense Drug                    U/D                    Inactive Date
      FAMOTIDINE 20MG TAB               1
+  Enter ?? for more actions
DC Discontinue                   ED Edit             AL Activity Logs
HD (Hold)                        RN (Renew)
FL Flag                          VF Verify
Select Item(s): Next Screen// VF Verify
...a few moments, please.....
```

```
Pre-Exchange DOSES:

ORDER VERIFIED.

Enter RETURN to continue or '^' to exit:

...entering CLOPIDOGREL.....


Remote data not available - Only local order checks processed.



Now Processing Enhanced Order Checks!  Please wait...

 CLOPIDOGREL 75MG TAB: Single dose amount of 150 MILLIGRAMS exceeds the maximum
 single dose amount of 75 MILLIGRAMS.

Do you want to Continue? N// n NO

Select DRUG: .
.

Or

Do you want to Continue? N// YES


Now creating Pharmacy Intervention
for CLOPIDOGREL 75MG TAB

PROVIDER: PSJPROVIDER, ONE
RECOMMENDATION: NO CHANGE

See 'Pharmacy Intervention Menu' if you want to delete this intervention or for more
options.

Would you like to edit this intervention? N// O

 (1)Orderable Item: CLOPIDOGREL TAB
      Instructions:
 (2)Dosage Ordered: 150MG
        Duration:                                   (3)Start: 03/21/08 09:00
 (4) Med Route: ORAL
                                                    (5) Stop: 06/19/08 24:00
 (6) Schedule Type: CONTINUOUS
 (8)      Schedule: BID
 (9)   Admin Times: 09-17
 (10)     Provider: PSJPROVIDER,ONE [w]
 (11) Special Instructions:

 (12) Dispense Drug                  U/D                          Inactive Date
      CLOPIDOGREL 75MG TAB            1
+  Enter ?? for more actions
DC Discontinue                 ED Edit              AL Activity Logs
HD (Hold)                      RN (Renew)
FL Flag                        VF Verify
Select Item(s): Next Screen//
```

When entering new Unit Dose orders via a pharmacy order set through pharmacy options, a Maximum Single Dose Order Check will be performed after any Duplicate Therapy order checks are displayed. A Maximum Single Dose Order Check will be performed for each drug within the order set one by one.

If the user responds 'No' to the 'Do you want to Continue?' prompt, the program will take them back to the 'Select Drug:' prompt when the drug being entered is the last one in the order set to be processed. If not the last drug to be processed within the order set, the program will delete the drug and go on to the next drug within the order set.

### 3.2.1.3 Finishing a Complex Inpatient Medication Order

In Example 3, a complex inpatient medication order has been entered through CPRS and finished in Pharmacy.

**Pending Complex Inpatient Medication order**

```
Inpatient Order Entry          Oct 14, 2011@11:04:18              Page: 1 of 1
PSJPATIENT,THREE                    Ward: 2ASM                               A
 PID: 666-45-6754            Room-Bed: 102-3             Ht(cm): 187.96 (07/05/94)
 DOB: 01/01/45 (66)                                     Wt(kg): 77.27 (07/05/94)
 Sex: MALE                                              Admitted: 03/11/11
 Dx: CEHDST                                     Last transferred: ********


- - - - - - - - - - - P E N D I N G  C O M P L E X - - - - - - - - - - - -
 1 WARFARIN TAB                               ? ***** ***** P
     Give: 20MG PO QPM
   WARFARIN TAB                               ? ***** ***** P
     Give: 10MG PO QPM




  Enter ?? for more actions
PI Patient Information              SO Select Order
PU Patient Record Update           NO New Order Entry
Select Action: Quit// 1

PENDING UNIT DOSE (ROUTINE)    Oct 14, 2011@11:05:52              Page: 1 of 4
PSJPATIENT,THREE                    Ward: 2ASM                               A
 PID: 666-45-6754            Room-Bed: 102-3             Ht(cm): 187.96 (07/05/94)
 DOB: 01/01/45 (66)                                     Wt(kg): 77.27 (07/05/94)

*(1)Orderable Item: WARFARIN TAB
      Instructions: 20MG
*(2)Dosage Ordered: 20MG
          Duration: 3 days                      (3)Start: 10/14/11 21:00
*(4)      Med Route: ORAL                   Calc Start: 10/14/11 11:04
                                             (5) Stop: 10/17/11 21:00
 (6) Schedule Type: CONTINUOUS              Calc Stop: 10/15/11 21:00
*(8)        Schedule: QPM
 (9)    Admin Times: 2100
*(10)      Provider: PROVIDER,ONE [es]
 (11) Special Instructions:

(12) Dispense Drug                    U/D                        Inactive Date
     WARFARIN 10MG                     2

+  Enter ?? for more actions
BY Bypass                                FL Flag
DC Discontinue                           FN Finish
Select Item(s): Next Screen// FN Finish

Remote data not available - Only local order checks processed.
A Drug-Allergy Reaction exists for this medication and/or class!

    Prospective Drug: WARFARIN 5MG TAB
     Causative Agent: WARFARIN
```

```
  Historical/Observed: HISTORICAL
             Severity: Not Entered
          Ingredients: WARFARIN (LOCAL),
       Signs/Symptoms: RASH,
           Drug Class: BL110 ANTICOAGULANTS (LOCAL),
   Provider Override Reason: demonstration

Do you want to Intervene? YES//NO

Now Processing Enhanced Order Checks! Please wait...
===============================================================================
This patient is receiving the following order(s) that have a CRITICAL Drug
Interaction with WARFARIN 10MG:

NON-VA Med: CIMETIDINE 200MG TAB
Dosage: 200MG  Schedule: AT BEDTIME

The pharmacologic effects of warfarin may be increased resulting in severe
bleeding.

===============================================================================

Display Professional Interaction Monograph(s)? NO//

Do you want to Continue with WARFARIN 10MG? NO// YES

Now creating Pharmacy Intervention
For WARFARIN 10MG

PROVIDER:
RECOMMENDATION: NO CHANGE

See 'Pharmacy Intervention Menu' if you want to delete this
intervention or for more options.


Would you like to edit this intervention? N// O

===============================================================================
This patient is already receiving the following INPATIENT and/or OUTPATIENT
order(s) for a drug in the same therapeutic class(es) as WARFARIN 10MG:

Pending Outpatient Drug for WARFARIN 10MG
SIG: TAKE ONE TABLET BY MOUTH AT BEDTIME

Class(es) Involved in Therapeutic Duplication(s): Oral Anticoagulants,
 Antiplatelet and Antithrombotic Drugs
===============================================================================

Press Return to continue...



 WARFARIN 10MG: Single dose amount of 20 MILLIGRAMS exceeds the maximum
 single dose amount of 7.5 MILLIGRAMS.


Do you want to Continue? NO// YES

Now creating Pharmacy Intervention
For WARFARIN 10MG

PROVIDER:
```

```
RECOMMENDATION: NO CHANGE

See 'Pharmacy Intervention Menu' if you want to delete this
intervention or for more options.


Would you like to edit this intervention? N// O


ED Edit    AC ACCEPT

NON-VERIFIED UNIT DOSE              Oct 14, 2011@11:07:42            Page: 1 of 4
PSJPATIENT,THREE                        Ward: 2ASM                               A
 PID: 666-45-6754                Room-Bed: 102-3         Ht(cm): 187.96 (07/05/94)
 DOB: 01/01/45 (66)                                     Wt(kg): 77.27 (07/05/94)

*(1)Orderable Item: WARFARIN TAB
      Instructions: 20MG
*(2)Dosage Ordered: 20MG
          Duration: 3 days                         (3)Start: 10/14/11 21:00
*(4)      Med Route: ORAL                     Calc Start: 10/14/11 11:04
                                               (5) Stop: 10/17/11 21:00
 (6) Schedule Type: CONTINUOUS                Calc Stop: 10/15/11 21:00
*(8)       Schedule: QPM
 (9)    Admin Times: 2100
*(10)      Provider: PROVIDER,ONE [es]
 (11) Special Instructions:

 (12) Dispense Drug      U/D Inactive Date
  WARFARIN 10MG      2

+  Enter ?? for more actions
ED Edit                              AC ACCEPT
Select Item(s): Next Screen// AC ACCEPT

NON-VERIFIED UNIT DOSE              Oct 14, 2011@11:07:42            Page: 1 of 4
PSJPATIENT,THREE                        Ward: 2ASM                               A
 PID: 666-45-6754                Room-Bed: 102-3         Ht(cm): 187.96 (07/05/94)
 DOB: 01/01/45 (66)                                     Wt(kg): 77.27 (07/05/94)

*(1)Orderable Item: WARFARIN TAB
      Instructions: 20MG
*(2)Dosage Ordered: 20MG
          Duration: 3 days                         (3)Start: 10/14/11 21:00
*(4) Med Route: ORAL                          Calc Start: 10/14/11 11:04
                                               (5) Stop: 10/17/11 21:00
 (6) Schedule Type: CONTINUOUS                Calc Stop: 10/15/11 21:00
*(8)       Schedule: QPM
 (9)    Admin Times: 2100
*(10)      Provider: PHARMACIST,ONE [es]
 (11) Special Instructions:

 (12) Dispense Drug                          U/D                 Inactive Date
      WARFARIN 10MG                            2

+  Enter ?? for more actions

...accepting order......



DC Discontinue                      FN Finish
```

```
PENDING UNIT DOSE (ROUTINE)              Oct 14, 2011@11:08:16        Page: 1 of 4
PSJPATIENT,THREE                          Ward: 2ASM                            A
 PID: 666-45-6754                       Room-Bed: 102-3        Ht(cm): 187.96 (07/05/94)
 DOB: 01/01/45 (66)                                           Wt(kg): 77.27 (07/05/94)


*(1)Orderable Item: WARFARIN TAB
      Instructions: 10MG
*(2)Dosage Ordered: 10MG
          Duration:                                   (3)Start: 10/17/11 21:00
*(4)     Med Route: ORAL                          Calc Start: 10/14/11 11:04
                                                     (5) Stop: 10/18/11 21:00
 (6) Schedule Type: CONTINUOUS
*(8)       Schedule: QPM
 (9)    Admin Times: 2100
*(10)      Provider: PROVIDER,ONE [es]
 (11) Special Instructions:

 (12) Dispense Drug                          U/D                      Inactive Date
      WARFARIN 10MG                           1

+  Enter ?? for more actions
BY Bypass  FL Flag
DC Discontinue                                  FN Finish
Select Item(s): Next Screen// FN Finish

Remote data not available - Only local order checks processed.
A Drug-Allergy Reaction exists for this medication and/or class!

    Prospective Drug: WARFARIN 5MG TAB
      Causative Agent: WARFARIN
 Historical/Observed: HISTORICAL
            Severity: Not Entered
         Ingredients: WARFARIN (LOCAL),
      Signs/Symptoms: RASH,
          Drug Class: BL110 ANTICOAGULANTS (LOCAL),
   Provider Override Reason: demonstration

Do you want to Intervene? YES//NO

Now Processing Enhanced Order Checks! Please wait...
================================================================================
This patient is receiving the following order(s) that have a CRITICAL Drug
Interaction with WARFARIN 10MG:

NON-VA Med: CIMETIDINE 200MG TAB
Dosage: 200MG  Schedule: AT BEDTIME

The pharmacologic effects of warfarin may be increased resulting in severe
bleeding.

================================================================================

Display Professional Interaction Monograph(s)? NO//

Do you want to Continue with WARFARIN 10MG? NO// YES

Now creating Pharmacy Intervention
For WARFARIN 10MG

PROVIDER:
RECOMMENDATION: NO CHANGE
```

```
See 'Pharmacy Intervention Menu' if you want to delete this
intervention or for more options.


Would you like to edit this intervention? N// O

===============================================================================
This patient is already receiving the following INPATIENT and/or OUTPATIENT
order(s) for a drug in the same therapeutic class(es) as WARFARIN 10MG:

Pending Outpatient Drug for WARFARIN 10MG
SIG: TAKE ONE TABLET BY MOUTH AT BEDTIME

Class(es) Involved in Therapeutic Duplication(s): Oral Anticoagulants,
 Antiplatelet and Antithrombotic Drugs
===============================================================================

Press Return to continue...



 WARFARIN 10MG: Single dose amount of 10 MILLIGRAMS exceeds the maximum
 single dose amount of 7.5 MILLIGRAMS.


Do you want to Continue? NO// YES

Now creating Pharmacy Intervention
For WARFARIN 10MG

PROVIDER: PROVIDER,ONE OP 119
RECOMMENDATION: NO CHANGE

See 'Pharmacy Intervention Menu' if you want to delete this
intervention or for more options.


Would you like to edit this intervention? N// O



ED Edit                          AC ACCEPT


NON-VERIFIED UNIT DOSE            Oct 14, 2011@11:09:38          Page: 1 of 4
PSJPATIENT,THREE                      Ward: 2ASM                           A
 PID: 666-45-6754             Room-Bed: 102-3         Ht(cm): 187.96 (07/05/94)
 DOB: 01/01/45 (66)                                  Wt(kg): 77.27 (07/05/94)

*(1)Orderable Item: WARFARIN TAB
      Instructions: 10MG
*(2)Dosage Ordered: 10MG
         Duration:                                (3)Start: 10/17/11 21:00
*(4)     Med Route: ORAL                      Calc Start: 10/14/11 11:04
                                                 (5) Stop: 10/18/11 21:00
 (6) Schedule Type: CONTINUOUS
*(8)      Schedule: QPM
 (9)   Admin Times: 2100
*(10)     Provider: PROVIDER,ONE [es]
 (11) Special Instructions:

 (12) Dispense Drug                         U/D                 Inactive Date
      WARFARIN 10MG                          1
```

```
+  Enter ?? for more actions
ED Edit                               AC ACCEPT
Select Item(s): Next Screen// AC ACCEPT

...accepting order......




PU Patient Record Update              NO New Order Entry




Inpatient Order Entry           Oct 14, 2011@11:10:12              Page: 1 of 1
PSJPATIENT,THREE                     Ward: 2ASM                              A
 PID: 666-45-6754              Room-Bed: 102-3         Ht(cm): 187.96 (07/05/94)
 DOB: 01/01/45 (66)                                   Wt(kg): 77.27 (07/05/94)
 Sex: MALE                                            Admitted: 03/11/11
 Dx: CEHDST                                  Last transferred: ********

 - - - - - - - - - N O N - V E R I F I E D C O M P L E X - - - - - - - - - - -
 1 WARFARIN TAB                                C 10/14 10/17 N
    Give: 20MG PO QPM
   WARFARIN TAB                                C 10/17 10/18 N
    Give: 10MG PO QPM






  Enter ?? for more actions
PI Patient Information                SO Select Order
PU Patient Record Update             NO New Order Entry
Select Action: Quit//
```

When finishing pending complex orders, a Maximum Single Dose Order Check will be performed for each order within the complex group of orders. If the dosage exceeds the FDB recommended dosage then a warning will be displayed just as it was for a simple order.

A pharmacy intervention shall be required to be logged if the user wishes to continue with the order if a Maximum Single Dose Order Check warning was generated. The intervention type shall be set to 'MAX SINGLE DOSE'.

### 3.2.1.4 Renewing an Order

Example 4 illustrates renewing an inpatient medication order that was entered through CPRS.

**Renewing Unit Dose Order**
```
ACTIVE UNIT DOSE                Nov 21, 2011@13:38:39              Page: 1 of 2
PSJPATIENT,TWO                       Ward: 3AS                                A
 PID: 666-06-9999              Room-Bed: 300-3         Ht(cm): _____ (_____)
 DOB: 05/30/40 (71)                                   Wt(kg): _____ (_____)

*(1)Orderable Item: FAMOTIDINE TAB                                        <DIN>
      Instructions:
*(2)Dosage Ordered: 80MG
         Duration:                            *(3)Start: 11/21/11 17:00
*(4)     Med Route: ORAL                        Renewed: 11/21/11 13:38
                                              *(5) Stop: 02/01/12 24:00
 (6) Schedule Type: CONTINUOUS
```

```
*(8)      Schedule: BID
 (9)   Admin Times: 09-17
*(10)     Provider: PROVIDER,ONE [w]
 (11) Special Instructions:

 (12) Dispense Drug                         U/D                  Inactive Date
      FAMOTIDINE 20MG TAB                    4
+  Enter ?? for more actions
DC Discontinue                ED Edit                    AL Activity Logs
HD Hold                       RN Renew
FL Flag                       VF (Verify)
Select Item(s): Next Screen// rn Renew


RENEW THIS ORDER? YES//
STOP DATE/TIME: FEB 1,2012@24:00// FEB 1,2012@24:00
Expected First Dose: NOV 21,2011@17:00
PROVIDER: PROVIDER,ONE// AA3333333 123


Remote data not available - Only local order checks processed.



Now Processing Enhanced Order Checks!  Please wait...
===============================================================================
This patient is already receiving the following INPATIENT and/or OUTPATIENT
order(s) for a drug in the same therapeutic class(es) as FAMOTIDINE 20MG
TAB:

FAMOTIDINE TAB     C 11/03 02/01 A
Give: 20MG PO BID

Pending Outpatient Drug for SUCRALFATE 1GM TAB
SIG: TAKE ONE TABLET BY MOUTH FOUR TIMES A DAY

Class(es) Involved in Therapeutic Duplication(s): Peptic Ulcer Agents,
 Histamine-2 Receptor Antagonists (H2 Antagonists)
===============================================================================

Do you wish to continue with the current order? YES//


Press Return to continue...


FAMOTIDINE TAB     C 11/03 02/01 A
Give: 20MG PO BID


Do you want to discontinue the above order? No// (No)


 FAMOTIDINE 20MG TAB: Single dose amount of 80 MILLIGRAMS exceeds the
 maximum single dose amount of 40 MILLIGRAMS.


Do you want to Continue? NO// n NO

No changes made to this order.

Enter RETURN to continue or '^' to exit:
```

```
FL Flag                               VF (Verify)


ACTIVE UNIT DOSE                Nov 21, 2011@13:40:16              Page: 1 of 2
PSJPATIENT,TWO                        Ward: 3AS                               A
 PID: 666-06-9999              Room-Bed: 300-3        Ht(cm): _____ (_____)
 DOB: 05/30/40 (71)                                  Wt(kg): _____  (_____)

*(1)Orderable Item: FAMOTIDINE TAB                                        <DIN>
     Instructions:
*(2)Dosage Ordered: 80MG
        Duration:                              *(3)Start: 11/21/11 17:00
*(4)     Med Route: ORAL                           Renewed: 11/21/11 13:38
                                               *(5) Stop: 02/01/12 24:00
 (6) Schedule Type: CONTINUOUS
*(8)      Schedule: BID
 (9)   Admin Times: 09-17
*(10)     Provider: PROVIDER,ONE [w]
 (11) Special Instructions:

 (12) Dispense Drug                     U/D                     Inactive Date
      FAMOTIDINE 20MG TAB                4
+  Enter ?? for more actions
DC Discontinue                    ED Edit                    AL Activity Logs
HD Hold                           RN Renew
FL Flag                           VF (Verify)
Select Item(s): Next Screen//
```

If a Maximum Single Dose Order Check warning is generated and the user responds 'No' to the 'Do you want to Continue?' prompt for the following pharmacy order entry processes, the software shall take them back to the point where they initiated the action for the following processes as in Example 4:

- Finishing a pending Unit Dose medication order
- Renewing a Unit Dose order
- Creating a new Unit Dose order when editing the orderable item (to a new orderable item) through pharmacy options
- Entering a new Unit Dose medication order through pharmacy options using order sets
- Copying a Unit Dose medication order, thereby creating a new order
- Editing the following for a Unit Dose order:
    - Dosage Ordered
    - Units per Dose (for Dispense Drug)
    - Med Route
    - Schedule

Dosage checks will be the last order checks performed as documented in the order check display sequence Section 3.1.3 of this documentation.

### 3.2.1.5 Edit of an Order

In Example 5, the Dosage Ordered is edited and thereby creates a new unit dose order.

**Editing Orderable Item –Creating New Unit Dose order**
```
ACTIVE UNIT DOSE                 Apr 21, 2008@14:37:23             Page: 1 of 2
PSJPATIENT,TWO                        Ward: 3AS                            CWAD
 PID: 666-16-4010              Room-Bed: 300-1      Ht(cm): 187.96 (08/14/07)
 DOB: 10/10/50 (57)                                Wt(kg): 83.41 (08/14/07)


*(2)Dosage Ordered: 400MG
```

```
        Duration:                                            *(3)Start: 04/21/08 14:00
*(4)     Med Route: ORAL
                                                             *(5) Stop: 04/28/08 24:00
 (6) Schedule Type: CONTINUOUS
*(8)       Schedule: Q8H
 (9)   Admin Times: 0600-1400-2200
*(10)      Provider: PSJPROVIDER,TWO [w]
 (11) Special Instructions:

 (12) Dispense Drug                          U/D                    Inactive Date
     INDINAVIR 400MG CAP                       1
+  Enter ?? for more actions
DC Discontinue                    ED Edit                  AL Activity Logs
HD Hold                           RN Renew
FL Flag                           VF (Verify)
Select Item(s): Next Screen// ED Edit

Select FIELDS TO EDIT: 2


Available Dosage(s)
 1. 400MG
 2. 800MG

Select from list of Available Dosages or Enter Free Text Dose: 400MG// 1200

You entered 1200MG is this correct? Yes// YES

WARNING: Dosage Ordered and Dispense Units do not match.
  Please verify Dosage.


Enter RETURN to continue or '^' to exit:



ED Edit    AC ACCEPT

NON-VERIFIED UNIT DOSE            Apr 21, 2008@14:39:38           Page: 1 of 2
PSJPATIENT,TWO                        Ward: 3AS                          CWAD
 PID: 666-16-4010               Room-Bed: 300-1        Ht(cm): 187.96 (08/14/07)
 DOB: 10/10/50 (57)                                    Wt(kg): 83.41 (08/14/07)

*(1)Orderable Item: INDINAVIR CAP,ORAL
      Instructions:
*(2)Dosage Ordered: 1200MG
        Duration:                                            *(3)Start: 04/21/08 14:00
*(4)     Med Route: ORAL
                                                             *(5) Stop: 04/28/08 24:00
 (6) Schedule Type: CONTINUOUS
*(8)       Schedule: Q8H
 (9)   Admin Times: 0600-1400-2200
*(10)      Provider: PSJPROVIDER,TWO
 (11) Special Instructions:

 (12) Dispense Drug                          U/D                    Inactive Date
     INDINAVIR 400MG CAP                       1

+  This change will cause a new order to be created.
Select Item(s): Next Screen// ED Edit

Select FIELDS TO EDIT: 12
```

```
Select DISPENSE DRUG: INDINAVIR 400MG CAP//
 UNITS PER DOSE: 1// 3
 INACTIVE DATE:
Select DISPENSE DRUG:


NON-VERIFIED UNIT DOSE              Apr 21, 2008@14:40:29              Page: 1 of 2
PSJPATIENT,TWO                          Ward: 3AS                              CWAD
 PID: 666-16-4010                 Room-Bed: 300-1        Ht(cm): 187.96 (08/14/07)
 DOB: 10/10/50 (57)                                      Wt(kg): 83.41 (08/14/07)

*(1)Orderable Item: INDINAVIR CAP,ORAL
      Instructions:
*(2)Dosage Ordered: 1200MG
         Duration:                                    *(3)Start: 04/21/08 14:00
*(4)     Med Route: ORAL
                                                      *(5) Stop: 04/28/08 24:00
 (6) Schedule Type: CONTINUOUS
*(8)       Schedule: Q8H
 (9)    Admin Times: 0600-1400-2200
*(10)      Provider: PSJPROVIDER,TWO
 (11) Special Instructions:

 (12) Dispense Drug                           U/D                   Inactive Date
      INDINAVIR 400MG CAP                       3

+  This change will cause a new order to be created.
ED Edit                              AC ACCEPT
Select Item(s): Next Screen// AC
Select Item(s): Next Screen// AC ACCEPT

 INDINAVIR 400MG CAP: Single dose amount of 1200 MILLIGRAMS exceeds the maximum
 single dose amount of 1000 MILLIGRAMS.

Do you want to Continue? N// n NO

ACTIVE UNIT DOSE                   Apr 21, 2008@14:37:23              Page: 1 of 2
PSJPATIENT,TWO                          Ward: 3AS                              CWAD
 PID: 666-16-4010                 Room-Bed: 300-1        Ht(cm): 187.96 (08/14/07)
 DOB: 10/10/50 (57)                                      Wt(kg): 83.41 (08/14/07)

*(2)Dosage Ordered: 400MG
         Duration:                                    *(3)Start: 04/21/08 14:00
*(4)     Med Route: ORAL
                                                      *(5) Stop: 04/28/08 24:00
 (6) Schedule Type: CONTINUOUS
*(8)       Schedule: Q8H
 (9)    Admin Times: 0600-1400-2200
*(10)      Provider: PSJPROVIDER,TWO [w]
 (11) Special Instructions:

 (12) Dispense Drug                           U/D                   Inactive Date
      INDINAVIR 400MG CAP                       1
+  Enter ?? for more actions
DC Discontinue                       ED Edit                     AL Activity Logs
HD Hold                              RN Renew
FL Flag                              VF (Verify)
.
.
 OR

Do you want to Continue? N// ES
```

```
Now creating Pharmacy Intervention
for INDINAVIR 400MG CAP

PROVIDER: OPPROVIDER, ONE
RECOMMENDATION: NO CHANGE

See 'Pharmacy Intervention Menu' if you want to delete this
intervention or for more options.


Would you like to edit this intervention? N// NO


NATURE OF ORDER: SERVICE CORRECTION// S
...discontinuing original order...

  ...creating new order...(you will now work on this new order).



FL Flag                          VF Verify

NON-VERIFIED UNIT DOSE             Apr 21, 2008@14:40:54            Page: 1 of 2
PSJPATIENT,TWO                         Ward: 3AS                              CWAD
 PID: 666-16-4010              Room-Bed: 300-1         Ht(cm): 187.96 (08/14/07)
 DOB: 10/10/50 (57)                                    Wt(kg): 83.41 (08/14/07)

*(1)Orderable Item: INDINAVIR CAP,ORAL
     Instructions:
*(2)Dosage Ordered: 1200MG
        Duration:                                 *(3)Start: 04/21/08 14:00
*(4)     Med Route: ORAL
                                                  *(5) Stop: 04/28/08 24:00
 (6) Schedule Type: CONTINUOUS
*(8)      Schedule: Q8H
 (9)   Admin Times: 0600-1400-2200
*(10)     Provider: PSJPROVIDER,TWO
 (11) Special Instructions:

 (12) Dispense Drug                         U/D                    Inactive Date
     INDINAVIR 400MG CAP                     3
+  Enter ?? for more actions
DC Discontinue                   ED Edit              AL Activity Logs
HD (Hold)                        RN (Renew)
FL Flag                          VF Verify
Select Item(s): Next Screen//
```

In Example 5, when editing orders, the Dosing Order Checks will be performed after all edits are complete and the user accepts the order.

### 3.2.1.6  Copy a Unit Dose Order

In Example 6, a copy of a unit dose order is performed.

```
ACTIVE UNIT DOSE                   Aug 17, 2012@15:27:26            Page: 1 of 2
PSJPATIENT,THIRTYONE                   Ward: 7AS
 PID: 666-99-2928              Room-Bed:              Ht(cm): _____ (_____)
 DOB: 06/09/25 (87)                                  Wt(kg): _____  (_____)

*(1)Orderable Item: GABAPENTIN TAB
     Instructions:
*(2)Dosage Ordered: 2400MG
        Duration:                                 *(3)Start: 08/15/12 07:56
```

```
*(4)      Med Route: ORAL
                                                     *(5) Stop: 11/23/12 11:59
 (6) Schedule Type: CONTINUOUS
*(8)        Schedule: TID
 (9)    Admin Times: 09-13-17
*(10)       Provider: PROVIDER,ONE [w]
 (11) Special Instructions:

 (12) Dispense Drug                          U/D                    Inactive Date
      GABAPENTIN 600MG TAB                    4
+  Enter ?? for more actions
DC Discontinue                  ED Edit                  AL Activity Logs
HD Hold                         RN Renew
FL Flag                         VF (Verify)

Select Item(s): Next Screen// co CO

Do you want to copy this order? No//Y (Yes)
..copying….


ACTIVE UNIT DOSE                   Aug 17, 2012@15:28:07          Page: 1 of 2
PSJPATIENT,THIRTYONE                    Ward: 7AS
 PID: 666-99-2928                  Room-Bed:            Ht(cm): _____  (_____)
 DOB: 06/09/25 (87)                                     Wt(kg): _____  (_____)

 (1)Orderable Item: GABAPENTIN TAB
      Instructions:
 (2)Dosage Ordered: 2400MG
         Duration:                            (3)Start: 08/17/12 15:28
 (4)      Med Route: ORAL
                                              (5) Stop: 11/25/12 11:59
 (6) Schedule Type: CONTINUOUS
 (8)        Schedule: TID
 (9)    Admin Times: 09-13-17
 (10)       Provider: PROVIDER,ONE [w]
 (11) Special Instructions:

 (12) Dispense Drug                          U/D                    Inactive Date
      GABAPENTIN 600MG TAB                    4

+  Enter ?? for more actions
ED Edit                              AC ACCEPT

Select Item(s): Next Screen// ac ACCEPT

Remote data not available - Only local order checks processed.

Now Processing Enhanced Order Checks! Please wait...



 GABAPENTIN 600MG TAB: Single dose amount of 2400 MILLIGRAMS exceeds the
 maximum single dose amount of 1200 MILLIGRAMS.


Do you want to Continue? NO// y YES

Now creating Pharmacy Intervention
For GABAPENTIN 600MG TAB

PROVIDER: PROVIDER,ONE OP
RECOMMENDATION: NO CHANGE
```

```
See 'Pharmacy Intervention Menu' if you want to delete this
intervention or for more options.


Would you like to edit this intervention? N// O

NATURE OF ORDER: WRITTEN// W

...transcribing this active order.....

Pre-Exchange DOSES:
```

### 3.2.1.7  Renew a Unit Dose Order - Free Text Dosage Error

In Example 7, a free text dosage has been entered that the software cannot interpret. It is a Local Possible
Dosage for which the Numeric Dose and Dose Unit are not defined.

```
*(1)Orderable Item: ALBUTEROL SOLN,INHL
       Instructions:
*(2)Dosage Ordered: 1 AMPULE (3ML)
        Duration:                                       *(3)Start: 11/03/11 17:00
*(4)      Med Route: INHALATION
                                                        *(5) Stop: 11/10/11 24:00
 (6) Schedule Type: CONTINUOUS
*(8)       Schedule: Q4H

ACTIVE UNIT DOSE                      Nov 03, 2011@15:31:46          Page: 1 of 2
PSJPATIENT,TWO                           Ward: 3AS                              A
 PID: 666-06-9999                     Room-Bed: 300-3        Ht(cm): _____ (_____)
 DOB: 05/30/40 (71)                                          Wt(kg): _____ (_____)

 (9)   Admin Times: 01-05-09-13-17-21
*(10)      Provider: PROVIDER,ONE [w]
 (11) Special Instructions:

 (12) Dispense Drug                          U/D                      Inactive Date
      ALBUTEROL 0.083% INHL SOLN              1
+  Enter ?? for more actions
DC Discontinue                     ED Edit                      AL Activity Logs
HD Hold                            RN Renew
FL Flag                            VF (Verify)
Select Item(s): Next Screen// RN Renew


RENEW THIS ORDER? YES//
STOP DATE/TIME: NOV 10,2011@24:00// NOV 10,2011@24:00
Expected First Dose: NOV 3,2011@17:00
PROVIDER: PROVIDER,ONE// AA3333333 123


Remote data not available - Only local order checks processed.



Now Processing Enhanced Order Checks!  Please wait...



Press Return to continue...


 Maximum Single Dose Check could not be performed for Drug: ALBUTEROL
```

```
 0.083% INHL SOLN
 Reason(s): Free Text Dosage could not be evaluated


Press Return to continue...


NATURE OF ORDER: WRITTEN// W

Pre-Exchange DOSES:

...updating order.....DONE!
```

In Example 6, an error message stating that the free text dosage cannot be evaluated is displayed to the Pharmacy user because the dosage ordered of '1 AMPULE (3ML)' does not have a Numeric Dose and Dose Unit defined for the Local Possible Dosage selected. A Maximum Single Dose Order Check cannot be performed. The user is not asked if they want to continue nor prompted to enter a pharmacy intervention.

### 3.2.1.8  Verifying a non-verified Unit Dose Order

In Example 8, a pharmacist has selected a non-verified unit dose order and taken the VERIFY action. Upon taking the action, order checks will be processed. In this example a Maximum Single Dose Order Check warning is displayed. Had the VERIFY action been taken with any other action that triggers order checks, order checks would have only been displayed once.

```
Inpatient Order Entry              Feb 28, 2013@16:43:59           Page: 1 of 1
PSJPATIENT,THREE                      Ward: 3 NORTH                            A
 PID: 666-00-0253                 Room-Bed: 1-3         Ht(cm): _____ (_____)
 DOB: 06/14/51 (61)                                     Wt(kg): _____ (_____)
 Sex: MALE                                           Admitted: 08/19/97
 Dx: TESTING ALERT                           Last transferred: ********
 CrCL: <Not Found>                                 BSA (m2): _____


- - - - - - - - - - - - - - - - A C T I V E - - - - - - - - - - - - - - - - -
1 ->FOLIC ACID TAB                              C 02/28 03/14 A
     Give: 10MG PO QAM
- - - - - - - - - - - - - - N O N - V E R I F I E D - - - - - - - - - - - - - -
2 SIMVASTATIN TAB                               C 02/28 03/14 N
   Give: 800mg PO QAM
3 WARFARIN TAB                                  C 02/28 03/14 N
   Give: 15MG PO QPM




  Enter ?? for more actions
PI Patient Information                   SO Select Order
PU Patient Record Update                NO New Order Entry
Select Action: Quit//
```

```
NON-VERIFIED UNIT DOSE             Feb 28, 2013@16:45:47           Page: 1 of 2
PSJPATIENT,THREE                      Ward: 3 NORTH                            A
 PID: 666-00-0253                 Room-Bed: 1-3        Ht(cm): _____ (_____)
 DOB: 06/14/51 (61)                                    Wt(kg): _____ (_____)

*(1)Orderable Item: WARFARIN TAB
     Instructions:
*(2)Dosage Ordered: 15MG
        Duration:                            (3)Start: 02/28/13 17:00
*(4)     Med Route: ORAL
```

```
                                                          (5) Stop: 03/14/13 24:00
 (6) Schedule Type: CONTINUOUS
*(8)       Schedule: QPM
 (9)    Admin Times: 17
*(10)      Provider: INPATIENT-MEDS,PROVIDER [w]
 (11) Special Instructions:

 (12) Dispense Drug                              U/D                    Inactive Date
      WARFARIN 10MG TAB                          1.5
+  Enter ?? for more actions
DC Discontinue                  ED Edit                     AL Activity Logs
HD (Hold)                       RN (Renew)
FL Flag                         VF Verify
Select Item(s): Next Screen// vf Verify


 WARFARIN 10MG TAB: Single dose amount of 15 MILLIGRAMS exceeds the
 maximum single dose amount of 10 MILLIGRAMS.


Do you want to Continue? NO//
```

```
NON-VERIFIED UNIT DOSE            Feb 28, 2013@16:50:59            Page: 1 of 2
PSJPATIENT,THREE                   Ward: 3 NORTH                              A
 PID: 666-00-0253                Room-Bed: 1-3         Ht(cm): _____ (_____)
 DOB: 06/14/51 (61)                                    Wt(kg): _____ (_____)

*(1)Orderable Item: WARFARIN TAB
      Instructions:
*(2)Dosage Ordered: 15MG
          Duration:                               (3)Start: 02/28/13 17:00
*(4)      Med Route: ORAL
                                                  (5) Stop: 03/14/13 24:00
 (6) Schedule Type: CONTINUOUS
*(8)       Schedule: QPM
 (9)    Admin Times: 17
*(10)      Provider: INPATIENT-MEDS,PROVIDER [w]
 (11) Special Instructions:

 (12) Dispense Drug                              U/D                    Inactive Date
      WARFARIN 10MG TAB                          1.5
+  Enter ?? for more actions
DC Discontinue                  ED Edit                     AL Activity Logs
HD (Hold)                       RN (Renew)
FL Flag                         VF Verify
Select Item(s): Next Screen//
```

### 3.2.1.9 Editing and then Verifying a Non-Verified Unit Dose Order

In Example 9, a non-verified unit dose order is edited and then verified through pharmacy backdoor options within a single order session. Only a Maximum Single Dose Order Check is generated when the Units per Dose field for the dispense drug Warfarin 10mg tab is edited from 3 to 2. Upon verification, enhanced order checks are processed and a drug interaction between Amiodarone and Warfarin is displayed for processing. The Maximum Single Dose Order Check is not displayed again. In this case, since the Dosing Order Check was triggered during the Edit action, the same order check will not be displayed again during the Verify action.

**Non-verified Unit Dose Order Edited and then Edited through pharmacy backdoor options**
```
Inpatient Order Entry               Mar 25, 2013@16:07:48      Page:  1 of  1
PSJPATIENT,FIFTYONE                          Ward: 3AS
```

```
 PID: 666-55-4343                 Room-Bed:             Ht(cm): _____ (_____)
 DOB: 07/29/44 (68)                                     Wt(kg): _____ (_____)
 Sex: MALE                                           Admitted: 08/14/12
 Dx: SHORTNESS OF BREATH                    Last transferred: ********
CrCL: <Not Found>                                   BSA (m2): _____

- - - - - - - - - - - - - - - A C T I V E - - - - - - - - - - - - - - - - - -
 1  AMIODARONE TAB                            C 03/25 04/01 A
    Give: 200MG PO TID
- - - - - - - - - - - - - - N O N - V E R I F I E D - - - - - - - - - - - - - -
 2  WARFARIN TAB                              C 03/25 03/26 N
    Give: 10MG PO QPM




    Enter ?? for more actions
PI Patient Information        SO Select Order
PU Patient Record Update      NO New Order Entry
Select Action: Quit// 2


NON-VERIFIED UNIT DOSE          Mar 25, 2013@16:10:29         Page:  1 of  2
PSJPATIENT,FIFTYONE                   Ward: 3AS
  PID: 666-55-4343              Room-Bed:             Ht(cm): _____ (_____)
  DOB: 07/29/44 (68)                                 Wt(kg): _____ (_____)

*(1)Orderable Item: WARFARIN TAB                          <OCI>
     Instructions:
*(2)Dosage Ordered: 10MG
          Duration:                            (3)Start: 03/25/13 21:00
*(4)      Med Route: ORAL
                                               (5) Stop: 03/26/13 24:00
 (6) Schedule Type: CONTINUOUS
*(8)       Schedule: QPM
 (9)    Admin Times: 2100
*(10)      Provider: PROVIDER,ONE [s]
 (11) Special Instructions:

 (12) Dispense Drug              U/D              Inactive Date
     WARFARIN 5MG TAB            3
+    Enter ?? for more actions
DC Discontinue           ED Edit               AL Activity Logs
HD (Hold)                RN (Renew)
FL Flag                  VF Verify
Select Item(s): Next Screen// ED  Edit

Select FIELDS TO EDIT: 12

Select DISPENSE DRUG: WARFARIN 5MG TAB//
 DISPENSE DRUG: WARFARIN 5MG TAB//
 UNITS PER DOSE: 3// 2
Select DISPENSE DRUG:


NON-VERIFIED UNIT DOSE          Mar 25, 2013@16:11:16         Page:  1 of  2
PSJPATIENT,FIFTYONE                   Ward: 3AS
  PID: 666-55-4343              Room-Bed:             Ht(cm): _____ (_____)
  DOB: 07/29/44 (68)                                 Wt(kg): _____ (_____)

*(1)Orderable Item: WARFARIN TAB                          <OCI>
     Instructions:
*(2)Dosage Ordered: 10MG
```

```
          Duration:                                        (3)Start: 03/25/13 21:00
*(4)      Med Route: ORAL
                                                           (5) Stop: 03/26/13 24:00
 (6) Schedule Type: CONTINUOUS
*(8)       Schedule: QPM
 (9)    Admin Times: 2100
*(10)      Provider: PROVIDER,ONE
 (11) Special Instructions:

 (12) Dispense Drug                       U/D                    Inactive Date
      WARFARIN 5MG TAB                      2

+      Enter ?? for more actions
ED Edit                          AC ACCEPT
Select Item(s): Next Screen// AC   ACCEPT



 WARFARIN 5MG TAB: Single dose amount of 10 MILLIGRAMS exceeds the
 maximum single dose amount of 7.5 MILLIGRAMS.


Do you want to Continue? NO// YES

Now creating Pharmacy Intervention
For WARFARIN 5MG TAB

PROVIDER:
RECOMMENDATION:   NO CHANGE

See 'Pharmacy Intervention Menu' if you want to delete this
intervention or for more options.


Press Return to continue...


Would you like to edit this intervention? N// O


...updating order.....
...updating OE/RR...
```

```
NON-VERIFIED UNIT DOSE            Mar 25, 2013@16:12:56            Page:  1 of  2
PSJPATIENT,FIFTYONE                    Ward: 3AS
 PID: 666-55-4343                 Room-Bed:                Ht(cm): _____ (_____)
 DOB: 07/29/44 (68)                                        Wt(kg): _____ (_____)

*(1)Orderable Item: WARFARIN TAB                                 <OCI>
      Instructions:
*(2)Dosage Ordered: 10MG
          Duration:                                        (3)Start: 03/25/13 21:00
*(4)      Med Route: ORAL
                                                           (5) Stop: 03/26/13 24:00
 (6) Schedule Type: CONTINUOUS
*(8)       Schedule: QPM
 (9)    Admin Times: 2100
*(10)      Provider: PROVIDER,ONE
 (11) Special Instructions:

 (12) Dispense Drug                       U/D                    Inactive Date
      WARFARIN 5MG TAB                      2
```

```
+     Enter ?? for more actions
DC Discontinue                   ED Edit                AL Activity Logs
HD (Hold)                        RN (Renew)
FL Flag                          VF Verify
Select Item(s): Next Screen// VF  Verify


Remote data not available - Only local order checks processed.



Now Processing Enhanced Order Checks! Please wait...
==============================================================================
This patient is receiving the following order(s) that have a CRITICAL Drug
Interaction with WARFARIN 5MG TAB:

AMIODARONE TAB                            C 03/25 04/01 A
  Give: 200MG PO TID

The concurrent administration of amiodarone and an anticoagulant may
result in an increase in the clinical effects of the anticoagulant and an
increased risk of bleeding.(1-5,7-23) It may take several weeks of
concurrent therapy before the full effects of this interaction are noted.
The effect of amiodarone on anticoagulant levels may continue for several
months after amiodarone is discontinued.The concurrent administration of
dronedarone and an anticoagulant may also result in an increase in the
clinical effects of the anticoagulant and an increased risk of bleeding;
however, most patients experience increased effects within 1 week of
dronedarone initiation.(6)


Press Return to continue...



==============================================================================

Display Professional Interaction Monograph(s)? NO//

Do you want to Continue with WARFARIN 5MG TAB? NO// YES

Now creating Pharmacy Intervention
For WARFARIN 5MG TAB

PROVIDER:
RECOMMENDATION:  NO CHANGE

See 'Pharmacy Intervention Menu' if you want to delete this
intervention or for more options.


Press Return to continue...


Would you like to edit this intervention? N// O

...a few moments, please.....

Pre-Exchange DOSES:

ORDER VERIFIED.

Enter RETURN to continue or '^' to exit:
```

```
Inpatient Order Entry          Mar 25, 2013@16:15:18          Page:  1 of  1
PSJPATIENT,FIFTYONE                     Ward: 3AS
  PID: 666-55-4343              Room-Bed:                 Ht(cm): _____ (_____)
  DOB: 07/29/44 (68)                                      Wt(kg): _____ (_____)
  Sex: MALE                                             Admitted: 08/14/12
  Dx: SHORTNESS OF BREATH              Last transferred: ********
 CrCL: <Not Found>                                      BSA (m2): _____

- - - - - - - - - - - - - - - - A C T I V E - - - - - - - - - - - - - - - - -
  1  AMIODARONE TAB                               C 03/25 04/01 A
       Give: 200MG PO TID
  2  WARFARIN TAB                                 C 03/25 03/26 A
       Give: 10MG PO QPM




      Enter ?? for more actions
PI Patient Information              SO Select Order
PU Patient Record Update           NO New Order Entry
Select Action: Quit//
```

## 3.2.2  IV Module

### 3.2.2.1  New IV Order

In Example 1, a new IV order is entered through pharmacy backdoor options.

**New Order Entry through pharmacy backdoor options**
```
Select Action: Quit// NO New Order Entry

Select DRUG:

Select IV TYPE: PIGGYBACK.
Select ADDITIVE: CEFAZOLIN
  *N/F*
 Restriction/Guideline(s) exist. Display? : (N/D): No// NO

Enter RETURN to continue or '^' to exit:



(The units of strength for this additive are in GM)
Strength: 10 10 GM
Select ADDITIVE:
Select SOLUTION: D550 5% DEXTROSE  50 ML
  *N/F*
 Restriction/Guideline(s) exist. Display? : (N/D/O/B): No// NO

Enter RETURN to continue or '^' to exit:



Remote data not available - Only local order checks processed.



Now Processing Enhanced Order Checks!  Please wait...
INFUSION RATE: 30 INFUSE OVER 30 MINUTES
```

```
MED ROUTE: IVPB IV PIGGYBACK IVPB
SCHEDULE: Q12H
ADMINISTRATION TIMES: 09-21//
REMARKS:
OTHER PRINT INFO:
START DATE/TIME: OCT 14,2011@09:00// (OCT 14, 2011@09:00)
STOP DATE/TIME: OCT 24,2011@11:59//
PROVIDER: PROVIDER, ONE//


Orderable Item: CEFAZOLIN INJ
Give: IVPB Q12H

59
[2]0123 NHCU 10/14/11
PSJPATIENT,ONE 110-1

CEFAZOLIN 10 GM
5% DEXTROSE 50 ML

Dose due at: _____
INFUSE OVER 30 MINUTES
Q12H
09-21
fld by: _____  Chkd by: _____
1[1]

Start date: OCT 14,2011 09:00 Stop date: OCT 24,2011 11:59

Expected First Dose: OCT 14,2011@09:00



Press Return to continue...

 CEFAZOLIN 10 GM: Single dose amount of 10 GRAMS exceeds the maximum
 single dose amount of 3 GRAMS.

Do you want to Continue? NO//

Select IV TYPE:

 *****Or*****
Do you want to Continue? NO// YES

Now creating Pharmacy Intervention
For CEFAZOLIN 1GM VI

PROVIDER:
RECOMMENDATION: NO CHANGE

See 'Pharmacy Intervention Menu' if you want to delete this
intervention or for more options.


Would you like to edit this intervention? N// O


Is this O.K.: YES// YES
NATURE OF ORDER: WRITTEN// W
...transcribing this non-verified order....
```

```
ED Edit                         AL Activity Logs

NON-VERIFIED IV                 Oct 14, 2011@08:59:50           Page: 1 of 2
PSJPATIENT,ONE                      Ward: NHCU                               A
 PID: 666-66-0123               Room-Bed: 110-1         Ht(cm): 176.53 (12/30/05)
 DOB: 10/01/75 (36)                                     Wt(kg): 67.28 (01/09/06)

*(1) Additives:                                         Type: PIGGYBACK <DIN>
     CEFAZOLIN 10 GM *N/F*
 (2) Solutions:
     5% DEXTROSE 50 ML *N/F*
      Duration:                                  (4) Start: 10/14/11 09:00
 (3) Infusion Rate: INFUSE OVER 30 MINUTES
*(5) Med Route: IVPB                             (6) Stop: 10/24/11 11:59
*(7)  Schedule: Q12H                             Last Fill: ********
 (8) Admin Times: 09-21                             Quantity: 0
*(9)  Provider: PROVIDER,ONE [w]                Cum. Doses:
*(10)Orderable Item: CEFAZOLIN INJ
      Instructions:
 (11)   Other Print:


+  Enter ?? for more actions
DC Discontinue                  RN (Renew)                    VF Verify
HD (Hold)                       OC (On Call)                  FL Flag
ED Edit                         AL Activity Logs
Select Item(s): Next Screen// VF Verify .

1 Label needed for dose due at ...

10/14/11 0900 :
```

When entering a new IV order through the pharmacy backdoor, a Maximum Single Dose Order Check will be performed after the expected first dose is displayed. If the dosage ordered exceeds the FDB recommended maximum single dose a warning message will be displayed to the user. The warning message will be indented and the drug name will precede the warning message. The drug name within the message will either be the IV Additive print name, strength and unit or if a PreMix IV Solution is involved, the IV Solution print name (1) and volume. In this example, the IV Additive print name, strength and unit is displayed.

If a Maximum Single Dose Order Check warning is displayed, the user will be prompted with 'Do you want to Continue?' If the user accepts the default of 'No', the software will take them back to the 'Select IV Type:' prompt. If the user responds 'Yes', the program will proceed with the intervention dialog.

If a Maximum Single Dose Order Check cannot be performed an error message is displayed. The user will not be asked to enter an intervention to continue.

If the schedule within the order has been marked to be excluded from all dosing checks, no Maximum Single Dose Order Check will be performed. In this case, no message will be displayed to the user informing them of this.

### 3.2.2.2 Finishing an IV Order

Example 2 illustrates finishing an IV order with multiple prospective drugs that each generate a Maximum Single Dose warning.

**Multiple Prospective Drugs**

```
PENDING IV (ROUTINE)               Nov 07, 2011@11:09:21             Page: 1 of 3
PSJPATIENT,FIVE                         Ward: MICU
 PID: 666-87-4591                 Room-Bed: MICU-2       Ht(cm): _____ (_____)
 DOB: 04/05/20 (91)                                      Wt(kg): _____ (_____)

 (1) Additives:                                          Type: ADMIXTURE <DIN>
     CALCIUM GLUCONATE 6 GM (1)
     MAGNESIUM SULFATE 5 GM (1) *N/F*
     POTASSIUM CHLORIDE 50 MEQ
 (2) Solutions:
     5% DEXTROSE 1000 ML
      Duration:                                    (4) Start: 11/07/11 15:30
 (3) Infusion Rate: 125 ml/hr
*(5) Med Route: IV                                  (6) Stop: 12/08/11 11:59
*(7)  Schedule:                                     Last Fill: ********
 (8) Admin Times:                                   Quantity: 0
*(9)  Provider: PROVIDER,ONE [es]                   Cum. Doses:
*(10)Orderable Item: CALCIUM GLUCONATE INJ,SOLN
       Instructions:
 (11)    Other Print:
+  Enter ?? for more actions
DC Discontinue                          FL Flag
ED Edit                                 FN Finish
Select Item(s): Next Screen// FN Finish
 PROVIDER COMMENTS:
place calcium in bag #1 and magnesium in bag #2


 Select one of the following:

   Y  Yes
   N  No
   !  Copy and flag for display in a BCMA Message Box


Remote data not available - Only local order checks processed.



Now Processing Enhanced Order Checks!  Please wait...



Press Return to continue...



AC Accept                          ED Edit

 (1) Additives:                                          Type: ADMIXTURE <DIN>
PENDING IV (ROUTINE)               Nov 07, 2011@11:10:27             Page: 1 of 3
PSJPATIENT,FIVE                         Ward: MICU
 PID: 666-87-4591                 Room-Bed: MICU-2       Ht(cm): _____ (_____)
 DOB: 04/05/20 (91)                                      Wt(kg): _____ (_____)

     CALCIUM GLUCONATE 6 GM (1)
     MAGNESIUM SULFATE 5 GM (1) *N/F*
     POTASSIUM CHLORIDE 50 MEQ
 (2) Solutions:
     5% DEXTROSE 1000 ML
      Duration:                                    (4) Start: 11/07/11 15:30
 (3) Infusion Rate: 125 ml/hr
*(5) Med Route: IV                                  (6) Stop: 12/08/11 11:59
```

```
*(7) Schedule:                                    Last Fill: ********
 (8) Admin Times:                                 Quantity: 0
*(9) Provider: PROVIDER,ONE [es]  Cum. Doses:
*(10)Orderable Item: CALCIUM GLUCONATE INJ,SOLN
     Instructions:
 (11) Other Print: place calcium in bag #1 and magnesium in bag #2
+  Enter ?? for more actions
AC Accept                             ED Edit
Select Item(s): Next Screen// ED Edit

Select FIELDS TO EDIT: 1
Select ADDITIVE: CALCIUM GLUCONATE//
ADDITIVE: CALCIUM GLUCONATE//

(The units of strength for this additive are in GM)
Strength: 6 GM//
BOTTLE: 1// 1
Select ADDITIVE: MAGNESIUM SULFATE 5 GM (1)
...OK? Yes// (Yes)
ADDITIVE: MAGNESIUM SULFATE//
 Restriction/Guideline(s) exist. Display? : (N/D): No// NO

Enter RETURN to continue or '^' to exit:


(The units of strength for this additive are in GM)
Strength: 5 GM//
BOTTLE: 1// 2
Select ADDITIVE:


Remote data not available - Only local order checks processed.



Now Processing Enhanced Order Checks!  Please wait...


Press Return to continue...



AC Accept                             ED Edit

PENDING IV (ROUTINE)              Nov 07, 2011@11:10:49        Page: 1 of 3
PSJPATIENT,FIVE                        Ward: MICU
 PID: 666-87-4591                 Room-Bed: MICU-2      Ht(cm): _____ (_____)
 DOB: 04/05/20 (91)                                    Wt(kg): _____ (_____)

 (1) Additives:                                   Type: ADMIXTURE <DIN>
     CALCIUM GLUCONATE 6 GM (1)
     MAGNESIUM SULFATE 5 GM (2) *N/F*
     POTASSIUM CHLORIDE 50 MEQ
 (2) Solutions:
     5% DEXTROSE 1000 ML
      Duration:                                   (4) Start: 11/07/11 15:30
 (3) Infusion Rate: 125 ml/hr
*(5) Med Route: IV                                (6) Stop: 12/08/11 11:59
*(7)  Schedule:                                   Last Fill: ********
 (8) Admin Times:                                 Quantity: 0
*(9) Provider: PROVIDER,ONE [es]                  Cum. Doses:
*(10)Orderable Item: CALCIUM GLUCONATE INJ,SOLN
```

```
     Instructions:
 (11) Other Print: place calcium in bag #1 and magnesium in bag #2
+   Enter ?? for more actions
AC Accept                             ED Edit
Select Item(s): Next Screen// AC Accept


 CALCIUM GLUCONATE 6 GM: Single dose amount of 6 GRAMS exceeds the
 maximum single dose amount of 3.5 GRAMS.


Do you want to Continue? NO// YES

Now creating Pharmacy Intervention
For CALCIUM GLUCONATE 100MG/ML 10ML VI

PROVIDER: PROVIDER,ONE LBB 119
RECOMMENDATION: NO CHANGE

See 'Pharmacy Intervention Menu' if you want to delete this
intervention or for more options.


Would you like to edit this intervention? N// O



Press Return to continue...

 MAGNESIUM SULFATE 5 GM: Single dose amount of 5 GRAMS exceeds the
 maximum single dose amount of 4 GRAMS.


Do you want to Continue? NO// YES

Now creating Pharmacy Intervention
For MAGNESIUM SULFATE 50% 1GM/2ML AMP

PROVIDER: PROVIDER,ONE LBB 119
RECOMMENDATION: NO CHANGE

See 'Pharmacy Intervention Menu' if you want to delete this
intervention or for more options.


Would you like to edit this intervention? N// O



Press Return to continue...

 POTASSIUM CHLORIDE 50 MEQ: Single dose amount of 50 MILLIEQUIVALENTS
 exceeds the maximum single dose amount of 40 MILLIEQUIVALENTS.


Do you want to Continue? NO// YES

Now creating Pharmacy Intervention
For POTASSIUM CL 2MEQ/ML 10ML VI

PROVIDER: PROVIDER,ONE LBB 119
RECOMMENDATION: NO CHANGE
```

```
See 'Pharmacy Intervention Menu' if you want to delete this
intervention or for more options.


Would you like to edit this intervention? N// O



Orderable Item: CALCIUM GLUCONATE INJ,SOLN
Give: IV

109
4591 MICU 11/07/11
PSJPATIENT,FIVE MICU-2

CALCIUM GLUCONATE 6 GM (1)
MAGNESIUM SULFATE 5 GM (2)
POTASSIUM CHLORIDE 50 MEQ
5% DEXTROSE 1000 ML

Dose due at: _____
125 ml/hr
place calcium in bag #1 and magnesium in bag #2
fld by: _____ Chkd by: ____


1[1]

Start date: NOV 7,2011 15:30 Stop date: DEC 8,2011 11:59

Expected First Dose: NOV 7,2011@15:30

*** This change will cause a new order to be created. ***
Is this O.K.? YES//
NATURE OF ORDER: SERVICE CORRECTION// S
```

For each prospective drug, in this case for each IV Additive that generates a Maximum Single Dose warning, the user will be prompted with a 'Do you want to Continue?' prompt. If they respond No, the program will take them back to the detailed order screen where the FINISH action was initiated. If the user responds 'Yes' they will have to log a pharmacy intervention. An intervention will have to be entered for each IV Additive that generated a Maximum Single Dose Order Check as illustrated.

### 3.2.2.3 Editing an Order

Example 3 illustrates editing the infusion rate for an IV Solution that is marked as a PreMix.

**Editing IV Solution marked as PreMix**
```
ACTIVE IV                      Apr 21, 2008@15:14                Page: 1 of 1
PSJPATIENT,TWO                     Ward: 3AS                              CWAD
 PID: 666-16-4010              Room-Bed: 300-1      Ht(cm): 187.96 (08/14/07)
 DOB: 10/10/50 (57)                                 Wt(kg): 83.41 (08/14/07)

*(1) Additives:            Order number: 9             Type: ADMIXTURE <DIN>
*(2) Solutions:
     HEPARIN 25000U/D5W 250 ML *N/F*
      Duration:                             *(4) Start: 04/21/08 15:30
*(3) Infusion Rate: 15 ml/hr
*(5) Med Route: IV                          *(6) Stop: 04/22/08 24:00
*(7)  Schedule:                             Last Fill: 04/21/08 15:13
 (8) Admin Times:                            Quantity: 1
*(9) Provider: PSJPROVIDER,TWO [w]          Cum. Doses: 1
 (10) Other Print:
```

```
 (11) Remarks :
      IV Room: GLRISC
 Entry By: PSJPHARMACIST,ONE                        Entry Date: 04/21/08 15:10
   Enter ?? for more actions
DC Discontinue                  RN Renew                    VF (Verify)
HD Hold                         OC On Call                  FL Flag
ED Edit                         AL Activity Logs
Select Item(s): Quit// ED Edit


Select Item(s): Edit// ED Edit


Select FIELDS TO EDIT: 3
INFUSION RATE: 15 ml/hr//20 ml/hr




AC Accept                       ED Edit

ACTIVE IV                  Apr 21, 2008@15:15:07                 Page: 1 of 1
PSJPATIENT,TWO                  Ward: 3AS                           CWAD
 PID: 666-16-4010          Room-Bed: 300-1          Ht(cm): 187.96 (08/14/07)
 DOB: 10/10/50 (57)                                 Wt(kg): 83.41 (08/14/07)

*(1) Additives:        Order number: 9                  Type: ADMIXTURE <DIN>
*(2) Solutions:
     HEPARIN 25000U/D5W 250 ML *N/F*
      Duration:                                  *(4) Start: 04/21/08 15:30
*(3) Infusion Rate: 20 ml/hr
*(5) Med Route: IV                               *(6) Stop: 04/22/08 24:00
*(7) Schedule:                                   Last Fill: 04/21/08 15:13
 (8) Admin Times:                                 Quantity: 1
*(9) Provider: PSJPROVIDER,TWO [w]               Cum. Doses: 1
 (10) Other Print:

 (11) Remarks :
      IV Room: GLRISC
 Entry By: PSJPHARMACIST,ONE                        Entry Date: 04/21/08 15:10

   Enter ?? for more actions
AC Accept                         ED Edit
Select Item(s): Edit// AC Accept

 HEPARIN 25000U/D5W 250 ML: The dose form rate of 20 MILLILITERS/HOUR exceeds the
 maximum dose form rate of 16.67 MILLILITERS/HOUR.

Do you want to Continue? N// n NO


ACTIVE IV                  Apr 21, 2008@15:14                    Page: 1 of 1
PSJPATIENT,TWO                  Ward: 3AS                           CWAD
 PID: 666-16-4010          Room-Bed: 300-1          Ht(cm): 187.96 (08/14/07)
 DOB: 10/10/50 (57)                                 Wt(kg): 83.41 (08/14/07)

*(1) Additives:        Order number: 9                  Type: ADMIXTURE <DIN>
*(2) Solutions:
     HEPARIN 25000U/D5W 250 ML *N/F*
      Duration:                                  *(4) Start: 04/21/08 15:30
*(3) Infusion Rate: 15 ml/hr
*(5) Med Route: IV                               *(6) Stop: 04/22/08 24:00
*(7) Schedule:                                   Last Fill: 04/21/08 15:13
 (8) Admin Times:                                 Quantity: 1
*(9) Provider: PSJPROVIDER,TWO [w]               Cum. Doses: 1
```

```
  (10) Other Print:

  (11) Remarks :
       Room: GLRISC
       Entry By: PSJPHARMACIST,ONE                    Entry Date: 04/21/08 15:10
  Enter ?? for more actions
DC Discontinue                    RN Renew                   VF (Verify)
HD Hold                           OC On Call                 FL Flag
ED Edit                           AL Activity Logs
.
.
.

OR

Do you want to Continue? N// YES

Now creating Pharmacy Intervention
for HEPARIN 25000U/D5W 250 ML

PROVIDER: OPPROVIDER, ONE
RECOMMENDATION: NO CHANGE

See 'Pharmacy Intervention Menu' if you want to delete this
intervention or for more options.


Would you like to edit this intervention? N// NO

Med Route: IV
48
[9]4010 3AS 04/21/08
PSJPATIENT,TWO 300-1

HEPARIN 25000U/D5W 250 ML

Dose due at: _____
20 ml/hr
fld by: ____ Chkd by: ____
1[1]

Start date: APR 21,2008 15:30 Stop date: APR 22,2008 24:00

Expected First Dose: APR 21,2008@15:30

*** This change will cause a new order to be created. ***

Is this O.K.: Y//
```

In Example 3, the editing of the infusion rate for an IV order with the IV Type of 'Admixture' results in a new order to be created and a Maximum Single Dose Order Check to be performed. However, the editing of the infusion rate will not always result in a Dosing Order Check being performed. The IV type of the order must be an 'Admixture', 'Hyperal', 'Chemotherapy Admixture', 'Continuous Syringe' or 'Chemotherapy Continuous Syringe'.

A Maximum Single Dose Order Check will only be performed when the schedule of an IV order is edited for IV Types of 'Piggyback', 'Intermittent Syringe', 'Chemotherapy Piggyback', or 'Chemotherapy Intermittent Syringe'.

A Maximum Single Dose Order Check will not be performed when the volume of an IV order is edited for IV Types of 'Piggyback', 'Intermittent Syringe', 'Chemotherapy Piggyback', or 'Chemotherapy Intermittent Syringe' with an IV Solution not marked as a PreMix.

Making an edit to the medication route, changing any IV Additive fields or IV Solution fields for any IV Solution marked as a PreMix will generate a Maximum Single Dose Order Check to be performed.

Dosing Order Checks will be performed after all edits are made and the user accepts the order.

### 3.2.2.4 Renewing of an Order

In Example 4, an IV order with a free text infusion rate will be renewed.

```
ACTIVE IV                        Nov 07, 2011@15:00:56              Page: 1 of 1
PSJPATIENT,FIVE                       Ward: MICU
 PID: 666-87-4591               Room-Bed: MICU-2              Ht(cm): 170.00 (11/07/11)
 DOB: 04/05/20 (91)                                          Wt(kg): 90.00 (11/07/11)


*(1) Additives:            Order number: 6                   Type: ADMIXTURE
*(2) Solutions:
     DOPAMINE 1600MCG/ML IN D5W 250 ML
      Duration:                                   *(4) Start: 11/07/11 15:30
*(3) Infusion Rate: 100MCG/KG/MIN@1
*(5) Med Route: IV                                *(6) Stop: 12/08/11 11:59
*(7) Schedule:                                    Last Fill: 11/07/11 14:27
 (8) Admin Times:                                  Quantity: 1
*(9) Provider: PROVIDER,ONE [es]                 Cum. Doses: 1
 (10) Other Print:

 (11) Remarks :
       IV Room: GLRISC
       Entry By: PROVIDER,ONE                    Entry Date: 11/07/11 14:27
  Enter ?? for more actions
DC Discontinue                    RN Renew                    VF (Verify)
HD Hold                           OC On Call                  FL Flag
ED Edit                           AL Activity Logs
Select Item(s): Quit// RN Renew
STOP DATE/TIME: DEC 8,2011@11:59//
PROVIDER: PROVIDER,ONE//


Remote data not available - Only local order checks processed.



Now Processing Enhanced Order Checks!  Please wait...

Enhanced Order Checks cannot be performed for Local Drug: AMINOPHYLLINE 100MG
TAB
 Reason(s): Drug not matched to NDF



Press Return to continue...

===============================================================================
This patient is receiving the following order(s) that have a SIGNIFICANT Drug
Interaction with DOPAMINE 1600MCG/ML IN D5W 250 ML:

NON-VA Med: PHENYTOIN SOD 100MG CAP
Dosage: 100MG  Schedule: EVERY 8 HOURS


*** REFER TO MONOGRAPH FOR SIGNIFICANT INTERACTION CLINICAL EFFECTS
===============================================================================

Display Professional Interaction Monograph(s)? NO//
```

```
Do you want to Intervene with DOPAMINE 1600MCG/ML IN D5W 250 ML? NO//


 DOPAMINE 1600MCG/ML IN D5W 250 ML: The dose rate of 9000
 MICROGRAM(S)/MINUTE exceeds the maximum dose rate of 4500
 MICROGRAM(S)/MINUTE.


Do you want to Continue? NO// YES

Now creating Pharmacy Intervention
For DOPAMINE 400MG/D5W 250ML

PROVIDER: PROVIDER,ONE LBB 119
RECOMMENDATION: ??
RECOMMENDATION: NO CHANGE

See 'Pharmacy Intervention Menu' if you want to delete this
intervention or for more options.


Would you like to edit this intervention? N// O



Med Route: IV
109
[6]4591 MICU 11/07/11
PSJPATIENT,FIVE MICU-2

DOPAMINE 1600MCG/ML IN D5W 250 ML

Dose due at: _____
100MCG/KG/MIN
fld by: ____  Chkd by: ____
1[1]

Start date: NOV 7,2011 15:30 Stop date: DEC 8,2011 11:59

Expected First Dose: NOV 7,2011@15:30
```

For this IV order in Example 4 there is only an IV Solution that is marked as a PreMix. The infusion rate is used to determine the single dose amount and Dose Unit. The infusion rate is in an acceptable format since it was entered through CPRS. The Numeric Dose is '100'; the drug unit is 'MCG', the patient parameter is 'KG' and the Dose Rate Unit/Duration Rate is 'MIN'. The single dose amount will be calculated by looking up the patient's latest weight in KG which is '90'and multiplying by 100. The single dose amount is calculated to be '9000'. The software uses the drug unit of 'MCG' to do a lookup into the DOSE UNITS file to find the FDB equivalent of 'MICROGRAM(S)' to send into the interface. 'MINUTE' will be sent into the interface for the Dose Rate Unit/Duration Rate. This can be verified by looking at the Maximum Single Dose Order Check warning that is displayed.

### 3.2.2.5  Copy an IV Order

Example 5 illustrates the COPY action taken on an IV order that generates a Maximum Single Dose Order Check warning.

```
Inpatient Order Entry          Aug 16, 2012@11:26:28              Page: 1 of 2
PSJPATIENT,FIFTY                   Ward: 2ASM
 PID: 666-11-3333            Room-Bed:                    Ht(cm): 200.00 (08/16/12)
 DOB: 07/14/33 (79)                                      Wt(kg): 70.00 (08/16/12)
```

```
 Sex: MALE                                              Admitted: 08/14/12
 Dx: CHEST PAIN                              Last transferred: ********


- - - - - - - - - - - - - - - - - A C T I V E - - - - - - - - - - - - - - - - -
 1 CEFAZOLIN 5 GM                              C 08/16 08/26 A
   in 5% DEXTROSE 100 ML Q12H
 2 in DOPAMINE 1600MCG/ML IN D5W 250 ML        C 08/16 09/16 A
   TITRATE
 3 HEPARIN 25000 UNITS                         C 08/16 09/16 A
   in 5% DEXTROSE 250 ML 20 ml/hr
 4 POTASSIUM CHLORIDE 50 MEQ                    C 08/16 09/16 A
   CALCIUM GLUCONATE 5 GM (2)
   in 5% DEXTROSE 1000 ML 125 ml/hr
 5 TEMAZEPAM CAP,ORAL                           C 08/15 08/22 A
   Give: 30MG PO QHS
+  Enter ?? for more actions
PI Patient Information          SO Select Order
PU Patient Record Update        NO New Order Entry
Select Action: Next Screen// 3




ACTIVE IV                    Aug 16, 2012@11:27                Page: 1 of 2
PSJPATIENT,FIFTY                    Ward: 2ASM
 PID: 666-11-3333          Room-Bed:                Ht(cm): 200.00 (08/16/12)
 DOB: 07/14/33 (79)                                Wt(kg): 70.00 (08/16/12)

*(1) Additives:         Order number: 5              Type: ADMIXTURE <DIN>
     HEPARIN 25000 UNITS *N/F*
*(2) Solutions:
     5% DEXTROSE 250 ML *N/F*
      Duration:                               *(4) Start: 08/16/12 11:26
*(3) Infusion Rate: 20 ml/hr
*(5) Med Route: IV                            *(6) Stop: 09/16/12 11:59
*(7) Schedule:                                Last Fill: 08/16/12 11:26
 (8) Admin Times:                              Quantity: 1
*(9) Provider: PROVIDER,ONE [w]               Cum. Doses: 1
 (10) Other Print:

 (11) Remarks :
      IV Room: GLRISC
+  Enter ?? for more actions
DC Discontinue            RN Renew              VF (Verify)
HD Hold                   OC On Call            FL Flag
ED Edit                   AL Activity Logs
Select Item(s): Next Screen// CO CO

Do you want to copy this order? No// Y (Yes)

Remote data not available - Only local order checks processed.

Now Processing Enhanced Order Checks! Please wait...


ACTIVE IV                    Aug 16, 2012@11:27:58             Page: 1 of 1
PSJPATIENT,FIFTY                    Ward: 2ASM
 PID: 666-11-3333          Room-Bed:                Ht(cm): 200.00 (08/16/12)
 DOB: 07/14/33 (79)                                Wt(kg): 70.00 (08/16/12)

*(1) Additives:         Order number: 5              Type: ADMIXTURE <DIN>
     HEPARIN 25000 UNITS *N/F*
*(2) Solutions:
     5% DEXTROSE 250 ML *N/F*
```

```
    Duration:                                    *(4) Start: 08/16/12 11:26
*(3) Infusion Rate: 20 ml/hr
*(5) Med Route: IV                                *(6) Stop: 09/16/12 11:59
*(7) Schedule:                                    Last Fill: ********
 (8) Admin Times:                                  Quantity: 1
*(9) Provider: PROVIDER,ONE                       Cum. Doses: 1
 (10) Other Print:

 (11) Remarks :
       IV Room: GLRISC
 Entry By: PHARMACIST,ONE                         Entry Date: 08/16/12 11:26
   Enter ?? for more actions
AC Accept                        ED Edit
Select Item(s): Edit// AC Accept


 HEPARIN 25000 UNITS: The dose rate of 2000 UNIT(S)/HOUR exceeds the
 maximum dose rate of 1667 UNIT(S)/HOUR.

Do you want to Continue? NO// YES

Now creating Pharmacy Intervention
For HEPARIN 10,000 U/ML 5ML VI

PROVIDER: PROVIDER,ONE OP
RECOMMENDATION: NO CHANGE

See 'Pharmacy Intervention Menu' if you want to delete this
intervention or for more options.


Would you like to edit this intervention? N// O

.
.
.

Med Route: IV
132
[5]3333 2ASM 08/16/12
PSJPATIENT,FIFTY NF

HEPARIN 25000 UNITS
5% DEXTROSE 250 ML

Dose due at: _____
20 ml/hr
fld by: _____ Chkd by: _____
1[1]

Start date: AUG 16,2012 11:26 Stop date: SEP 16,2012 11:59

Expected First Dose: AUG 16,2012@11:26

*** This change will cause a new order to be created. ***

Is this O.K.: Y// YES
NATURE OF ORDER: WRITTEN// W

        3        6        9       12       15       18       21       24
..:..:..:..:..:..:..:..:..:..:..:..:..:..:..:..:..:..:..:..:..:..:..:..:
             A
```

```
                                 N

Next delivery time is 1530 ***


Action (PB) B//
```

## 3.2.2.6 Adjusting Single Dose Amount

Example 6 illustrates an IV order where the single dose amount has to be adjusted.

```
PENDING IV (ROUTINE)          Nov 07, 2011@15:25:49              Page: 1 of 3
PSJPATIENT,FIVE                   Ward: MICU
 PID: 666-87-4591           Room-Bed: MICU-2          Ht(cm): 170.00 (11/07/11)
 DOB: 04/05/20 (91)                                   Wt(kg): 90.00 (11/07/11)

*(1) Additives:                                       Type: ADMIXTURE <DIN>
     THIAMINE 1000 MG
*(2) Solutions:
     0.9% SODIUM CHLORIDE 1000 ML *N/F*
      Duration:                            (4) Start: 11/07/11 15:30
*(3) Infusion Rate: 62 ml/hr
*(5) Med Route: IV                         (6) Stop: 12/08/11 11:59
*(7) Schedule:                             Last Fill: ********
 (8) Admin Times:                           Quantity: 0
*(9) Provider: PROVIDER,ONE [es]           Cum. Doses:
 (10) Other Print:

 (11) Remarks :
        IV Room: GLRISC
 Entry By: PROVIDER,ONE                     Entry Date: 11/07/11 15:25
+  Enter ?? for more actions
DC Discontinue                   FL Flag
ED Edit                          FN Finish
Select Item(s): Next Screen// FN Finish
IV TYPE: ADMIXTURE//


Remote data not available - Only local order checks processed.



Now Processing Enhanced Order Checks!  Please wait...

Enhanced Order Checks cannot be performed for Local Drug: AMINOPHYLLINE 100MG
TAB
 Reason(s): Drug not matched to NDF



Press Return to continue...


AC Accept  ED Edit

PENDING IV (ROUTINE)          Nov 07, 2011@15:26:30              Page: 1 of 3
PSJPATIENT,FIVE                   Ward: MICU
 PID: 666-87-4591           Room-Bed: MICU-2          Ht(cm): 170.00 (11/07/11)
 DOB: 04/05/20 (91)                                   Wt(kg): 90.00 (11/07/11)

*(1) Additives:                                       Type: ADMIXTURE <DIN>
     THIAMINE 1000 MG
```

```
*(2) Solutions:
     0.9% SODIUM CHLORIDE 1000 ML *N/F*
      Duration:                                   (4) Start: 11/07/11 15:30
*(3) Infusion Rate: 62 ml/hr
*(5) Med Route: IV                                (6) Stop: 12/08/11 11:59
*(7) Schedule:                                    Last Fill: ********
 (8) Admin Times:                                 Quantity: 0
*(9) Provider: PROVIDER,ONE [es]                  Cum. Doses:
 (10) Other Print:

 (11) Remarks :
       IV Room: GLRISC
 Entry By: PROVIDER,ONE                     Entry Date: 11/07/11 15:25
+  Enter ?? for more actions
AC Accept                       ED Edit
Select Item(s): Next Screen// AC Accept


 PLEASE NOTE: The single dose of the IV Additive has been adjusted to
 reflect the amount of drug infused over the nearest whole number of
 hours (992 ML over 16 hours).

 THIAMINE 1000 MG: Single dose amount of 992 MILLIGRAMS exceeds the
 maximum single dose amount of 100 MILLIGRAMS.


Do you want to Continue? NO// YES

Now creating Pharmacy Intervention
For THIAMINE INJ 100MG/ML 10ML

PROVIDER:
RECOMMENDATION: NO CHANGE

See 'Pharmacy Intervention Menu' if you want to delete this
intervention or for more options.


Would you like to edit this intervention? N// O


Med Route: IV
109
4591 MICU 11/07/11
PSJPATIENT,FIVE MICU-2

THIAMINE 1000 MG
0.9% SODIUM CHLORIDE 1000 ML

Dose due at: _____
62 ml/hr
fld by: _____ Chkd by: _____
1[1]

Start date: NOV 7,2011 15:30 Stop date: DEC 8,2011 11:59

Expected First Dose: NOV 7,2011@15:30
```

In earlier scenarios there was discussion about how the single dose amount has to be adjusted for the Maximum Single Dose Order Check. In this example one bag of IV fluids containing Thiamine will infuse over 16.12 hours. The frequency has to be rounded to 16 hours. The drug, Thiamine is not a drug that is administered via a continuous route as per FDB dosing records. The IV Type of the order is an

'Admixture' and the order is equal to or greater than 24 hours. The single dose is adjusted based on 16 hours. The full amount of '1000' mg in one IV bag will not completely infuse over 16 hours. The dose is adjusted to '992' to reflect this. The message will reflect the adjusted single dose amount and volume over the rounded time period. A note will display before the Maximum Single Dose Order Check warning. If the adjusted dose does not exceed the recommended maximum single dose for the drug, and no warning message is displayed, the user will not be informed that the single dose was adjusted for the Maximum Single Dose Order Check.

### 3.2.2.7 Verifying a non-verified IV order

In Example 7, a pharmacist has selected a non-verified IV order and taken the VERIFY action. Upon taking the action, order checks will be processed. In this example a Maximum Single Dose Order Check warning is displayed. Had the VERIFY action been taken with any other action that triggers order checks, order checks would have only been displayed once.

```
Inpatient Order Entry            Mar 01, 2013@12:12:46            Page: 1 of 1
PSJPATIENT,FIFTY                       Ward: 2ASM
 PID: 666-11-3333                 Room-Bed:                Ht(cm): 200.00 (08/16/12)
 DOB: 07/14/33 (79)                                        Wt(kg): 70.00 (08/16/12)
 Sex: MALE                                                 Admitted: 08/14/12
 Dx: CHEST PAIN                               Last transferred: ********
 CrCL: <Not Found>                                        BSA (m2): 2.04


 - - - - - - - - - - - - - N O N - V E R I F I E D - - - - - - - - - - - - - - -
 1 CEFAZOLIN INJ                           C 03/01 03/11 N
    Give: 10 GM IVPB Q12H




  Enter ?? for more actions
PI Patient Information              SO Select Order
PU Patient Record Update           NO New Order Entry
Select Action: Quit// 1
NON-VERIFIED IV                  Mar 01, 2013@12:13:22            Page: 1 of 2
PSJPATIENT,FIFTY                       Ward: 2ASM
 PID: 666-11-3333                 Room-Bed:                Ht(cm): 200.00 (08/16/12)
 DOB: 07/14/33 (79)                                        Wt(kg): 70.00 (08/16/12)

*(1) Additives:                                           Type: PIGGYBACK <DIN>
    CEFAZOLIN 10 GM *N/F*
 (2) Solutions:
    5% DEXTROSE 50 ML *N/F*
     Duration:                              (4) Start: 03/01/13 12:12
 (3) Infusion Rate: INFUSE OVER 60 MINUTES
*(5) Med Route: IVPB                         (6) Stop: 03/11/13 11:59
*(7) Schedule: Q12H                          Last Fill: ********
 (8) Admin Times: 09-21                       Quantity: 0
*(9) Provider: PROVIDER,ONE [w]              Cum. Doses:
*(10)Orderable Item: CEFAZOLIN INJ
     Instructions: CEFAZOLIN 1GM VI

 (12) Remarks :
+  Enter ?? for more actions
DC Discontinue               RN (Renew)                    VF Verify
HD (Hold)                    OC (On Call)                  FL Flag
ED Edit                      AL Activity Logs
Select Item(s): Next Screen// VF Verify
```

```
 CEFAZOLIN 10 GM: Single dose amount of 10 GRAMS exceeds the maximum
 single dose amount of 2 GRAMS.


Do you want to Continue? NO//
NON-VERIFIED IV                 Mar 01, 2013@12:14:52            Page: 1 of 2
PSJPATIENT,FIFTY                    Ward: 2ASM
 PID: 666-11-3333               Room-Bed:                 Ht(cm): 200.00 (08/16/12)
 DOB: 07/14/33 (79)                                       Wt(kg): 70.00 (08/16/12)

*(1) Additives:                                          Type: PIGGYBACK <DIN>
     CEFAZOLIN 10 GM *N/F*
 (2) Solutions:
     5% DEXTROSE 50 ML *N/F*
      Duration:                                  (4) Start: 03/01/13 12:12
 (3) Infusion Rate: INFUSE OVER 60 MINUTES
*(5) Med Route: IVPB                             (6) Stop: 03/11/13 11:59
*(7) Schedule: Q12H                             Last Fill: ********
 (8) Admin Times: 09-21                          Quantity: 0
*(9) Provider: PROVIDER,ONE [w]                Cum. Doses:
*(10)Orderable Item: CEFAZOLIN INJ
     Instructions: CEFAZOLIN 1GM VI


 (12) Remarks :
+  Enter ?? for more actions
DC Discontinue                      RN (Renew)              VF Verify
HD (Hold)                           OC (On Call)            FL Flag
ED Edit                             AL Activity Logs
Select Item(s): Next Screen//
```

### 3.2.2.8  Editing and then Verifying a non-verified IV order

In Example 8, a non-verified IV order is edited and then verified through pharmacy backdoor options within a single order session. Only a Maximum Single Dose Order Check is generated when the Infusion Rate field is edited from 40 to 50. Upon verification, enhanced order checks are processed and a drug interaction between Dopamine and Phenelzine is displayed for processing. The Maximum Single Dose Order Check is not displayed again. In this case, since the Dosing Order Check was triggered during the Edit action, the same order check will not be displayed again during the Verify action.

```
Inpatient Order Entry           Mar 25, 2013@18:05:42         Page:  1 of  2
PSJPATIENT,FIFTYONE                 Ward: 3AS
  PID: 666-55-4343              Room-Bed:              Ht(cm): _____ (_____)
  DOB: 07/29/44 (68)                                   Wt(kg): 100.00 (03/25/13)
  Sex: MALE                                           Admitted: 08/14/12
  Dx: SHORTNESS OF BREATH                     Last transferred: ********
 CrCL: <Not Found>                                    BSA (m2): _____


- - - - - - - - - - - - - - - - A C T I V E - - - - - - - - - - - - - - - - -
  1  AMIODARONE TAB                  C 03/25 04/01 A
     Give: 200MG PO TID
  2  PHENELZINE SULFATE TAB          C 03/25 04/01 A
     Give: 15MG PO TID
  3  WARFARIN TAB                    C 03/25 03/26 A
     Give: 10MG PO QPM
- - - - - - - - - - - - - N O N - V E R I F I E D - - - - - - - - - - - - - -
  4  CIMETIDINE TAB                  C 03/25 04/24 N
     Give: 1200MG PO QHS
  5  DOPAMINE 5000 MG                C 03/25 04/25 N
+    Enter ?? for more actions
PI Patient Information                  SO Select Order
```

```
PU Patient Record Update                  NO New Order Entry
Select Action: Next Screen// 5


NON-VERIFIED IV               Mar 25, 2013@18:05:46            Page:  1 of  2
PSJPATIENT,FIFTYONE                    Ward: 3AS
  PID: 666-55-4343          Room-Bed:              Ht(cm): _____ (_____)
  DOB: 07/29/44 (68)                              Wt(kg): 100.00 (03/25/13)

*(1) Additives:                                 Type: ADMIXTURE <OCI><DIN>
     DOPAMINE 5000 MG
*(2) Solutions:
     5% DEXTROSE 250 ML *N/F*
      Duration:                          (4)   Start: 03/25/13 20:00
*(3) Infusion Rate: 50 ml/hr
*(5)   Med Route: IV                      (6)   Stop: 04/25/13 11:59
*(7)     Schedule:                       Last Fill: ********
 (8)   Admin Times:                       Quantity: 0
*(9)     Provider: PROVIDER,ONE [s]       Cum. Doses:
 (10)  Other Print:


 (11) Remarks :
       IV Room: GLRISC
+     Enter ?? for more actions
DC  Discontinue                   RN  (Renew)               VF  Verify
HD  (Hold)                        OC  (On Call)             FL  Flag
ED  Edit                          AL  Activity Logs
Select Item(s): Next Screen// ED  Edit


Select FIELDS TO EDIT: 3
INFUSION RATE: 50 ml/hr//40 ml/hr
NON-VERIFIED IV               Mar 25, 2013@18:06:59            Page:  1 of  1
PSJPATIENT,FIFTYONE                    Ward: 3AS
  PID: 666-55-4343          Room-Bed:              Ht(cm): _____ (_____)
  DOB: 07/29/44 (68)                              Wt(kg): 100.00 (03/25/13)

*(1) Additives:                                 Type: ADMIXTURE <OCI><DIN>
     DOPAMINE 5000 MG
*(2) Solutions:
     5% DEXTROSE 250 ML *N/F*
      Duration:                          (4)   Start: 03/25/13 20:00
*(3) Infusion Rate: 40 ml/hr
*(5)   Med Route: IV                      (6)   Stop: 04/25/13 11:59
*(7)     Schedule:                       Last Fill: ********
 (8)   Admin Times:                       Quantity: 0
*(9)     Provider: PROVIDER,ONE [s]       Cum. Doses:
 (10)  Other Print:

 (11) Remarks :
       IV Room: GLRISC
    Entry By: BERTUZIS,LINA                  Entry Date: 03/25/13 18:05
    Enter ?? for more actions
AC  Accept                       ED  Edit
Select Item(s): Edit// AC  Accept




 DOPAMINE 5000 MG: The dose rate of 800 MILLIGRAMS/HOUR exceeds the
 maximum dose rate of 300 MILLIGRAMS/HOUR.


Do you want to Continue? NO// YES
```

```
Now creating Pharmacy Intervention
For DOPAMINE 160MG/ML INJ

PROVIDER:
RECOMMENDATION:  NO CHANGE

See 'Pharmacy Intervention Menu' if you want to delete this
intervention or for more options.


Press Return to continue...


Would you like to edit this intervention? N// O


Med Route: IV
133
4343 3AS 03/25/13
PSJPATIENT,FIFTYONE NF

DOPAMINE 5000 MG
5% DEXTROSE 250 ML

Dose due at: _____
40 ml/hr
fld by: ____ Chkd by: ____
1[1]


Start date: MAR 25,2013 20:00 Stop date: APR 25,2013 11:59


Expected First Dose: MAR 25,2013@20:00

*** This change will cause a new order to be created. ***
Is this O.K.? YES//
NATURE OF ORDER: SERVICE CORRECTION// WRITTEN    W
```

**NON-VERIFIED IV**                     Mar 25, 2013@18:18:39              Page:  1 of  2
PSJPATIENT,FIFTYONE                          Ward: 3AS
  PID: 666-55-4343                Room-Bed:               Ht(cm): _____ (_____)
  DOB: 07/29/44 (68)                                      Wt(kg): 100.00 (03/25/13)

*(1) Additives:                                        Type: ADMIXTURE <OCI><DIN>
    DOPAMINE 5000 MG
*(2) Solutions:
    5% DEXTROSE 250 ML *N/F*
      Duration:                                  (4)   Start: 03/25/13 20:00
*(3) Infusion Rate: 40 ml/hr
*(5)   Med Route: IV                             (6)   Stop: 04/25/13 11:59
*(7)    Schedule:                                Last Fill: ********
 (8)  Admin Times:                               Quantity: 0
*(9)    Provider: PROVIDER,ONE [w]              Cum. Doses:
 (10)  Other Print:

 (11) Remarks :
      IV Room: GLRISC
+     Enter ?? for more actions
DC  Discontinue                  RN  (Renew)                      VF  Verify
HD  (Hold)                       OC  (On Call)                    FL  Flag
ED  Edit                         AL  Activity Logs
**Select Item(s): Next Screen// VF  Verify**


Remote data not available - Only local order checks processed.

```
Now Processing Enhanced Order Checks! Please wait...
===============================================================================
This patient is receiving the following order(s) that have a CRITICAL Drug
Interaction with DOPAMINE 5000 MG:

PHENELZINE SULFATE TAB          C 03/25 04/01 A
Give: 15MG PO TID

Concurrent use of MAOIs may result in potentiation of sympathomimetic
effects, which may result in headaches, hypertensive crisis, toxic
neurological effects, and malignant hyperpyrexia. Fatalities have
occurred.

===============================================================================

Display Professional Interaction Monograph(s)? NO//

Do you want to Continue with DOPAMINE 5000 MG? NO// YES

Now creating Pharmacy Intervention
For DOPAMINE 160MG/ML INJ

PROVIDER:  PROVIDER,ONE    OP
RECOMMENDATION:  NO CHANGE

See 'Pharmacy Intervention Menu' if you want to delete this
intervention or for more options.


Press Return to continue...


Would you like to edit this intervention? N// O


===============================================================================
This patient is already receiving the following INPATIENT and/or OUTPATIENT
order(s) for a drug in the same therapeutic class(es):

Drug(s) Ordered:
  DOPAMINE 5000 MG

DOPAMINE 5000 MG              ? ***** ***** N
in 5% DEXTROSE 250 ML 40 ml/hr

Class(es) Involved in Therapeutic Duplication(s): Pressors
===============================================================================

Do you wish to continue with the current order? YES//


DOPAMINE 5000 MG              ? ***** ***** N
in 5% DEXTROSE 250 ML 40 ml/hr


Enter DC to discontinue the above order or press <RETURN> to continue:
No action taken!

.
```

```
5 Labels needed for doses due at ...

03/25/13 2000 : 03/26/13 0100 : 03/26/13 0600 : 03/26/13 1100 : 03/26/13 1600 :

          3        6        9       12       15       18       21       24
..:..:..:..:..:..:..:..:..:..:..:..:..:..:..:..:..:..:..:..:..:..:..:..:
                        A
  ^         ^        ^         ^        ^
                        N

Next delivery time is 2000 ***


Action (PB) P// BYPASS

Inpatient Order Entry                 Mar 25, 2013@18:20:06          Page:  1 of  2
PSJPATIENT,FIFTYONE                    Ward: 3AS
  PID: 666-55-4343                    Room-Bed:                 Ht(cm): _____ (_____)
  DOB: 07/29/44 (68)                                            Wt(kg): 100.00 (03/25/13)
  Sex: MALE                                             Admitted: 08/14/12
  Dx: SHORTNESS OF BREATH                       Last transferred: ********
 CrCL: <Not Found>                                     BSA (m2): _____

 - - - - - - - - - - - - - - - - A C T I V E - - - - - - - - - - - - - - - - -
  1  AMIODARONE TAB                          C 03/25 04/01 A
       Give: 200MG PO TID
  2  DOPAMINE 5000 MG                         C 03/25 04/25 A
    in 5% DEXTROSE 250 ML 40 ml/hr
  3  PHENELZINE SULFATE TAB                   C 03/25 04/01 A
       Give: 15MG PO TID
  4  WARFARIN TAB                             C 03/25 03/26 A
       Give: 10MG PO QPM
 - - - - - - - - - - - - - - N O N - V E R I F I E D - - - - - - - - - - - - - - -
  5  CIMETIDINE TAB                           C 03/25 04/24 N
+      Enter ?? for more actions
PI Patient Information                      SO Select Order
PU Patient Record Update                   NO New Order Entry
Select Action: Next Screen//
```

*(This page included for two-sided copying.)*

Dosing Order Check
User Manual

# 4  Error Handling

Three levels of errors have been established; System, Drug and Order. System and Drug level errors were introduced with the release of MOCHA v1.0. Order level errors are introduced with Dosing Order Checks with the release of MOCHA v2.0.

## 4.1  System Level Errors

When a system level error occurs in MOCHA v2.0, no Drug Interaction, Duplicate Therapy or Dosing Order Checks (Maximum Single Dose Order Check) will be performed for any drugs. Other order checks that do not use the FDB database will still be performed such as Allergy/ADRs, Duplicate Drug, CPRS order checks, etc.

The ability to turn on and off Dosing Order Checks for all orders will be available in MOCHA v2.0. However, this functionality should not be used unless prior authorization has been received from Pharmacy Benefits Management (PBM). PBM will only authorize if local approval has been granted by the Medical Center Patient Safety Office and the Medical Center Director. PBM should be notified of this decision by the Pharmacy Chief via email to the VHAPBH PMO Outlook mail group. PBM in turn will notify Patient Care Services, the National Patient Safety Office and the Office of Information and Technology (OIT).

Examples of system level errors are displayed in the table below for Pharmacy and CPRS:

| Error Level | Error Message | Reason |
|---|---|---|
| **MOCHA v2.0 – Backdoor Pharmacy System Level Errors** | | |
| System | No Enhanced Order Checks can be performed. | Vendor Database cannot be reached. |
| System | No Enhanced Order Checks can be performed. | The connection to the vendor database has been disabled. |
| System | No Enhanced Order Checks can be performed | Vendor database updates are being processed |
| System | No Enhanced Order Checks can be performed | An unexpected error has occurred |
| System | Maximum Single Dose Check could not be performed | Vendor Database cannot be reached. |
| System | Maximum Single Dose Check could not be performed | The connection to the vendor database has been disabled. |
| System | Maximum Single Dose Check could not be performed | Vendor database updates are being processed |
| System | Maximum Single Dose Order Check is not available, please complete a manual check for appropriate Dosing | Dosing Order Checks have been disabled* |
| **MOCHA v2.0 and subsequent versions – CPRS System Level Errors** | | |
| System | These checks could not be completed for this patient:<br>    Drug Interactions<br>    Duplicate Therapy<br>    Dosing | N/A |

| Error Level | Error Message | Reason |
|---|---|---|
| System | These checks could not be completed for this patient:<br>    Dosing | An unexpected error has occurred* or Dosing Order Checks have been disabled.* |

* Reason not displayed to the user.

If the message, 'Vendor database cannot be reached' is displayed, this usually means that the link between VistA and the COTS database is down and the two systems are not communicating.

If the message, 'The connection to the vendor database has been disabled' is displayed, this indicates that a specific PDM option, *Enable/Disable Vendor Database Link* has been used to disable the interface.

If the message, 'Maximum Single Dose Order Check is not available, please complete a manual check for appropriate Dosing' is displayed, this indicates that a specific PDM option, *Enable/Disable Dosing Order Checks* has been used to disable Dosing Order Checks.

The pharmacy ADPAC or IRM support person should be contacted if any of the three messages that were just mentioned are displayed.

If the message, 'Vendor database updates are being processed' is displayed, this means that the FDB database is being updated. The standard and/or custom updates should not take long and will probably be done when there are few users are on the system. Most users will never see this reason.

If the message, 'An unexpected error has occurred' is displayed, this could indicate a problem in the software, or even a network issue. This should be reported immediately.

System level errors will be shown for every order being processed; once for the Enhanced Order Checks (i.e. Drug Interactions, Duplicate Therapy) and once when Dosing Order Checks are being performed. The exception to this is when Dosing Order Checks have been disabled using the PDM option, *Enable/Disable Dosing Order Checks*. The message stating that the 'Maximum Single Dose Order Check is not available, please complete a manual check for appropriate Dosing' will only be seen once per patient session in MOCHA v2.0.

## 4.2  Drug Level Errors

The second error level is for the drug. No Drug Interaction, Duplicate Therapy or Dosing Order Checks will be performed for a specific drug in this case.

When a user is processing an order, the user may see a drug level error for the prospective drug that is being processed or for a drug that is on the profile. If the drug level error is displayed for the prospective drug that is being processed, no Drug Interaction or Duplicate Therapy Order Checks will be performed against any profile drug (local or remote). If a drug level error exists for one of the profile drugs also, it will NOT be displayed because it would just be redundant. The only exception to this is when multiple prospective drugs, such as multiple IV Additives or multiple IV Solutions, marked as PreMix, are found within an IV order. In this case, a drug level error message may be displayed against one of the prospective drugs and another drug level error may be seen for a profile drug.

If a drug level error is displayed for the profile drug, no Drug Interaction or Duplicate Therapy Order Checks will be performed on that profile drug against any prospective drugs being processed within the patient session.

Profile drug errors will only be shown once per patient session. So if a user processes several more orders, the user will not see the error again. However, if the user exits the option or works on another patient and at some later time reselects this patient to process new orders or take action on any existing orders, the user will be shown the profile drug error once again.

If an order is edited and a new order is created, a drug level error will only be displayed once for both processes.

Examples of drug level errors are displayed in the table below for Pharmacy and CPRS:

| Error Level | Error Message | Reason |
|---|---|---|
| **MOCHA v2.0 – Backdoor Pharmacy Drug Level Errors** | | |
| Drug (prospective) | Order Checks could not be done for Drug: <DRUG NAME>, please complete a manual check for Drug Interactions, Duplicate Therapy and appropriate Dosing | No GCNSEQNO exists for VA Product* Bad GCNSEQNO assigned to VA Product* |
| Drug (profile) | Order Checks could not be done for <Remote> Drug: <DRUG NAME>, please complete a manual check for Drug Interactions and Duplicate Therapy.<br><br><Remote> indicator only for remote outpatient medication orders | No GCNSEQNO exists for VA Product* Bad GCNSEQNO assigned to VA Product* |
| Drug | Enhanced Order Checks cannot be performed for Local or Local Outpatient Drug: <DRUG NAME> | Drug not matched to NDF |
| Drug (profile – pending outpatient or pending unit dose order) | Enhanced Order Checks cannot be performed for Orderable Item: <OI Name> | No Dispense Drug found |
| Drug | Maximum Single Dose Check could not be performed for Drug: <DRUG NAME> (only if edit performed on IP order and only when dosage check performed) | Drug not matched to NDF |
| Drug | Maximum Single Dose Check could not be done for Drug: <DRUG NAME>, please complete a manual check for appropriate Dosing (only if edit performed on IP order and only when dosage check performed) | No GCNSEQNO exists for VA Product* Bad GCNSEQNO assigned to VA Product* |
| **MOCHA v2.0 and subsequent versions – CPRS Drug Level Errors** | | |
| Drug (prospective) | Order Checks could not be done for Drug: <Drug Name>, please complete a manual check for Drug Interactions, Duplicate Therapy and appropriate Dosing. | No GCNSEQNO exists for VA Product* Bad GCNSEQNO assigned to VA Product* Drug not matched to NDF* |
| Drug (profile) | Order Checks could not be done for <Remote> Drug: <Drug Name>, please complete a manual check for Drug Interactions and Duplicate Therapy.<br><br><Remote> indicator only for remote orders | No GCNSEQNO exists for VA Product* Bad GCNSEQNO assigned to VA Product* Drug not matched to NDF* |

| Error Level | Error Message | Reason |
|---|---|---|
| Drug (prospective – outpatient and inpatient (UD)) | Order Checks could not be done for Drug: <Drug Name>, please complete a manual check for Drug Interactions, Duplicate Therapy and appropriate Dosing. | No active dispense drug could be found * |
| Drug (prospective) | Maximum Single Dose Check could not be done for Drug: <DRUG NAME>, please complete a manual check for appropriate Dosing | No active IV Additive/Solution marked for IV fluid order entry could be found* |

*Reason not displayed to user.

**Please Note:** <Drug Name> for error messages:
- CPRS simple orders (OP & IP & IV) →OI Name + Dosage Form (DF)
- CPRS complex orders (OP & IP & IV) → OI Name + DF (Dose=XX)
- OP & UD pharmacy backdoor simple orders →Dispense Drug
- OP pharmacy backdoor complex orders →Dispense Drug
- IV order with IV Additives (pharmacy backdoor) →IV Additive print name + Strength + Unit
- IV order with IV Solution (PreMix) pharmacy backdoor → IV Solution print name (1) + Volume

This table shows the drug level errors that may be displayed along with the various reasons.

If a drug is not matched to NDF, a GCNSEQNO cannot be obtained to identify the drug to FDB in order to perform a Drug Interaction, Duplicate Therapy or Dosing Order Check. The reason Drug not matched to NDF will be displayed.

The software, within the error message text, will distinguish an inpatient vs. an outpatient order when processing inpatient medication orders. The inpatient order will have the text Local Drug displayed before the drug name, whereas the outpatient order will have the text Local Outpatient Drug displayed before the drug name.

A remote order will have the text Remote Drug displayed before the drug name.

The drug may be matched to NDF, but the VA Product, to which it is matched, may not have a GCNSEQNO assigned or the GCNSEQNO in our VA Product file does not match up with a valid GCNSEQNO in the FDB database. In these cases, a generic message will be displayed and the reasons will not be displayed to the user. An error message will not be displayed if the EXCLUDE DRG-DRG INTERACTION CK field for the VA Product is marked 'Yes'.

In some rare cases you may also see drug level errors for the Orderable Item with reasons such as No Dispense Drug found for a profile pending outpatient order or a profile pending unit dose order. The reason this error is displayed is because the software could not find an active dispense drug. A generic error message will be displayed to the CPRS user in these cases.

When an active dispense drug cannot be found when an order is entered through the outpatient, inpatient or Non-VA Med dialog in CPRS, a generic message will be displayed for the prospective drug. When no active IV Additive/Solution is found for a prospective drug entered through the IV Fluid dialog in CPRS, a generic message is displayed indicating that the Maximum Single Dose Order Check could not be performed. In all these cases, please jot down this information and report it to your Pharmacy ADPAC so that they can follow up or make corrections. For orders displaying a prospective drug error when entered through CPRS, the pharmacy user will be required to make edits to the drug and/or order to correct the problem when finishing the order through pharmacy backdoor options.

If it is a drug level error through Pharmacy options, the drug name is specified within the message. If it is for an Outpatient medication or an Inpatient unit dose order, the dispense drug name is displayed. If it is for an IV Additive within an IV order, the IV Additive's print name, strength, and unit are displayed. If it is for an IV Solution marked as a PreMix within an IV order, the IV Solution's print name and volume are displayed. If a dispense drug cannot be identified for an order, the software will display the orderable item name. Most error messages will provide a reason through pharmacy backdoor options.

For CPRS simple orders regardless of the type of order (i.e. outpatient, inpatient, IV), the error message will minimally display the Orderable Item Name and Dosage Form. For CPRS complex orders, the error message will display the Orderable Item Name, Dosage Form with the Dose specified in parenthesis.

## 4.3 Order Level Errors

The final type of error is an order level error that is specific to an order and order type check. You will only see order level errors when Dosing Order Checks are performed.

The table below displays various order level errors seen through Pharmacy and CPRS. This is not a complete list. There are many other reasons that are returned by the vendor software when the Maximum Single Dose Order Check cannot be performed in MOCHA v2.0.

| Error Level | Error Message | Reason |
|---|---|---|
| **MOCHA v2.0 – Backdoor Pharmacy Order Level Errors** | | |
| Order Level | Maximum Single Dose Check could not be performed for Drug: <DRUG NAME> | One or more required patient parameters unavailable: Age |
| Order Level | Maximum Single Dose Check could not be performed for Drug: <DRUG NAME> | Invalid or Undefined Dose Route |
| Order Level | Maximum Single Dose Check could not be performed for Drug: <DRUG NAME> | Invalid or Undefined Dose Type |
| Order Level | Maximum Single Dose Check could not be performed for Drug: <DRUG NAME> | Invalid or Undefined Dose Rate |
| Order Level | Maximum Single Dose Check could not be performed for Drug: <DRUG NAME> | Free Text Dosage could not be evaluated |
| Order Level | Maximum Single Dose Check could not be performed for Drug: <DRUG NAME> | FDB dosing information is not available for this drug. |
| Order Level | Maximum Single Dose Check could not be performed for Drug:<DRUG NAME> | No dosing information found in database. |
| Order Level | Maximum Single Dose Check could not be performed for Drug: <DRUG NAME> | Free Text Infusion Rate could not be evaluated. |
| Order Level | Maximum Single Dose Check could not be performed for Drug: <DRUG NAME> | An unexpected error has occurred |
| **MOCHA v2.0 CPRS Order Level Error** | | |
| Order Level | Maximum Single Dose Check could not be done for Drug: <Drug Name>, please complete a manual check for appropriate Dosing | N/A |

\* Reason not displayed to the user

If the age for a patient is not available, the first error will be displayed.

If the message 'Invalid or Undefined Dose Route' is displayed, the most likely reason is that your Local Medication Route used in the order is not matched to a Standard Medication Route. Remember the

Standard Medication Route is mapped to an FDB Dose Route and without it the Dosing Order Check cannot be performed.

If the message 'Free text dosage could not be evaluated' is displayed, it means that the order has a free text dosage that the software cannot interpret. Many business rules have been created to try to evaluate free text dosages. However, care was taken that the dosage be correctly interpreted. Remember a Local Possible Dosage can always be created with the Dose Unit and Numeric Dose defined to prevent this order level error message from being displayed.

If the reason is 'FDB dosing information is not available for this drug', it does not mean that FDB does not have any dosing records for the drug being ordered, it just means that the data that was sent in for the drug may not have matched up to a particular record. This message may be displayed because your Local Medication Route is not associated with a FDB dose route that is found in any of the drug's dosing records or the Dose Unit for your Local Possible Dosage does not match a FDB Dose Unit (mg vs. patch) for the drug.

## 4.3.1  Warning Messages

There may be some messages returned that are not considered error messages, but warn a user that a drug is not recommended for the patient because of the patient's age or dosing has not been established for a patient of a certain age. Two of these messages are listed in the table below.

| Level | Warning Message | Warning |
|---|---|---|
| **MOCHA v2.0 – Backdoor Pharmacy and CPRS** | | |
| Order Level | Maximum Single Dose Check Warning for <DRUG NAME>: | This drug is not recommended for a patient of this age. |
| Order Level | Maximum Single Dose Check Warning for <DRUG NAME>: | Dosing is not established for a patient of this age. |

# 5 Appendix A – Error Messages

| Error Level | Error Message | Reason |
|---|---|---|
| **MOCHA v2.0 – Backdoor Pharmacy System Level Errors** | | |
| System | No Enhanced Order Checks can be performed. | Vendor Database cannot be reached. |
| System | No Enhanced Order Checks can be performed. | The connection to the vendor database has been disabled. |
| System | No Enhanced Order Checks can be performed | Vendor database updates are being processed |
| System | No Enhanced Order Checks can be performed | An unexpected error has occurred |
| System | Maximum Single Dose Check could not be performed | Vendor Database cannot be reached. |
| System | Maximum Single Dose Check could not be performed | The connection to the vendor database has been disabled. |
| System | Maximum Single Dose Check could not be performed | Vendor database updates are being processed |
| System | Maximum Single Dose Order Check is not available, please complete a manual check for appropriate Dosing | Dosing Order Checks have been disabled* |
| **MOCHA v2.0 and subsequent versions – CPRS System Level Errors** | | |
| System | These checks could not be completed for this patient:<br>  Drug Interactions<br>  Duplicate Therapy<br>  Dosing | N/A |
| System | These checks could not be completed for this patient:<br>  Dosing | An unexpected error has occurred*<br>or<br>Dosing Checks have been disabled.* |
| **MOCHA v2.0 – Backdoor Pharmacy Drug Level Errors** | | |
| Drug (prospective) | Order Checks could not be done for Drug: <DRUG NAME>, please complete a manual check for Drug Interactions, Duplicate Therapy and appropriate Dosing | No GCNSEQNO exists for VA Product*<br>Bad GCNSEQNO assigned to VA Product* |
| Drug (profile) | Order Checks could not be done for <Remote> Drug: <DRUG NAME>, please complete a manual check for Drug Interactions and Duplicate Therapy<br><Remote> indicator only for remote orders | No GCNSEQNO exists for VA Product*<br>Bad GCNSEQNO assigned to VA Product* |
| Drug (profile – pending outpatient or pending unit dose order) | Enhanced Order Checks cannot be performed for Orderable Item: <OI Name> | No Dispense Drug found |

| Error Level | Error Message | Reason |
|---|---|---|
| Drug | Enhanced Order Checks cannot be performed for Local or Local Outpatient Drug: <DRUG NAME> | Drug not matched to NDF |
| Drug | Maximum Single Dose Check could not be performed for Drug: <DRUG NAME> (only if edit performed on IP order and only when dosage check performed) | Drug not matched to NDF |
| Drug | Maximum Single Dose Check could not be done for Drug: <DRUG NAME>, please complete a manual check for appropriate Dosing (only if edit performed on IP order and only when dosage check performed) | No GCNSEQNO exists for VA Product* Bad GCNSEQNO assigned to VA Product* |
| **MOCHA v2.0 and subsequent versions – CPRS Drug Level Errors** | | |
| Drug (prospective) | Order Checks could not be done for Drug: <Drug Name>, please complete a manual check for Drug Interactions, Duplicate Therapy and appropriate Dosing. | No GCNSEQNO exists for VA Product* Bad GCNSEQNO assigned to VA Product* Drug not matched to NDF* |
| Drug (profile) | Order Checks could not be done for <Remote> Drug: <Drug Name>, please complete a manual check for Drug Interactions and Duplicate Therapy. <Remote> indicator only for remote orders. | No GCNSEQNO exists for VA Product* Bad GCNSEQNO assigned to VA Product* Drug not matched to NDF* |
| Drug (prospective – outpatient and inpatient (UD)) | Order Checks could not be done for Drug: <Drug Name>, please complete a manual check for Drug Interactions, Duplicate Therapy and appropriate Dosing. | No active dispense drug could be found* |
| Drug (prospective – IV order) | Maximum Single Dose Check could not be done for Drug: <DRUG NAME>, please complete a manual check for appropriate Dosing | No active IV Additive/Solution marked for IV Fluid order entry could be found* |
| **MOCHA v2.0 – Backdoor Pharmacy Order Level Errors** | | |
| Order Level | Maximum Single Dose Check could not be performed for Drug: <DRUG NAME> | One or more required patient parameters unavailable: Age |
| Order Level | Maximum Single Dose Check could not be performed for Drug: <DRUG NAME> | Invalid or Undefined Dose Route |
| Order Level | Maximum Single Dose Check could not be performed for Drug: <DRUG NAME> | Invalid or Undefined Dose Type |
| Order Level | Maximum Single Dose Check could not be performed for Drug: <DRUG NAME> | Invalid or Undefined Dose Rate |
| Order Level | Maximum Single Dose Check could not be performed for Drug: <DRUG NAME> | Free Text Dosage could not be evaluated |
| Order Level | Maximum Single Dose Check could not be performed for Drug: <DRUG NAME> | FDB dosing information is not available for this drug. |

| Error Level | Error Message | Reason |
|---|---|---|
| Order Level | Maximum Single Dose Check could not be performed for Drug:<DRUG NAME> | No dosing information found in database. |
| Order Level | Maximum Single Dose Check could not be performed for Drug: <DRUG NAME> | Free Text Infusion Rate could not be evaluated |
| Order Level | Maximum Single Dose Check could not be performed for Drug: <DRUG NAME> | An unexpected error has occurred |
| **MOCHA v2.0 CPRS Order Level Error** | | |
| Order Level | Maximum Single Dose Check could not be done for Drug: <Drug Name>, please complete a manual check for appropriate Dosing | N/A |

\* Reason not displayed to user.


**Please Note:** <Drug Name> for error messages:

CPRS simple orders (OP & IP & IV) →OI Name + Dosage Form (DF)
CPRS complex orders (OP & IP & IV) → OI Name + DF (Dose=XX)
OP & UD pharmacy backdoor simple orders →Dispense Drug
OP pharmacy backdoor complex orders →Dispense Drug
IV order with IV Additives (pharmacy backdoor) →IV Additive print name + Strength + Unit
IV order with IV Solution (PreMix) pharmacy backdoor → IV Solution print name (1) + Volume


| Level | Warning Message | Warning |
|---|---|---|
| **MOCHA v2.0 – Backdoor Pharmacy and CPRS** | | |
| Order Level | Maximum Single Dose Check Warning for <DRUG NAME>: | This drug is not recommended for a patient of this age. |
| Order Level | Maximum Single Dose Check Warning for <DRUG NAME>: | Dosing is not established for a patient of this age. |

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# 6 Appendix B – Standard Medication Routes

As of March 5, 2013, the following are the Standard Medication Routes.

| Standard VA Medication Routes Name | FDB Route [*] |
|---|---|
| BUCCAL | BUCCAL |
| DENTAL | DENTAL |
| ENTERAL | ORAL |
| EPIDURAL | EPIDURAL |
| INFILTRATION | INFILTRATION |
| INHALATION | INHALATION |
| INTRA-AMNIOTIC | |
| INTRA-ARTERIAL | INTRA-ARTERIAL |
| INTRA-ARTICULAR | INTRA-ARTICULAR |
| INTRABURSAL | INTRABURSAL |
| INTRACARDIAC | INTRACARDIAC |
| INTRACATHETER | INTRA-CATHETER |
| INTRACAUDAL | CAUDAL BLOCK |
| INTRACAVERNOSAL | INTRA-CAVERNOSAL |
| INTRACAVITARY | INTRACAVITY |
| INTRADERMAL | INTRADERMAL |
| INTRADETRUSOR | INTRADETRUSOR |
| INTRADUCTAL | INTRADUCTAL |
| INTRALESIONAL | INTRALESIONAL |
| INTRAMUSCULAR | INTRAMUSCULAR |
| INTRAOCULAR | INTRAOCULAR |
| INTRAOSSEOUS | INTRAOSSEOUS |
| INTRAPERITONEAL | INTRAPERITONEAL |
| INTRAPLEURAL | INTRAPLEURAL |
| INTRASPINAL | INTRASPINAL |
| INTRASYNOVIAL | INTRASYNOVIAL |
| INTRATHECAL | INTRATHECAL |
| INTRATRACHEAL | INTRATRACHEAL |
| INTRATYMPANIC | |
| INTRAUTERINE | INTRAUTERINE |
| INTRAVENOUS | INTRAVENOUS |
| INTRAVESICAL | INTRAVESICAL |
| INTRAVITREAL | INTRAVITREAL |
| IONTOPHORESIS | NOT APPLICABLE |
| IRRIGATION | IRRIGATION |
| NASAL | INTRANASAL |
| NEBULIZATION | NEBULIZATION |
| NOT APPLICABLE | NOT APPLICABLE |

| Standard VA Medication Routes Name | FDB Route [*] |
|---|---|
| OPHTHALMIC | OPHTHALMIC |
| ORAL | ORAL |
| OTIC | OTIC |
| PERIBULBAR | PERIBULBAR |
| RECTAL | RECTAL |
| RETROBULBAR | RETROBULBAR |
| SUBCONJUNCTIVAL | SUBCONJUNCTIVAL |
| SUBCUTANEOUS | SUBCUTANEOUS |
| SUBLINGUAL | SUBLINGUAL |
| SUBTENONS | SUB-TENON |
| TOPICAL | TOPICAL |
| TRANSDERMAL | TRANSDERMAL |
| TRANSLINGUAL | TRANSLINGUAL |
| URETHRAL | INTRA-URETHRAL |
| VAGINAL | VAGINAL |

# 7 Appendix C – DOSE UNITS File with FDB Mapping

As of January 14, 2013, the following are the DOSE UNITS file with FDB mapping.

| DOSE UNIT NAME | SYNONYM | MAP TO FDB DOSE UNIT | DOSE FORM INDICATOR |
|---|---|---|---|
| APPLICATION(S) | APPLICATIONS | APPLICATION(S) | Y |
| | APPLICATION | | |
| APPLICATORFUL(S) | APPFUL | APPLICATORFUL/S | Y |
| | APPLICATORFUL/S | | |
| | APPLICATOR | | |
| | APPLICATORFUL | | |
| | APPLICATORFULS | | |
| | APPLICATORS | | |
| anti-Xa unit | aXa IU | AXA IU | N |
| | aXa unit | | |
| | AXA IU | | |
| | antiXA unit | | |
| | ANTI-XA UNIT | | |
| | AXA UNIT | | |
| | ANTIXA UNIT | | |
| BAR(S) | BAR | BARS | Y |
| | BARS | | |
| CAP/TAB | TAB-CAPS | TAB-CAPS | Y |
| | TAB-CAP | | |
| | TAB/CAP | | |
| CAPLET(S) | CAPLET | CAPLETS | Y |
| | CAPLETS | | |
| CAPSULE(S) | CAP | CAPSULE(S) | Y |
| | CAPS | | |
| | CAPSULE | | |
| | CAPSULES | | |
| CENTIMETER(S) | CENTIMETER | CENTIMETERS | Y |
| | CM | | |
| | CMS | | |
| | CENTIMETERS | | |
| DROP(S) | DROP | DROP(S) | Y |
| | DROPS | | |
| | DRP | | |
| | DRPS | | |
| | GTT | | |
| | GTTS | | |
| EACH | EA | EACH | Y |
| | EACHES | | |
| ELISA UNIT(S) | EL UNIT | ELISA UNIT | N |
| | ELISA UNITS | | |

| DOSE UNIT NAME | SYNONYM | MAP TO FDB DOSE UNIT | DOSE FORM INDICATOR |
|---|---|---|---|
| | ELISA UNIT | | |
| | EL.U. | | |
| | ELISA UNT | | |
| | ELU | | |
| ENEMA(S) | ENEMA | ENEMAS | Y |
| | ENEMAS | | |
| FILM(S) | FILM | FILMS | Y |
| | FILMS | | |
| GRAM(S) | G | GRAMS | N |
| | GM | | |
| | GMS | | |
| | GRAM | | |
| | GRAMS | | |
| IMPLANT(S) | IMPLANT | IMPLANTS | Y |
| | IMPLANTS | | |
| INCH(ES) | IN | INCH(ES) | Y |
| | INCH | | |
| | INCHES | | |
| INHALATION(S) | INH | INHALATIONS | Y |
| | INHALATION | | |
| | INHL | | |
| | INHALATIONS | | |
| INSERT(S) | INSERT | INSERTS | Y |
| | INSERTS | | |
| LITER(S) | L | LITERS | Y |
| | LITER | | |
| | LITERS | | |
| | LITRE(S) | | |
| LOZENGE(S) | LOZENGE | LOZENGES | Y |
| | LOZENGES | | |
| MG-PE | MG PE | MG PE | N |
| MICROGRAM(S) | MCG | MICROGRAM(S) | N |
| | MCGS | | |
| | MICROGRAM | | |
| | MICROGRAMS | | |
| MILLIGRAM(S) | MGS | MILLIGRAMS | N |
| | MILLIGRAM | | |
| | MILLIGRAMS | | |
| | MG | | |
| MICRO UNIT(S) | MICRO UNIT | MICRO UNITS | N |
| | MICRO UNITS | | |
| | MICROUNIT | | |
| | MICROUNITS | | |
| MILLIEQUIVALENT(S) | MILLIEQUIVALENT | MILLIEQUIVALENTS | N |

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| DOSE UNIT NAME | SYNONYM | MAP TO FDB DOSE UNIT | DOSE FORM INDICATOR |
|---|---|---|---|
| | MILLIEQUIVALENTS | | |
| | MEQ | | |
| | MEQS | | |
| MILLIONUNIT(S) | MILI U | MILLIONUNIT(S) | N |
| | MILI UNIT | | |
| | MILI UNITS | | |
| | MILU | | |
| | MIU | | |
| | MU | | |
| | MILLION UNT | | |
| | MILLION UNIT | | |
| | MILLION UNITS | | |
| MILLILITER(S) | MILLILITER | MILLILITERS | Y |
| | MILLILITERS | | |
| | MILILITERS | | |
| | MILILITER | | |
| | ML | | |
| | MLS | | |
| | CC | | |
| | CCS | | |
| MILLIMOLE(S) | MILLIMOL | MILLIMOLES | N |
| | MILLIMOLE | | |
| | MILLIMOLES | | |
| | MILLIMOLS | | |
| | MM | | |
| | MMOL | | |
| | MMOLE | | |
| | MMOLES | | |
| | MMOLS | | |
| NANOGRAM(S) | NANOGRAM | NANOGRAMS | N |
| | NANOGRAMS | | |
| | NG | | |
| | NGS | | |
| OVULE(S) | OVULE | OVULE(S) | Y |
| | OVULES | | |
| PACKAGE(S) | PACKAGE | PACKAGES | Y |
| | PACKAGES | | |
| | PKGS | | |
| | PKG | | |
| PACKET(S) | PACKET | PACKETS | Y |
| | PACKETS | | |
| PAD(S) | PAD | PADS | Y |
| | PADS | | |
| PATCH(ES) | PATCH | PATCHES | Y |

| DOSE UNIT NAME | SYNONYM | MAP TO FDB DOSE UNIT | DOSE FORM INDICATOR |
|---|---|---|---|
| | PATCHES | | |
| PELLET(S) | PELLET | PELLETS | Y |
| | PELLETS | | |
| PIECE(S) | PIECE | PIECE(S) | Y |
| | PIECE OF GUM | | |
| | PIECES | | |
| | PIECES OF GUM | | |
| PUFF(S) | PUFF | PUFF(S) | Y |
| | PUFFS | | |
| SACHET(S) | SACHET | SACHETS | Y |
| | SACHETS | | |
| SCOOPFUL(S) | SCOOP | SCOOPFULS | Y |
| | SCOOPFUL | | |
| | SCOOPFULS | | |
| | SCOOPS | | |
| | SCOOPSFUL | | |
| | SCP | | |
| SPRAY(S) | SPR | SPRAY(S) | Y |
| | SPRAY | | |
| | SPRAYS | | |
| SQUIRT(S) | SQUIRT | SQUIRTS | Y |
| | SQUIRTS | | |
| STRIP(S) | STRIP | STRIP(S) | Y |
| | STRIPS | | |
| SUPPOSITOR(IES) | SUPP | SUPPOSITORY/IES | Y |
| | SUPPOSITORIES | | |
| | SUPPOSITORY | | |
| TABLESPOONFUL(S) | TABLESPOONFUL | TABLESPOONFULS | Y |
| | TABLESPOONFULS | | |
| TABLET(S) | TABLET | TABLET(S) | Y |
| | TABLETS | | |
| | TABS | | |
| | TAB | | |
| TEASPOONFUL(S) | TEASPOONFUL | TEASPOONFULS | Y |
| | TEASPOONFULS | | |
| TROCHE(S) | TROCHE | TROCHES | Y |
| | TROCHES | | |
| THOUSAND UNITS | THOUU | TU | N |
| | TU | | |
| UNIT(S) | U | UNIT(S) | N |
| | UNIT | | |
| | UNITS | | |
| | UNT | | |
| | UNTS | | |

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| DOSE UNIT NAME | SYNONYM | MAP TO FDB DOSE UNIT | DOSE FORM INDICATOR |
|---|---|---|---|
|  | IU |  |  |
| VAGINAL INSERT | VAGINAL INSERTS | VAGINAL INSERT | Y |
| VAGINAL RING | VAG RING | VAGINAL RING | Y |
|  | VAG RINGS |  |  |
|  | VAGINAL RINGS |  |  |
| VIAL(S) | VIAL | VIALS | Y |
|  | VIALS |  |  |
|  | VIL |  |  |
| WAFER(S) | WAFER | WAFERS | Y |
|  | WAFERS |  |  |

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# Glossary

| Term | Definition |
|---|---|
| **Additive** | A drug that is added to an IV Solution for the purpose of parental administration. An additive can be an electrolyte, a vitamin or other nutrient, or an antibiotic. |
| **Administration Schedule File** | The ADMINISTRATION SCHEDULE file (#51.1) contains administration schedule names and standard dosage administration times. The name is a common abbreviation for an administration schedule (e.g., QID, Q4H, and PRN). The administration time is entered in military time. |
| **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. |
| **BSA** | Acronym for Body Surface Area |
| **Body Surface Area** | A measured or calculated surface of a human body. |
| **Chemotherapy** | Chemotherapy is the treatment or prevention of cancer with chemical agents. The chemotherapy IV type administration can be a syringe, admixture or a piggyback. Once the subtype (syringe piggyback etc.) is selected, the order entry follows the same procedure as the type that corresponds to the selected subtype (e.g., piggyback type of chemotherapy follows the same entry procedure as regular piggyback |
| **Chemotherapy Admixture** | The Chemotherapy "Admixture" IV type follows the same order entry procedure as the regular admixture IV type. This type is in use when the level of toxicity of the chemotherapy drug is high and is to be administered continuously over an extended period of time (e.g., seven days). |
| **Chemotherapy Piggyback** | The Chemotherapy "Piggyback" IV type follows the same order entry procedure as the regular piggyback IV type. This type of chemotherapy is in use when the chemotherapy drug does not have time constraints on how fast it must be infused into the patient. These types are normally administered over a 30 - 60 minute interval. |
| **Chemotherapy Syringe** | The Chemotherapy "Syringe" IV type follows the same order entry procedure as the regular syringe IV type. Its administration may be continuous or intermittent. The pharmacist selects this type when the level of toxicity of the chemotherapy drug is low and needs to be infused directly into the patient within a short time interval (usually 1-2 minutes). |
| **Complex Order (Inpatient)** | 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.<br><br>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. For example:<br><br>• If one child order within a Complex Order is made active, all child orders in the Complex Order must be made active.<br>• If one child order within a Complex Order is discontinued, all child orders in the Complex Order must be discontinued.<br>• If one child order within a Complex Order is renewed, all child orders in the Complex Order must be renewed. |

| Term | Definition |
|------|-----------|
| Complex Order (Outpatient) | An order that is created from CPRS using the Complex Order dialog and consists of one or more dosing sequences. |
| Continuous IV order | Inpatient Medications IV order not having an administration schedule. This includes the following IV types: Hyperal, Admixture, 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 | A VistA computer software package called Computerized Patient Record System. CPRS is an application in VistA that allows the user to enter all necessary orders for a patient in different packages from a single application. All pending orders that appear in the Unit Dose and IV modules are initially entered through the CPRS package. |
| Daily Dose Range | A recommended dosage range for a patient based on age, dose type and dose route. |
| Daily Dose Range Order Check | Dose Range Check provides healthcare professionals with general dosing and route-specific dosing range information for patients. Dosing is provided in Dose Units (for example: mg/day, mg/kg/day) as well as dosage form units (for example: each, milliliter, inhalations) for various dose types. With a specific patient age, the user can monitor the appropriateness of drug dosing. That is, users can verify that the SIG they want to use falls within the usual dosage range for a selected dose type, route and age group. The Dose Range Check information is not intended to recommend a specific dose; however, it can recommend a dosage range. |
| DEA Special Handling | The Drug Enforcement Agency special Handling code used for drugs to designate if they are over-the counter, narcotics, bulk compounds, supply items, etc. |
| DIF | Acronym for Drug Information Framework |
| Dispense Drug | The Dispense Drug name has the strength attached to it (e.g., Acetaminophen 325 mg). The name alone without a strength attached is the Orderable Item name. |
| Dosage Form | Refers to the physical presentation of a drug. Dosage Form includes aerosol, capsule, cream, and so on. |
| Dosage Form File | The DOSAGE FORM file (#50.606) contains all dosage forms and associated data that are used by Pharmacy packages and CPRS. The dosage form is used in SIG construction, default values and in the determination of the type of each dosage created for each application. |
| Dosage Ordered | Provides the single dose amount and Dose Unit for a drug within a medication order. |
| Dose Rate Unit | The unit of measure for rate of the dose (HOUR, HR, H, MINUTE, MIN, DAY). |
| Dose Route | A term which represents the method of administering the drug. |
| Dose Type | A term which identifies the purpose for which the dose is given (for example, loading dose, maintenance dose). |
| Dose Unit | A unit of measure commonly reported in the medical literature and reference sources, such as 'MG', 'TABLET. |
| Dose Units File | The DOSE UNITS file (#51.24) was created to accomplish the mapping to First DataBank (FDB). All entries in this file have been mapped to an FDB Dose Unit. Although this file has not yet been standardized by Standards and Terminology Services (SRS), no local editing will be allowed. When |

| Term | Definition |
|------|------------|
| | Populating the Dose Unit field for a Local Possible Dosage, selection will be from this new file. |
| **Dosing Order Checks** | General term that refers to the Maximum Single Dose Order Check and Daily Dose Range Order Check. |
| **Drug File** | The DRUG file (#50) holds the information related to each drug that can be used to fill a prescription or medication order. It is pointed to from several other files and should be handled carefully, usually only by special individuals in the Pharmacy Service. Entries are not typically deleted, but rather made inactive by entering an inactive date. |
| **Drug Level Error** | An error that prevents the mapping of a drug from the VistA database to the FDB DIF database. The GCNSEQNO is used to map between the VA PRODUCT file (#50.68) to a drug in the FDB DIF database. Example: A dispense drug in the local DRUG file (#50) that is being ordered is not matched to a VA Product in the VA PRODUCT file (#50.68). Therefore a GCNSEQNO cannot be obtained. |
| **Dubois formula** | Calculation to measure the Body Surface Area in m$^2$. It is<br>BSA (m²) = 0.20247 x Height(m)$^{0.725}$ x Weight(kg)$^{0.425}$ |
| **Duration** | A specific length of time. For Dosing Order Checks, the duration is set to 1 day. |
| **Duration Rate Unit** | The unit of measure for rate of the length of therapy (HOUR, HR, H, MINUTE, MIN, DAY) |
| **Enhanced Order Checks** | Drug – Drug Interaction, Duplicate Therapy, and Dosing order checks that are executed utilizing FDB's MedKnowledge Framework APIs and database. |
| **FDB** | Acronym for First Databank. |
| **Free Text Dosage** | Any combination of text, numbers, or special characters entered in no particular format in the DOSAGE ORDERED field for a medication order. |
| **Free Text Infusion Rate** | Any combination of text, numbers, or special characters entered in no particular format in the INFUSION RATE field for a continuous IV fluid order. |
| **Frequency** | The number of administrations per day of a drug. |
| **Finish** | Term used for completing orders from Order Entry/Results Reporting V. 3.0. |
| **GCNSEQNO** | A numeric value that represents a generic formulation. It is specific to the generic ingredient(s), route of administration, dosage form, and strength. The Formulation ID (GCN), in some cases, may have the same value for different dosage forms, strengths, or non-active ingredient list differences and therefore may be linked to more than one GCNSENO. But a GCNSEQNO is unique in its association with each combination of factors. |
| **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 Additives File** | The IV ADDITIVES file (#52.6) contains drugs that are used as additives in the IV room. Data entered includes drug generic name, print name, drug information, synonym(s), dispensing units, cost per unit, days for IV order, usual IV schedule, administration times, electrolytes, and quick code information. |
| **IV Solutions File** | The IV SOLUTIONS file (#52.7) contains drugs that are used as primary solutions in the IV room. The solution must already exist in the Drug file (#50) to be selected. Data in this file includes: drug generic name, print name, status, drug information, synonym(s), volume, and electrolytes. |

| Term | Definition |
|------|-----------|
| **Local Possible Dosages** | Local Possible Dosages are free text dosages that are associated with drugs that do not meet all of the criteria for Possible Dosages. |
| **Maximum Single Dose** | Maximum amount to be administered in a single dose |
| **Maximum Single Dose Order Check** | A safeguard incorporated in software when a new medication order is entered or acted upon to ensure that the single dose ordered for a patient does not exceed a recommended upper limit for a drug. |
| **Medication Routes File** | The MEDICATION ROUTES file (#51.2) contains medication route names. The user can enter an abbreviation for each route to be used at their site. The abbreviation will most likely be the Latin abbreviation for the term. |
| **MOCHA** | Acronym for Medication Order Check Healthcare Application. |
| **NDF** | Acronym for National Drug File |
| **National Drug File** | The National Drug File provides standardization of the local drug files in all VA medical facilities. Standardization includes the adoption of new drug nomenclature and drug classification and links the local drug file entries to data in the National Drug File. For drugs approved by the Food and Drug Administration (FDA), VA medical facilities have access to information concerning dosage form, strength and unit; package size and type; manufacturer's trade name; and National Drug Code (NDC). The NDF software lays the foundation for sharing prescription information among medical facilities. |
| **Non-VA Meds** | Term that encompasses any Over-the-Counter (OTC) medications, Herbal supplements, Veterans Health Administration (VHA) prescribed medications but purchased by the patient at an outside pharmacy, and medications prescribed by providers outside VHA. All Non-VA Meds should be documented in patients' medical records. |
| **Numeric Dose** | A single dose amount entered as a numeric value. The Numeric Dose with the Dose Unit make up the dosage ordered for a medication order. |
| **Order Level Error** | An error that is returned from the FDB DIF API or order information cannot be sent to the interface because of missing data. Example: Information is passed from VistA to FDB database, but the Dosing Order Check cannot be performed, because no FDB dosing information is available for the drug. |
| **Orderable Item** | An Orderable Item name has no strength attached to it (e.g., Acetaminophen). The name with a strength attached to it is the Dispense drug name (e.g., Acetaminophen 325mg). |
| **Orderable Item File** | The ORDERABLE ITEM file (#101.43) is a CPRS file that provides the Orderable Items for selection within all Pharmacy packages. Pharmacy Orderable Items are a subset of this file. |
| **Order Check** | Order checks (Drug-Allergy/ADR interactions, Drug-Drug, Duplicate Drug, Duplicate Therapy, and Dosing) are performed when a new medication order is placed through either the CPRS or Inpatient Medications applications. They are also performed when medication orders are renewed, when Orderable Items are edited, or during the finishing process in Inpatient Medications. This functionality will ensure the user is alerted to possible adverse drug reactions and will reduce the possibility of a medication error. |
| **Order Sets** | An Order Set is a set of N pre written orders. (N indicates the number of orders in an Order Set is variable.) Order Sets are used to expedite order entry for drugs that are dispensed to all patients in certain medical practices and procedures. |

| Term | Definition |
|------|------------|
| Pending Order | A pending order is one that has been entered by a provider through CPRS without Pharmacy finishing the order. Once Pharmacy has finished the order, it will become active. |
| Pharmacist Intervention | A recommendation provided by a pharmacist through the system's Intervention process acknowledging the existence of a critical drug-drug interaction, allergy/ADR interaction, and/or dosing order checks and providing justification for its existence. There are two ways an intervention can be created, either via the Intervention Menu, or in response to Order Checks. |
| Pharmacy Orderable Item File | The PHARMACY ORDERABLE ITEM file (#50.7) contains the Order Entry name for items that can be ordered in the Inpatient Medications and Outpatient Pharmacy packages. |
| 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. |
| Possible Dosages | Dosages that have a numeric dosage and numeric Dispense Units Per Dose appropriate for administration. For a drug to have possible dosages, it must be a single ingredient product that is matched to National Drug File. The National Drug File entry must have a numeric strength and the dosage form/unit combination must be such that a numeric strength combined with the unit can be an appropriate dosage selection. |
| PreMix | An IV Solution that is manufactured or compounded that contains additives. |
| Prescription | This term is now referred to throughout the software as medication orders. |
| Print Name | Drug generic name as it is to appear on pertinent IV output, such as labels and reports. Volume or Strength is not part of the print name. |
| Prospective Drug | Drug being ordered or entered. |
| Route | Refers to the route of administration, which is the site or method by which a drug is administered. |
| 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), and OC - on call (one time with no specific time to be given, e.g., 1/2 hour before surgery). |
| Sig | The instructions printed on the label. |
| Single Dose Amount | The numeric value of the dosage ordered for a medication order. For an IV order, this value can be represented by the IV Additive strength, numeric value of an IV Solution (PreMix) volume or IV order infusion rate or derived using a formula. |
| Standard Medication Route File | The STANDARD MEDICATION ROUTES file (#51.23) was created to map Local Medication Routes in VistA to an FDB Route in order to perform Dosing Order Checks.. This file has been standardized by Standards and Terminology Service (STS) and is mapped to an FDB Route. It cannot be edited locally. |

| Term | Definition |
|---|---|
| **Start Date/Time** | The date and time an order is to begin. |
| **Stop Date/Time** | The date and time an order is to expire. |
| **Strength** | The potency of a drug usually expressed in a metric quantity consisting of a value and unit, such as 500MG. Strength is usually a whole number. |
| **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. |
| **System Level Error** | If this error occurs, no order checks can be performed. Example: Communication link to FDB database is down. |
| **VA Drug Class Code** | A drug classification system used by VA that separates drugs into different categories based upon their characteristics. Some cost reports can be run for VA Drug Class Codes. |
| **VA Product File** | The VA PRODUCT file (#50.68). |
| **VistA** | Acronym for Veterans Health Information Systems and Technology Architecture, the new name for Decentralized Hospital Computer Program (DHCP). |

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