CONNECTING THE DOTS: LINKING ASTRO STANDARDIZATION TO AAPM ONTOLOGY DEVELOPMENT

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AMERICAN SOCIETY FOR RADIATION ONCOLOGY

Aligning with federal priorities

- Patient access to EHI
- Nationwide bi-directional data exchange
- Ubiquitous API use
- Focus on data blocking guidelines and pricing

CMS Seeks to Improve Interoperability With Public Policy Changes

EM

NOTICE OF PRO.

CMS Administrator Seema Verma outlined the federal agency's plans to push interoperability forward at an FAH public policy conference.

Trusted Exchange Framework and Common Agreement (TEFCA) Draft 2

ONC, CMS drop information blocking, interoperability rules ahead of HIMSS

On the eve of HIMSS, ONC and CMS take center stage by announcing proposals for interoperability and information blocking rules.



Need for standardization

Duke Clinical Research Institute

REGISTRY DATA STANDARDS - 2018

Data C	Collection Variability	
Data Element Name (CRF Label)	Permissible Values	Concordance
Gender	Male	5
	Female	
Patient Gender	Male	2
	Female	
Gender	1=Male	1
	2=Female	
	-1=Unknown/Missing	
Gender	M	1
	F	
Sex	Male	3
	Female	
Sex	Male	2
	Female	
	Unknown	
Sex	M	1
	F	
	UN	
Sex	Male	1
	Female	
	Other	
	Unknown	
Sex (at birth)	Male	1
	Female	

Data Collection Variability						
Data Element Name (CRF Label)	Concordance					
Patient's Sex at Birth	m=male f=female u=unknown	1				
Indicate the patient's sex at birth	Yes No	1				
And are you?	Male Female	1				

MINIMUM DATA ELEMENTS PANEL



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MINIMUM DATA ELEMENTS FOR RADIATION ONCOLOGY: AN ASTRO CONSENSUS PAPER

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	Data Flement	Definition	Detail				
	Data Liement	Treatment Course Data Elements	Detan				
	Diagnosis	Identify disease(s) relevant to	ICD-10				
	Diagnosis	treatment					
	Modality	Radiation type - Records the list of all modalities used during treatment course (Check all that apply)	Reference Table 2 for detail				
	Technique	Treatment delivery method - Records the list of all techniques used during treatment course (Check all that apply)	Reference Table 2 for detail				
5	Number of fractions planned	Records the total number of treatments prescribed in a treatment					
	Number of fractions delivered	Records the total number of treatments delivered in a treatment course					
	Start date of treatment	Indicates the date on which the patient commences course of delivered radiation treatment	MMDDYYYY				
	End date of treatment	Indicates the date on which the patient ends/completes a course of delivered radiation treatment	MMDDYYYY				
	Prescribed Dose Level Data Elements						
	(Note: Multiple dose levels are pos	sible for a given treatment. The followi dose level)	ng elements are completed for each				
	Anatomic site of each prescribed dose level	Indicates the primary anatomic site(s) targets for each dose level	Reference the Standards for Oncology Registry Entry (Supplemental material)				
	Total dose planned for each prescribed dose level	Dose prescribed to each dose level	cGy				
	Total dose delivered for each prescribed dose level	Dose delivered to each dose level	cGy				

	Mod	ality	Technique
MODALITY & TECHNIQUE	External Beam Radiation Therapy (EBRT)	Protons	Passive Scattering Scanning Beam Intensity Modulated Proton Therapy (IMPT) Scanning Beam Multi-Field Optimization (MFO) Scanning Beam Single-Field Optimization (SFO) 2-Dimensional (2D)
		Photons (LINAC)	3-Dimensional (3D) planned Intraoperative Radiation Therapy (IORT) 2D 3D Intensity Modulated Radiation Therapy (IMRT)/Volumetric Madulated Ara Therapy (VD(AT))
MINIMUM DATA ELEMENTS		Photons (Isotope Source)	2D 3D Intracranial stereotactic
		Carbon	3D IMRT/VMAT 2D 3D
AN ASTRO CONSENSUS	Brachytherapy	Low Dose Rate (LDR)	IMRT/VMAT Interstitial Permanent Interstitial Temporary Intracavitary Permanent
PAPER		High Dose Rate (HDR)	Intracavitary Temporary Interstitial Temporary Intracavitary Temporary IORT
		Pulse Dose Rate (PDR) Radiopharmaceuticals	Interstitial Temporary Intracavitary Temporary Sealed Unsealed
	kV x-rays	Electronic brachytherapy IORT Superficial Orthovoltage	Intracavitary

EXAMPLE - PROSTATE

MINIMUM DATA ELEMENTS FOR RADIATION ONCOLOGY: AN ASTRO CONSENSUS PAPER

	Data Element	Definition	Detail
		Treatment Course Data Elements	
	Diagnosis	Identify disease(s) relevant to	C.61
		treatment	
	Modality	Radiation type - Records the list of all	Photons
		modalities used during treatment	
	Technicus	course (Check all that apply)	10447
	Technique	Treatment delivery method - Records	VMAI
		the list of all techniques used during	
		apply)	
ł	Number of Fractions	Records the total number of	20
	Planned	treatments prescribed in a treatment	20
	Number of Erections	Percende the total number of	20
	Number of Fractions	Records the total number of	20
	Delivered	course	
ł	Start date of Treatment	Indicates the date on which the	01/01/2019
		patient commences course of	
		delivered radiation treatment	
Ì	End date of Treatment	Indicates the date on which the	01/05/2019
		patient ends/completes a course of	
		delivered radiation treatment	
		Prescribed Dose Level Data Elements	
	Anatomic Site of each	Indicates the primary anatomic site(s)	PTV_High: Prostate + SemVes
	prescribed dose level	targeted for each dose level	PTV_Low: Lymph Nodes
	Total Dose Planned for Each	Dose prescribed to each dose level	PTV_High : 6000 cGy
	Prescribed Dose Level		PTV_Low : 4200 cGy
Ì	Total Dose Delivered for	Dose delivered to each dose level	PTV_High: 6000 cGy
	Each Prescribed Dose Level		PTV_Low: 4200 cGy

MINIMUM DATA ELEMENTS – EXAMPLE – BREAST

Data Element	Definition	Detail						
Treatment Course Data Elements								
	Primary Treatment Boost							
Diagnosis	Identify disease(s) relevant to treatment	C50.811	C50.811					
Modality	Photons (LINAC)	Electrons						
Technique	Treatment delivery method - Records the list of all techniques used during treatment course (Check all that apply)	3D	3D					
Number of Fractions Planned	Records the total number of treatments prescribed in a treatment	25	5					
Number of Fractions Delivered	Records the total number of treatments delivered in a treatment course	30	5					
Start date of Treatment	Indicates the date on which the patient commences course of delivered radiation treatment	2/25/2019	4/8/2019					
End date of Treatment	Indicates the date on which the patient ends/completes a course of delivered radiation treatment	4/5/2019	4/12/2019					
	Prescribed Dose Level Data Elements		•					
Anatomic Site of each prescribed dose level	Indicates the primary anatomic site(s) targets for each dose level	Chest wall and Chest wall lymph node regions	Chest wall					
Total Dose Planned for Each Prescribed Dose Level	Dose prescribed to each dose level	5000 cGy	1000 cGy					
Total Dose Delivered for Each Prescribed Dose Level	Dose delivered to each dose level	5000 cGy	1000 cGy					

CURRENT IMPLEMENTATION

mCODE







-mCODE[™]------

mCODE v1.0



-mCODE[™]------

mCODE v1.0



Internati	onal	HL7 FHIR Implementation Guide: minimal Common Oncology Data Elements (mCODE) Release 1 - US Realm STU1						۵ 🍐	HL7 [°] FHIR [°]
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This pag	e is part of	f the HL7 FHIF	R Implementa	tion Guide: m	inimal Comn	on Oncology	/ Data Elements (mCODE) Release 1 - US Realm	STU1 (v1.0.0: ST	U 1) based on FHIR R4.

This is the current published version. For a full list of available versions, see the Directory of published versions 🖪

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1.1 Background

According to the National Cancer Institute, 38.5 percent of men and women will be diagnosed with cancer at some point during their lifetimes. In 2014, an estimated 14.7M people were living with cancer in the United States. While these numbers are staggering, the silver lining in the wide prevalence of cancer is the potential to learn from treatment of millions of patients. If we had research-quality data from all cancer patients, it would enable higher quality health outcomes. Today, we lack the data models, technologies, and methods to capture that data.

http://hl7.org/fhir/us/mcode/



A NEW HL7 FHIR ACCELERATOR





http://hl7.org/CodeX

A <u>community</u> and platform to accelerate <u>interoperable data</u> modeling and implementation around <u>mCODE</u>, leading to step-change <u>improvements</u> in <u>cancer care</u> and <u>research</u>



Clinical Research



EHR-based clinical trials endpoints collection:



Develop and validate data elements that define clinical utility (treatment response, toxicity, change in treatment, deviation from clinical pathway) ST. JOSEPH MERCY ANN ARBOR Saint Joseph Mercy Health System metro-minnesota MMCORC community oncology research consortium

ThedaCare. Medical Center-Waupaca







Clinical Care



Demonstrate the use of mCODE elements to allow providers and patients to make informed, shared, data-driven decisions and provide data back to generate new knowledge



ASCO CancerLinQ Shaping The Future Of Cancer Care



Intermountain Healthcare



CODEX USE-CASE-BASED PROJECTS



mCODE++ Extraction

EHR Endpoints for Cancer Clinical Trials (future extensions of ICAREdata)

Integrated Trial Matching for Cancer Patients and Providers



Oncology Clinical Pathways



Radiation Therapy Treatment Data for Cancer



Oncology Clinical Pathways: Prior Authorization Support



Alternative Payment Model Data Reporting for Cancer



Drug Value Based Agreements for Cancer



Active Community Development Active Community Planning

ty In Discovery

RADIATION THERAPY TREATMENT DATA (RTTD) FOR CANCER

FHIR mCODE++ radiation treatment data extraction from radiation oncology EHR module and sent to EHR.

Through mCODE++, radiation therapy treatment summary data is available for clinical care, surveillance and evaluation.



mCODE++: leveraging mCODE with possible extensions

when these systems natively support mCODE and FHIR.

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PARALLEL TRACKS







ASTRO

TARGETING CANCER CARE

mCODETM



PARALLEL TRACKS



PARALLEL TRACKS



More information

- ASTRO Minimum Data Elements <u>https://www.astro.org/Patient-Care-and-Research/Clinical-Practice-Statements/Minimum-Data-Element</u>
- mCODETM <u>https://health.mitre.org/mcode/</u>
- FHIR IG <u>http://standardhealthrecord.org/guides/mcode/</u>
- ICAREdata™ <u>http://icaredata.org/</u>

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