

Therapeutic Substitutions: A review of both current state and recommendations from Cerner

2/5/2019

Situation: Pharmacists cannot easily identify therapeutic substitutions (T-sub) that are not mapped exactly.

Background: Therapeutic substitution functionality in Cerner works well when the T-sub is matched in the build. When there is not an exact match, the system will suggest possible T-sub options and the wording indicates the provider should choose one of these suggestions. We have examples when the system suggested T-sub was not appropriate. The pharmacist cannot tell whether the T-sub was an exact match in our build or one of these system generated possible T-sub matches.

Assessment: T-sub functionality is essential for pharmacy efficiency but the inability to identify the non-exact matches creates a patient safety concern.

Recommendation:

Option 1: Use the function that allows T-sub to not be required, but only display the t-sub option window when there is no exact match. Currently the window presents every time when the t-sub is not required, even when there is an exact match built. This would allow the user to decline the substitutions and pass the complete original order to pharmacy for evaluation. This has less risk and is safer than the pharmacy to dose option.

Option 2: There should be an indicator to pharmacy when a T-sub is not an exact match and the wording on the system suggested possible match should be changed in Powerchart. Our suggestions would be to highlight the (No Exact Match) statement and provide the user more guidance on what to do.

Concerns with Current State - Examples

Below are examples of order issues that occurred at Concord Hospital within the last several months due to the current configuration of the therapeutic substitution functionality.

Original Order			What the provider ordered due to lack of clarity in window		
Patient A:					
Lisinopril-HCTZ 20-12.5	2 tabs	every morning	Lisinopril	20 mg	at bedtime daily
			HCTZ	12.5 mg	at bedtime daily
Patient B:					
Bupropion SR (12hr)	200 mg	1 tab every morning	Bupropion ER (24hr)	450 mg	1 tab daily
Patient C:					
Metoprolol-HCTZ 100-25	1 tab	at bedtime daily	Hydrochlorothiazide	25 mg	daily
			Metoprolol tartrate	100 mg	daily
Metoprolol succinate 100 mg	1 tab	daily	Metoprolol succinate	100 mg	daily

Concerns with Current State - Powerchart

In our current configuration, the provider is forced to pick a therapeutic substitution when no exact match is found, even if the other options are not appropriate. The font and language in the window also do not convey the gravity that the provider is ordering a dose that does not match the patient's home dose.

Therapeutic Substitution - REGRESSIONC, INA

REGRESSIONC, INA DOB:09/09/70 Age:48 years Sex:Male MRN:004001... Complex Care Plan (CCP):Yes Interp Svcs: No P...
Dose Wt:160.000 kg (01/09/2...Attending:Clark, Paul R MD Adv Dir:No Code Status:
MyPatientConnect: No Allergies: No Known Allergies PCP:Antinerella, Nicole DO **Loc:5S: 51...** Inpatient FIN: 4000200012 [Admit Dt: 01/07/...

Selected Order:
candesartan: 2 mg, Oral, Tab, 2 times/day

Choose Therapeutic Substitution (No Exact Match):

losartan: 50 mg, Tab, Oral, Daily
Equivalent to: candesartan 8 mg, Tab, Oral, Daily

losartan: 100 mg, Tab, Oral, Daily
Equivalent to: candesartan 16 mg, Tab, Oral, Daily

valsartan: 320 mg, Tab, Oral, Daily
Equivalent to: candesartan 32 mg, Tab, Oral, Daily

losartan: 25 mg, Tab, Oral, Daily
Equivalent to: candesartan 4 mg, Tab, Oral, Daily

*** This substitution is required by your facility.**

OK Cancel

Concerns with Current State - Meds Manager

During order verification, it is not clear to the pharmacist that the provider ordered a dose that is not the home dose. The pharmacist must click into the therapeutic substitution icon, and even this is not particularly clear.

The screenshot shows a 'Therapeutic Interchange' dialog box with the following sections:

- From:** A table with columns: Item, Route, Form, Dose, Frequency. Row 1: candesartan, Oral, Tab, 8 mg, Daily.
- To:** A table with columns: Item, Route, Form, Dose, Frequency, Order sentence. Row 1: losartan, Oral, Tab, 50 mg, Daily, (empty).
- Substitution text:** A text input field with a copy icon to its right.
- Original order details for candesartan:** A section with four input fields: Dose (2 mg), Route (Oral), Form (Tab), and Frequency (2 times/day).
- Accepted with alternate regimen defined:** A checkbox that is currently unchecked.
- Close:** A button at the bottom right.

In this scenario, we do not know if this order was placed due to an error in the t-sub selection window, or if this was an intentional dose increase of the patient's home medication.

Pharmacy to dose option - Powerchart issue:

The user is **required** to choose a recommended dose from the list (even though none of them are appropriate) before the Pharmacy to Dose button can be clicked. We would be more amenable to this option if the user was not required to pick a non-matching substitution.

Therapeutic Substitution - REGRESSION, INA

REGRESSION, INA DOB:09/09/70 Age:48 years Sex:Male MRN:005000... Complex Care Plan (CCP):No Interp Svcs: No Pr...
Preferred Name: Dose Wt: Attending: Adv Dir:Refus... Code Status:
MyPatientConnect: No Allergies: Cheese PCP:Wiemer, Kelly A APRN **Loc:6N: 6...** Inpatient FIN: 5000100176 (Admit Dt: 05/02/...

Selected Order:
cimetidine: 300 mg, Oral, Tab, 4 times/day

Choose Therapeutic Substitution (No Exact Match):
To request pharmacy assistance for dosing, select a recommendation from below and click Pharmacy to Dose.

famotidine: 20 mg, Tab, Oral, 2 times/day Equivalent to: cimetidine 300 mg, Tab, Oral, 2 times/day
famotidine: 20 mg, Tab, Oral, Daily Equivalent to: cimetidine 300 mg, Liquid, Oral, Daily
famotidine: 20 mg, Tab, Oral, At bedtime daily Equivalent to: cimetidine 300 mg, Liquid, Oral, At bedtime daily
famotidine: 20 mg, Tab, Oral, 2 times/day Equivalent to: cimetidine 300 mg, Liquid, Oral, 2 times/day
famotidine: 20 mg, Tab, Oral, Daily Equivalent to: cimetidine 300 mg, Tab, Oral, Daily
famotidine: 20 mg, Tab, Oral, At bedtime daily Equivalent to: cimetidine 300 mg, Tab, Oral, At bedtime daily

*** This substitution is required by your facility.**

Pharmacy to Dose OK Cancel

Pharmacy to dose option - Powerchart issue:

If the Pharmacy to Dose option could be utilized without the user having to select an order when there is not a match found in the T-sub tool, that would be ideal.

Therapeutic Substitution - REGRESSION, INA

REGRESSION, INA DOB:09/09/70 Age:48 years Sex:Male MRN:005000... Complex Care Plan (CCP):No Interp Svcs: No Pr...
Preferred Name: Dose Wt: Attending: Adv Dir:Refus... Code Status:
MyPatientConnect: No Allergies: Cheese PCP:Wiemer, Kelly A APRN Loc:6N: 6... Inpatient FIN: 5000100176 [Admit Dt: 05/02/...

Selected Order:
cimetidine: 300 mg, Oral, Tab, 4 times/day

Choose Therapeutic Substitution (No Exact Match):
To request pharmacy assistance for dosing, select a recommendation from below and click Pharmacy to Dose.

famotidine: 20 mg, Tab, Oral, 2 times/day Equivalent to: cimetidine 300 mg, Tab, Oral, 2 times/day
famotidine: 20 mg, Tab, Oral, Daily Equivalent to: cimetidine 300 mg, Liquid, Oral, Daily
famotidine: 20 mg, Tab, Oral, At bedtime daily Equivalent to: cimetidine 300 mg, Liquid, Oral, At bedtime daily
famotidine: 20 mg, Tab, Oral, 2 times/day Equivalent to: cimetidine 300 mg, Liquid, Oral, 2 times/day
famotidine: 20 mg, Tab, Oral, Daily Equivalent to: cimetidine 300 mg, Tab, Oral, Daily
famotidine: 20 mg, Tab, Oral, At bedtime daily Equivalent to: cimetidine 300 mg, Tab, Oral, At bedtime daily

* This substitution is required by your facility.

Pharmacy to Dose OK Cancel

Pharmacy to dose option - Meds Manager issues:

When resolving a Pharmacy to Dose order, the pharmacist cannot see the original details of the documented home medication. When clicking on the t-sub icon, the pharmacist is only presented with the order that was placed in the prior screen, NOT the original home dose. The original order details in the bottom-most fields should contain the home medication details as they were documented in Powerchart.

Therapeutic Interchange

From:

Item	Route	Form	Dose	Frequency
cimetidine	Oral	Tab	300 mg	At bedtime daily

To:

Item	Route	Form	Dose	Frequency	Order sentence
famotidine	Oral	Tab	20 mg	At bedtim...	4,000 mcg, 0.1 mcg/kg/min

Substitution text:

Original order details for cimetidine

Dose: 300 mg Route: Form: Frequency:

Accepted with alternate regimen defined Close

cimetidine (cimetidine 300 mg oral tablet)

Documented

1 tab, Oral, 4 times/day, # 90 tab, 0 Refill(s)

Leveraging whether or not a T-sub is required:

When a therapeutic substitution is not flagged as being required, the provider is forced to click OK, even when there is an exact match built. We would be more amenable to leveraging this option if the provider only had a screen appear when there was NOT an exact match.

Therapeutic Substitution - REGRESSION, INA

REGRESSION, INA DOB:09/09/70 Age:48 years Sex:Male MRN:005000... Complex Care Plan (CCP):No Interp Svcs: No Pr...
Preferred Name: Dose Wt: Attending: Adv Dir:Refus... Code Status:
MyPatientConnect: No Allergies: Cheese PCP:Wiemer, Kelly A APRN **Loc:6N: 6...** Inpatient FIN: 5000100176 [Admit Dt: 05/02/...

Selected Order:
calcium acetate: 1,334 mg, Oral, Cap, 3 times/day (after meals)

Choose Therapeutic Substitution:

calcium (as carbonate) 500 mg oral tablet, chewable: 2 tab, Tab-Chew, Chewed, 3 times/day (after meals)
Equivalent to: calcium acetate 1,334 mg, Cap, Oral, 3 times/day (after meals)

-OR-
Choose Decline Reason:

OK Cancel

Leveraging whether or not a T-sub is required:

Our ordeal scenario would be to have a window that lets the provider decline the substitution **ONLY** when there is no exact match, as the decline workflow works smoothly and continues the order with the original, accurate order details.

Therapeutic Substitution - REGRESSION, INA

REGRESSION, INA DOB:09/09/70 Age:48 years Sex:Male MRN:005000... Complex Care Plan (CCP):No Interp Svcs: No Pr...
Preferred Name: Dose Wt: Attending: Adv Dir:Refus... Code Status:
MyPatientConnect: No Allergies: Cheese PCP:Wiemer, Kelly A APRN **Loc:6N: 6...** Inpatient FIN: 5000100176 [Admit Dt: 05/02/...

Selected Order:
calcium acetate: 1,334 mg, Oral, Cap, 3 times/day (after meals)

Choose Therapeutic Substitution:

calcium (as carbonate) 500 mg oral tablet, chewable: 2 tab, Tab-Chew, Chewed, 3 times/day (after meals)
Equivalent to: calcium acetate 1,334 mg, Cap, Oral, 3 times/day (after meals)

-OR-

Choose Decline Reason:
Declined by Provider

OK Cancel



calcium acetate (calcium acetate 667 mg oral capsule)
2 cap, Oral, 3 times/day (after meals), 0 Refill(s)

Documented



calcium acetate

1,334 mg, Oral, 3 times/day (after meals)