Interaction Model Diagrams

New Medications: When the user clicks the Add button appearing at the bottom of the working list, the Add New Medication wizard is displayed. The user first searches for and selects a medication, the system displays FDB alerts (if there are any) which the user *must* override in order to continue, and the user modifies the medication's prompts. Once the user is done, the new medication appears in the working list.
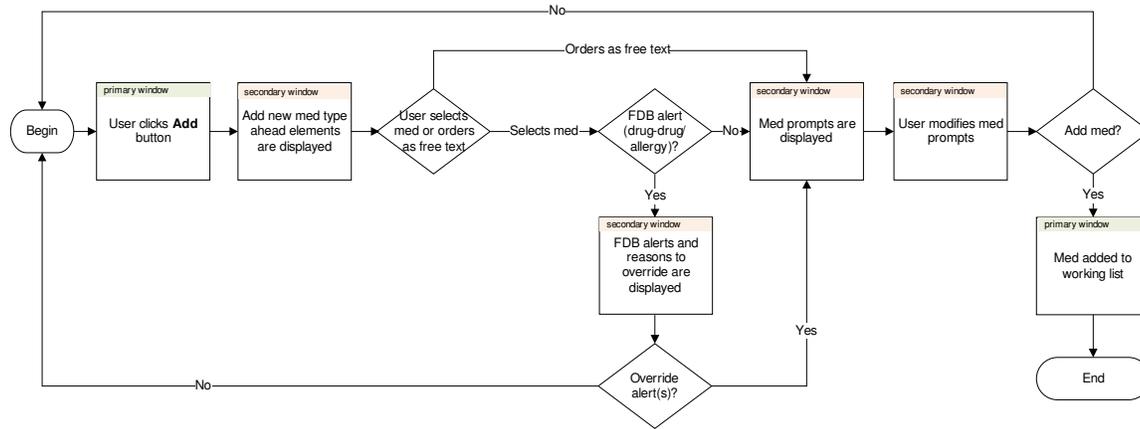

Figure 1 - New medication interaction model diagram

Home Medications: When the user clicks the Ord or Mod button appearing next to a home medication in the medication list, the Order for Hospital Use wizard is displayed. The system returns a list of orderables matching the home med selected. The user selects the desired search result or orders the home med as is. The system displays FDB alerts (if there are any) which the user *must* override in order to continue, and the user modifies the medication's prompts. Once the user is done, the medication appears in the working list.

Note: If the user initially clicks the Ord button, but makes changes to the medication's prompts, the Mod button will appear clicked in the medication list. This is likely the majority of the time the user clicks the Ord button for home medications.
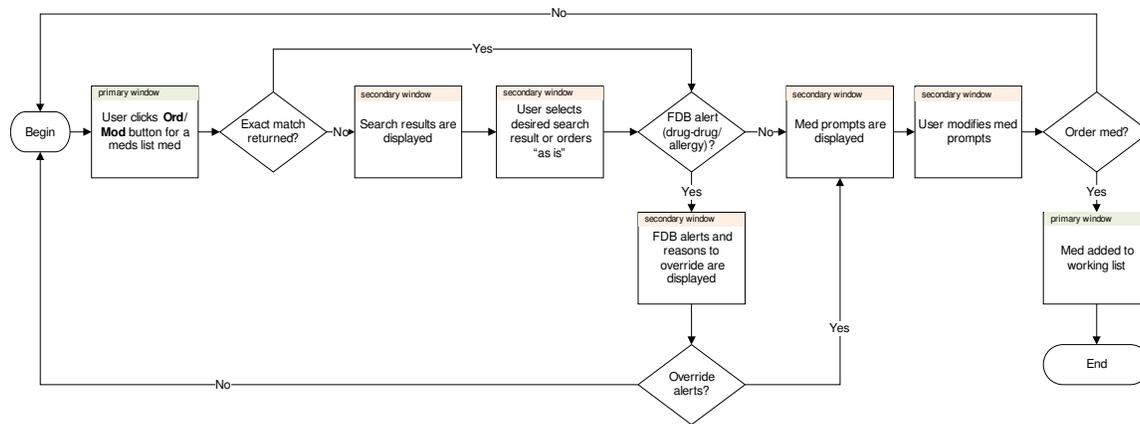

Figure 2 - Home medications interaction model diagram

Common Design Elements
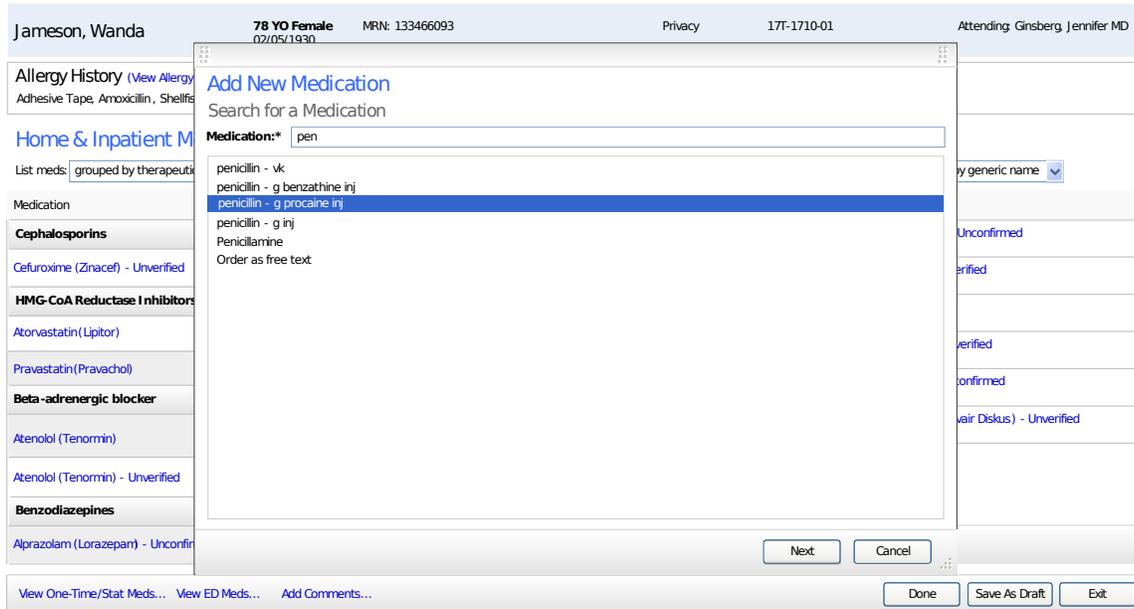
Context within Magnolia

Figure 3 - Context within Magnolia

The Magnolia + HOCS wizard is presented as a movable and resizable lightbox that appears on top of the primary medication reconciliation window. Unlike the non-movable and non-resizable lightboxes that appear in Magnolia phase 1, this lightbox does not feature a semi-transparent overlay. These features are included to facilitate readability of items within the primary window, in the event that the user needs to refer back to, for example, the medication list.

Wizard Features

Each screen of the wizard has a number of common features documented below. Exceptions and adjustments to these features are noted in the Add New, Home, and Inpatient Medication sections.
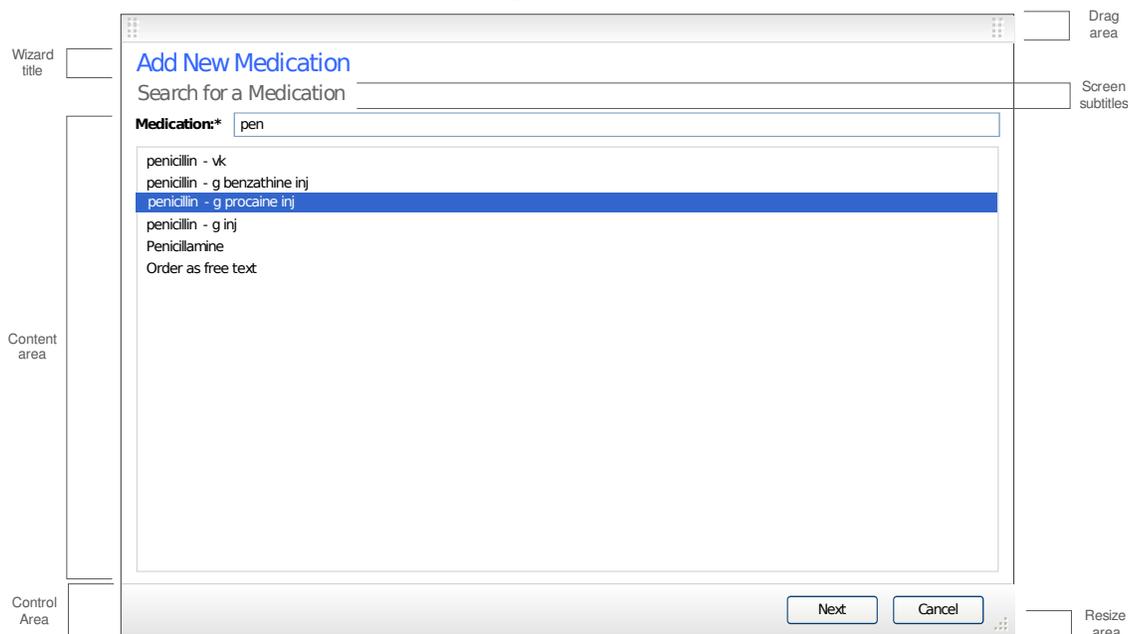
Figure 4 - Wizard features

Table 1 - Wizard features detail design

Label	Widget	Description	Req.	Tab #	Key	Tooltip
	Wizard lightbox	**Default size** is 700x490 pixels. **Default position** is the middle of the screen. This lightbox is both movable and resizable (refer to drag area and resize area below). **Minimum size** is 350x385 pixels. **Maximum size** is 850x585 pixels. The **current** dimensions and position of this lightbox are retained within a single med rec session, but are reset to default size and position once the session ends.				
	Drag area	Default size: 700x22 pixels. The user can click anywhere within this area to drag and move the lightbox.				
Variable	Wizard title	Title varies according to the action taken in the primary window (e.g. clicking the add button, acting on a home med, acting on an inpatient med).				
Variable	Screen subtitle(s)	Subtitles and content type varies according to the action taken in the primary window and the current wizard step.				
	Content area	This area contains controls that are specific to the current wizard step.				
	Control area	This area contains buttons to navigate through the wizard and a resize area (refer to resize area below). Default size of this container is 700x45 pixels.				
	Resize area	When the user clicks and drags in this area, the window is resized.				

The Medication Sentence

The medication sentence appearing on the medication prompts wizard screen facilitates visibility of medication prompt status (current value contained within form field, unfulfilled required prompts) as well as navigation to prompts. Each prompt, whether it contains a current value or not, is hyperlinked to the appropriate form element(s). When a prompt hyperlink is clicked, the appropriate prompt appearing in the content area below is given focus.

Figure 5 - Medication sentence shown in context

When a medication prompt is given focus, the area surrounding the prompt is given a blue background color to provide an additional queue to the user where they are in the form.

Figure 6 - The frequency prompt has focus

The medication sentence contains 2 type of prompts:
1. Those that contain values (e.g. the form field for the prompt contains information).
2. Required prompts that don't yet contain information. These use the required field standard of bolding the field label, and following it with an asterisk.

Figure 7 - Medication sentence

Penicillin - g procaine inj 1.2 MMU IM **<Frequency>*** Until Discontinued This is only a test

Figure 8 - Medication sentence with an unfulfilled required prompt (frequency)

Medication Prompts

Medication orderables can be configured to include any number of prompts. To support this level of configurability, this specification defines a set of form element types and example designs but does not define the order in which prompts are presented or what prompts appear for a given orderable.

Form Element Types

Form Element Type	Description	Example Medication Prompts
Combo-box	User can type in a value but also has a list of recommended and allowed values from which to choose. User *may* be able to type a value not included in the list of allowed values. Allowed values are not shown initially, but an expand widget is shown in the combo-box allowing the user to view all recommends and allowed values.	dose, route, freq, priority, indication, primary instructions, admin. instructions, subst. instructions, demand dose, diluent, alternate with, rate, basal rate, demand interval, infusion instructions, additives, ingredient, other additives, keep at bedside, lockout amount, lockout interval, PCA loading dose, non-formulary reason
Text	User can type in a value.	duration, quantity
Checkbox	User can check or uncheck to set the state of a particular prompt.	duration
Text area	User can type in a lengthy value (around 255 characters)	comments
Label	A read-only value, no user interaction possible.	demand dose, rate, basal rate demand interval, additives, ingredient, other additives, keep at bedside, lockout amount, lockout interval, PCA loading dose
Drop-down menu	User can select from a list of alternatives.	duration

Form Element Examples

Combo-boxes are initially populated with only recommended values. Recommended values are shown in bold font weight. The last entry in the combo-box is an expand element as shown below. When the user selects this item, the combo-box is populated with allowed values shown in normal font weight.

Frequency:* Daily ☐ PRN
Q6H
Q4H
Q8H

Figure 9 - Frequency combo-box, initial state

Figure 10 - Frequency combo-box, allowed values shown

The allowed values are shown only as long as the combo-box is open. Once the combo-box has been closed, it returns to its initial state, showing only recommended values.

Text fields simply allow the user to type a value. Depending on the medication prompt, the text field may or may not support validation. Sometimes, as in the case of duration, **checkboxes** can be presented with text fields. In this case if "Until Discontinued" is checked, the text field and drop-down menu elements should be disabled.

Figure 11 - Text field, checkbox, and drop-down menu example (duration)

Figure 12 - Form elements disabled when checkbox is checked

Text areas allow for entry of lengthy values.

Figure 13 - A text area

Form element **labels** come in two varieties: Concise labels consisting of one or a few words, and longer labels usually in the form of a question. In the latter case, the label should be presented on a line by itself.

Form Layout

To ensure a consistent layout, form elements should be laid out in two columns as shown below. Long prompts should span both columns. The width of the label column is driven by the length of its longest member, Label 3 in the example below:

Label 1:	<form elements>
Label 2:	<form elements>
Label with more words 3:	<form elements>
Really long label 4 posed in the form of a question. What is the frequency of this medication?	
	<form elements>

Label 5:	<form elements>

Figure 14 - Form layout example

An appropriate amount of vertical white space should exist between medication prompts. In this design, 12 pixels should provide sufficient white space for readability.

Tab Order

The user should be able to tab among form elements. The standard order is top to bottom, left to right as shown in the example below. Form element labels are not part of the tab order.

Figure 15 - Tab order example

Default Values

If a default value for the medication prompt exists, it should be populated in the form with the medication prompts screen is displayed.

Medication Prompt Validation

Should the user enter a value in a medication prompt that is not allowed, a message is shown informing the user that a valid value must be entered. This message is shown directly above the form element for the prompt so the area containing the prompt and the validation message should expand and push all other prompts down. The focus background color should contain the validation message. When the field loses focus, invalid information is removed from the field, and an error message is displayed in this format: "Invalid <field label>: <value entered>". Each time the field loses focus, the validity check is performed. Once the field contains a valid value, the error message is removed and the user can click the Finish button provided that all other required fields contain valid information.

Figure 16 - Invalid frequency message

Handling Medications that Trigger Decision Support

When a medication is returned in search results that has associated decision support, the item is shown as disabled. If the user moves their cursor over the item, a popup panel is shown.

Figure 17 - Handling medications that trigger decision support