Analysis of the Process of Encoding Guidelines into GLIF

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1. Introduction

The work described in this summary gives an account of our preliminary analysis of the process of guideline creation. The approach taken involves recording of a physician's interaction with an advanced computer system as he encoded two ACP-ASIM guidelines into the GLIF representation language. The purpose of this work is to characterize the cognitive processes involved in the encoding of guidelines in the GLIF language and assess our methodology for analysis of the process of guideline encoding. Our preliminary analyses include identification of the following: (1) potential problems with the GLIF language and its representations, (2) difficulties originating from the underlying guidelines and (3) issues related to the interaction between the encoder and the computer tools designed to support the encoding process. This report describes the methods employed and presents some initial results from the analysis of the encoding of the two guidelines into GLIF: one involving a thyroid screening guideline and another involving the treatment of depression. The data obtained from these sessions were initially analyzed to determine the main tasks involved in encoding the guidelines and was later analyzed in further detail to identify problems ranging from difficulty in representing guideline steps to problems arising from the underlying guideline.

2. Method

The approach to data collection involved full video recording of user interaction with the guideline creation software during the process of encoding guidelines into GLIF. The subject for the work described in this report was a researcher at the Harvard site. The recording was conducted by remotely logging on to the user's application (i.e. the encoding software) via NetMeeting, at our evaluation site in Montreal. By doing so, we were able to record the computer screens of the subject's interaction with computer system during the task of representing guidelines into GLIF by inputting the resulting screens (accessible using NetMeeting in Montreal) into a PC-Video recorder which then outputs to a VCR. In this way we were able to obtain a complete video recording of the interaction at the remote site in real time. In addition, the subject encoding the guideline at the Harvard site was instructed to "think aloud" as he entered the guideline into GLIF. By using a speaker phone at both the Harvard and Montreal sites, the subject's verbalizations were audio recorded at the Montreal site and merged with the corresponding video of the computer screens. The instructions to the subject was to use the computer system to encode two ACP-ASIM guidelines into GLIF, working from a graphic representation of the guideline and having access to the on-line text of the guideline.

Data analysis involved first transcribing the audio portion of the subject's thinking aloud while encoding the guideline. The transcription was opened in word processing file and then linked (i.e. time-stamped) to the corresponding sections of the video tape using a video annotation package known Cvideo. This software facilitates the coding and annotation of the verbal transcript by the experimenters who annotate the transcripts as they watch the video. This approach allows for indexing and replay of the tape to identify exact video sequences where problems occur in encoding the guidelines. The analysis consisted of first identifying what steps were taken in the encoding of the guideline as well as identifying and classifying the problems that were experienced during the process of encoding.

The preliminary coding scheme developed included identifying and coding the following:

Identification of task-related phases/actions:

- preparation phase
- categorization of guideline
- definition of eligibility of patients
- description of guideline steps
- add action step
- add conditional step
- add links

Identification of problems in encoding the guideline in GLIF:

- Problems with the guideline
- Algorithm ambiguous/vague
- Lack of supporting information about normal ranges
- Lack of information about treatment
- Conflicting information
- Lack of information on temporal aspects
- Problems with the GLIF representation language
- Problem deciding on type of step
- Problem modeling background/supporting statement
- Problem representing time
- Problems with the user interface of the encoding software
- Inflexibility of interface
- Navigational problems
- Program bug

In addition, we were interested in characterizing key decision points made during the encoding of the guidelines, and the aspects of the interaction of the physician with the encoding software at those points.

3. Preliminary results

Characterization of the process of guideline encoding

Table 1 presents a task description of the steps and actions taken by the subject in encoding the thyroid guideline, along with problems encountered at each stage. The table also refers to Figure 1, the output flowchart that was constructed. Specifically, the numbers on the flowchart correspond to the steps taken in Table 1. Likewise, Table 2 presents a task description of the steps and actions taken by the subject in encoding the depression guideline, along with the problems encountered at each stage. These tables show a top-down approach to encoding these guidelines, beginning with more general information and progressively increasing the level of specificity within each clinical condition. Also, the processes used in the encoding of the thyroid guideline appear to be quite similar to the processes used in the encoding of the depression guideline. Thus, it appears that a top-down approach is used in the encoding of clinical guidelines in GLIF.

It also appears that problems encountered in the encoding of the guidelines are not related to the level of specificity. Indeed, the occurrence of problems was evenly distributed throughout the encoding process. Therefore, it appears that the level of specificity is not causally related to the occurrence of problems. However, a propositional analysis of the guideline itself may reveal that representational problems with GLIF may be related to the conceptual complexity of the statement being modeled.

TABLE 1: Process of Encoding the Thyroid Guideline (numbers refer to Figure 1)

Time	Task	Action	Problems	Comments
00:00-04:40	Enter Top-Level Information	•name guideline •list authors •define eligibility •add references		
04:40-05:26	Description of Guideline	•switch to GLIF mode		
05:26-11:58	Define Screening Conditions(1)	•enter eligibility • create Screen Sensitive TSH node •enter screening conditions	Problem With GLIF: branching from node	Had to deviate from flowchart
11:58-12:16	TSH Normal Condition(2)	•enter no further action required(3)		
12:16-19:21	TSH Undetectable Condition(4)	•enter FT4 test required(5) •modify algorithm •enter FT4 tests normal(6) •enter symptoms of hyperthyroidism(7) •enter treatment(8) • enter diagnosis under FT4 tests elevated(9) •enter treatment(10)	Problem with GLIF: deciding on what type of step Problem with Guideline: algorithm confusing Problem with Guideline: missing information about normal range Problem with GLIF: modeling a statement Problem with Guideline: treatment information Problem with Guideline: treatment information	Representation problem

19:21-23:17	TSH Elevated Condition(11)	•enter FT4 test required (12) •enter diagnoses of sub-clinical hypothyroidism(13) •enter repeat testing(14) •enter diagnoses of overt hyperthyroidism(15) •enter treatment(16)	Problem with Guideline: missing information on normal range Problem with GLIF: representation of time range Problem with Guideline: treatment information	Should have defined this condition as being global to the guideline.
23:17-25:35	Define Concepts	•enter normal range for TSH •enter normal range for FT4	Problem with Guideline: missing measurement scale Problem with GLIF: bug in program(?)	
25:35-	Save Guideline			

TABLE 2: Process of Encoding the Depression Guideline

Time	Task	Action	Problems	Comments
00:00-01:47	Enter Top-Level Information	•describe eligibility •rough sketching		
01:47-04:20	Define Types of Depression	•enter categories of depression		
04:20-17:14	Mild to Moderate Depression Condition	•model St. John's Wort prescription •enter reevaluation of patient •check for clinical improvement •put down end of message •enter review side effects •select drug class •prescribe drug •enter waiting period •reevaluate clinical improvement •enter therapeutic response	Problem with GLIF: modeling a step Problem with GLIF: modeling a statement Problem with GLIF: modeling a statement Problem with GLIF: deciding type of step	Discussed in thyroid guideline as well
17:14-19:12	Moderate to Severe Depression Condition	•link condition to side effect profile	Problem with GLIF: representation of links	

19:12-20:06	Recurring Depression and the Presence of Serious Comorbidities Conditions	•link conditions to side effect profiles	Problem with GLIF: modeling a statement	
20:06-21:30	Afterthoughts		Problem with Guideline: vague statements Problem with GLIF: modeling statements	Lack of detail in descriptions Lack of syntax for specifying logic statements in GLIF

The results include analysis of type and frequency of problems encountered in encoding guidelines, as well as a characterization of the process of guideline encoding. The complete coded transcripts of both recorded sessions are attached at the end of this report as Appendix 4 and 5. In order to summarize this data, Table 3 presents the frequency of problems encoded in the two sessions analyzed, one for the thyroid guideline and one for the depression guideline.

TABLE 3: Frequency of problems

	Thyroid Guideline	Depression Guideline
Type of problem		
Problem with the guideline 1.Lacking supporting information - specification of normal	2	
2.Lacking supporting information - measurement scale		
3.Lacking information about treatment	1	
4. Statements generally “vague” or “ambiguous”	3	
	1	1
Problem with GLIF Problem representing time	1	1
2.Problem modeling an informational statement	1	3
3.Problem in deciding on type of step		
Problem in representing repeating time sequence	1	1
5. Problem representing link	1	1
Problem with the interface 1. Bug in the program (enforcing range?)	1	
TOTAL	12	7

The problems identified from the coded transcripts indicated that they could be broken down into two basic categories: problems with the underlying guideline and problems in representing information using GLIF. The problems that were experienced with the thyroid guideline were mostly due to a perceived lack of support in the guideline materials used by the encoder which

did not allow the subject to specify information in as much detail as he wished. This included the need for knowing exact values from the materials for encoding normal ranges and need for further information about treatment options under different patient circumstances. The subject also stated that information contained in the depression guideline was "vague" and had problems with representing the concept of "major depression".

The type of problems encountered by the subject in using GLIF were similar for both the thyroid and depression guidelines. This included problems modeling time, specifying informational statements (that were not attached to specific steps) and deciding on which type of step was most appropriate. For example, at several points the subject stated that it was difficult to decide what type of step should be used and also how to represent background information that did not map to the currently available representational tools.

The following section contains excerpts from the coded protocol for the thyroid guideline illustrating these types of problems (see the attached transcripts for the complete sessions for both the encoding of the thyroid guideline and the depression guideline).

3.2 Problems with GLIF

00:12:16

PROBLEM WITH GLIF: REPRESENTATION - DECIDING ON TYPE OF STEP

"And, uh.....I'm running into a little problem because, uh, I have to decide whether it's an action step or conditional step direction in ordering a TSH, uh, or a 3-peroxine test, uh, conditional is when making a decision based on the results of, uh, 3-peroxine test. Uh, this particular algorithm has that confused, uh, according to GLIF's specifications."

00:14:29

PROBLEM WITH GLIF: REPRESENTATION - MODELLING A STATEMENT (NEITHER DECISION OR ACTION)

"And now I have to work on the FT4 tests normal branch. If it is normal then...then there's a chance that there's sub-clinical hyperthyroidism.

Again, uh, this is...uh, this next box, sub-clinical hyperthyroidism, is difficult to represent in, uh, GLIF, uh, directly GLIF, I mean this is basically making a statement and, uh, saying it is sub-clinical hyperthyroidism it's not a decision or an action."

00:21:39

PROBLEM WITH GLIF: REPRESENTATION OF TIME RANGE

"In defining my action in more detail here I'm really not sure how to define it in much more detail. Uh, this particular recommendation which is repeat every 2-5 years would be difficult in the put in the structured language because of the large gap between 2 and 5 years. Okay, so that proximal branch is done now."

PROBLEM SPECIFYING INFORMATION:

"There is really nothing more I can say, I mean there is another step which is long-term maintenance therapy and I can't model it in GLIF and it's just a comment more than anything else. On the other hand, I need to put it in there."

PROBLEM SPECIFYING INFORMATION

"I would like just to put down the level, end of message. I could not do that because there is no construct in GLIF to do that."

3.3 Problems with the guideline

00:13:54

PROBLEM WITH GUIDELINE: SUPPORTING INFORMATION - MISSING INFORMATION ABOUT NORMAL RANGE

And I'm going to look up the definition of, uh, what the normal FT4 test is. And not given in the supporting documentation...uh...can't find it, uh, I don't know what the normal FT4 test should be so I'm just going to leave, uh, specification down here, where you can see my cursor, blank. Okay.

00:17:07

PROBLEM WITH GUIDELINE: SUPPORTING INFORMATION - TREATMENT

Now we're down to if there are signs or symptoms of hyperthyroidism then we have to consider treatment. And I can't specify the action in more detail because the guideline, uh, does not specify what the treatment should be____ so we'll leave it at that. If there are no signs or symptoms the guideline says they don't have sufficient evidence to recommend any treatment for

it, do not recommend any treatment for it. So we're done with, uh, the FT4 being, uh, 3-peroxine test being normal.

PROBLEM WITH GUIDELINE: SUPPORTING INFORMATION - TREATMENT

Again the treatment is not, uh, specified in the guideline, uh, so we'll just leave it as a blank. So we're done with the , uh, undetectable level of, uh, TSH. I'll move to the last branch which is TSH elevated above 10mul's.

00:20:12

PROBLEM WITH GUIDELINE: SUPPORTING INFORMATION - MISSING INFORMATION ON NORMAL RANGE

I don't know what normal should be so I'm going to leave the specification blank. Uh...For the FT4 test if it is normal and I have supplemental hypothyroidism...I'm gonna put a...I'm gonna put a new step.

4. Discussion and conclusions

We have employed methods involving the recording and analysis of the process of encoding ACP-ASIM guidelines into GLIF. Through our preliminary work in this area, described above, we have been able to characterize the steps taken in modeling guidelines using GLIF and identify potential difficulties encountered in the task of encoding two guidelines – difficulties encountered both with the underlying guideline and with the computer-based representation in performing this complex task. In conclusion, the approach taken can lead to identification of both generic aspects of the process of guideline encoding as well as specific problems in doing this task. For example, difficulties were encountered by the subject studied in deciding on the type of computer-based representation to apply in (a) choosing the appropriate type of computer step for modeling a statement in the guideline, and (b) representing informational statements not associated with a specific step or condition. Regarding the guideline material used by the subject in carrying out this task, key background information (e.g. regarding normal ranges) was found to be needed in order to encode the guideline. Given the amount and richness of information obtained from this pilot study of a single subject encoding two guidelines, we wish to extend the analyses to the study of encoding of the same guidelines by other subjects (with varied degrees of computer and medical background) as well as with other guidelines. The resulting information from such study can be directly fed back into: (a) the design of information contained in the guidelines, and (b) the fine-tuning of both the underlying representational scheme used in GLIF and the user interface to the encoding software. This input should lead to improvement in both

design of the GLIF representation language and ultimately the effectiveness of the guidelines as they become implemented in electronic form.

Appendix 5
Coded transcript of Encoding of Thyroid Guideline

00:00:24 to 00:00:24 Start

PREPARATION PHASE

"So this is start by entering the top level information on the guideline. Things like, uh, you know, the name of the guideline and, uh, who created it, keywords, those kinds of things, but other than that, I mean. And then later I'll start adding other words, so.

00:00:38

CATEGORIZATION OF GUIDELINE

We'll open the guideline. The category, we'll say, is new guideline. We'll call it, uh, Primary Thyroid Screening Guideline, and the authors are the American College of Physicians.

00:01:10

DEFINITION OF ELIGIBILITY

The intention of the guideline is management, uh. Let's define an eligibility of which patients are eligible for this guideline. We'll add, uh, women ...., women older than 50 years of age. And, uh, adding in the defined language of the, say, gender... equals the female and, uh..... and age is greater than or equal to 50 years. Keyword is thyroid....and screening.

00:02:36

CREATE REFERENCES

I can also add, uh, direct information which, uh, describes, uh, parts of the kind of information in the guideline. I'm just going to add, cause there are two categories, there are local and, uh, kind of, uh, site acting, some I'm just going to add local right now. So, let's go ahead and add a reference to the screening paper....And, let's see....published in McGill, Journal of Internal

Medicine, in 1998. Along with, uh, background paper...okay. So that completes my top level information.

00:04:40

DESCRIPTION OF GUIDELINE

Now I'm going to start describing the guideline itself.

And for that I'm going to use the, the algorithm to start with. So...I'm going to start by adding a step which says, uh, which patients should be included, and, uh, I'm going to create a GLIF level guideline that still has support for GEODEM so I'm going to switch it to GLIF mode. And I'm going to create a new GLIF text.

00:05:26

ADD CONDITIONAL STEP

Uh, there are four steps in GLIF. I'm going to use the conditional step because that's, can... I can put the logic, uh, forth, uh, for the eligibility there..... Which is really the same as what we were doing earlier...female, greater than fifty....add that here...and there...equals female.....greater than or equal to fifty years...That's my first step in the guideline. Uh, screening only eligible patients.

00:06:34

ADD ACTION STEP

If that is true then I want to, uh, screen for TSH test.. and...that is a, let's see, screening for TSH's....what is it.. it's an action step, so I'm going to put in an action step...because it will only work if it's, uh, true. If a female greater than fifty turns out to be true.

00:07:14

ADD BRANCH STEP

Now I have to deviate from the flowchart a little bit because, uh, because of, uh, peculiarities of GLIF. The next step from the screen sensitive TSH test has three, uh, branches....or....GLIF actually allows only one output from an action step and when I add a branch that...which will...which will let me put three branches. I.....Let's see... What name should I put here? There are different selections on how the branching can be performed. Uh, I have to...okay, I'm going to add the branch step now. I want to do only one of the steps and...any other sign....uh...

00:08:38

ADD CONDITIONAL STEP

So I've taken conditional step which is whether TSH is normal, it's undetectable or it's elevated. Uh...okay, so conditional step. New condition....TSH is normal, and....TSH normal is defined in the text as...0.5 to 4.5 mu for litre. So that's done...uh.

00:10:10

ADD CONDITIONAL STEP

Another __ branch ___another conditional step. It says TSH is undetectable.

00:10:48

ADD CONDITIONAL STEP

Okay, so...now I'll add the third branch which is TSH is elevated. Now I have the three branches done.

00:11:58

ADD ACTION STEP

Now I'm gonna take the branch that's normal, uh, when TSH

is normal and just put end of guideline...or...no further action required.

00:12:16

PROBLEM WITH GLIF: REPRESENTATION - DECIDING ON TYPE OF STEP

PROBLEM WITH GUIDELINE: ALGORITHM ("CONFUSED")

And when TSH is undetectable then what we're going to do is...3-peroxine test(?). And, uh.....I'm running into a little problem because, uh, I have to decide whether it's an action step or conditional step directionism in ordering a TSH, uh, or a 3-peroxine test, uh, conditional is when

making a decision based on the results of, uh, 3-peroxine test. Uh, this particular algorithm has that confused, uh, according to GLIF's specifications.

00:13:14

ADD CONDITIONAL STEP

I'm going to make this a...conditional step so I'm going to modify the algorithm to a slightly different way of putting it. (Experimenter: That's in the branch to, uh, the FT4 test?) The undetectable. (Experimenter: yeah.)The FT4test. Okay, so I'm just going to change it FT...I'm going to change it to a conditional step which is whether the FT4 test is normal. And the condition is going to be...FT4 is normal.

00:13:54

PROBLEM WITH GUIDELINE: SUPPORTING INFORMATION - MISSING INFORMATION ABOUT NORMAL RANGE

And I'm going to look up the definition of, uh, what the normal FT4 test is. And not given in the supporting documentation...uh...can't find it, uh, I don't know what the normal FT4 test should be so I'm just going to leave, uh, specification down here, where you can see my cursor, blank. Okay.

00:14:29

PROBLEM WITH GLIF: REPRESENTATION - MODELLING A STATMENT

And now I have to work on the FT4 tests normal branch. If it is normal then...then there's a chance that there's sub-clinical hyperthyroidism. Again, uh, this is...uh, this next box, sub-clinical hyperthyroidism, is difficult to represent in, uh, GLIF, uh, directly GLIF, I mean this is basically making a statement and, uh, saying it is sub-clinical hyperthyroidism it's not a decision or an action.

00:15:07

ADD BRANCH STEP

So I think the best thing to do now is maybe to represent it as a branch step and have only one branch leading out from it. I mean not the way it should be done but it's the best way I can do it given the GLIF specifications that are available right now. Pick ALL OFF because there's only going to be one branch.

00:15:41

ADD CONDITIONAL STEP

And then the next one is a conditional step which is checking that I meet sufficient signs or symptoms of hyperthyroidism. Okay, symptoms of hyperthyroidism. And the one kind they did mention in the document was___is present.

00:17:07

PROBLEM WITH GUIDELINE: SUPPORTING INFORMATION - TREATMENT

Now we're down to if there are signs or symptoms of hyperthyroidism then we have to consider treatment. And I can't specify the action in more detail because the guideline, uh, does not specify what the treatment should be____ so we'll leave it at that. If there are no signs or symptoms the guideline says they don't have sufficient evidence to recommend any treatment for it, do not recommend any treatment for it. So we're done with, uh, the FT4 being, uh, 3-peroxine test being normal.

00:18:04

ADD ACTION STEP

So we'll go to the branch that says 3-peroxine is elevated. That's on the 3-peroxine test was abnormal. Uh...With this situation we're just going to have to type in the diagnosis in here, into a branch that...and then...a consider treatment box.

PROBLEM WITH GUIDELINE: SUPPORTING INFORMATION - TREATMENT

Again the treatment is not, uh, specified in the guideline, uh, so we'll just leave it as a blank. So we're done with the , uh, undetectable level of, uh, TSH. I'll move to the last branch which is TSH elevated above 10mul's.

00:19:21

ADD CONDITIONAL STEP

And, uh....the next step from that is again the 3-peroxine test and that's normal so we'll do the same thing. FT4 test normal. A conditional step and, uh, if I'd actually thought this through a little better I would have, uh, defined this condition as being global to the guideline and then I could have put it in any place. In the guideline I do do that and then afterwards I don't need to define the ___condition again.

00:20:12

PROBLEM WITH GUIDELINE: SUPPORTING INFORMATION - MISSING INFORMATION ON NORMAL RANGE

I don't know what normal should be so I'm going to leave the specification blank. Uh...For the FT4 test if it is normal and I have supplemental hypothyroidism...I'm gonna put a...I'm gonna put a new step....Sorry....

00:20:43

ADD BRANCH STEP

A new step right there which says branch step which is a diagnoses of sub-clinical hypothyroidism. Then, the recommendation if sub-clinical hypothyroidism is true is to repeat the testing every two to five years.

00:21:39

PROBLEM WITH GLIF: REPRESENTATION OF TIME RANGE

In defining my action in more detail here I'm really not sure how to define it in much more detail. Uh, this particular recommendation which is repeat every 2-5 years would be difficult in the put in the structured language because of the large gap between 2 and 5 years. Okay, so that proximal branch is done now.

00:22:18

ADD BRANCH STEP

We need to go back and tackle the 3-peroxine test is not normal. If it is not normal then___ and there is overt hyperthyroidism. It's a branch step. And the recommendation is treatment may benefit.

00:23:08

PROBLEM WITH GUIDELINE: SUPPORTING INFORMATION - TREATMENT

So...again they don't specify treatment in more detail. I can't specify it in more detail by adding some more things to the action step.

00:23:17

DEFINE CONCEPT

That more or less completes the guideline but one thing I forgot to do earlier is define what TSH and FT4 are. I need to define those with better definitions. So I'll create...go to new definitions of data. So this one TSH...and which is not a summary value...it is a required value for the guideline...numeric type...I'm not going to specify the part value or the part range I'm going to specify the normal value of it....Measurement scale is muL and I'm going to leave everything else on it blank.

00:24:07

DEFINE CONCEPT

So I defined TSH now I'm going to define FT4. And again it's not a summary value, it is a required value for the guideline. Uh, it is a cardinality, a numeric value, uh. Now I'm going to specify normal or abnormal.

PROBLEM WITH GUIDELINE: SUPPORTING INFORMATION

Uh, measurement scale is....I don't know what the measurement scale is so I'm going to leave all that blank.

00:24:40

REVISE DEFINITION

And now that I think about it I'm going to go back and define TSH a little bit...so I am going to put a normal range for it cause I know what that is.

PROBLEM WITH GLIF: BUG??

Unfortunately I think there's a bug in this program. I better...0.5 to 4.5 is the normal range. And I can enforce range to be minimal for zero and I'll leave the maximum blank.

00:25:35

SAVE GUIDLEINE

And now I'll go ahead and save the guideline. Put, uh, ACP-ASIM Thyroid GLIF. And that's it. Now I'm done.

ABOUT PROBLEMS

(Experimenter: Okay, now, uh, I have a question.) Yes. (When you mentioned the problems one was to, uh, when there was an action step or an addition step or something like that was that a problem with the actual GLIF or another type of problem) Uh, I think it was when I was trying to put a diagnosis in there like, uh, what was I trying to say? Like the thing sub-clinical hyperthyroidism. And that's just to make a statement in there saying because FT4 test is normal we have sub-clinical hyper thyroidism. And, uh, I don't know if...I mean if GLIF has steps for specifying actions, for conditions and, uh, branching and synchronization they didn't seem to put any of those. There seems to be a problem with GLIF right now. But I couldn't make the statement easily. (And the other question is regarding the years. When you specified years what was the problem there?) Uh, 2 to 5 years. It was a slightly vague statement in terms of let's say if I were to set this up in a computer system...how would I...write the statement so that maybe this thing could set up an automatic reminder let's after two years this test has to be done again. _____ Okay.

Appendix 2
Coded Transcript of Encoding of Depression Guideline

00:00:00

PREPARATION PHASE

Q. Can you see my screen now?

I see one screen, that's it.

Q. Shall I start?

Yeah, any time.

00:00:16

CATEGORIZATION OF GUIDELINE

O.k. Ready to go. I am going to start by through the describing the top level information of the guideline.

Q. Could you speak up when you are describing what you are doing.

00:01:02

DESCRIPTION OF GUIDELINE

I am going to describe at the eligibility information which patients are eligible for the guideline and we're gonna say adults with acute major depression or dysthymia in primary care setting .Not going to encode the criteria right now, most of the text guideline, fairly long . So I will just start by doing some rough sketching initially.

00:01:47

ADD BRANCH STEP

First step is branches out into four different partitions of the guide line : mild to moderate, moderate to severe, recurring and comorbidities. I need to do that as a branch step which will branch out four pathways ....ok.

00:02:53

ADD CONDITIONAL STEP

Then I hold to the four different types , mild to moderate depression or dysthymia , and next to the condition....and all of these are I guess conditional steps , recurring depression , last one is depression with comorbidities.

00:04:20

ADD ACTION STEP

Go down first pathway now , mild to moderate depression , for each other four conditional .. only two pathway and not our fault .

00:05:04

ADD ACTION STEP

Now we are going to model the St. John's Wort prescription. You have to wait for 6 weeks.

00:05:50

ADD ACTION STEP

Then the next step is to reevaluate the patient.

00:06:12

PROBLEM WITH GLIF: REPRESENTATION - MODELLING A STEP

I have to do a slight deviation from what's in the flow chart right now , Flow chart they reevaluate in clinical improvement as one, uh, to do it as two steps here I have to do a reevaluation followed by something as whether there was an improvement.

00:06:30

ABOUT PROBELM

Q. Why do you have to do that?

Because re evaluation is an action whether does clinical

improvement as a deficient, I need to model different types of steps.

00:06:47

ADD CONDITIONAL STEP

You can see that now, two sequential step, first one, reevaluate patient or not, after that you will check whether the clinical improvement, based on your evaluation.

00:07:14

PROBLEM WITH GLIF: REPRESENTATION - MODELLING A STATEMENT

There is an improvement..... There is really nothing more I can say , I mean there is another step which is long term maintenance therapy and I can't model it in the GLIF and just a comment more than anything else. On the other hand , I need to put it in there.

00:07:41

ADD BRANCH STEP

I'll take it as another branch step for now .

00:07:59

PROBLEM WITH GLIF: REPRESENTATION - MODELING A STATEMENT

I would like just to put down the level, end of message, I could not do that because there is no construct in GLIF to do that...It was discussed last time too, on hypothyroidism.

00:08:17

ADD ACTION STEP

I am going to go down to, If there is no clinical improvement, Then we need to go down another pathway.

00:09:08

ADD BRANCH STEP

Then I am going to follow this up with two steps to review side effect as an action and then after that there's a branch step which is sort of selecting..,

00:09:37

ADD ACTION STEP

I just going to select one of the following four drugs. Prescribe Tricyclic antidepressant.

00:10:10

ADD ACTION STEP

Next action step is to prescribe selective serotonin re-uptake inhibitor.

00:10:25

ADD ACTION STEP

Next one is serotonin something else re-uptake inhibitor.

00:10:36

ADD ACTION STEP

Last one is, 5Ht2 antagonist.....OK.....

00:10:51

ADD CONDITIONAL STEP

And I have to..... After giving any one of these drug .....I have to wait for 6 weeks.

00:11:44

ADD LINKS

In next.....I am just going to link all of these ....down to 6 wks step. I am going to start link at each another previous drug....Starter link from here...and I am going to end it right here, top of the screen , I am going to start on the next step, start link.....SnrI

Q. So You just ....click on the starting and the click on the end.

Yeah.....I am going to click on start link for 5HT and then end link on 6 wks. All link to the same step which is kind of similar to how is done in..... in this model....

00:12:41

PROBLEM WITH GLIF: REPRESENTATION - DECIDING ON TYPE OF STEP

I mean.. I am probably little bit confused whether I should have done this as a synchronization step or as link step and I prefer doing it, synchronization step means actually going down multiple pathway .....but I am assuming that you only go down one of these four drugs ,You only take one of these four drugs, You don't really need synchronized .....but it's a bunch of steps with links.

Do I need explain that more?....Basically ....that you go on each one ,right, selected drug and goes down one path ,that's what you meant,? Yeah, Selected drug only take one path, Really don't need synchronized them.

00:13:35

ADD ACTION STEP

wks I need to do my reevaluate clinical improvement, again I am going to do as two step as done

00:14:07

ADD CONDITIONAL STEP

00:14:23

ADD ACTION STEP

If there is clinical improvement, then have to continue treatment for at least four months.

00:14:52

ADD CONDITIONAL STEP

If there is no improvement, then adjust dose and drug level.

00:15:38

CHANGE TO ACTION STEP

Actually I'm going to change this to an action step.

00:15:52

ADD CONDITIONAL STEP

Conditional step.....Therapeutic.....just clinical response in 6 wks., I am going to ....

00:16:18

ADD ACTION STEP

00:16:52

ADD ACTION STEP

after adjusting dose, I have to go back assessing clinical response in 6 wks. and ..... I have to link back what I have done earlier, going to start my link here and make it look around to right here.....

00:17:14

ADD LINK

Looking around , we can see sort of link from drug level therapeutic adjust dose to .. there almost done with this , going back to the top and what done with the 2nd path and that fairly simple to do actually because we have done most of modeling , we just into connect the moderate to severe depression to the review side effects of drugs.

.....Do you know how to repeat them?...I said ...

I am going to go down to the second path which is moderate to severe depression modeling the treatment of that , actually almost we completely defined that when we defined the treatment for St. John's Wort not working

00:18:23

ADD LINK

just going to create link a little complete that part of guideline too. I am going to start from this tape which says we have moderate to severe depression

.....review side effect profile ,

00:18:46

PROBLEM WITH GLIF: REPRESENTATION - OF LINKS

this particular authoring tool does not lay out guideline to the same way as the one laid out in flow chart ... we can see sort of multiple link coming in same step.. does not show you that, just shows you one path at a time .On your flow chart moderate to severe depression is done .

00:19:12

PROBLEM WITH GLIF: REPRESENTATION - MODELLING A STATEMENT

Now I am going to work on.....next one which is recurring depression .....the next box of recurring depression and the presence of serious comorbidities both of those actually as a note which is insufficient data for recommendation but then they do recommend prescribing the regular treatment. So I'm going to skip the note since I don't have a way to do that and I'm just going to link down to review side effect so this is more or less as other one

00:19:51

ADD LINK

....here start link and link right here ..and sort of modeling the or catching out the guide line at least.

00:20:06

PROBLEM WITH GUIDELINE: SUPPORTING INFORMATION - "VAGUE STATEMENTS"

Uh I have not described....any of these in greater detail and I don't know I can do the...either ,So one psychiatrist sort of out of my range of expertise , but then I mean look at the text which is sent to me ....just condition ..I mean with the conditional ..... and described in there . They're fairly vague statements which above find very difficult

.to model say like modeling of major depression .

Q. I see this is the final according to what they say.

Sorry....

Q. This seems to be final guideline .....

I think it is fine for like....., I guess .....but for me..

to satisfy condition here.

00:20:58

PROBLEM WITH GLIF: REPRESENTATION - OF TIME CHRONOLOGY

In here to sort of to put it down some syntax to say patient has major depression for the last two weeks and decrease the appetite and insomnia /hypersomnia.. some of those can be said more easily , something like recurrent thoughts of death and I really don't have syntax for specifying that…So I can't model that any more. In the GLIF I mean the logic statements.

00:21:30

PROBLEMS WITH GLIF: SUGGESTIONS

Q. you think that the new GLIF will handle that.

Not this kind of vague statement

There are some things like, uh, it probably will do it a little better in ways we were talking about like when we do, we talk about modeling of doing step which is sort of elaborate on mild to moderate depression by actually specifying more guideline stuff inside that step....

I can probably do little better job.

The other thing is talk about like prescribe TCA. That's not specific enough either, its TCA is a class of drug it's not specific drug , So I can , I could describe that in more detail. Like, let's say ..You know for ACP-ASIM purposes it might be fine to send this guideline out, then when like some primary care clinic gets this guideline they can elaborate on that in more detail like this is the particular TCA we prescribe in this office.

It's really difficult to do that much more. I mean the other thing I could do is add some kind of annotation which is at the level of evidence. There is slight I guess .....GLIF for me can do that I could do it as didactic. I could say level A evidence, recommendation as evidence.