



RE: Question re: HL7 Insulin Sliding Scales and Tapering Medications 

Scott M Robertson to: HL7 Pharmacy List

Cc: william.hammond, vandna.mittal

11/16/2011 10:37 AM

Discussed during pharmacy telcons and work group meeting. While often discussed, no one was aware of any specific examples. I agreed to research further.

I did not find any insulin sliding scale examples in the v2.x documents I have (v2.2 - v2.8). I searched through old documentation and did not find any examples. I suspect that complex/conditional coding - such as with a sliding scale - was sent as text (not encoded) in v2.x implementations. However, I took this as a challenge to see what is possible in v2.x.

Prior to v2.5; ORC.7 and OBR.27 carried the order timing information in the TQ data type. The TQ data type has the following components:

SEQ	DT	COMPONENT NAME	COMMENTS
1	CQ	Quantity	
2	RI	Interval	
3	ST	Duration	
4	TS	Start Date/Time	
5	TS	End Date/Time	
6	ST	Priority	
7	ST	Condition	
8	TX	Text	
9	ID	Conjunction	
10	OS D	Order Sequencing	
11	CE	Occurrence Duration	added in v2.3.1
12	NM	Total Occurrences	added in v2.3.1

Without considering the clinical appropriateness, assume we are attempting to code the following (the blue text is the portion to be encoded).

Inject 0 units before meals if BG<100, 5 units for BG > 100, 10 units if BG>200, 15 units if BG>300 and call MD

What I would typically expect from a pre-v2.5 implementation would be no detailed encoding, ORC.7 would appear as

|^^^^^^0 units before meals if BG<100, 5 units for BG =100 to 199, 10 units if BG=200-299, 15 units if BG=300 or more and call physician|

This is simply embedding the complex dosing in the text component of ORC.7

Realizing that was not the intent of the question, I attempted to utilize the capabilities of the TQ data type, and came up with:

|0&Units^AC^^^^^BG<100^A~5&Units^AC^^^^^BG=100 to 199^A~10&Units^AC^^^^^BG=200 to 299^A~

15&Units^AC^^^^^BG=300 or more and call physician|

While this does further encode the timing sequence, it doesn't add much functionality. Each of the TQ repetitions express subsequent steps of the sliding scale, but the TQ.7 Condition component is limited to a textual representation of the scale criteria. (The "A" in TQ.8 indicates that the timing element are asynchronous - they all happen at the same time, but only the repetition where the condition is satisfied is performed.) It may be possible to codify the step criteria by breaking the elements of the sliding scale into separate ORC's, but that would create a series of interdependent orders, one for each step of the sliding scale (i.e., there would be a different prescription for each sliding scale step) and I considered that to be an inappropriate path to follow further.

The Timing Segments (TQ1/TQ2) are available starting in v2.5. TQ1 essentially replaces the TQ data type (TQ data type field are deprecated in v2.5). The advantage of TQ1 comes from promoting the TQ components to TQ1 fields. Fields can repeat, components cannot - which was an issue for some timing specifications. TQ2 allows the timing specification to reference the results/outcome/status of another order, which was not possible with the TQ data type. Unfortunately, the TQ1/TQ2 segments do not include codified criteria - TQ1.10 remains text. The equivalent of the last example above would be:

TQ1|1|0^Units|AC| | | | |BG<100| |A<cr>

TQ1|2|5^Units|AC| | | | |BG=100 to 199| |A<cr>

TQ1|3|10^Units|AC| | | | |BG=200 to 299| |A<cr>

TQ1|4|15^Units|AC| | | | |BG=300 or more and call physician<cr>

-Scott

Scott M Robertson, PharmD



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"Tom de Jong"

Hi Vandna, Thank you for your reminder (and for your patience;-). I can honestl...

11/01/2011 05:30:59 AM

From: "Tom de Jong" <tom@nova-pro.nl>
To: <vandna.mittal@duke.edu>, Scott M Robertson/CA/KAIPERM@KAIPERM
Cc: ""Hugh Glover"" <hugh_glover@bluewaveinformatics.co.uk>, ""Melva Peters"" <melva.peters@gpinformatics.com>
Date: 11/01/2011 05:30 AM
Subject: RE: Question re: HL7 Insulin Sliding Scales and Tapering Medications

Hi Vandna,

Thank you for your reminder (and for your patience;-). I can honestly say we had NOT forgotten your question, since it has been on the agenda for the Pharmacy conference call ever since it was raised. Scott Robertson had volunteered to respond to you, so I copy him on this. I hope Scott can provide a response (even if it is partial) OR note that he will be unable to, in which case we can assign it to someone else.

Thanks,
Tom

-----Oorspronkelijk bericht-----

Van: vandna.mittal@duke.edu [mailto:vandna.mittal@duke.edu]
Verzonden: maandag 31 oktober 2011 22:08
Aan: Tom de Jong
Onderwerp: RE: Question re: HL7 Insulin Sliding Scales and Tapering Medications

Hi Tom,

I wanted to check-in to see if you heard from the group about my HL7

question? I wanted to be respectful of the time of everyone but hadn't heard back anything from the group after I responded with the version etc...

Please let me know if you heard anything!

Thanks so much!
Vandna

Quoting Tom de Jong <tom@nova-pro.nl>:

> Hi Scott,
>
> I don't think it's that urgent, but thanks for looking into it.
>
> I had the same question about version (and therefore data type). I
> think the easiest way to get the answer is to simply copy the person
> who asked the question. As a side effect, they will know when to
> expect an initial reply.
>
> By the way, assuming this leads to a resolution (even if it just
> covers part of the issue that was raised), I suggest the end result
> is posted to the list.
>
> Thanks,
> Tom
>
>
>
> -----Oorspronkelijk bericht-----
> Van: Scott.M.Robertson@kp.org [mailto:Scott.M.Robertson@kp.org]
> Verzonden: woensdag 7 september 2011 19:23
> Aan: tom@nova-pro.nl
> CC: robert.hallowell@siemens.com;
> hugh_glover@bluewaveinformatics.co.uk; Scott.M.Robertson@nsmt.p.kp.org
> Onderwerp: Re: Question re: HL7 Insulin Sliding Scales and Tapering
> Medications
>
> I'm at an all-day meeting today and tomorrow. It could be Friday
> before I can respond in detail.

>
> A question back: what version of v2? In particular, do they support
> TQ1/TQ2?
>
> -Scott
> Scott M Robertson, PharmD
> Kaiser Permanente
> 310-200-0231
> (Sent from my Blackberry)
>
>
> ----- Original Message -----
> From: "Tom de Jong" [tom@nova-pro.nl]
> Sent: 09/07/2011 07:08 PM ZE2
> To: Scott Robertson
> Cc: "Rob Hallowell \ (Siemens\)" <robert.hallowell@siemens.com>;
> "'Hugh Glover'" <hugh_glover@bluewaveinformatics.co.uk>
> Subject: FW: Question re: HL7 Insulin Sliding Scales and Tapering Medications
>
>
>
> Hi Scott (and/or Rob),
>
> As our most seasoned V2 experts, could you respond to the question below?
>
> Thanks,
> Tom
>
> -----Oorspronkelijk bericht-----
> Van: Tom de Jong [mailto:tom@nova-pro.nl]
> Verzonden: donderdag 1 september 2011 16:08
> Aan: 'pharmacy@lists.hl7.org'
> CC: 'vandna.mittal@duke.edu'
> Onderwerp: FW: Question re: HL7 Insulin Sliding Scales and Tapering Medications
>
> Hello Pharmacites,
>
> See the question below, which can be summarized as:
>
> How do you represent a sliding/tapered dose in HL7 v2.x?
>
> My own background in V2 Pharmacy is mostly as a project lead and not

> so much the actual 'data over the wire'. I know the answer involves
> the right way of using the TQ data type or TQ1 segment (depending on
> which version you use), but it would be helpful to have a more
> precise description of the syntax.
>
> Also, we could turn this into a V2 action item, because a text search
> in Chapter 4 for 'sliding' or 'tapered' turns up nothing. I think it
> would be helpful to have this singled out in a separate section or at
> least an example.
>
> Thanks for any assistance,
> Tom
>
> -----Oorspronkelijk bericht-----
> Van: vandna.mittal@duke.edu [mailto:vandna.mittal@duke.edu]
> Verzonden: donderdag 1 september 2011 8:33
> Aan: Tom de Jong
> CC: 'Dr Ed Hammond, Ph.D.'; Rob Hallowell (Siemens); 'Hugh Glover';
> marcus.frazier@engineeredcare.com; chris.corio@engineeredcare.com
> Onderwerp: RE: Question re: HL7 Insulin Sliding Scales and Tapering
> Medications
>
> Dear Tom,
>
> We are currently working with version 2. Thank you for helping us work
> through
> this!
>
> Much appreciated,
> Vandna
>
>
> Quoting Tom de Jong <tom@nova-pro.nl>:
>
>> Dear Vandna,
>>
>>
>>
>> Your question regarding HL7 was forwarded to me by Ed Hammond. I am
>> one of the co-chairs of the Pharmacy workgroup. The answer to your
>> question depends on whether you refer to HL7 version 2 or version
>> 3? I'll wait for you to tell me which one you're interested in,
>> because it's actually not so easy to specify how sliding/tapered

>> dosage is handled (it?s handled completely differently between
>> versions).
>>
>>
>>
>> Best wishes,
>>
>> Tom de Jong
>>
>> Co-chair Pharmacy WG
>>
>>
>>
>> Van: Dr Ed Hammond, Ph.D. [mailto:william.hammond@duke.edu]
>> Verzonden: woensdag 31 augustus 2011 22:36
>> Aan: Tom de Jong
>> Onderwerp: FW: Question re: HL7 Insulin Sliding Scales and Tapering
>> Medications
>>
>>
>>
>> Tom,
>>
>> Can you refer these persons to the appropriate material. I think
>> pharmacy has dealt with both issues.
>>
>>
>> Thanks
>>
>>
>> ED
>>
>>
>>
>> From: Vandna Mittal [mailto:vandna.mittal@duke.edu]
>> Sent: Wednesday, August 31, 2011 2:21 PM
>> To: Dr Ed Hammond, Ph.D.
>> Cc: Marcus Frazier; Chris Corio
>> Subject: Question re: HL7 Insulin Sliding Scales and Tapering Medications
>>
>>
>>
>> Hi Dr. Hammond,

>>
>>
>>
>> Hope your trip to Ireland was great! I was wondering if you can
>> provide some needed HL7 help! I just got a new job with a health
>> technology startup that focuses on patient education around the
>> discharge process. My team and I are stumped along an HL7 issue and
>> we were wondering if you can help out. We're trying to determine how
>> Insulin Sliding Scales and Tapering Medications would be represented
>> in an HL7 message? Do you know where we can find this or help us
>> with this information?
>>
>>
>>
>> If it is easier to go through this via the phone let us know and
>> we'll be happy to talk with you over the phone! I've cc'd my team
>> members in this email.
>>
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>>
>> Thanks so much for your help.
>>
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>> Vandna
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>> _____
>>
>> No virus found in this message.
>> Checked by AVG - www.avg.com
>> Version: 10.0.1392 / Virus Database: 1520/3868 - Release Date: 08/30/11
>>
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>
> -----
> No virus found in this message.
> Checked by AVG - www.avg.com
> Version: 10.0.1392 / Virus Database: 1520/3868 - Release Date: 08/30/11
>
> -----
> No virus found in this message.

> Checked by AVG - www.avg.com
> Version: 10.0.1392 / Virus Database: 1520/3882 - Release Date: 09/07/11
>
>

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2012.0.1834 / Virus Database: 2092/4587 - Release Date: 10/31/11