NCG-KCDO EMR Requirement (NER)- Medical Oncology Module

(Version 2.0)

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FOREWORD

The National Cancer Grid (NCG) Electronic Medical Records (EMR) initiative has been well received by the NCG Hospitals and our community of healthcare professionals and stakeholders. The enthusiasm and support we have garnered for this initiative reflect a shared commitment to advancing cancer care through technology and collaboration.

As part of our ongoing efforts to enhance the EMR initiative, we have established distinct subcommittees to focus on specific areas of improvement. These subcommittees bring together subject matter experts in oncology from several NCG hospitals across the country to build the features and functionalities in EMR systems.

The Medical Oncology module has been developed in close collaboration with medical oncologists from across the NCG, leveraging their insights and expertise to ensure its effectiveness and usability. This module aims to streamline the systemic therapy process, providing oncologists and healthcare providers with the tools they need to deliver optimal care to patients with cancer.

This collaborative effort has been informed by thorough industry research, ensuring that the NCG helps EMR vendors build solutions aligned with best practices and meet the diverse needs of our stakeholders.

We are immensely grateful for the feedback, suggestions, and guidance provided by the healthcare professionals involved in treating cancer patients, as well as the healthcare technology companies and providers. We are pleased to share the final version of the Medical Oncology module. Thank you for your continued support and collaboration.

Dr C.S. Pramesh
Convener, National Cancer Grid
July 2024

NATIONAL CANCER GRID
COLLABORATION FOR CANCER CARE

Koita Centre for Digital Oncology

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1. NCG EMR INITIATIVE OVERVIEW

The National Cancer Grid Koita Centre for Digital Oncology (NCG KCDO) launched an initiative to empanel Electronic Medical Records (EMR) vendors and help develop high quality EMR solutions that are appropriate for use in hospitals providing cancer care. This marks a significant milestone in the ongoing efforts to promote digital health and enhance cancer care across the country. Launched with the aim of standardizing and improving clinical practices in oncology, it is a collaborative approach involving leading healthcare institutions, clinicians, and technology partners.

In March 2023, NCG KCDO released the NCG EMR Requirements (NER) – a comprehensive set of EMR requirements needed for effective management of patients with cancer. The NER is a blueprint for the development and implementation of robust EMR systems which will serve general hospitals well, but are also tailored specifically for oncology practices. The NER document is a result of intense deliberations over several months between healthcare professionals involved in cancer care and technology experts, and is available as a digital public good at NCG-KCDO EMR Initiative.

To further support the development of the empanelled EMR systems, the NCG is developing detailed requirements and features in specific areas of oncology including radiotherapy, systemic therapy and surgical oncology. This document details the systemic therapy requirements and features, based on best practices developed at several leading NCG centres.

2. EMR FEATURE BUILDING

A. Medical Oncology Module Overview

Building on the features outlined in the NER (NCG EMR Requirement), the Medical Oncology Module is designed to streamline and optimize the systemic therapy treatment process for cancer patients. This module is designed to enhance the quality, safety, and efficiency of systemic therapy treatment within the NCG network, ultimately improving outcomes for cancer patients and advancing the field of oncology care.

Key features of the Medical Oncology module include:

2.1 Intent of Treatment Management: The Medical Oncology Module provides robust functionality to document and manage the intent of treatment for each patient. It allows clinicians to specify treatment goals and objectives based on the patient's clinical condition, disease stage, and individual preferences.

2.2 Role of Treatment Definition: Within the module, the role of treatment for each patient is clearly defined, detailing the specific modalities.

2.3 Treatment Planning and Scheduling: The Module has the facility for creating comprehensive treatment plans, including drug regimens, dosage, frequency, and duration of treatment cycles.

2.4 Dose Calculation and Optimization: Built-in tools for accurate calculation of systemic therapy doses based on patient characteristics, such as body surface area, renal function, and comorbidities.

2.5 Toxicity Monitoring and Management: Comprehensive documentation of treatment-related toxicities, including grading, onset, duration, and management strategies. There is integration with standardized toxicity scoring systems, such as CTCAE (Common Terminology Criteria for Adverse Events), to facilitate consistent assessment and reporting. Automated alerts for critical or severe toxicities, prompting timely intervention, postpone treatment or modify dose as necessary.

2.6 Delivery Tracking and Verification: The module facilitates Real-time tracking of treatment delivery, including medication administration, infusion duration, and adherence to treatment protocols. Electronic verification of medication orders, preparation, and administration to minimize errors ensuring patient safety.

2.7 Nurse's notes: In-built templates and structured forms for standardized documentation of vital signs, symptom management.

2.8 Follow-Up Plan and Discharge Summary Documentation: Finally, the module supports the documentation of comprehensive follow-up plans for patients completing systemic therapy treatment. It generates comprehensive discharge summaries which summarizes the patient's treatment course, response to therapy, ongoing care needs, and instructions for self-management.

B. Methodology

The methodology used to build the systemic therapy Module within the NER (NCG EMR Requirements) document encompasses a systematic and collaborative approach, involving key stakeholders and leveraging industry best practices. Recognizing the need, NCG KCDO formed a subcommittee which consisted of medical oncologists from leading NCG hospitals across the country. The Medical Oncology Core Team developed the systemic therapy Module based on their expertise and discussions with clinical and technology professionals.

The Medical Oncology module is characterized into 6 parts:

CT- Part A: Protocol Master- This section acts as a central repository within the systemic therapy module that contains standardized treatment protocols. It includes standard templates on systemic therapy regimens, dosing schedules, administration routes (To be configured as per the need of NCG member centre).

CT- Part B: Doctor's Notes- This section refers to documentation by oncologists or prescribing physicians regarding the patient's medical history, treatment plan, and progress throughout the

systemic therapy course. The notes include details such as diagnosis, systemic therapy regimen prescribed, dosage adjustments, response to treatment, and any complications or adverse events encountered.

CT- Part C: Nurse's Notes- It refers to the documentation entries made by oncology nurses or allied healthcare professionals involved in administering systemic therapy and monitoring patient responses. These notes typically include vital signs, infusion details, medication administration records, patient assessments, symptom management interventions.

CT- Part D: Toxicity Monitoring- Toxicity Monitoring involves the systematic assessment and documentation of systemic therapy-related adverse effects or toxicities experienced by the patient. It aims to identify and manage adverse events promptly, guide dose modifications or treatment adjustments, and optimize patient safety and quality of life during systemic therapy.

CT- Part E: Discharge Summary on treatment- It provides an overview of the systemic therapy regimen administered, treatment duration, cumulative doses received, response to treatment, toxicities encountered, follow up advice and care.

CT-Part F: Final Discharge Summary at Completion- The Final Discharge Summary provides closure to the systemic therapy phase of the patient's cancer journey. It encompasses a comprehensive review of the patient's medical history, systemic therapy treatments received, response to treatment, toxicity profile

3. CT- Part A: Protocol Master

Medical Oncology Module			
SNo	**Data Elements**	**Clinician's Response**	**Remarks for Vendors**
1	**Defining Systemic therapy Protocol**		
A	Protocol Name		To configure as per NCG Member Centre
B	Number of Cycles		Numeric
C	Number of days between Cycles		Enable drop down from serial number
D	Special Instructions		Open Text box
2	**Defining drug dosage and frequency**		
A	Systemic therapy drug database		List down all the drugs. Repeat the steps from B-K

			for each and every drug in the protocol
B	Drug Type	☐ Pre-Systemic /Prophylaxis Drug ☐ Systemic Drug (Immuno/Systemic /Targeted) ☐ Post Systemic Drug	Select one
C	Dose		Write the dose in numerical form
		☐ ml ☐ mg ☐ mcg ☐ gms ☐ Unit	Choose one option
		☐ Kg ☐ m2	Choose one option
D	Maximum Dose		Write in maximum dose in numerical form
E	Route of Administration	☐ Intrathecal ☐ Subcutaneous ☐ Intravenous ☐ Intravenous Central Line ☐ Intramuscular ☐ Per Oral ☐ Transdermal	Choose one option
F	Administration Type	☐ Bolus ☐ Infusion	Choose one
G	Frequency	☐ Once Daily ☐ Twice Daily ☐ Thrice Daily ☐ Four Times Daily ☐ Others	Choose one
H	Diluent/ Additive	☐ Ringers Lactate ☐ Normal Saline ☐ Dextrose Normal ☐ Saline ☐ 5% Dextrose ☐ 10% Dextrose ☐ Distilled Water	NOT To appear when response to 2E is 'Per oral'.
I	Volume (ml)		Write the volume in numeric form
J	Duration of Infusion	☐ Stat ☐ Duration	Choose One

		Period_____/Hours/Minute/Second	To be Enabled only if the response to 'Duration, is chosen in above row
K	Special Instructions		Open Text Box
Save the Protocol Master			

4. CT- Part B: Doctor's Notes

Doctor's Notes			
SNo	**Data Elements**	**Clinician's Response**	**Remarks for Vendors**
1	**Primary Details**		**If multiple options are chosen in row A, then repeat the entire set (Item A through Item M)**
A	Name of the consultant		Choose Multiple option
B	Height/Length of the patient		In Cms
C	Weight		In Kg
D	LMP Date		Calendar View. Only for female patients in the reproductive age group of 10-45
E	BSA (m2)		Auto calculate based on the The DuBois & DuBois Formula. This will change for each Cycle as per change in weight.
F	ECOG Performance Status	☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	Incorporate standard ECOG Criteria
2	**Tumor Board**		
A	Past tumor board decision		Auto populate from VTB/MDT module
B	Past tumor board decision followed	☐ Yes ☐ No	

C	If No, Reason		Open text box
D	Assign patient to tumor board	☐ Yes ☐ No	
E	If Yes, Schedule the patient for tumor board discussion	DD/MM/YYYY	Link to VTB/MDT Scheduler
F	Question for tumor Board discussion		Open text Box. Mention reason and question for tumor board discussion
3	**Allergic Reaction**		
A	Allergy/Reaction	☐ Yes ☐ No	To disable rows 3B- 3E if the response to 3A is 'No'
B	If Yes, Name of the drug		Open text box
C	Type of Allergic Reaction (Description, Eg- Skin reaction)		Open text box
D	Allergy/Reaction Severity Level	☐ Mild ☐ Moderate ☐ Severe	Choose one
E	Drug Interaction Checked	☐ Yes ☐ No	MedScape/UptoDate/Any other
4	**Treatment**		
A	Intent of treatment	☐ Curative ☐ Non-Curative	
B	Type of Systemic therapy	☐ Neo Adjuvant ☐ Concurrent ☐ Adjuvant ☐ CT Alone	If Concurrent, Start of RT, End of RT, Treatment interruption and Reason to suspend/Stop the treatment should be visible from RT Module
C	Patient Consent taken	☐ Yes ☐ No	Option to Upload soft copy of the consent form/click picture of the form with date of consent
D	Systemic therapy Safety Checklist Verified	☐ Yes ☐ No	If No, further options should be disabled
E	Pre-Systemic therapy Investigations	☐ CBC ☐ Creatinine ☐ LFT ☐ 2 D ECHO/Cardiac Assessment	Link to EMR for reports, Provide a trend analysis of the past history.

		☐ Others, Please Specify_____	
5	**Protocol Selection**		
A	Protocol Name		Generate a list of dropdowns of all the protocols made in the Protocol Master page
B	Planned no of Cycles		Auto populate from protocol
C	Any Ongoing toxicities from the previous cycle or prior systemic therapy regimen	☐ Yes ☐ No	If yes, provide link to Toxicity monitoring page, If No, proceed ahead
D	Alert Pop Up of past cycle adverse event -Cycle no -Toxicity name -Grade		A Pop Up
E	Select one to proceed ahead	☐ Continue same treatment ☐ Modify dose ☐ Change in treatment ☐ Postpone treatment- Due to socioeconomic reasons	If continue same TT, then the modified dose option from rows 7C-7E should be disabled.
F	Reason for Changing the protocol	☐ Tolerance ☐ Progression ☐ Others, Ex- Patient's Choice	Row 5E should be enabled only If the response to 5D is Modify dose/Change treatment
G	Start date of the protocol	DD-MM-YYYY	Calendar view
6	**Treatment Planning**		**View EMR- Link to the EMR**
A	Cycle No		Auto populate with an option to edit
B	Frequency (Day)		Provide dropdown option from 1-28 and Others
C	Plan dates	DD-MM-YYYY	Calculate all the future dates as per the protocol
	Disclaimer-The date of next cycle may change in case of toxicity and any delays due to compliance or travel to another centre		
7	**Current Medication Details**		**Ability to generate prescription**
A	Drug Name		Auto Populate

B	Dose		Auto calculate as per the BSA formula
C	Modified Dose		Free text box
D	Whether modified	☐ Yes ☐ No	
E	Reason for modification	☐ Co-Morbidities ☐ Toxicity in previous cycle ☐ Poor performance status ☐ Low nutritional Profile ☐ Poor general condition ☐ Others, _____	
F	Given	☐ Yes ☐ No	Row 7G, 7H, 7I to appear only if the response to 7F is 'No'
G	Reason for not given		Open text box
H	Follow up date		Calendar View
I	Tests Recommended		Open text box
8	**Approvals**		
A	Verified by: Doctor Signature		
B	Prepared By: Nurse Signature		
C	Verified and administered by: Nurse Signature		
Go to CT Part C: Nurse's Notes			

5. CT- Part C: Nurse's Notes

Nurse's Notes			
Sno	**Data elements**	**Clinician's Response**	**Remarks for Vendors**
1	**Treatment details**		
A	Cycle no		Auto Populate from 6A
B	Frequency (Day)		Auto Populate from 6B
C	Plan date		Auto Populate from 6C
D	Enter place of treatment	☐ Casualty ☐ Daycare ☐ Injection room ☐ Interventional Radiology ☐ Paediatric Daycare ☐ Ward ☐ Other hospital	
E	General/Private	☐ General ☐ Private	
2	**Vital Sign Monitoring**		

S NO	Vital Signs	Pre	During	Post
A	Temp			
B	Pulse			
C	BP			
D	RR			
E	SpO2			

3	**Systemic therapy Drug Administration**

SNo	Drug Name	Special Instructions	Dose	Given	Starting time	Ending time	Reason for not given/not completed
	Auto Populate	Auto Populate	Auto Populate	☐ Yes ☐ No			☐ Infusion Reaction

	from Doctor's Notes	from Protocol Master	from Doctor's Notes	☐ Toxicity ☐ Others
A	Status of completion of cycle		☐ Completed as planned ☐ Not completed	
B	Referral Letter			In case patient wants to take Systemic from outside, hospitals can upload the referral letter template
C	Doctor Notes			Open text box and link to EMR
Go to CT Part D-Toxicity Monitoring Page				

6. CT- Part D: Toxicity Monitoring

Toxicity Monitoring							
Sno	**Data elements**	**Clinician's Response**			**Remarks for Vendors**		
	Cycle	**Day of Onset**	**Place of toxicity management**	**Grading system**	**Toxicity (System)**	**Adverse event**	**Grade**	**Description**
			☐ Home ☐ Local hospital OPD ☐ Primary Center OPD ☐ Local Hospital-Hospitalisation ☐ Primary Center-Hospitalisation	☐ WHO ☐ CTCAE		CTCAE 5.0*		Open text box
2	Toxicity Attributable to Systemic therapy	☐ Unrelated ☐ Possible ☐ Probably ☐ Definite						
3	**Postpone treatment**							
A	Postpone treatment	☐ Yes ☐ No				If Type of Systemic is Concurrent, then Postpone treatment details to show in RT Module as a red Flag		
B	Reason to Postpone					Open text box		
C	No of days of postponement					Open text box		
Go to CT Part E: Discharge Summary								

7. CT- Part E: Discharge Summary- On Treatment

Discharge Summary- On treatment			
Sno	**Data Elements**	**Clinician's Response**	**Remarks for Vendors**
1	**Primary Details**		
A	Name		Auto Populate
B	Age		Auto Populate
C	Gender		Auto Populate
D	Ht/Wt/BSA		Auto Populate
E	Diagnosis		Auto Populate
F	Type of Systemic therapy		Auto Populate
G	Protocol Name		Auto Populate
H	Cycle No		Auto Populate
I	Frequency (Day)		Auto Populate
J	Tolerated Systemic therapy Well	☐ Yes ☐ No	If no, Toxicity table to appear as below
2	**Toxicity Monitoring Summary**		**Include Past toxicities too**

Cycle	Day of Onset	Place of toxicity management	Grading system	Toxicity (System)	Adverse event	Grade	Description

3	**Systemic therapy Administration Details**

Sno	Drug Name	Dose given

4	**Advice on Discharge**

Symptoms	Drug Name	Route	Dosage	No of Days	Remarks	Add
☐ Pain						

☐ Loose Motions ☐ Constipation ☐ Vomiting ☐ Increase White Blood Cells ☐ Mouth Ulcer/ Painful Swelling ☐ Indigestion ☐ Fever or prevention of infection (Temp above 100F or 38C, please take one dose of drug, do CBC and contact your doctor immediately						
Post Systemic drugs in the protocol master to get auto populated						

5	**Follow up Schedule**		
A	Follow up date for doctor/Systemic therapy Clinic		Calendar View
B	Follow up date for Day Care/Systemic therapy Delivery		Calendar View
C	In case of emergency, Contact _____		Configure as per NCG Centre
D	Tests recommended	☐ CBC ☐ LFT ☐ RFT ☐ Serum Electrolytes ☐ Others_____	Multiple Choice possible
6	**Approval**		
A	Doctor's Sign		E-Sign
If the treatment is completed, go to CT Part F: Discharge Summary at Completion			

8. CT- Part F: Discharge Summary- At Completion

Systemic therapy Summary- At Completion			
Sno	**Data Elements**	**Clinician's Response**	**Remarks for Vendors**
1	**Systemic therapy Completion dates**		

Cycle No	**Systemic therapy Completion Date**	**Auto Populate, If Cancelled, provide a box for cancellation**
Cycle 1	DD-MM-YYYY	
Cycle 2	DD-MM-YYYY	

2	**Toxicity Monitoring Summary**

Cycle	**Day of Onset**	**Place of toxicity management**	**Grading system**	**Toxicity (System)**	**Adverse event**	**Grade**	**Description**

A	Completed Planned no of Cycles	☐ Yes ☐ No	
B	If no, please specify reasons	☐ Death ☐ Progression ☐ Defaulter ☐ Tolerance	If No, then RT Module should be intimated- Row no 18,19,20,21
C	End of treatment response		
D	End of treatment response date	DD-MM-YYYY	Calendar View

9. Appendices

Appendix 1- Glossary of terms

Abbreviations	
NCG	National Cancer Grid
EMR	Electronic Medical Record
NER	NCG EMR Requirements
LEAP	Leading EMR Adoption Program
ECOG	ECOG performance Status Scale is a widely used method to assess the functional status of a patient
BSA	Body Surface Area
RR	Respiratory rate
BP	Blood pressure
CTCAE	Common Terminology Criteria for Adverse Events
Ht	Height
Wt	Weight
CBC	Complete Blood Count
LFT	Liver Function Test
RFT	Renal Function Test

Appendix 2- Reference documents

1. ncg-emr-requirements-ner.pdf (kcdo.in)

2. *CTCAE5.0- https://docs.google.com/spreadsheets/d/1el-Fgl492JKBsSi-ChXcMW8GTVVZzOSv/edit?usp=sharing&ouid=105450460550883119207&rtpof=true&sd=truehttps://docs.google.com/spreadsheets/d/1el-Fgl492JKBsSi-ChXcMW8GTVVZzOSv/edit?rtpof=true&sd=true#gid=192951646