Great idea to move this to Zulip…and maybe announce its move to Zulip on the SDWG listserve to be fair to the CDA Community member who are not as regularly engaged in using Zulip (though we are always encouraging this new behavior at the C-CDA IAT).

Since this whole discussion stems from a topic that was discussed at the July C-CDA IAT, I would ask that the C-CDA stream be used. It’s the perfect place for this discussion to continue.

This link will get you into that stream: https://chat.fhir.org/#narrow/stream/179311-C-CDA. Just start a new topic with a title like “Multi-Code Problems” – ACTUALLY – I just did that for you!

Lisa

From: Robert McClure MD <rmcclure@mdpartners.com>

Sent: Thursday, August 19, 2021 12:31 PM

To: Michael Lawley PhD <Michael.Lawley@csiro.au>; Austin Kreisler <austin.j.kreisler@leidos.com>; Dave Carlson <dcarlson@mieweb.com>

Cc: Matt Szczepankiewicz <mszczepa@epic.com>; Rob Hausam <rob@hausamconsulting.com>; Sean P. McIlvenna <sean.mcilvenna@lantanagroup.com>; Gay Dolin MSN RN <gdolin@namasteinformatics.com>; Ann D. Phillips <APhillips@imohealth.com>; Brett Marquard <brett@waveoneassociates.com>; Emma Jones <Emma.Jones@allscripts.com>; Benjamin Flessner <benjamin@redoxengine.com>; John D'Amore <jdamore@diameterhealth.com>; Lisa Nelson MSc, MBA <lnelson@max.md>; bdolin@elimu.io; Jake Roth <jaroth@epic.com>; Ayyar, Shamant <Shamant.Ayyar@allscripts.com>; Ryan Zoellner <rzoellne@epic.com>

Subject: Re: EXTERNAL: Re: Multi-Code Problems

Austin, per your request, this is the last email you’ll get from me but thought you’d be interested in the proposed approach.

Dave - yes, Matt and I will try to summarize then start (add to?) a Zulip thread.

Michael,

Look for a Zulip. Can you point me to a document (or where in the SCG doc) that clarifies the current SCG domain restrictions for compositions?

Also, while I understand the value to being specific regarding use case examples, the point of this is in part to assess how to use the general model tool in C-CDA and determine what it can be allowed to do.

. . .

All content represents my view only

Robert McClure MD FAMIA FHL7 (he/him) : President, MD Partners, Inc.

303.926.6771 : rmcclure@mdpartners.com

On Aug 19, 2021, at 1:44 AM, Lawley, Michael (H&B, Herston - RBWH) <Michael.Lawley@csiro.au> wrote:

Any chance of a TL;DR summary -- it's a very long thread to piece together.

I have a couple opf comments though:

1/ I don't believe it's worth having a discussion about expressions like this in the abstract. They need to be place in an information model somewhere, and depending on that information model it may make more sense to store the codes separately. Ultimately it comes down to what you need to express and, perhaps more importantly, how the coded data is expected to be used.

2/ this is NOT a valid SNOMED CT post coordinated expression:

8801005|:47429007|105502003|,47429007|=709044004

Specifically, the | symbol is used to surround display terms within an expression. The correct syntax would be:

8801005:47429007=105502003,47429007=709044004

Additionally, insofar as this is about post coordination, the relevant specification is the compositional grammar (http://snomed.org/scg) and not ECL (the Expression Constraint Langauge) -- ECL is about writing queries to match sets of concepts, not about expressing a complex idea with multiple codes.

Regards,

michael

--

Dr Michael Lawley

Research Group Leader, Health Informatics

The Australia e-Health Research Centre http://aehrc.com/

work: +61 7 3253 3609; mob: +61 427 456 260 email: michael.lawley@csiro.au

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From: Rob McClure <rmcclure@mdpartners.com>

Sent: Wednesday, 18 August 2021 12:53 PM

To: Matt Szczepankiewicz <mszczepa@epic.com>; Rob Hausam <rob@hausamconsulting.com>; Lawley, Michael (H&B, Herston - RBWH) <Michael.Lawley@csiro.au>

Cc: Sean P. McIlvenna <sean.mcilvenna@lantanagroup.com>; Austin Kreisler <austin.j.kreisler@leidos.com>; Gay Dolin MSN RN <gdolin@namasteinformatics.com>; Dave Carlson <dcarlson@mieweb.com>; Ann D. Phillips <APhillips@imohealth.com>; Brett Marquard <brett@waveoneassociates.com>; Emma Jones <Emma.Jones@allscripts.com>; Benjamin Flessner <benjamin@redoxengine.com>; John D'Amore <jdamore@diameterhealth.com>; Lisa Nelson MSc, MBA <lnelson@max.md>; bdolin@elimu.io <bdolin@elimu.io>; Jake Roth <jaroth@epic.com>; Ayyar, Shamant <Shamant.Ayyar@allscripts.com>; Ryan Zoellner <rzoellne@epic.com>

Subject: Re: EXTERNAL: Re: Multi-Code Problems

I’ve added them to this reply.

Rob and Michael, look over the thread for some background on this meeting request. I think there is a Zulip thread that touched on this also.

. . .

All content represents my view only

Robert McClure MD FAMIA FHL7 (he/him) : President, MD Partners, Inc.

303.926.6771 : rmcclure@mdpartners.com

On Aug 17, 2021, at 10:48 AM, Matt Szczepankiewicz <mszczepa@epic.com> wrote:

Yeah, I think that makes sense. Hope everyone can let me know their availability via this newDoodle poll (sorry for the confusion over the first one)! That said, I don’t think I have Rob or Michael’s contact info and couldn’t find it on the HL7 Confluence Page. Mind giving it to me so I can explain the background of this issue to them and invite them to the call?

Matt Szczepankiewicz

Epic | Software Developer | Care Everywhere

📞 (608) 271-9000

From: Robert McClure MD <rmcclure@mdpartners.com>

Sent: Sunday, August 15, 2021 7:05 AM

To: Matt Szczepankiewicz <mszczepa@epic.com>

Cc: Sean P. McIlvenna <sean.mcilvenna@lantanagroup.com>; Austin Kreisler <AUSTIN.J.KREISLER@leidos.com>; Gay Dolin MSN RN <gdolin@namasteinformatics.com>; Dave Carlson <dcarlson@mieweb.com>; Ann D. Phillips <APhillips@imohealth.com>; Brett Marquard <brett@waveoneassociates.com>; Emma Jones <Emma.Jones@allscripts.com>; Benjamin Flessner <benjamin@redoxengine.com>; John D'Amore <jdamore@diameterhealth.com>; Lisa Nelson MSc, MBA <LNelson@max.md>; bdolin@elimu.io; Jake Roth <jaroth@epic.com>; Ayyar, Shamant <Shamant.Ayyar@allscripts.com>; Ryan Zoellner <rzoellne@epic.com>

Subject: Re: EXTERNAL: Re: Multi-Code Problems

Matt,

First, yes - I’m on a full month mostly OOO road trip in August and would rather we find a time in early September - likely dedicated 90 min - to attempt to get close to a final recommendation we can finalize at the WGM. So perhaps a doodle targeting the first two weeks in September?

As to approach. I’d like us to come up with a general approach but from FHIR in particular I’ve been told the door is shut and any expression representation SHALL be represented inside the code string. That does not mean we can not use the qualifier model structure in CCDA, it just means we need a clear transform. So yes, with proper clarity on use, we can support the use in CCDA of the qualifier structure (but I’m not saying I agree exactly with your choices in the example, that will come fro the meeting.)

Both approaches require (SHALL) only allow use of an expression syntax that is defined by “the code system specified.” I find this onerous and perhaps we can find a way around it, but for now it means we should be able to clarify how to solve your most pressing needs because SCT and ICD do have defined expression grammars. If we clarify how to apply those grammars within the two models (separate qualifiers per CCDA, and inside a single code) and how to transform, we are fine. This should be one of the tasks for the meeting and to do that we need to get more information on the requirements for these grammars. The meeting should include Rob Hausam and Michael Lawley if possible for SCT. Rob also is the guy who wrote the ICD FHIR page.

As for anything that mixes code systems, unless the use of multiple code system codes is defined within a specific code system grammar, we are currently barred from doing this unless we declare a new code system that crafts the grammar we want to use, and we somehow clarify how to the mixed code systems are identified. [One way would be to restrict the number and use of the codes from the “other” code system to a clearly identified spot in the syntax so the syntax spec carries the information, not the expression.] The FHIR approach forces this complexity on us because it only supports identifying a single code system for the expression. We need FHIR-I to provide viable solutions on how to get outside this box, which means proving there is a need. Defining that need is another task for the meeting.

Make sense?

. . .

All content represents my view only

Robert McClure MD FAMIA FHL7 (he/him) : President, MD Partners, Inc.

303.926.6771 : rmcclure@mdpartners.com

On Aug 9, 2021, at 6:56 PM, Matt Szczepankiewicz <mszczepa@epic.com> wrote:

Does the dagger-asterisk syntax generalize to combining three or more ICD-10 codes? What about handling this problem in codeSystems besides SNOMED and ICD? From a functional standpoint, we definitely need an approach that answers that first question, and being able to answer the second would still be extremely desirable… although I suppose that if we decide this is truly impossible because we don’t know whether other arbitrary codeSystems allow combining problem codes and thus allow the use of qualifiers here, doing this for just SNOMED and ICD codes would cover the vast majority of cases. Although I think I’ve gotten a little confused about the approach you’re proposing here. Originally, I had something like this in mind:

<value xsi:type="CD" code="8801005" codeSystem="2.16.840.1.113883.6.96" codeSystemName="SNOMED CT" displayName="Secondary diabetes mellitus">

 <!-- Additional qualifiers representing the concepts not captured in the first SNOMED code -->

 <qualifier>

 <name code="SUMM" displayName="summarized by" codeSystem="2.16.840.1.113883.5.1002" codeSystemName="ActRelationshipType" />

 <value code="105502003" codeSystem="2.16.840.1.113883.6.96" codeSystemName="SNOMED CT" displayName="Dependence on renal dialysis" />

 </qualifier>

 <qualifier>

 <name code="SUMM" displayName="summarized by" codeSystem="2.16.840.1.113883.5.1002" codeSystemName="ActRelationshipType" />

 <value code="709044004" codeSystem="2.16.840.1.113883.6.96" codeSystemName="SNOMED CT" displayName="Chronic kidney disease" />

 </qualifier>

</value>

But then it sounded like you were instead proposing this:

<value code="8801005|:47429007|105502003|,47429007|=709044004" codeSystem="2.16.840.1.113883.6.96" codeSystemName="SNOMED CT" xsi:type="CD" />

Which approach do you have in mind (or are you torn between the two)? I think the first approach would be easier in nearly every practical way (easier to send, easier to receive, doesn’t break existing value sets, doesn’t confuse receivers who don’t know what to do with the additional codes) but if it would be an illegal use of CDA qualifiers and you’re saying the second is the only viable option, then I suppose it’s better than nothing. Barring that, though, I’d much rather stick to the first approach here.

It feels like I’m misunderstanding part of your point, though. Maybe this would be easier to talk about more on this week’s Structured Docs or Vocab call?

Matt Szczepankiewicz

Epic | Software Developer | Care Everywhere

📞 (608) 271-9000

From: Robert McClure MD <rmcclure@mdpartners.com>

Sent: Sunday, August 8, 2021 9:48 AM

To: Matt Szczepankiewicz <mszczepa@epic.com>

Cc: Sean P. McIlvenna <sean.mcilvenna@lantanagroup.com>; Austin Kreisler <AUSTIN.J.KREISLER@leidos.com>; Gay Dolin MSN RN <gdolin@namasteinformatics.com>; Dave Carlson <dcarlson@mieweb.com>; Ann D. Phillips <APhillips@imohealth.com>; Brett Marquard <brett@waveoneassociates.com>; Emma Jones <Emma.Jones@allscripts.com>; Benjamin Flessner <benjamin@redoxengine.com>; John D'Amore <jdamore@diameterhealth.com>; Lisa Nelson MSc, MBA <LNelson@max.md>; bdolin@elimu.io; Jake Roth <jaroth@epic.com>; Ayyar, Shamant <Shamant.Ayyar@allscripts.com>; Ryan Zoellner <rzoellne@epic.com>

Subject: Re: EXTERNAL: Re: Multi-Code Problems

Matt,

Regarding whitespaces, I’ll yield on this but believe the use of the tighter regex is more than the datatype definition required. But I’m fine with sending codes only.

On the other: Per the specification, and for now, what we have allowed, you may only use the qualifier model when the code system specifies that codes my be combined. We (HL7) are not allowed to do this on our own, unless we make a new code system that specifies how to combine something like ICD codes. We do have the using ICD in FHIR pages that discusses how to use dagger-asterisk and we need to use this but within the qualifier. At a minimum for ICD, we need to decide if the + and \* are to be included or assumed when using CCDA datatypes.

You must answer “those questions” before you get to “use the qualifiers there now.”

. . .

All content represents my view only

Robert McClure MD FAMIA FHL7 (he/him) : President, MD Partners, Inc.

303.926.6771 : rmcclure@mdpartners.com

On Aug 5, 2021, at 3:58 PM, Matt Szczepankiewicz <mszczepa@epic.com> wrote:

That’s not quite right. You can try running a code with spaces through the CDA schema and watch it fail:

Value '93796005|Primary malignant neoplasm of female breast' is not facet-valid with respect to pattern '[^\s]+' for type 'cs'.

The correct way to read that regex is “one or more non-whitespace characters”—that is, they ALL have to be non-whitespace.

That said, I don’t want to get too hung up on this specific topic over the more general questions here. A code like "8801005|:47429007|105502003|,47429007|=709044004" might work for SCT, but what about sending, say, multiple ICD-10 codes? Likewise, how would we be able to make sure value set logic can handle an SCT expression like that?

Those are questions that ought to be answered, but I’m not sure whether we want to make answering them a prerequisite for solving the specific problem at hand, or whether we should stick to using qualifiers there for now.

Matt Szczepankiewicz

Epic | Software Developer | Care Everywhere

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From: Robert McClure MD <rmcclure@mdpartners.com>

Sent: Tuesday, August 3, 2021 10:49 PM

To: Sean P. McIlvenna <sean.mcilvenna@lantanagroup.com>

Cc: Austin Kreisler <AUSTIN.J.KREISLER@leidos.com>; Gay Dolin MSN RN <gdolin@namasteinformatics.com>; Matt Szczepankiewicz <mszczepa@epic.com>; Dave Carlson <dcarlson@mieweb.com>; Ann D. Phillips <APhillips@imohealth.com>; Brett Marquard <brett@waveoneassociates.com>; Emma Jones <Emma.Jones@allscripts.com>; Benjamin Flessner <benjamin@redoxengine.com>; John D'Amore <jdamore@diameterhealth.com>; Lisa Nelson MSc, MBA <LNelson@max.md>; bdolin@elimu.io; Jake Roth <jaroth@epic.com>; Ayyar, Shamant <Shamant.Ayyar@allscripts.com>; Ryan Zoellner <rzoellne@epic.com>

Subject: Re: EXTERNAL: Re: Multi-Code Problems

Agreed. Hence we can technically include white spaces which would make the expression more readable which as we all know, is always important for the developers.

. . .

All content represents my view only

Robert McClure MD FAMIA FHL7 (he/him) : President, MD Partners, Inc.

303.926.6771 : rmcclure@mdpartners.com

On Aug 3, 2021, at 4:01 PM, Sean P. McIlvenna <sean.mcilvenna@lantanagroup.com> wrote:

For those who don’t know…

[^\s]+

[^\s] = anything NOT a white-space

+ = at least once

So, the above regular expression really just says “at least one character that is not a white-space”.

Thanks,

Sean McIlvenna

t: (208) 712-3536

c: (208) 704-6613

North Idaho (Pacific Time)

From: Kreisler, Austin J. <AUSTIN.J.KREISLER@leidos.com>

Sent: Tuesday, August 3, 2021 2:56 PM

To: Gay Dolin <gdolin@namasteinformatics.com>; Robert McClure MD <rmcclure@mdpartners.com>; Sean P. McIlvenna <sean.mcilvenna@lantanagroup.com>

Cc: Matt Szczepankiewicz <mszczepa@epic.com>; Dave Carlson <dcarlson@mieweb.com>; Ann D. Phillips <APhillips@imohealth.com>; Brett Marquard <brett@waveoneassociates.com>; Emma Jones <Emma.Jones@allscripts.com>; Benjamin Flessner <benjamin@redoxengine.com>; John D'Amore <jdamore@diameterhealth.com>; Lisa Nelson MSc, MBA <LNelson@max.md>; bdolin@elimu.io; Jake Roth <jaroth@epic.com>; Ayyar, Shamant <Shamant.Ayyar@allscripts.com>; Ryan Zoellner <rzoellne@epic.com>

Subject: RE: EXTERNAL: Re: Multi-Code Problems

Gay.

HL7 Version 3 Standard: XML Implementation Technology Specification - Data Types, R1, the code attribute of the CD data type is an ST data type, with the following constraint:

code is represented by the XML attributecode whose value, if present, must be a valid xs:token with no internal whitespace.

xs:token is externally defined here:

https://www.w3.org/TR/xmlschema-2/#token

The CDA data types schema is using the regex expression [^\s]+ and properly implements the intent of the XML Data Types R1.

Since there is no white space in the code in the example, it appears to be an acceptable value for the code attribute per the XML Data Types R1 standard that is used by CDA.

I think this has been repeatedly discussed, coming to the same conclusion over the years. The real issue is whether the CDA community can actually handle the SNOMED expression syntax.

Regards, Austin

From: Gay Dolin <gdolin@namasteinformatics.com>

Sent: Tuesday, August 03, 2021 10:27 AM

To: Robert McClure MD <rmcclure@mdpartners.com>; Sean P. McIlvenna <sean.mcilvenna@lantanagroup.com>; Kreisler, Austin J. [US-US] <AUSTIN.J.KREISLER@leidos.com>

Cc: Matt Szczepankiewicz <mszczepa@epic.com>; Dave Carlson <dcarlson@mieweb.com>; Ann D. Phillips <APhillips@imohealth.com>; Brett Marquard <brett@waveoneassociates.com>; Emma Jones <Emma.Jones@allscripts.com>; Benjamin Flessner <benjamin@redoxengine.com>; John D'Amore <jdamore@diameterhealth.com>; Lisa Nelson MSc, MBA <LNelson@max.md>; bdolin@elimu.io; Jake Roth <jaroth@epic.com>; Ayyar, Shamant <Shamant.Ayyar@allscripts.com>; Ryan Zoellner <rzoellne@epic.com>

Subject: EXTERNAL: Re: Multi-Code Problems

CAUTION: This email originated from outside of Leidos. Be cautious when clicking or opening content.

adding Sean and Austin

Is the following (e.g SNOMED expressions) allowed in the CDA R2 and its version of HL7 data types?:

 <value code="8801005|:47429007|105502003|,47429007|=709044004" codeSystem="2.16.840.1.113883.6.96" codeSystemName="SNOMED CT" xsi:type="CD" />

On Tue, Aug 3, 2021 at 9:54 AM Robert McClure MD <rmcclure@mdpartners.com> wrote:

What I’m saying is that the schema then is overly constrained as defined per the datatype spec. Not saying that is an error, but would be interested to find out why the difference exists.

. . .

All content represents my view only

Robert McClure MD FAMIA FHL7 (he/him) : President, MD Partners, Inc.

303.926.6771 : rmcclure@mdpartners.com

On Aug 3, 2021, at 10:08 AM, Matt Szczepankiewicz <mszczepa@epic.com> wrote:

Rob/Gay—the type of a code/@code is cs, which has to match the regex [^\s]+ per the schema. So I don’t think whitespace is allowed, but as far as I can tell, pipes or colons or such are fair game.

From: Dave Carlson <dcarlson@mieweb.com>

Sent: Tuesday, August 3, 2021 11:05 AM

To: Robert McClure MD <rmcclure@mdpartners.com>; Matt Szczepankiewicz <mszczepa@epic.com>; Gay Dolin MSN RN <gdolin@namasteinformatics.com>

Cc: Ann D. Phillips <APhillips@imohealth.com>; Brett Marquard <brett@waveoneassociates.com>; Emma Jones <Emma.Jones@allscripts.com>; Benjamin Flessner <benjamin@redoxengine.com>; John D'Amore <jdamore@diameterhealth.com>; Lisa Nelson MSc, MBA <LNelson@max.md>; bdolin@elimu.io; Jake Roth <jaroth@epic.com>; Ayyar, Shamant <Shamant.Ayyar@allscripts.com>; Ryan Zoellner <rzoellne@epic.com>

Subject: Re: Multi-Code Problems

External Mail. Careful of links / attachments. Submit Helpdesk if unsure.

Current on this: code="8801005|:47429007|105502003|,47429007|=709044004"

We'd probably store the entire thing, although we wouldn't make much sense of it, since we generally only expect individual codes. In anticipation of this, I may check for a | and only pull in the first code into the table field for concept\_id, so, that is the difference in meaning I was talking about (storing just 8801005, vs. the entire string).

David Carlson

Director of Standards and Interoperability

Certified HL7® CDA Specialist

Medical Informatics Engineering

260-459-6270 x327

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From: Robert McClure MD

Sent: Tuesday, August 3, 2021 11:47 AM

To: Dave Carlson; Matt Szczepankiewicz; Gay Dolin MSN RN

Cc: Ann D. Phillips; Brett Marquard; Emma Jones; Benjamin Flessner; John D'Amore; Lisa Nelson MSc, MBA; bdolin@elimu.io; Jake Roth; Ayyar, Shamant; Ryan Zoellner

Subject: Re: Multi-Code Problems

Matt,

Yes, you would put all that into the string (or to make it “readable” you would put all of what I sent and yes, you may need to escape out the white space, I didn’t do that.) And yes, I believe you have the correct value string.

No, the model semantics of datatypes R2 were not “a mistake” but one approach in a path that has taken the community to a different point.

Yes, this complicates things but following R2 is not a simple solution either and it has consequences. In particular beyond the translation wall between R2 and R3/FHIR, this model would require governance documentation and constraints for any hope of consistency in implementation. It also raises complexities in value sets but of a different and likely less complex type.

Dave,

That is my point. Every implementer would need to parse everything. We’d have to provide guidance and it would help to craft a reference implementation. I’m not following the “Modifies the meaning” comment, can you clarify?

Gay,

I’d say it should be valid unless you can clarify why you think it should not be. I don’t see anything in DT R2 that would preclude it.

. . .

All content represents my view only

Robert McClure MD FAMIA FHL7 (he/him) : President, MD Partners, Inc.

303.926.6771 : rmcclure@mdpartners.com

On Aug 3, 2021, at 9:34 AM, Dave Carlson <dcarlson@mieweb.com> wrote:

I can't speak for other systems, but, I know we'd be having to basically parse out to just store the initial concept\_id there on the problem record, we don't have a mechanism for those pre-coordinated full strings currently. Whether that modifies the meaning (likely?) I guess that it up to the system reading it in... no matter what we do, we are going up against what any one system can do with the info.

David Carlson

Director of Standards and Interoperability

Certified HL7® CDA Specialist

Medical Informatics Engineering

260-459-6270 x327

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From: Matt Szczepankiewicz <mszczepa@epic.com>

Sent: Tuesday, August 3, 2021 11:31 AM

To: Robert McClure MD <rmcclure@mdpartners.com>

Cc: Gay Dolin MSN RN <gdolin@namasteinformatics.com>; Ann D. Phillips <APhillips@imohealth.com>; Brett Marquard <brett@waveoneassociates.com>; Emma Jones <Emma.Jones@allscripts.com>; Benjamin Flessner <benjamin@redoxengine.com>; John D'Amore <jdamore@diameterhealth.com>; Lisa Nelson MSc, MBA <LNelson@max.md>; Dave Carlson <dcarlson@mieweb.com>; bdolin@elimu.io <bdolin@elimu.io>; Jake Roth <jaroth@epic.com>; Ayyar, Shamant <Shamant.Ayyar@allscripts.com>; Ryan Zoellner <rzoellne@epic.com>

Subject: RE: Multi-Code Problems

So you’re suggesting that we literally put that into the @code attribute of a CDA code?

 <value code="8801005|:47429007|105502003|,47429007|=709044004" codeSystem="2.16.840.1.113883.6.96" codeSystemName="SNOMED CT" xsi:type="CD" />

(Note that CDA codes aren’t allowed to contain whitespace, but since AFAIK the inline displayNames are optional I don’t think removing them is a dealbreaker here.)

I think my two questions about that approach, assuming I’m understanding correctly, are:

1) Is this essentially saying, then, that the code/qualifier semantics of CDA were a mistake (or, at least, not the best decision) and that this is a better way to qualify codes in CDA?

2) As you said, this raises a lot of questions with value sets, so I’d want to make sure we’re prepared to deal with that somehow before actually implementing the above.

- Matt

From: Robert McClure MD <rmcclure@mdpartners.com>

Sent: Tuesday, August 3, 2021 10:13 AM

To: Matt Szczepankiewicz <mszczepa@epic.com>

Cc: Gay Dolin MSN RN <gdolin@namasteinformatics.com>; Ann D. Phillips <APhillips@imohealth.com>; Brett Marquard <brett@waveoneassociates.com>; Emma Jones <Emma.Jones@allscripts.com>; Benjamin Flessner <benjamin@redoxengine.com>; John D'Amore <jdamore@diameterhealth.com>; Lisa Nelson MSc, MBA <LNelson@max.md>; dcarlson@mieweb.com; bdolin@elimu.io; Jake Roth <jaroth@epic.com>; Ayyar, Shamant <Shamant.Ayyar@allscripts.com>; Ryan Zoellner <rzoellne@epic.com>

Subject: Re: Multi-Code Problems

Matt, all,

At the risk of making these emails long with all the carried info, I’d say we should do some more email discussion first.

So the V3 datatype r2 based CD type used in C-CDA does indeed have support for qualifiers using list<CR> and CR is “ConceptRole”. I stand corrected in that your (Matt) example is correctly formed, it is the datatype example that plays loose with the correct structure.

The big issue in continuing to use this structure is that HL7 decided, essentially based upon the long work tied to TermInfo, that concept expressions were too complex, too driven by code system specifics, and so rarely used, that to build a single common structure to support them was not worth the effort. Instead, all expression semantics are to be exchanged within the code string element. V3 datatypes r3 embraced this and so did FHIR; and V2 always has. I had a discussion with Lloyd last night on this and he’s firmly against changing this and I suspect for FHIR we’d struggle to get some sort of “qualifier” extension on codableConcept. That means if we promote the use of using a model structure to allow expressions, anyone translating between datatype r2 and FHIR will be in a bind.

So here is the thing, given there is an existing expected approach to pack the code with a syntactically correct (per the code system of the root code) expression, do we use that instead? We do know that these allowances for expressions can be complex and I’ve searched for the current refinement constraints on SCT and can not find it. I assume the use of “Associated with” might be correct but do not know. We certainly can be very specific regarding what would be allowed in these expressions and what would not be allowed, and I’d say that would be required for this to work. I think it is doable but would need to understand how broad the requirement for this might be.

My complaint with this approach is that once you promote the use of expressions (really this is always true but I suspect most ignore it) for a program use, every implementer must code to parse the code string element. Lloyd makes the (what I’d call a vacuous) argument on this saying everyone already has to be prepared rot parse that element, citing UCUM as the use case, but I’m not convinced. Yet I will admit that this approach is easily transferable and can be implemented. It will mean we will need to think about how to determine when an expression is conformant with a value set requirement. This has always been on our to-do list but we’ve swept it off.

So what we need to decide is are you willing to use this approach instead of the model-based R2 approach and in doing so along with the current HL7 path?

The SCT example from below, all of this goes into the code string, assuming Associated with is proper:

8801005|Secondary diabetes mellitus|:47429007|Associated with|=105502003|Dependence on renal dialysis|,47429007|Associated with|= 709044004|Chronic kidney disease|

. . .

All content represents my view only

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303.926.6771 : rmcclure@mdpartners.com

On Aug 2, 2021, at 3:20 PM, Matt Szczepankiewicz <mszczepa@epic.com> wrote:

I’d rather we keep the discussion going between now and the September WGM, or at least hear Rob’s concerns in particular so that we can figure out what to do about them in the meantime.

As for concepts like “Breast cancer, left breast. EHR +, stage 3”, that seems a bit separate to me since we know today what the ideal way is to represent those (using things like the laterality qualifier). Granted, that doesn’t mean it’s easy for vendors (including Epic) to do, but since 1) we know how to model a solution there already and 2) losing info like body site and laterality feels like a different (and less concerning) issue than losing part of a finding itself, I’m content to stick to focusing on making sure we have a way to accurately represent all parts of a finding for now.

Matt Szczepankiewicz

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📞 (608) 271-9000

From: Gay Dolin <gdolin@namasteinformatics.com>

Sent: Monday, August 2, 2021 11:55 AM

To: Matt Szczepankiewicz <mszczepa@epic.com>

Cc: Robert McClure MD <rmcclure@mdpartners.com>; Ann D. Phillips <APhillips@imohealth.com>; Brett Marquard <brett@waveoneassociates.com>; Emma Jones <Emma.Jones@allscripts.com>; Benjamin Flessner <benjamin@redoxengine.com>; John D'Amore <jdamore@diameterhealth.com>; Lisa Nelson MSc, MBA <LNelson@max.md>; dcarlson@mieweb.com; bdolin@elimu.io; Jake Roth <jaroth@epic.com>; Ayyar, Shamant <Shamant.Ayyar@allscripts.com>; Ryan Zoellner <rzoellne@epic.com>

Subject: Re: Multi-Code Problems

External Mail. Careful of links / attachments. Submit Helpdesk if unsure.

HI Matt,

Didn't we mention having sessions at the Sept WGM?

Or is your ask more urgent?

Another thing to consider is that IMO mappings, often include codes like SNOMED body site codes

For example: an IMO concept, such as "Breast Cancer, left breast. EHR +, stage 3" will contain maps to finding codes, body site codes, laterality and staging codes. So, in the spirit of perfection, since IMO does not map to SNOMED expressions, there would need to be logic on the EHR vendor side to to ensure, minimally, the right name/value pairs were used or that the codes were place in the right CDA Template or FHIR profile element or attribute.

@Matt Szczepankiewicz , do you think vendors are prepared to do that?

On Mon, Aug 2, 2021 at 6:31 AM Matt Szczepankiewicz <mszczepa@epic.com> wrote:

Hey Rob—sorry about the scheduling misunderstanding at the IAT last week! Do you want to talk about this more on this week’s Structured Docs or Vocab call, or would you rather we set up a separate discussion for it?

Matt Szczepankiewicz

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From: Robert McClure MD <rmcclure@mdpartners.com>

Sent: Monday, July 19, 2021 10:25 PM

To: Matt Szczepankiewicz <mszczepa@epic.com>

Cc: Ann D. Phillips <APhillips@imohealth.com>; Brett Marquard <brett@waveoneassociates.com>; Emma Jones <Emma.Jones@allscripts.com>; Benjamin Flessner <benjamin@redoxengine.com>; John D'Amore <jdamore@diameterhealth.com>; Gay Dolin MSN RN <gdolin@namasteinformatics.com>; Lisa Nelson MSc, MBA <LNelson@max.md>; dcarlson@mieweb.com;bdolin@elimu.io; Jake Roth <jaroth@epic.com>; Ayyar, Shamant <Shamant.Ayyar@allscripts.com>; Ryan Zoellner <rzoellne@epic.com>

Subject: Re: Multi-Code Problems

Matt,

The point is that this is not ECL. This is not a SNOMED expression. It is a made up HL7 structure to represent concept qualifiers. We do not want to make some sort of fake-kinda ECL to be used for any code system. Yes, the link you provided is an overview of the SNOMED model (not ECL) but the point is we are not attempting to follow this, and couldn’t, because it is IP protected and we would be violating that IP to apply some non-conformant type of ECL other code systems. Even discussing this with the SCT powers make me cringe.

. . .

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On Jul 19, 2021, at 7:05 PM, Matt Szczepankiewicz <mszczepa@epic.com> wrote:

Does the use of this qualifier not conform to the ECL? I don’t know very much about it (if you have any info on where to learn more about it, that would be helpful!) but I was going off of here, which suggested that “associated with” is a valid attribute to define a clinical finding concept with.

If using “associated with” actually doesn’t conform to the ECL, then I agree that using a custom code would probably be better in that we’d be more explicit about the fact that we’re making something up. But if it does, then it seems like we should consider using it at least in the particular case of qualifying a SNOMED code.

- Matt

From: Robert McClure MD <rmcclure@mdpartners.com>

Sent: Friday, July 16, 2021 10:49 AM

To: Matt Szczepankiewicz <mszczepa@epic.com>

Cc: Ann D. Phillips <APhillips@imohealth.com>; Brett Marquard <brett@waveoneassociates.com>; Emma Jones <Emma.Jones@allscripts.com>; Benjamin Flessner <benjamin@redoxengine.com>; John D'Amore <jdamore@diameterhealth.com>; Gay Dolin MSN RN <gdolin@namasteinformatics.com>; Lisa Nelson MSc, MBA <LNelson@max.md>; dcarlson@mieweb.com; bdolin@elimu.io; Jake Roth <jaroth@epic.com>; Ayyar, Shamant <Shamant.Ayyar@allscripts.com>; Ryan Zoellner <rzoellne@epic.com>

Subject: Re: Multi-Code Problems

Here is why:

1. You note that using SCT Associated with when the concept and the qualifiers are SCT “seems better” but in fact it’s technically not. SCT has a formal ECL (Expression Constraint Language) and a formal syntax for combining concepts. I’m not saying we have to only use formal ECL when combining SCT concepts, but I believe we want to define an approach that just lets users clearly communicate when a code is to be characterized further by some additional qualifiers. By that I mean we are doing our own thing, an HL7 defined thing. There is no need to tie our HL7 “concept qualifier expression” to SCT, or any other specific code system. In fact, I’m suggesting it would be better if we in essence make that clear by using an HL7 code to support the HL7 structure.

2. That all said, I do want us to fully define the model and codes needed to represent the qualification of a primary code with one or more other secondary codes AND do that in a way that can also “translate” to FHIR. I understand you may not want that second step to slow down what you want to do for C-CDA/CDA but you do know how important that would be. It’s been discussed and there is no easy button yet.

Bottom line, I don’t care that much about which word you use for this, but I can tell you that using the SCT concept that is a part of the ECL set will cause SCT-specific discussion that you can avoid with an HL7 code.

. . .

All content represents my view only

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On Jul 15, 2021, at 6:13 PM, Matt Szczepankiewicz <mszczepa@epic.com> wrote:

I’m not sure I understand the benefit of using an HL7 code for this. I certainly understand the downside to having, say, an ICD-10 code with a qualifier/name in SNOMED and a qualifier/value in ICD-10, but how is an ICD-10 code with an HL7 qualifier/name any better? In either case, ICD-10 codes weren’t designed to be qualified by SNOMED or HL7 codes, right?

So I’m not sure where using a SNOMED qualifier/name is worse than using an HL7 one, and it certainly seems better in the case where it’s qualifying an actual SNOMED code—then you actually do just have regular SNOMED post-coordination. I’m definitely interested in hearing your reasoning though.

- Matt

From: Robert McClure MD <rmcclure@mdpartners.com>

Sent: Thursday, July 15, 2021 7:02 PM

To: Matt Szczepankiewicz <mszczepa@epic.com>

Cc: Ann D. Phillips <APhillips@imohealth.com>; Brett Marquard <brett@waveoneassociates.com>; Emma Jones <Emma.Jones@allscripts.com>; Benjamin Flessner <benjamin@redoxengine.com>; John D'Amore <jdamore@diameterhealth.com>; Gay Dolin MSN RN <gdolin@namasteinformatics.com>; Lisa Nelson MSc, MBA <LNelson@max.md>; dcarlson@mieweb.com; bdolin@elimu.io; Jake Roth <jaroth@epic.com>; Ayyar, Shamant <Shamant.Ayyar@allscripts.com>; Ryan Zoellner <rzoellne@epic.com>

Subject: Re: Multi-Code Problems

I’d rather we make a new HL7 code for this in the proper code system (which I need to think more about)

If we feel the need to use something available right now I would suggest we also consider

Qualifier value 36298100

Yes, it is a general collector concept, but perhaps the generality and proper English description for what we want might suit better if SCT needs to be the choice for this thing that is to be used everywhere?

I understand that Associated with is a more correct SNOMED CT concept model concept for this and would not push hard against it.

But I think I’d rather we use a new HL7 code system concept for this general terminology modeling exercise.

. . .

All content represents my view only

Robert McClure MD FAMIA FHL7 (he/him) : President, MD Partners, Inc.

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On Jul 15, 2021, at 3:54 PM, Matt Szczepankiewicz <mszczepa@epic.com> wrote:

Hey all—update that we talked about this a little bit more on today’s Examples Task Force call and generally agreed that using the SNOMED code “associated with” for the qualifier/name seems to make more sense than using the ActRelationshipType code “SUMM.”

I’m still interested in hearing if any folks who weren’t on the call have any preference between the two, though. But for now I think the SNOMED code should be considered the default option and that’s what I’ll lead with at the IAT if we get into the weeds of how to represent this in CDA. Likewise, I’m interested in further discussing how we’d equivalently represent this in FHIR—my naïve answer is “using extensions to Condition.code”, but lots of people here are much better versed than I am in mapping from C-CDA to FHIR, so maybe this already has a straightforward answer.

Thanks for the continued feedback!

- Matt

From: Matt Szczepankiewicz

Sent: Friday, July 2, 2021 5:51 PM

To: Ann D. Phillips <APhillips@imohealth.com>; 'Brett Marquard' <brett@waveoneassociates.com>; 'Jones, Emma' <Emma.Jones@allscripts.com>; 'Benjamin Flessner' <benjamin@redoxengine.com>; 'John D'Amore' <jdamore@diameterhealth.com>; 'Gay Dolin' <gdolin@namasteinformatics.com>; Rob McClure <rmcclure@mdpartners.com>; Lisa Nelson <LNelson@max.md>; dcarlson@mieweb.com

Cc: Jake Roth <jaroth@epic.com>; 'Ayyar, Shamant' <Shamant.Ayyar@allscripts.com>

Subject: Multi-Code Problems

Hi all—over the past few months (and soon at the IAT), we’ve talked a bit about how to represent problems that consist of more than one code in a given code system. Previously, we’d discussed concatenating codes using qualifiers, with the code SUMM (summarized by) from the HL7 ActRelationshipType code system as the qualifier/name to for each additional code needed to fully represent one problem.

However, would it make more sense to use the SNOMED code Associated with for the qualifier/name instead? In the case of SNOMED codes in particular, this has the advantage of neatly following SNOMED post-coordination rules (or so I hope; let me know if this still isn’t how SNOMED post-coordination ought to work). For example:

 <value xsi:type="CD" code="8801005" codeSystem="2.16.840.1.113883.6.96" codeSystemName="SNOMED CT"displayName="Secondary diabetes mellitus">

 <!-- Additional qualifiers representing the concepts not captured in the first SNOMED code -->

 <qualifier>

 <name code="47429007" displayName="Associated with" codeSystem="2.16.840.1.113883.6.96"codeSystemName="SNOMED CT" />

 <value code="105502003" codeSystem="2.16.840.1.113883.6.96" codeSystemName="SNOMED CT"displayName="Dependence on renal dialysis" />

 </qualifier>

 <qualifier>

 <name code="47429007" displayName="Associated with" codeSystem="2.16.840.1.113883.6.96"codeSystemName="SNOMED CT" />

 <value code="709044004" codeSystem="2.16.840.1.113883.6.96" codeSystemName="SNOMED CT"displayName="Chronic kidney disease" />

 </qualifier>

 </value>

The downside is still that it’s much stranger to shoehorn a SNOMED qualifier into other code systems that don’t support post-coordination:

 <value xsi:type="CD" code="E08.22" codeSystem="2.16.840.1.113883.6.90" codeSystemName="ICD10"displayName="Diabetes mellitus due to underlying condition with diabetic chronic kidney disease">

 <qualifier>

 <!-- What does a SNOMED qualifier for an ICD-10 code mean?? -->

 <name code="47429007" displayName="Associated with" codeSystem="2.16.840.1.113883.6.96"codeSystemName="SNOMED CT" />

 <value code="N18.6" codeSystem="2.16.840.1.113883.6.90" codeSystemName="ICD10" displayName="End stage renal disease" />

 </qualifier>

 <qualifier>

 <name code="47429007" displayName="Associated with" codeSystem="2.16.840.1.113883.6.96"codeSystemName="SNOMED CT" />

 <value code="Z99.2" codeSystem="2.16.840.1.113883.6.90" codeSystemName="ICD10" displayName="Dependence on renal dialysis" />

 </qualifier>

 </value>

But it honestly still seems less strange than using SUMM for the qualifier/name instead (since in either case you’re pulling a qualifier/name from a code system that has no bearing on something like ICD-10). So this approach (that is, just using this SNOMED code for the qualifier/name instead of the HL7 ActRelationshipType one) seems nicer to me overall; I’m certainly curious in hearing any feedback from others though. We can also discuss this more at the IAT, of course…

Cheers,

Matt Szczepankiewicz

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Fostering Harmony in Interoperability

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