

# **Development of a Chemotherapy Ordering Management System**

**Department of Veterans Affairs (VA)  
Strategic Incubation Initiative**

## **Use Case for End of Treatment Summary Module v.1.4**



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Prepared for

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## Revision History

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## **1.0 End of Treatment Summary**

### **1.1 Brief Description**

The capstone module of the Chemotherapy Ordering Management System (COMS) application is End of Treatment Summary (EoTS). The EoTS module supports the oncology provider creation, and healthcare team viewing, of the summary of care rendered and results achieved throughout the specified treatment regimen. The EoTS module also enables the provider to stop a treatment regimen. Following the conclusion or discontinuation of a regimen and its applied template, the provider typically generates the treatment summary. To aid in generation of the summary report, the EoTS module retrieves relevant information from various COMS modules and pre-populates several sections of the treatment summary for provider consideration when preparing narratives for the disease response, toxicity side effects, and provider report sections.

The EoTS module supports pre-population of patient and regimen details, type of cancer, vital signs data, body surface area information, clinical trial, allergy, performance status, and medications administered. Further retrieval from the Flow Sheet (FS) module enables the provider to review healthcare team entries throughout the regimen regarding disease response and toxicity side effects for creation of the summation narrative and categorization of the disease response. The EoTS module also supports an overall provider report with free text entry to communicate patient and regimen specific assessment to the current and future healthcare team.

The EoTS module treatment summary form provides five main sections to guide the provider through generation of the End of Treatment Summary.

- Pre-populated Components – Provides pre-populated data for patient and regimen details, type of cancer(s), amputation(s), initial and final vital signs information for the regimen, body surface area factors and values, clinical trial, allergy, performance status, and medications administered to the patient throughout the regimen.
- Patient Disease Response – Enables the provider to review FS module entries for Patient Disease Response, categorize the disease response (complete response, partial response, minor response, progression, or stable), and create summation narrative.
- Toxicity Side Effects – Enables the provider to review FS module entries for Toxicity Side Effects and create summation narrative.
- Provider Report – Supports free text narrative for provider to enter patient and regimen specific overall assessment as a summary for the chemotherapy treatment, results, and/or prognosis.
- Follow-Up Appointments – Supports free text narrative for provider to enter information relevant to the patient's follow-up appointments.

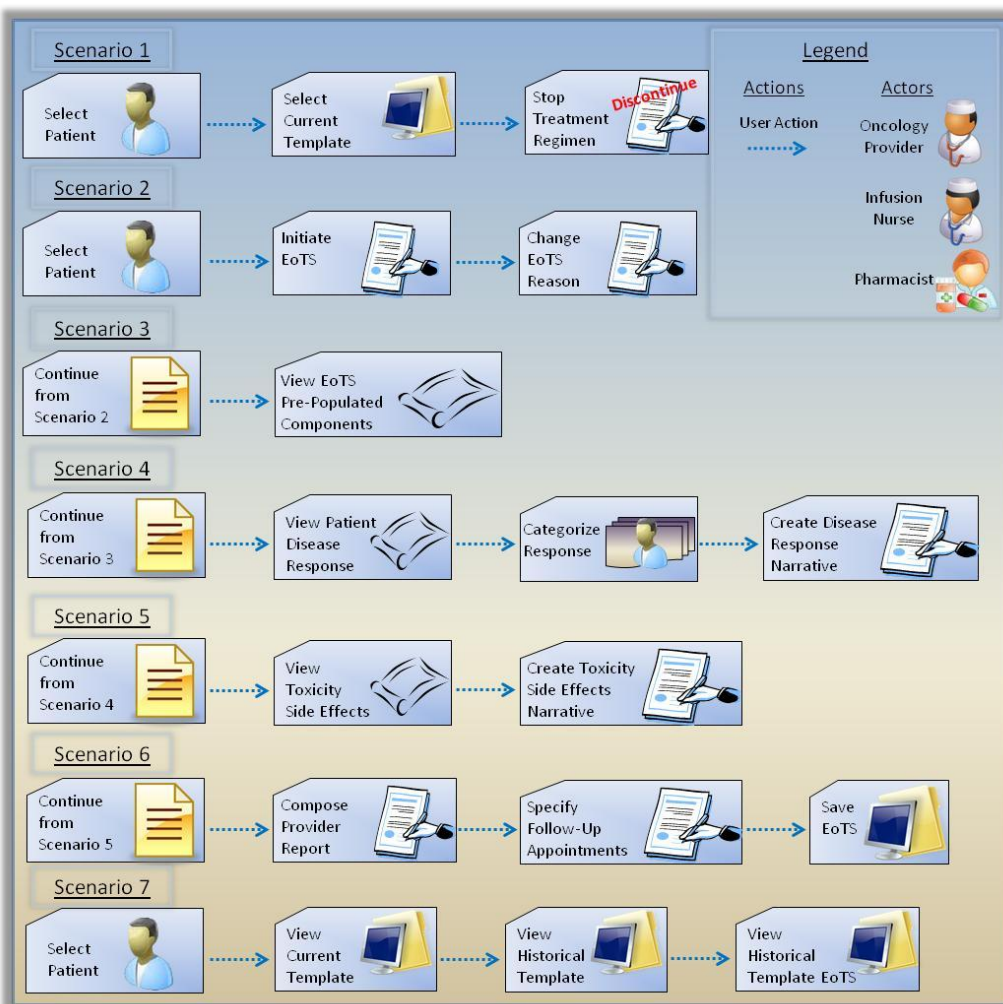
Altogether, the EoTS module facilitates stopping a treatment regimen and provides a chronological history of diagnosis, treatment, changes in treatment, disease response, and patient outcomes. The seven most common scenarios encountered within the EoTS module are the primary focus of this End of Treatment Summary Use Case and are detailed in section 5.

## 1.2 Use Case Diagram

Common EoTS module scenarios to summarize the provision of oncology services rendered to the patient within the individualized patient treatment regimen are as follows:

- Scenario 1 – Stop Treatment Regimen
- Scenario 2 – Initiate then Change Reason for Generating an End of Treatment Summary
- Scenario 3 – View Pre-Populated Components of an End of Treatment Summary
- Scenario 4 – View Patient Disease Response, Categorize Response, and Create Narrative
- Scenario 5 – View Toxicity Side Effects and Create Narrative
- Scenario 6 – Compose Provider Report and Specify Follow-Up Appointments
- Scenario 7 – View Current/Historical Template and Historical End of Treatment Summary

These scenarios are detailed in section 5 and depicted graphically in the Use Case diagram shown in **Figure 1** below.



**Figure 1 – COMS End of Treatment Summary Use Case Diagram**

### 1.3 Background

Within the COMS application, the EoTS module supports stopping a treatment regimen and also creation of an End of Treatment Summary as an essential communication medium for current and future healthcare teams. Through EoTS module functionality, the authoring provider reviews relevant patient information and prepares narratives for the Disease Response, Toxicity Side Effects, and Provider Report sections. The EoTS module displays pre-populated, patient-centric information and permits the provider to view healthcare team entries from the Flow Sheet for creating narratives. In this manner, the EoTS module aids the provider in generating an End of Treatment Summary for the treatment regimen in less than 15 minutes.

The EoTS module retrieves, organizes, and displays information from multiple COMS modules for efficient display of relevant clinical data, disease response, and patient reaction to the chemotherapy. Collectively, this functionality fosters creation of the End of Treatment Summary as an efficient communication mechanism within and among healthcare teams to enhance patient safety and VA's electronic health record of Veterans Health Information Systems and Technology Architecture (Vista) and Computerized Patient Record System (CPRS).

Leveraging information within other COMS modules, the EoTS module enables the provider to communicate the overall effectiveness as an historical recapitulation of the treatment regimen to the current and all future healthcare teams. Through the EoTS module, COMS automates and enhances documentation and communication within oncology services and with other healthcare disciplines. It serves as the capstone module for the COMS application, facilitating the generation and viewing of oncology regimen treatment summaries for the current healthcare team, referring/primary care providers, and other clinical and support staff.

### 1.4 Stakeholders

COMS stakeholders include oncology patients, those involved with management of the contract, the clinical healthcare team, and the dbITpro development team. As the author for the End of Treatment Summary, the oncology provider is the primary stakeholder. However, all members of the healthcare team – oncology providers, nurses, and pharmacists – may be involved with the EoTS module. These stakeholders are shown in **Figure 2**.

Name	Role	Organization	Phone	Email
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**Figure 2 – COMS End of Treatment Summary Stakeholders**

## 1.5 Supporting Requirements

As a uniquely high-risk and high-complexity domain of health care, oncology requires significant documentation of treatment. Effective and efficient documentation requires fully interfaced support of all involved healthcare applications. Notably, this includes VistA, CPRS, and COMS to create a clinical environment that provides patient-centered documentation and summation of the provision of oncology services. This interoperable environment will capture annotations with discrete data points of relevant documentation as a chronological history of diagnosis, treatment, disease response, toxicities, and patient outcomes. With an efficient display of information and pre-population of relevant data, the EoTS module facilitates creation of this oncology care summary in less than 15 minutes. Accordingly, an interoperable environment among VistA, CPRS, and COMS is an essential supporting requirement for this End of Treatment Use Case.

## 2.0 Actors

Discontinuing a regimen and generating the executive summary of oncology care rendered during that treatment regimen, oncology providers fulfill the primary role in the EoTS module. To initiate a treatment summary within the EoTS module, the oncology provider indicates the reason for generating the report. The provider then reviews pertinent, pre-populated information – patient and regimen details, type of cancer(s) and amputation(s), regimen initial and final vital signs, body surface area factors and values, clinical trial information, allergies, performance status, and medication administration details – assembled from multiple COMS modules, VistA, and CPRS. After reviewing patient disease response and toxicity side effects documentation, the provider authors the narrative for both sections to categorize/summarize disease response and summarize toxicities associated with the specific treatment regimen. The provider concludes the End of Treatment Summary with an overall provider report, specification of follow-up appointments, and saving the treatment summary. As authorized COMS users, members of the current and future healthcare team may view the completed treatment summary through the EoTS module.

The oncology provider is the critical human link to facilitate the interoperable environment among VistA, CPRS, and COMS. Oncology provider actions within the EoTS module primarily provide an executive

summary of oncology care and forge the desired clinical environment for standardization, direct order entry of chemotherapy, and documentation of care throughout the treatment regimen. Within the interoperable environment, a more complete spectrum of the provision of oncology services – ordering chemotherapy, administering prescribed medications and providing patient care, and assessing patient reactions and disease response to treatment – is created to support the healthcare team. Further, this standardized and interoperable environment facilitates appropriate documentation of oncology services within VA’s electronic health record for the healthcare team, referring/primary care providers, and other clinical and support staff.

### **3.0 Supporting Use Case List**

The Use Cases for the Chemotherapy Template Order Source (CTOS), Order Entry Management (OEM), Nursing Documentation (ND), and Flow Sheet (FS) modules all support this End of Treatment Summary module Use Case. The actions described within the CTOS module Use Case scenarios provide the foundation for COMS functionality and support ordering. Ensuing actions within the OEM module Use Case scenarios permit further tailoring and communication of the individualized patient care plan. Documentation of medication administration and other nursing activities are described in the ND module Use Case. These actions serve as iterative building blocks for FS module functionality. As the capstone module both for the treatment regimen and the COMS application, the EoTS module requires other COMS module Use Case activity to necessitate the generation and subsequent viewing of an End of Treatment Summary.

### **4.0 Preconditions**

The EoTS module provides an executive summary of patient care actions taken throughout the treatment regimen and documented within the CTOS, OEM, ND, and FS modules. Subsequently, End of Treatment Summary Use Case scenarios and preconditions build upon those expressed in the CTOS, OEM, ND, and FS Use Case documents. Further, the following are also required to support the End of Treatment Use Case scenarios detailed in section 5:

- An active regimen from an applied template is required to Stop Treatment Regimen and View Current Template
- A discontinued regimen from an applied template is required to Initiate then Change Reason for Generating an EoTS; View Pre-Populated Components of an EoTS; View Patient Disease Response, Categorize Response, and Create Narrative; View Toxicity Side Effects and Create Narrative; View Historical Template; and Compose Provider Report and Specify Follow-Up Appointments
- A previously-created EoTS report is required to View Historical End of Treatment Summary.



## 5.0 Use Case Scenarios

The intent of the Use Case scenarios is to walk the user through common process flows associated with the EoTS module and the provision of oncology services. Scenarios require the regimen information for a specific patient and scenarios 2 – 6 are iterative, building upon each other from initiating an End of Treatment Summary thru saving the report. For Use Case scenario testing, patients will be assigned to each test team as follows:

Team	Use Case Patient	Patient Identifier
1	PATIENT FOURHUNDRED	F0400
2	PATIENT FOURHUNDREDFIFTEEN	F0415
3	PATIENT FOURHUNDREDTWENTYFIVE	F0425
4	PATIENT FOURHUNDREDFORTYFIVE	F0445
5	PATIENT FOURHUNDREDFIFTY	F0450
6	PATIENT FOURHUNDREDFIFTYTWO	F0452
7	PATIENT FOURHUNDREDFIFTYFIVE	F0455
8	PATIENT FOURHUNDREDSIXTY	F0460
9	PATIENT FIVEHUNDREDFIFTEEN	F0515
10	PATIENT FIVEHUNDREDFIFTY	F0550

Each scenario requires the selection of the test team's specific patient as follows:

Step	Action	COMS Reaction
1	From the Patient tab, enter the patient identifier for team's assigned patient in the Patient panel and click on the "Query CPRS for Patient" link	Displays "Please Click Here to Confirm This is the Patient You Want"
2	Select the link for team's assigned patient to confirm the patient	Presents patient information for team's assigned patient
3	Select/Open/Expand the "Patient Information" panel	Expands "Patient Information" panel
4	View patient gender, age, and amputation(s); Body Surface Area (BSA) weight method, BSA method, and BSA calculations; template information; regimen status; type(s) of cancer; allergies; and clinical trial information	Permits viewing of information
5	Select/Open/Expand the "Patient History" panel	Expands "Patient History" panel
6	View vital signs historical information (date taken, temperature, pulse, blood pressure respirations, pain level, oxygen saturation, performance status, height, weight, and four columns for BSA information of weight formula, body weight, BSA method, and calculated BSA)	In reverse chronological order, displays information as obtained from VistA, COMS OEM module, and COMS ND module/ General Information panel
	<b>ALTERNATE</b>	<b>ALTERNATE</b>
1	From the Patient tab, enter the patient identification for team's assigned patient in the Patient panel and press enter	Displays "Select Patient from CPRS" pull-down menu
2	Select the team's assigned patient from the pull-down menu	Presents patient information for

Step	Action	COMS Reaction
		team's assigned patient
3	Select/Open/Expand the "Patient Information" panel	Expands "Patient Information" panel
4	View patient gender, age, and amputation(s); Body Surface Area (BSA) weight method, BSA method, and BSA calculations; template information; regimen status; type(s) of cancer; allergies; and clinical trial information	Permits viewing of information
5	Select/Open/Expand the "Patient History" panel	Expands "Patient History" panel
6	View vital signs historical information (date taken, temperature, pulse, blood pressure respirations, pain level, oxygen saturation, performance status, height, weight, and four columns for BSA information of weight formula, body weight, BSA method, and calculated BSA)	In reverse chronological order, displays information as obtained from VistA, COMS OEM module, and COMS ND module/ General Information panel
	ALTERNATE	ALTERNATE
1	From the Patient tab, using the Enter a Range of Administration Dates to Search functionality and the default of today's date for the "from" range, select a future date from the pop-up calendar "to" range, and click on the "Select Patient by Administration Date(s)" link	Displays "Select Patient from CPRS" pull-down menu
2	Select team's assigned patient from the pull-down menu	Presents patient information for team's assigned patient
3	Select/Open/Expand the "Patient Information" panel	Expands "Patient Information" panel
4	View patient gender, age, and amputation(s); Body Surface Area (BSA) weight method, BSA method, and BSA calculations; template information; regimen status; type(s) of cancer; allergies; and clinical trial information	Permits viewing of information
5	Select/Open/Expand the "Patient History" panel	Expands "Patient History" panel
6	View vital signs historical information (date taken, temperature, pulse, blood pressure respirations, pain level, oxygen saturation, performance status, height, weight, and four columns for BSA information of weight formula, body weight, BSA method, and calculated BSA)	In reverse chronological order, displays information as obtained from VistA, COMS OEM module, and COMS ND module/ General Information panel
Step	Action	COMS Reaction
7*	Proceed to Step 7 for EoTS Module Use Case Scenarios 1, 2, and 7	

### 5.1 Scenario 1: Stop Treatment Regimen

Step	Action	COMS Reaction
7*	Select/Open/Expand the "Treatment Regimens & Summaries" panel	Expands "Treatment Regimens & Summaries" panel; displays current and historical templates for your team's patient
8	Select "Stop Treatment" link next to the currently applied template to stop the treatment regimen	Displays message to confirm the stop treatment regimen action

Step	Action	COMS Reaction
9	Confirm action to stop treatment regimen	Stops treatment regimen with effective end date of “today”; displays information message for provider to generate EoTS
10	Acknowledge information message to generate EoTS	Closes information message window

## 5.2 Scenario 2: Initiate then Change Reason for Generating an End of Treatment Summary

Step	Action	COMS Reaction
7*	Select/Open/Expand the “Treatment Regimens & Summaries” panel (only required if not continued from previous scenario)	Expands “Treatment Regimens & Summaries” panel; displays current and historical templates for your team’s patient
8	Select the “Generate End of Treatment Summary” link for a specific historical template	Opens new window and presents four primary reasons (with radio buttons) for generating an EoTS
9	Select “Completed Prescribed Course” radio button	Replaces open window with new EoTS window; displays selected reason for generating the End of Treatment Summary
10	Select the “Change” link after the displayed text “Reason for generating End of Treatment Summary – Completed Prescribed Course”	Returns to previous window with four primary reasons for generating an EoTS; radio button for “Completed Prescribed Course” reflects current selection
11	Select “Treatment Change” radio button	Indicates “Treatment Change” as the new reason and prompts for secondary reason
12	Select “Toxicity” radio button	Replaces open window with new EoTS window; displays “Treatment Change – Toxicity” as reason for generating the End of Treatment Summary
13	Select the “Change” link after the displayed text “Reason for generating End of Treatment Summary – Treatment Change - Toxicity”	Returns to previous window with reasons for generating an EoTS; radio buttons for “Treatment Change” and “Toxicity” indicate selection
14	Select “Other” radio button	Indicates “Other” as the new reason and presents text field to qualify reason
15	Enter “COMS Testing” in the text field	Replaces open window with new EoTS window; displays

Step	Action	COMS Reaction
		"Other – COMS Testing" as reason for generating the EoTS
16	Proceed to Scenario 3	N/A

### 5.3 Scenario 3: View Pre-Populated Components of an End of Treatment Summary

Step	Action	COMS Reaction
17a	View pre-populated Patient Information for your team's assigned patient	Permits scrolling through EoTS and viewing of pre-populated components
17b	Below patient name, view gender, age, and amputation(s) for your team's assigned patient	Displays patient gender, age, and amputation(s) on first row of patient grid
17c	Beneath first row of patient grid, view name of historical template for this End of Treatment Summary	Displays user-friendly names on second row of patient grid
17d	Below template information, view regimen status, start date, and end date for this historical template	Displays ended regimen status with start/end dates on third/final row of patient grid
18a	View pre-populated Type(s) of Cancer, Allergies, and Clinical Trial information for your team's assigned patient	Permits scrolling through EoTS and viewing of pre-populated components
18b	Below Patient Information, view Type(s) of Cancer	Displays cancer type on first row of grid
18c	Beneath first row, view patient Allergies information of name, type, and comments	Displays allergies information imported from CPRS/VistA on second row of grid
18d	Below Allergies row, view Clinical Trial information	Displays regimen's clinical trial information as noted when template was applied to patient (if none, COMS displays "NOT a Clinical Trial")
19a	View pre-populated Initial Vital Signs information for your team's assigned patient	Permits scrolling through EoTS and viewing of pre-populated components
19b	Within Initial Vital Signs grid, view information for Date Taken, Height, Weight, Blood Pressure, Temperature, Pain, Pulse, Respiration, and Oxygen Saturation	Displays column header and specific data on first two rows of grid
19c	On the right side of the screen within the Initial Vital Signs grid, view information for BSA Weight Method, BSA Weight, BSA Method, and BSA	Displays information entered when template was applied to patient and corresponding BSA calculated value
19d	On the third row of the Initial Vital Signs grid, view information for the patient's performance status	Displays numeric entry when template was applied to patient and corresponding definition
20a	View pre-populated Final Vital Signs information (for the	Permits scrolling through EoTS

Step	Action	COMS Reaction
	regimen) for your team's assigned patient	and viewing of pre-populated components
20b	Within Final Vital Signs grid, view information for Date Taken, Height, Weight, Blood Pressure, Temperature, Pain, Pulse, Respiration, and Oxygen Saturation	Displays column header and specific data on first two rows of grid
20c	On the right side of the screen within the Final Vital Signs grid, view information for BSA Weight Method, BSA Weight, BSA Method, and BSA	Displays final information entered when template was active and corresponding BSA calculated value
20d	On the third row of the Final Vital Signs grid, view information for the patient's performance status	Displays final numeric entry when template was active and corresponding definition
21	In the section below the Final Vital Signs grid, view information for medications administered to the patient	Displays information for medications administered in horizontal date rows
22	Proceed to Scenario 4	N/A

#### 5.4 Scenario 4: View Patient Disease Response, Categorize Response, and Create Narrative

Step	Action	COMS Reaction
23	Review FS entries for Patient Disease Response and consider for inclusion in EoTS narrative	Displays information in horizontal date rows for viewing
24	Categorize Disease Response by selecting the appropriate selection from the pull-down menu	Presents options of Complete Response, Partial Response, Minor Response, Progression, and Stable; displays selected response categorization
25	Enter free text narrative in Patient Disease Response section	Permits free text entry with formatting and displays entered text; expands field, as needed for longer narrative
26	Proceed to Scenario 5	N/A

#### 5.5 Scenario 5: View Toxicity Side Effects and Create Narrative

Step	Action	COMS Reaction
27	Review FS entries for Toxicity Side Effects and consider for inclusion in EoTS narrative	Displays information in horizontal date rows for viewing
28	Enter free text narrative in Toxicity Side Effects section	Permits free text entry with formatting and displays entered text; expands field, as needed for longer narrative
29	Proceed to Scenario 6	N/A

## 5.6 Scenario 6: Compose Provider Report and Specify Follow-Up Appointments

Step	Action	COMS Reaction
30	Click in Provider Report section field and enter free text narrative	Permits free text entry with formatting and displays entered text; expands field, as needed for longer narrative
31	Click in Follow-Up Appointments field and enter free text narrative	Permits free text entry with formatting and displays entered text; expands field, as needed for longer narrative
32	Save End of Treatment Summary	Saves entered and pre-populated information as End of Treatment Summary for historical template/regimen; closes EoTS window

## 5.7 Scenario 7: View Current/Historical Template and Historical End of Treatment Summary

Step	Action	COMS Reaction
7*	Select/Open/Expand the "Treatment Regimens & Summaries" panel	Expands "Treatment Regimens & Summaries" panel; displays current and historical templates for your team's patient
8	Select "Show Details" link to view a specific current or historical template	Opens template in Chemotherapy Template Order Source module (below Laboratory Information panel) and displays template information for current regimen or prior/no longer active regimen, as selected
9	Select "Show End of Treatment Summary" link to view a specific treatment summary for an historical template	Opens new window and displays completed End of Treatment Summary for prior/no longer active regimen
10	After viewing the End of Treatment Summary, select the "Close" button	Closes EoTS viewing window