Consolidated Clinical Document Architecture (C-CDA) Quick Reference Sheet

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Introduction

Clinical data exchange plays a crucial role in enhancing patient care, facilitating informed clinical decision-making, and meeting regulatory requirements.

For medical data to be useful, it needs to be turned into meaningful information through seamless interoperability between health information technology (HIT) systems (Lehne et al., 2019).

The Consolidated Clinical Document Architecture (C-CDA), maintained by HL7 International, is the primary standard for structured clinical data exchange (D'Amore et al., 2018).

The complexities of C-CDA standards have led to significant variability in data structuring and exchange, hindering interoperability.

The purpose of this C-CDA Quick Reference Sheet is to simplify the C-CDA standard, reduce variability, and promote interoperability and user adoption.

Methods

To identify challenges in C-CDA adoption, I participated in Texas Health Services Interoperability Collaborative (THSA) meetings and several national and state department meetings.

The suggestion to generate a visual tool that would enable non-technical and technical stakeholders to engage more confidently with clinical data was put forth.

Feedback was gathered through structured discussions and iterative reviews. End users provided insights on pain points, usability concerns, and essential components for improving C-CDA comprehension.

Results

The C-CDA Quick Reference Sheet provides a concise overview of document, section, and entry templates, their purpose, and their role in interoperability, along with template identifiers (templateId), and version release dates.

It also includes standardized terminology Value Set Authority Center Object Identifier (VSAC OID) and Logical Observation Identifiers Names and Codes (LOINC), and hyperlinked resources for deeper insights. Feedback from end users indicated that the reference sheet helped clarify the most commonly used templates and improved their understanding of the C-CDA standard.

How the quick reference sheet works can be found in **Table 1**.

Discussion

This project addressed the complexity and variability of the C-CDA standard by developing a simplified quick reference sheet to support both technical and non-technical users. While C-CDA templates promote semantic interoperability, their complexity often leads to inconsistent data encoding and implementation challenges.

The reference sheet consolidates essential information, including template types, templateId, version history, and terminology like VSAC and LOINC, to improve clarity and consistency. Overall, this quick reference sheet is a meaningful step toward improving interoperability and user confidence in C-CDA implementation.

Conclusion

The quick reference sheet is a major step toward simplifying the C-CDA standard and finding inconsistencies. By facilitating a better understanding of templates, terminology, and constraints, this tool has the potential to improve interoperability and ultimately contribute to better healthcare outcomes.

Next Steps: Future work will involve testing this tool with a larger group of end users, gathering more structured feedback on its effectiveness, and studying its usability in real-world clinical settings.

Table 1- Results: Excel Spreadsheet Tool with Multiple Tabs and Filters Makes C-CDA Template Research Easier

Document Types (Select Document Type)

Document Types	Most General LOINC	Value Set Name (VSAC)
Care Plan	**18776-5**	**Care Plan Document Type**
Consultation Note	11488-4	ConsultDocumentType
Continuity of Care Document (CCD)	34133-9	Summary of episode note
Discharge Summary	18842-5	DischargeSummaryDocumentTypeCode
History & Physical (H&P)	34117-2	HPDocumentType
Operative Note	11504-8	SurgicalOperationNoteDocumentTypeCode
Procedure Note	28570-0	ProcedureNoteDocumentTypeCodes
Progress Note	11506-3	ProgressNoteDocumentTypeCode
Referral Note	57133-1	ReferralDocumentType
Transfer Summary	18761-7	TransferDocumentType
US Realm Header		

Section Types (Select Section Type)

Document Section Templates	Care Plan	LOINC Code
Health Concerns	Required	75310-3
Goals	Required	61146-7
Health Status Evaluations and Outcomes	Recommended	11383-7
Activities	Additional	62387-6
Advance Directives	Additional	42348-3

Entry Type (Select Entry Type)

Entry Name	Entry Constraint	Comment
Advance Directive Observation (V3)	[0..*]	[1..*] entry
Advance Directive Organizer (V2)	[0..*]	[1..*] entry

Entry Details Summarized to Show Data Resource Type, Temporal , Tense, and State Requirements, Overall Complexity Essential Entry Details Reveal Key Characteristics of Data Representation Patterns for USCDI Data Elements

Entry Template Name	Primary Resource	Effective Time Required?	Mood Code	Status Code	# of Contains
Advance Directive Organizer	Organizer	None	**EVN**	Completed	2

References

D'Amore, J., Bouhaddou, O., Mitchell, S., Li, C., Leftwich, R., Turner, T., Rahn, M., Donahue, M., & Nebeker, J. (2018). Interoperability Progress and Remaining Data Quality Barriers of Certified Health Information Technologies. *AMIA Annual Symposium Proceedings*, *2018*, 358–367.

Lehne, M., Sass, J., Essenwanger, A., Schepers, J., & Thun, S. (2019). Why digital medicine depends on interoperability. *Npj Digital Medicine*, *2*(1), 1–5. https://doi.org/10.1038/s41746-019-0158-1

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