



CardiacCare

Custom Question Creation Guide

CEDARON

CardiacCare Guide to Creating Custom Questions

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Overview

CardiacCare allows users to customize data forms and collect data unique for reporting/tracking by that organization by allowing the organization to define custom data questions and custom data forms.

A custom form would be used when an organization has a need to collect their own set of data points, which may not be related to any of the specific registry data forms. For example, perhaps the organization has a procedure that needs data points tracked and metrics generated, but this is not a procedure currently part of the registries used by the organization. In this case, the organization would create their own data form full of custom questions to represent the data the organization wishes to collect, track, and analyze.

While custom questions can be used on a custom data form, they also can be used to extend a stock registry form. For example, an organization may wish to collect additional data points related to an Adult Cardiac procedure, which are not part of the standard STS Adult Cardiac registry data form. In this case, the organization would create custom questions, and then add those to the STS Adult Cardiac registry data form. These questions would then appear for the data abstractors within their organization. This is advantageous, since the questions being seen as “part” of the standard data form, make it much less likely that an abstractor will forget to collect and enter that information.

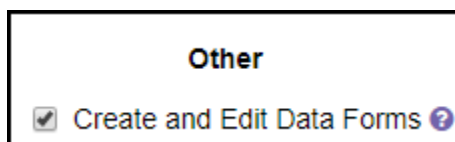
This guide will walk through a sample scenario, then provide additional reference information at the end.

Creating Custom Questions

Whether your organization will use a separate custom data form, or integrate custom questions into a stock registry data form, the process is the same.

Permissions

In order to work with custom questions, a user must have the “Create and Edit Data Forms” permission enabled in the Security Manager. This adds the “Form Builder” menu item under “Utilities”.



Plan Custom Questions

The first step is to gather information from your constituents about the type of data you wish to collect, and how that data will behave. In general, this will be categorized as one of the following types of questions:

- Yes/No question
These questions will have three options on the data form: (unspecified); No; Yes. The default value selected will be (unspecified).
- Numeric question
These questions will provide a box for the abstractor to enter a numeric value. The maximum and minimum values allowed can be specified, as well as the number of decimal places, and the unit of measurement. The default value will be blank.

- Date/time question
These questions can be set to one of the following 3 modes allowing entry of a date, a date and time, or date OR date and time. The default value will be blank.
- Single Choice question
These questions allow a set of choices to be specified. The abstractor will have to select one of the listed choices. The question will also have (unspecified) as a choice – this does not need to be entered. The default value selected will be (unspecified).
- Free Text question
These questions allow free text to be entered by the data abstractor for the answer. The default value will be blank.

While CardiacCare does offer additional question types, the above list will cover the majority of the custom questions created by organizations. For assistance with the more advanced question types, feel free to reach out to Cedaron.

You should carefully consider which type of question best represents the data you wish to collect, and if there are any relationships between the questions you will be creating.

For example, perhaps an organization wants to collect the following information:

- a. When did the pre-op consultation occur?
- b. How long did the pre-op consultation last? 15 minutes, 30 minutes, 45 minutes, 1 hour, Over 1 hour
- c. Was an interpreter used?
- d. If yes, collect the interpreter's badge number
- e. Were all the patient's concerns addressed?
- f. If not, what were the outstanding concerns?
- g. Was the patient referred to additional resources for those concerns?

For the above questions, (a) could be a date, or could be a selection such as "1-3 day prior to procedure", "4-6 days prior to procedure", "1 week prior to procedure", etc. In this scenario our organization would like to collect the date the pre-op consultation occurred, as our analysts can use that with the date of surgery to determine additional information, such as how far in advance the consultation was.

Question (b) will be a single choice question.

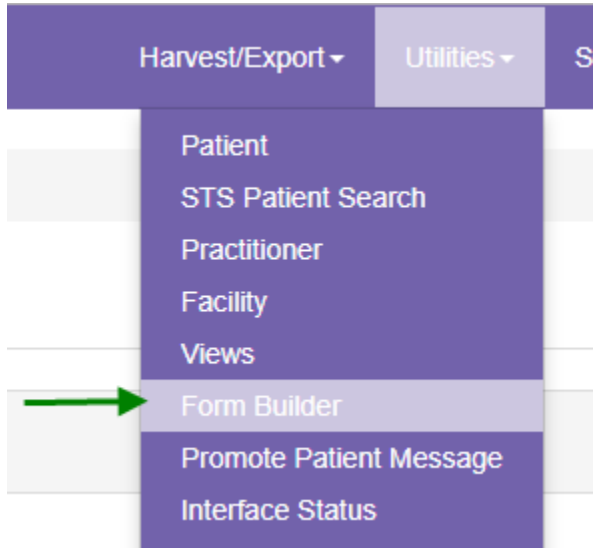
Question (c) will be a Yes/No question. Question (d) will be free text, but will only be visible and allow entry if Yes is selected to question (c).

Question (e) will also be a Yes/No question. Question (f) will be free text, but will only be visible and allow entry if No is selected to question (e). Question (g) will be a Yes/No question, and also only be visible if No is selected to question (e).

We would like these questions to be collected at the end of the STS Adult Cardiac 2.9 data form.

Create Data Form

Whether the custom questions will be integrated as one or more sections into a stock data form, or used as a separate data form, they are created on a custom data form. To begin, go to the **Utilities** menu, and select **Form Builder** from the sub-menu.



Select the **+ New Data Form** button.



Edit Data Forms

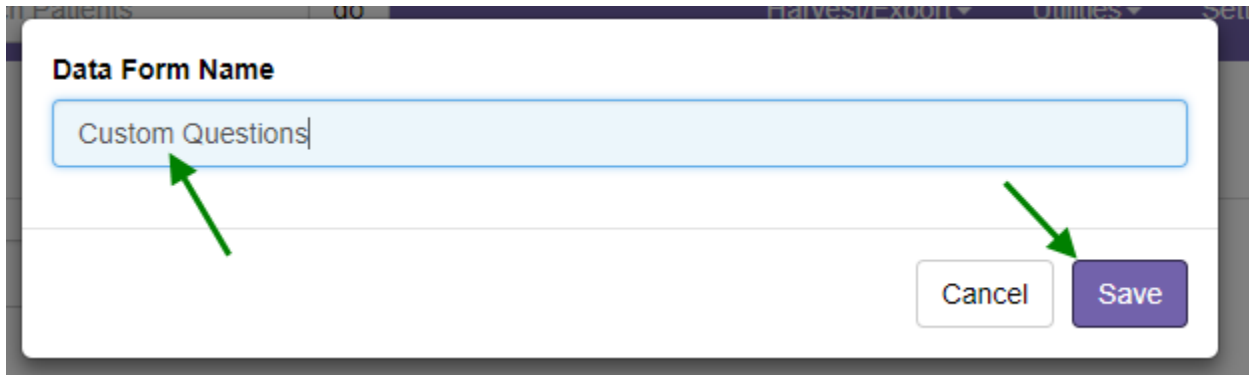
Search Data Forms **+ New Data Form**

Show entries

Data Form Name	Data Level	Type
Admission-Discharge	Admission	Standard
Demographics	Patient	Standard
STS Adult Cardiac Surgery v2.81	Procedure	Standard
STS Adult Cardiac Surgery v2.9	Procedure	Standard
STS Congenital Surgery v2.30	Procedure	Standard
STS Congenital Surgery v2.50	Procedure	Standard
STS Congenital Surgery v3.0	Procedure	Standard
STS Congenital Surgery v3.22	Procedure	Standard
STS Congenital Surgery v3.3	Procedure	Standard

Showing 1 to 10 of 15 entries Previous **1** 2 Next

Enter a name for the data form, and press **Save**.

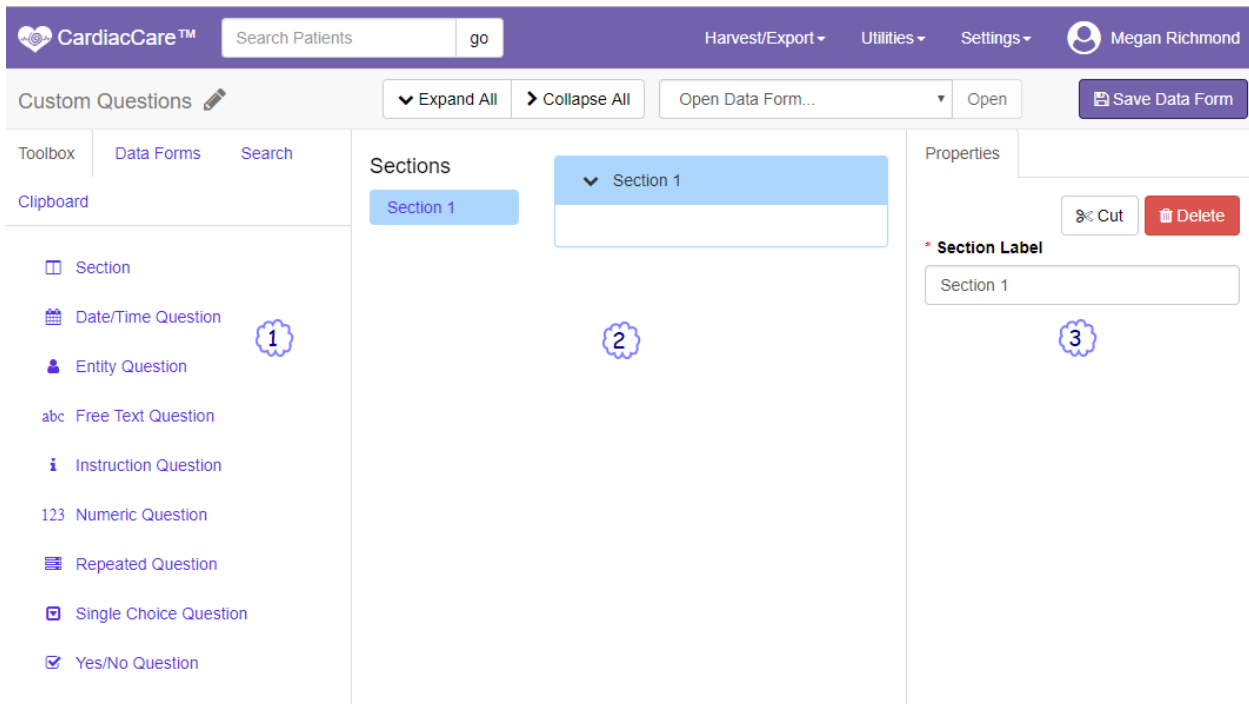


Data Form Name

Custom Questions

Cancel Save

You will be presented with a blank data form, containing one section. The question tools are to the left(1) ; the form's current content's are in the center(2); and the right contains the properties for the current item(3).



CardiacCare™ Search Patients go Harvest/Export Utilities Settings Megan Richmond

Custom Questions Expand All Collapse All Open Data Form... Open Save Data Form

Toolbox Data Forms Search

Clipboard

- Section
- Date/Time Question 1
- Entity Question
- Free Text Question
- Instruction Question
- Numeric Question
- Repeated Question
- Single Choice Question
- Yes/No Question

Sections

Section 1

Section 1

Properties

Cut Delete

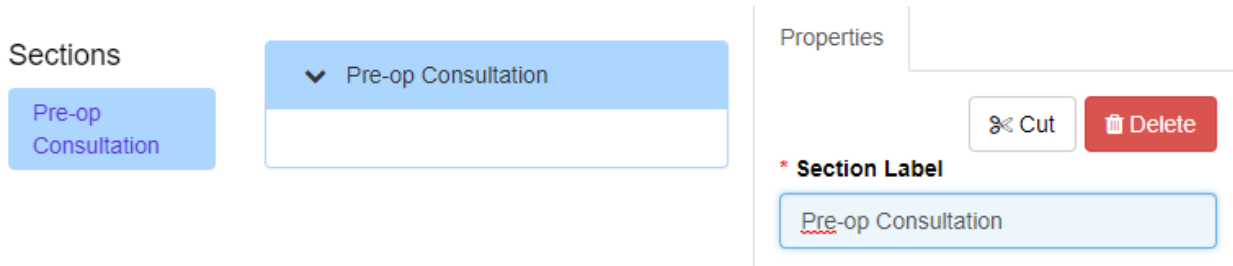
* Section Label

Section 1

1 2 3

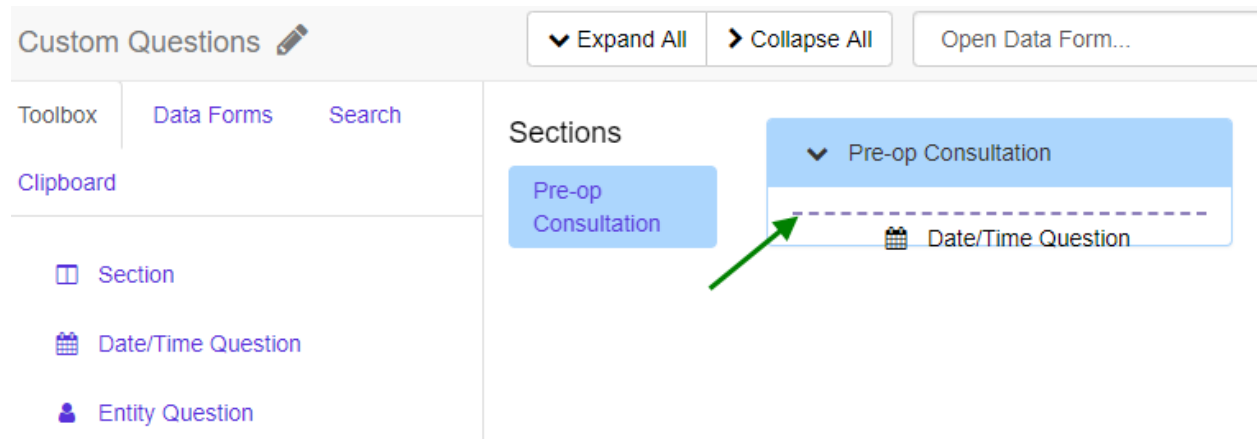
Start by giving a name to the section, rather than accepting the default of “Section 1”. This will display for the abstractors in the data form navigation on the left of the data form, allowing abstractors to quickly jump to this section.

Section 1 is already selected, so to change the name, you simply have to access the Section Label in the Properties panel – (3) in the screenshot above – and change the entered name. For this example, we will call the section “Pre-op Consultation”. You can see in the screenshot below, that the data form – in the center section – the name of the section changes to reflect the updated information:



Add Questions

Next, we will add questions to the data form. We will start by getting each question working, and in the display order we want. All questions will be visible at all times. Adding the parent/child relationships we identified will be completed in a later step. To add a question, drag the question type from the left hand panel to the location it should appear on the data form. A label showing the type of question appears, and a purple dashed line shows where the question will be placed:



When you let go of the mouse button, the add element dialog box will appear promoting you for the text of the question. For this walk-through we will be creating Procedure Level questions. Information about additional data levels is available in the reference section or by contacting Cedaron.

Add Element

* **Question Text**

When did the pre-op consultation occur?

* **Data Level**

Procedure

Cancel Save

After pressing **Save** the question is added to the form. It is automatically selected, so that you can adjust any additional properties as needed. For this question we want the precision to be “date”, which is the default. We can enter some additional help text which will be displayed when the purple ? icon is clicked.

Sections

Pre-op Consultation

▼ Pre-op Consultation

When did the pre-op consultation occur?

Procedure

Properties

Precision

Prefix

Suffix

Entry Required

Visible Expression

Enabled Expression

Calculated Value Expression

Initial Value Expression

Completeness Expression

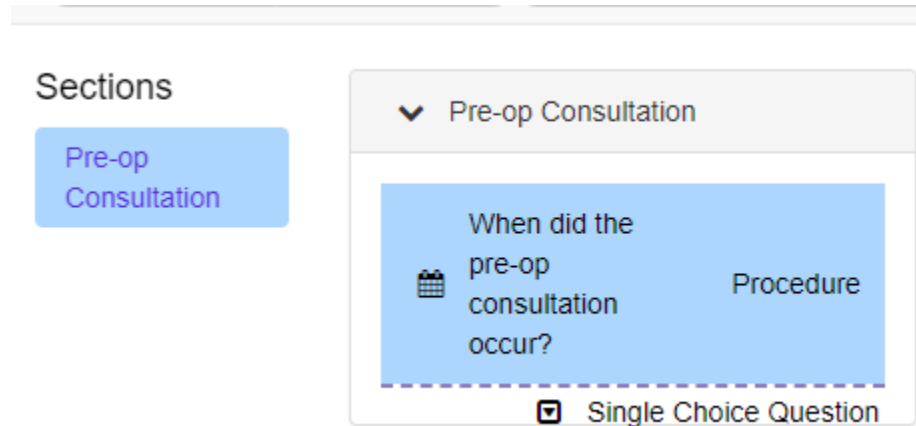
Help Description

Enter the date of the pre-op consultation provided for the patient.

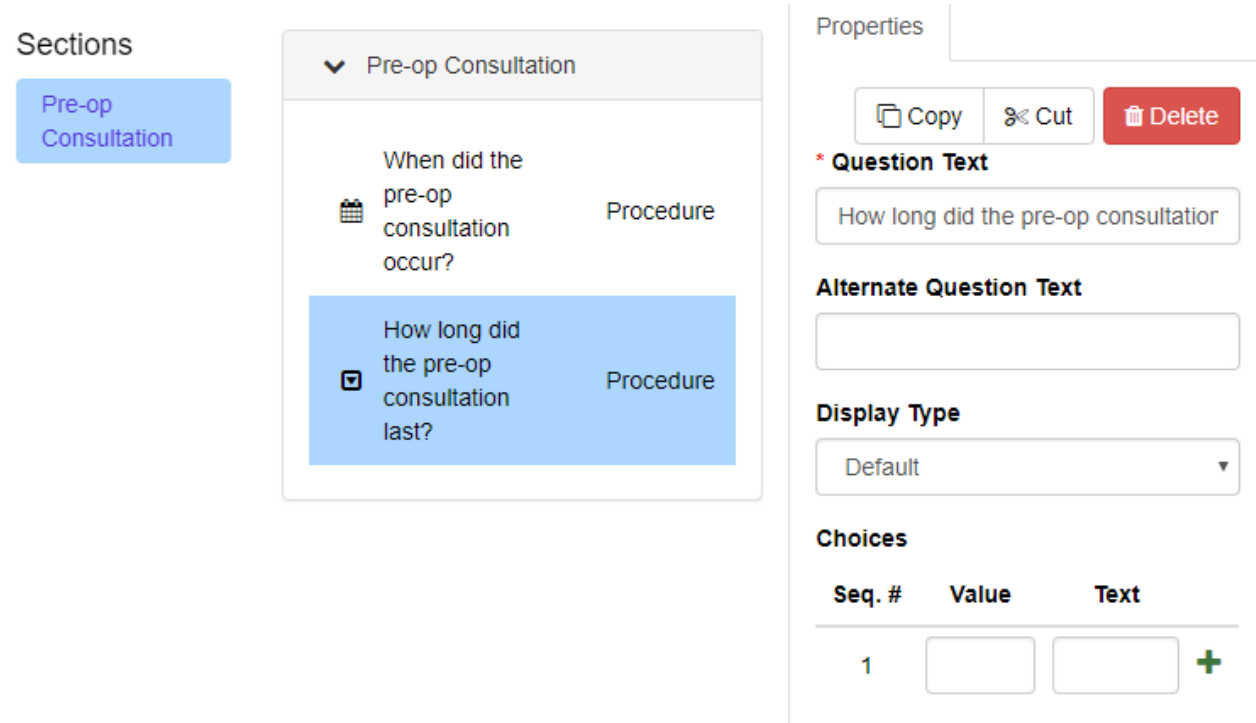
Alternate Help Description

There is also, for every question, the option of making entry required, by checking the **Entry Required** checkbox. See the additional reference material at the end of this guide for details.

Next, we add the second question, by dragging the Single Choice question from the left hand panel to the appropriate location in the center panel, again looking for the purple dashed line to indicate where the question will be placed:



When the mouse button is released, we are prompted to enter the question text, and after pressing **Save**, the question is added and auto-selected so we can edit the properties of the question.



For this question, we need to now add in the choices which should appear in the drop-down list. This is done by adding a value and text for each choice. The value is a numeric representation of this answer option (for example a code, or a numeric value that relates to the answer, or even just sequential numbering). The text is what will be displayed to the data abstractor for selection on the form. After entering the value and the text, press the green + icon to add the entry as a choice. A blank set of inputs will automatically appear for subsequent choice entry. You can use the red X to delete an entry if it is no

longer needed. It is strongly recommended not to re-use values for different text options if the options change in the future, if you ever collected any data for that question. Recall, that this will impact the meaning of all previously collected data.

Seq. #	Value	Text
1	15	15 minutes ✖
2	30	30 minutes ✖
3	60	1 hour ✖
4	45	45 minutes ✖
5	360	Over 1 hour ✖
6	<input type="text"/>	<input type="text"/> +

If a choice is entered in the wrong order, you can simply drag the option up or down in the list to re-order the options. A purple dashed line will indicate where the item is being moved to.

▼ Choices

Seq. #	Value	Text
1	15	15 minutes ✖
2	30	30 minutes ✖
3	60	1 hour ✖
4	45	45 minutes ✖
5	360 ^{1 hour}	Over 1 hour ✖
6	<input type="text"/>	<input type="text"/> +

Releasing the mouse button will move the item to the correct position.

▼ Choices

Seq. #	Value	Text
1	15	15 minutes ✖
2	30	30 minutes ✖
3	45	45 minutes ✖
4	60	1 hour ✖
5	360	Over 1 hour ✖
6	<input type="text"/>	<input type="text"/> +

We can also add some help text for this question:

Help Description

Indicate how long the pre-op consultation lasted. Round the time to the nearest 15 minute increment.

For our next question, “Was an interpreter used?”, we will drag the Yes/No question from the left hand panel to the center panel:

Sections

Pre-op Consultation

▼ Pre-op Consultation

<input type="checkbox"/>	When did the pre-op consultation occur?	Procedure
<input checked="" type="checkbox"/>	How long did the pre-op consultation last?	Procedure

In this case, we accidentally placed the question in the wrong position:

Sections

Pre-op Consultation

▼ Pre-op Consultation

<input type="checkbox"/>	When did the pre-op consultation occur?	Procedure
<input checked="" type="checkbox"/>	Was an interpreter used?	Procedure
<input type="checkbox"/>	How long did the pre-op consultation last?	Procedure

We can easily fix this by dragging the question to the correct location, which will re-order the questions within the section:

▼ Expand All ▸ Collapse All

Sections

Pre-op Consultation

▼ Pre-op Consultation

<input type="checkbox"/> When did the pre-op consultation occur?	Procedure
<input checked="" type="checkbox"/> Was an interpreter used?	Procedure
<input type="checkbox"/> How long did the pre-op consultation last?	Procedure
<input checked="" type="checkbox"/> Was an interpreter used?	

And the completed re-ordering:

Sections

Pre-op Consultation

▼ Pre-op Consultation

<input type="checkbox"/> When did the pre-op consultation occur?	Procedure
<input type="checkbox"/> How long did the pre-op consultation last?	Procedure
<input checked="" type="checkbox"/> Was an interpreter used?	Procedure

For our next question, “If yes, collect the interpreter’s badge number”, we will just set up as a free text question with the label “Interpreter’s Badge Number”. We do not need to have the “if yes...” wording, as we will eventually make it so that this question only displays if Yes was entered for the previous question. However, to start, we will just create the question, keeping in mind that we will be adding a parent/child relation in a later step. Drag the Free Text Question from the left hand panel to the appropriate location in the center panel, and create the question:

Sections

Pre-op Consultation

▼ Pre-op Consultation

<input type="checkbox"/> When did the pre-op consultation occur?	Procedure
<input type="checkbox"/> How long did the pre-op consultation last?	Procedure
<input checked="" type="checkbox"/> Was an interpreter used?	Procedure
abc Interpreter Badge Number	Procedure

Use a similar method to add the remaining few questions, with question (e) being Yes/No, question (f) being free text, and question (g) being Yes/No. Once done, your form should look like this:

Sections

Pre-op Consultation

▼ Pre-op Consultation

<input type="checkbox"/>	When did the pre-op consultation occur?	Procedure
<input type="checkbox"/>	How long did the pre-op consultation last?	Procedure
<input checked="" type="checkbox"/>	Was an interpreter used?	Procedure
	abc Interpreter Badge Number	Procedure
<input checked="" type="checkbox"/>	Were all of the patient's concerns addressed?	Procedure
	abc What were the outstanding concerns?	Procedure
<input checked="" type="checkbox"/>	Was the patient referred to additional resources for those concerns?	Procedure

Press the Save Data Form button in the upper right to save the form in its current state:

Expand All
▶ Collapse All

Open

Save Data Form

Procedure

Procedure

Properties

Copy
Cut
Delete

*** Question Text**

Was the patient referred to additional resources for those concerns?

The save button will gray out, and a green check will indicate the successful save of the data form:

✓

Save Data Form

Add Parent/Child Relationships

Next, we will add parent/child relationships to the questions which require them. This is how we can control which questions remain hidden and only display based on the answer to a different question. The question that controls the visibility is referred to as the parent, and the question which is hidden or displayed is referred to as the child.

The first relationship we need to add is to hide the “Interpreter Badge Number” question by default. It will then display if an abstractor enters “Yes” to the question “Was an interpreter used?”

Click on the “Interpreter Badge Number” question to select it and have the properties display in the right hand panel. Scroll down (if necessary) to find the edit (pencil) icon next to the “Visible Expression” property and click that button:

The screenshot shows the CEDARON interface with a list of questions on the left and a properties panel on the right. The question "Interpreter Badge Number" is selected in the list. The properties panel shows various fields for editing the question, including "Question Text", "Alternate Question Text", "Display Type", "Prefix", "Suffix", "Entry Required", "Visible Expression", "Enabled Expression", and "Calculated Value Expression". A green arrow points to the pencil icon next to the "Visible Expression" field.

Pre-op Consultation	
<input type="checkbox"/> When did the pre-op consultation occur?	Procedure
<input type="checkbox"/> How long did the pre-op consultation last?	Procedure
<input checked="" type="checkbox"/> Was an interpreter used?	Procedure
abc Interpreter Badge Number	Procedure
<input checked="" type="checkbox"/> Were all of the patient's concerns addressed?	Procedure
abc What were the outstanding concerns?	Procedure
<input checked="" type="checkbox"/> Was the patient referred to additional resources for those concerns?	Procedure

Properties

Copy Cut Delete

*** Question Text**
Interpreter Badge Number

Alternate Question Text

Display Type
Default

Prefix

Suffix

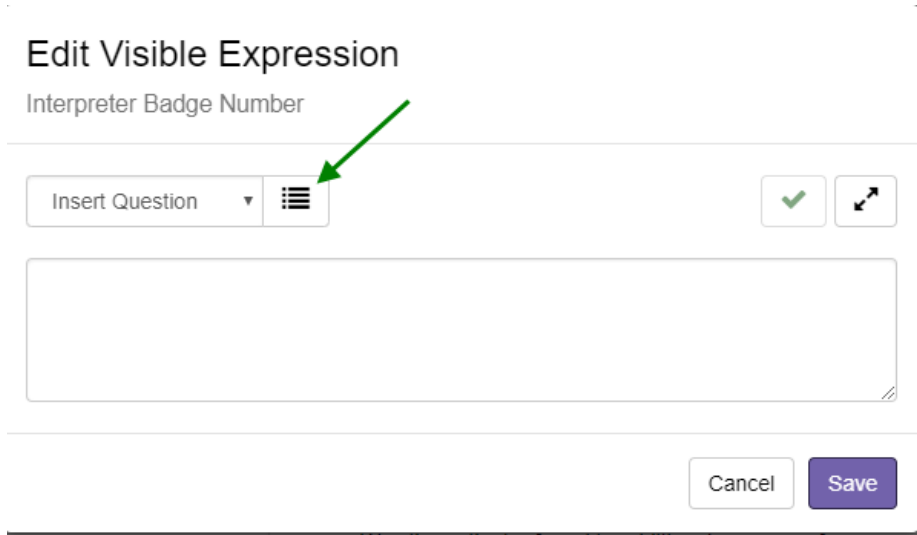
Entry Required

Visible Expression

Enabled Expression

Calculated Value Expression

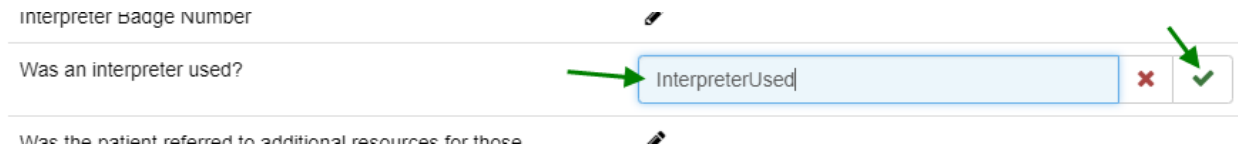
A window will appear to allow editing of the visibility expression for this question. Our first step will be to create a short code (think nickname) for the parent question. To do so, click on the list icon next to the "Insert Question" drop down menu:



A window allowing editing of short codes appears. Click the pencil icon next to the parent question.

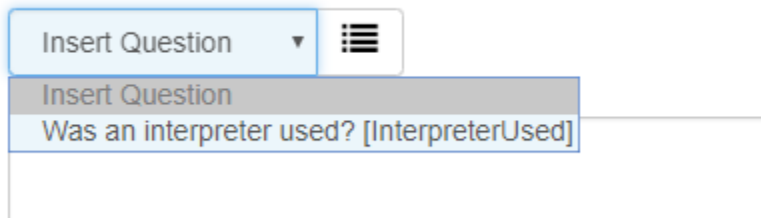
Question	Short Code
How long did the pre-op consultation last?	
Interpreter Badge Number	
Was an interpreter used?	←
Was the patient referred to additional resources for those concerns?	
Were all of the patient's concerns addressed?	
What were the outstanding concerns?	
When did the pre-op consultation occur?	

A text input appears. Enter a short code for this question. It is recommended that the short code does not contain any spaces. A frequent method for naming when spaces are not allowed is called Camel Case – which means to have the first letter of each word be capitalized. For this question we can use “InterpreterUsed”. After entering the text for the short code press the green check mark to save the short code:

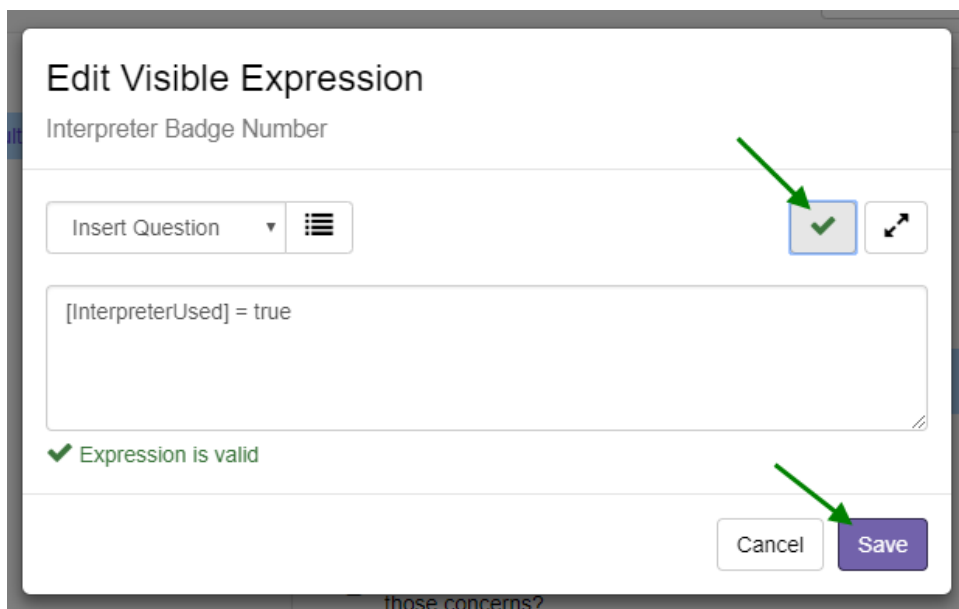


Click the X in the upper right to close the short code editor screen.

Back on the previous window, we can now click on the “Insert Question” drop-down and see that the parent question is now available to use in a relationship. The drop-down shows both the question, and the short code we created:



This parent is a simple Yes/No Question. The system interprets Yes as true; No as false; and (unspecified) as blank. In this case, we want the child to be visible when the parent question is “Yes”, our expression can be whether the parent question is true (or as a short cut simply be the short code of the parent question). We can press the check mark to test to see if our expression is valid. The results display between the expression input and the save/cancel buttons. Once we are done, we can save the expression:



The visibility expression now appears in the properties for the “Interpreter Badge Number” question:

Visible Expression

[InterpreterUsed] = true
✎

This question will now only appear when Yes is selected for the parent.

Our next relationship is very similar, except that we want the child question to appear when the parent question has an answer of No. Select the “What were the outstanding concerns?” question, and click the edit icon on the visible expression property. Add a short code for the “Were all of the patient’s concerns addressed?” question:

concerns?

Were all of the patient's concerns addressed?	AllPatientConcernsAddressed ✎
What were the outstanding concerns?	✎

Next we add in the visibility expression, but this time check for the value of No (is the answer to the parent question false):

Edit Visible Expression

What were the outstanding concerns?

Insert Question
▼
☰

✓

↔

[AllPatientConcernsAddressed] = false

✓ Expression is valid

Cancel

Save

(Note: Do not worry if the browser places a red squiggly line under the short code – this is not an error, just the web browser’s spell check. But since the “Insert Question” drop down was used to select the short code, you can be sure it is correct)

After saving, the visibility expression now appears in the properties:

Visible Expression

[AllPatientConcernsAddressed] = false
✎

Repeat the process to add the same visibility expression to the final question. Note, that this time you will not need to create the short code, since it used the same parent question which we have already created a short code for.

Was the patient referred to additional resources for those concerns? Procedure

Prefix

Suffix

Entry Required

Visible Expression

[AllPatientConcernsAddressed] = false

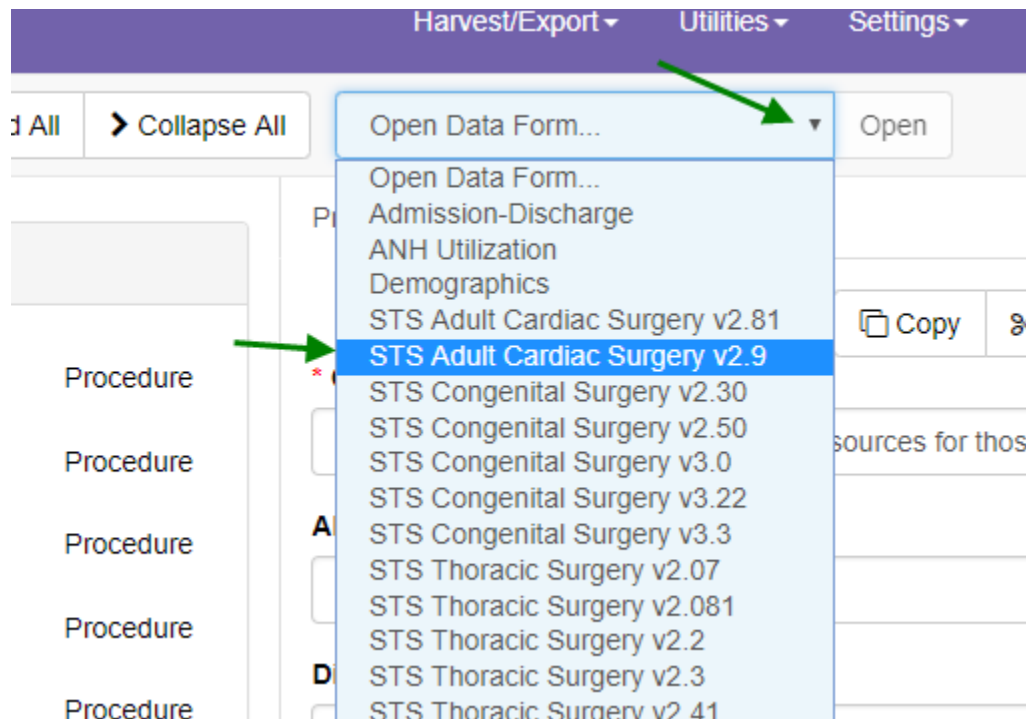
✎

Be sure to save the data form with the changes.

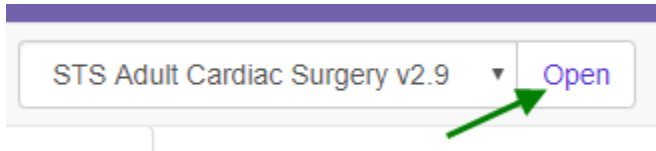
Place Custom Question Section on Existing Data Form

Our final step is to add these questions to the desired location which was at the end of the STS Adult Cardiac 2.9 data form.

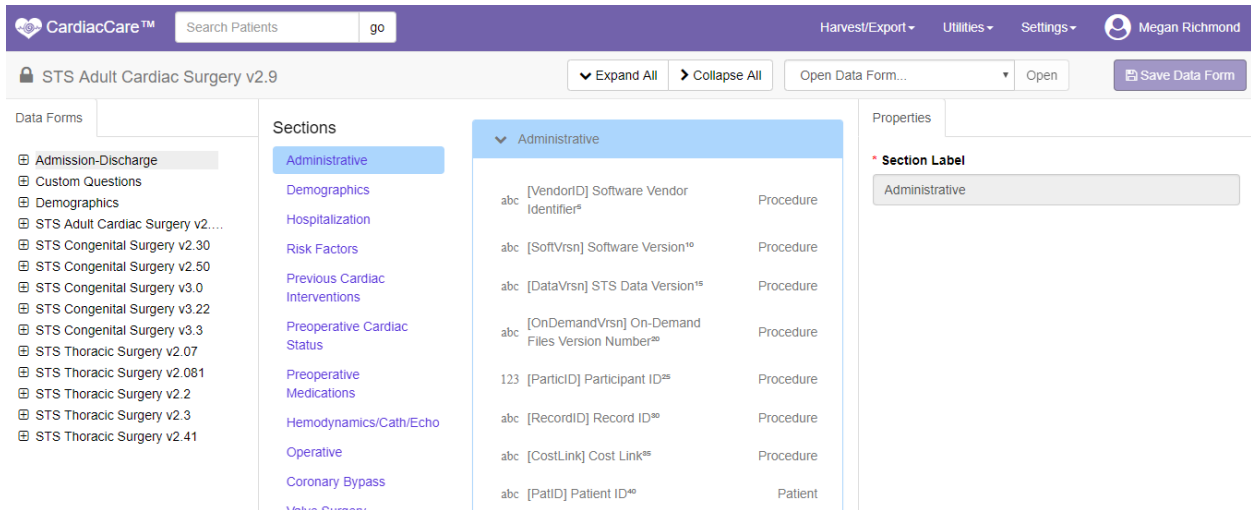
To do this we need to open the STS Adult Cardiac 2.9 data form. In the upper right, from the “Open Data Form” drop down, find STS Adult Cardiac 2.9:



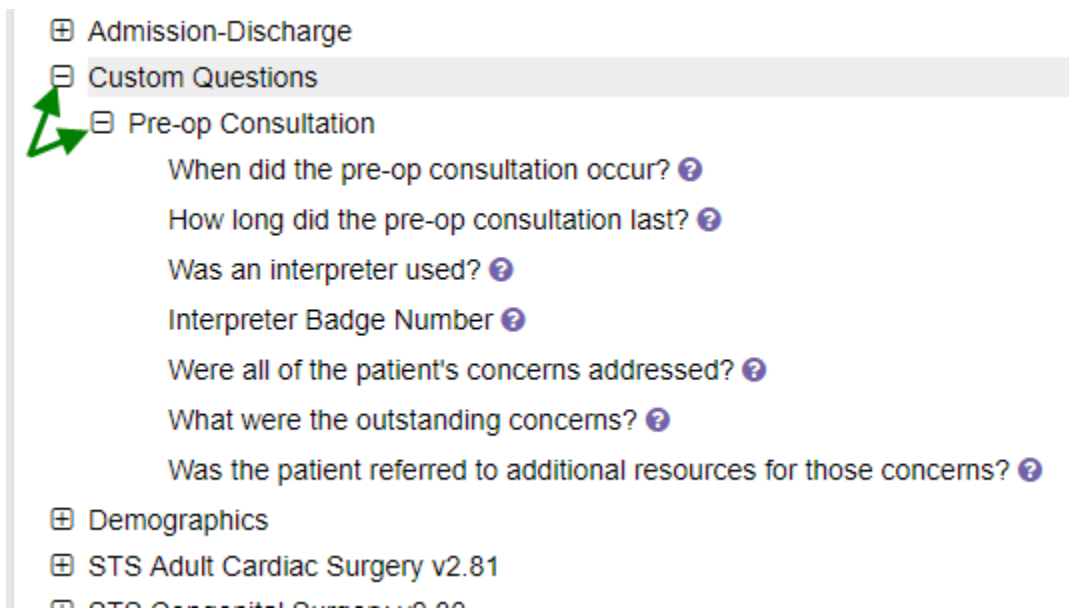
Once the form is selected, press the Open button:



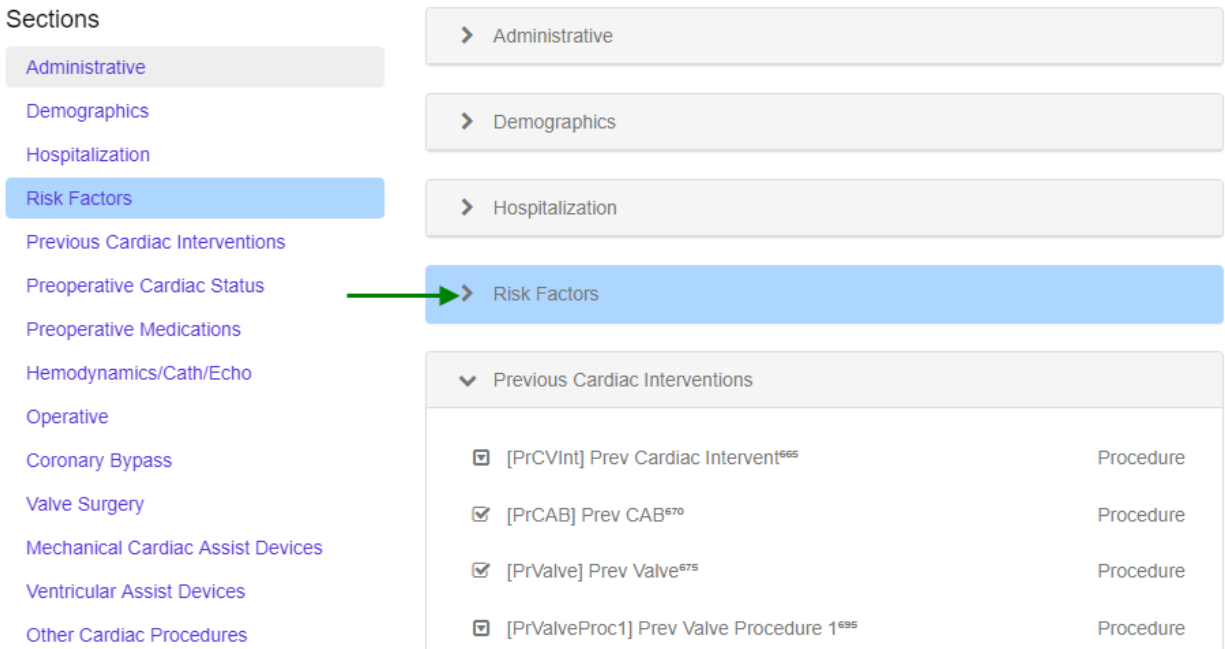
This screen will be very similar to the edit data form screen we were just working with. One difference is the left hand panel will have all of the data forms in the system. The center panel will have the STS Adult Cardiac 2.9 data form sections and questions:



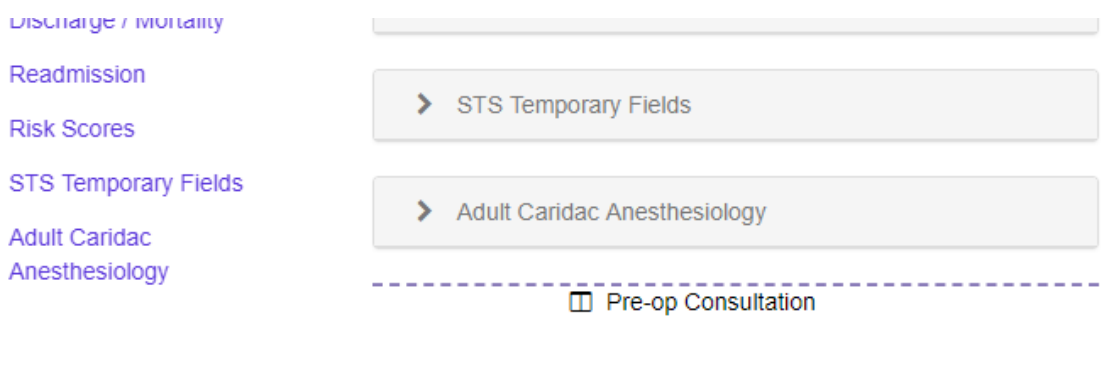
Our questions we just created are in a section inside the “Custom Questions” data form. We need to press the plus icon to expand this data form to see the sections and/or questions we created:



We now have the option to insert a single question, or we can insert a whole section from our custom questions into the STS Adult Cardiac 2.9 data form. For this example, we decided to use our entire section. When inserting a custom section, you will need to drag the item to the center panel to the actual location on the form; not the section list. To make this easier, it is recommended to collapse the existing sections first. To do this, you would click the down carrot icon next to each section name. The section will collapse and it will turn into a sideways carrot icon,(which could be clicked again to re-expand the section). Here is a screenshot of that having been done for several sections:



For this example we want to insert the “Pre-op Consultation” section at the end of the form. We do this by dragging it to the center panel, again using the dashed purple line to see the location the section will be added:



When the mouse is released, the section is added to the form:

The screenshot shows the CEDARON interface. On the left is a vertical sidebar menu with various procedure categories. The 'Pre-op Consultation' item is highlighted in blue. On the right is the main form area, which shows a tree view of the form structure. The 'Pre-op Consultation' section is expanded, showing a list of questions:

- When did the pre-op consultation occur? Procedure
- How long did the pre-op consultation last? Procedure
- Was an interpreter used? Procedure
- abc Interpreter Badge Number Procedure
- Were all of the patient's concerns addressed? Procedure
- abc What were the outstanding concerns? Procedure
- Was the patient referred to additional resources for those concerns? Procedure

The form can now be saved.

Test Custom Questions


Now that we have placed our custom questions on the data form, we can test the questions. To do this, we navigate to any patient record, open a STS Adult Cardiac 2.9 data form, and we should see our section as part of the form:


The screenshot shows the CEDARON interface. On the left is a vertical sidebar menu with various procedure categories. The 'Pre-op Consultation' item is highlighted in blue. On the right is the main form area, which shows the 'Pre-op Consultation' section expanded, displaying several questions with radio buttons and text input fields:


- (unspecified) No Yes
- When did the pre-op consultation occur?**
mm/dd/yyyy
- How long did the pre-op consultation last?**
(unspecified)
- Was an interpreter used?**
 (unspecified) No Yes
- Were all of the patient's concerns addressed?**
 (unspecified) No Yes


The pink icon next to the questions indicates these are custom questions. We can select different answers in order to test out our visibility expressions:


Pre-op Consultation


?  **When did the pre-op consultation occur?**


?  **How long did the pre-op consultation last?**

?  **Was an interpreter used?**
 (unspecified) No Yes

?  **Interpreter Badge Number**

?  **Were all of the patient's concerns addressed?**
 (unspecified) No Yes

?  **What were the outstanding concerns?**

?  **Was the patient referred to additional resources for those concerns?**
 (unspecified) No Yes

If we need to make any changes, we can go back into the form builder do so. Otherwise, the process is now complete.

Additional Reference Material

Whether your organization will use a separate custom data form, or integrate custom questions into a stock

Entry Required

When creating a custom question, there is the option to mark the “Entry Required” checkbox.

*** Question Text**

Alternate Question Text

Precision

Prefix

Suffix

Entry Required



Visible Expression

This will cause the question to have a red asterisk, as well as a red bar to the side of the question indicating that entering an answer is required for the question.

Pre-op Consultation

? When did the pre-op consultation occur? *

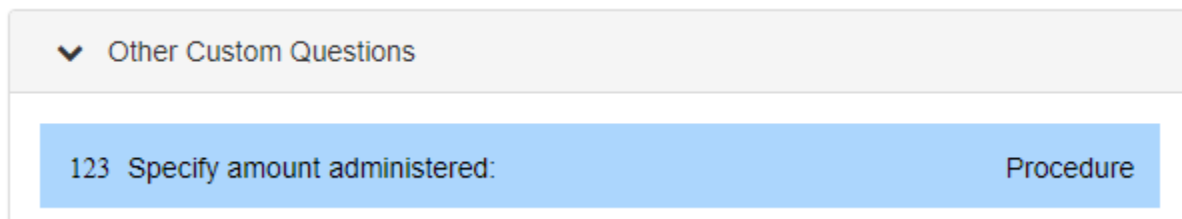
Common Numeric Question Properties

Numeric Questions have several additional properties which may be useful when creating custom questions. These include the minimum and maximum allowed values, the type of units the numeric value represents (i.e. kg, cm, in, mL, etc.), how many decimal points should be collected, and usual expressions.

A “Usual Expression” is used to indicate to the data abstractor that the value entered for the answer to the question is not typical, and should be checked. This will display in an orange color (unlike min/max values which display in red). A value outside of the usual range, can still be saved, while a value outside of the min and max range cannot be saved. An example of this is commonly seen for patient height or weight. For example, in the STS Adult Cardiac 2.9 data form, the specifications state that the entered value must be between 10 kg and 250 kg, but is most commonly between 30.0 kg and 181.8 kg. The data abstractor should be prevented from entering a value less than 10 or greater than 250. The abstractor should be allowed to enter a value between 10 kg and 30 kg, but if this is done should be warned. Similarly, for values between 181.8 kg and 250 kg. This is implemented using Usual Expressions for the weight field. Here are some screen shots to see how this can be done for any custom question.

For this example, let’s assume we want to create a numeric question that records a value in mL. The answer must be between 0 mL and 1000 mL, but is most commonly between 100 mL and 500 mL. In this case, whole numbers should be collected.

First the question is created:



Other Custom Questions

123 Specify amount administered: Procedure

In the properties panel on the right hand side, we enter the minimum and maximum allowed values:

Min Value

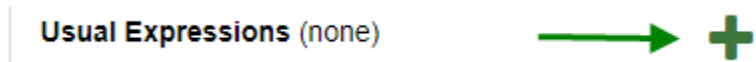
Max Value

We specify the number of decimals for the numeric value to be 0, and that we expect the answer to be supplied in mL:

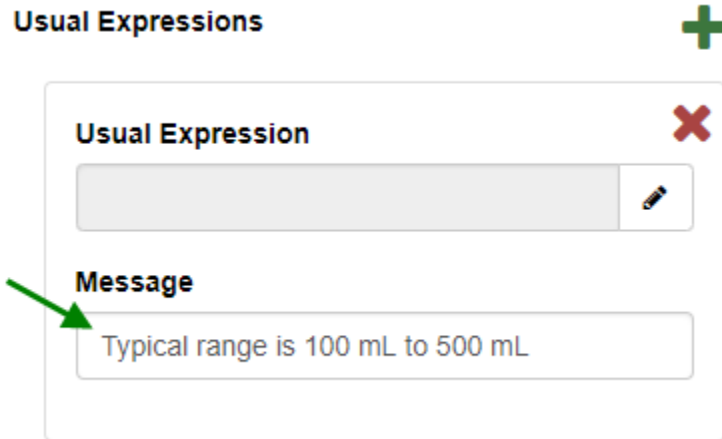
Decimals

Unit of Measurement

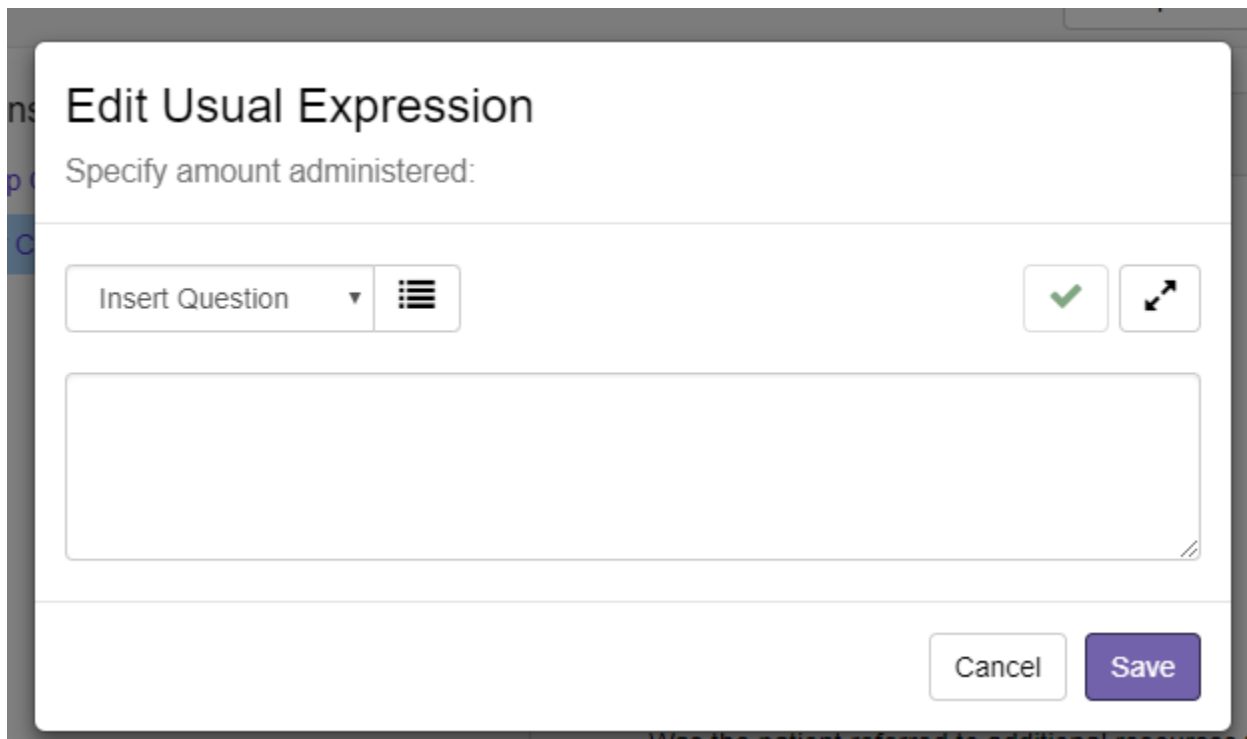
We next specify the Usual Expression for this question. Click the green + next to the Usual Expressions:



In the Message box enter the message which will display to the abstractor when a value outside of the typical range is entered onto the form:



Click the pencil (edit) icon next to the Usual Expression to create the logic for when the message should and should not appear:






As in creating parent/child relations, you may need to create a short code for the question. In this case, we will create a short code for this question itself (not for any parent):

Specify amount administered:

AmountAdministered 

Then specify the criteria for what is considered the usual values. This means the expression should show the times the message will NOT appear. For example, in this case the expression should read:


Insert Question   


`([AmountAdministered] >= 100 or [AmountAdministered] <= 500)`


 Expression is valid

Cancel Save

Press Save to return to the previous screen:

Usual Expressions 


Usual Expression 


`([AmountAdministered] >= 100 or [Amou` 

Message

Typical range is 100 mL to 500 mL

Then save your data form. Now if you try to use the field you will see the expected behavior:

 **Specify amount administered:**

1250  mL

- Value must be between 0 and 1000

More Complex Parent/Child Relationships

One type of parent/child relationship that may be useful, but which is more complex than the Yes/No parent example shown in the guide examples, is to have the parent question be a Single Choice Question. In this case you may want a child enabled when one of a set of values is selected from the parent. You may also want a different child enabled when alternate items are selected. For example, suppose that you have a question which you would like to behave as follows:

Diabetic Management:

- None
- Self-monitoring of blood glucose (SMBG)
- Dietary and exercise modifications
- Medication (Oral)
- Medication (Injected)

If “None” is selected then nothing further happens.

If either “Dietary and exercise modifications” or “Self-monitoring of blood glucose (SMBG)” are selected the following question should be asked:

- Does the patient participate in “Diabetic Diets: Managing Blood-Glucose Through Diet” program:
Y/N

If “Medication (Oral)” is selected the following question should be asked:

- Specify the oral medication being used:
 - Metformin
 - Glyburide
 - Glipizide
 - Glimepiride
 - Repaglinide
 - Nateglinide
 - Piogiltazone
 - Rosigiltazone
 - Acarbose
 - Miglitol
 - Dapagliflozin

If “Medication (Injected)” is selected the following question should be asked:

- Specify the injected medication being used:
 - Insulin – manual injections
 - Insulin – pump
 - Albiglutide
 - Dulaglutide
 - Exenatide
 - Liraglutide
 - Pramlintide

In this case, there are multiple answers to the first (parent) question which drive the behavior of different child questions, and in fact two answers in the parent drive the same child question. Here is how you would set up this type of parent/child relationship.

First create the four questions:

▼ Diabetic Management

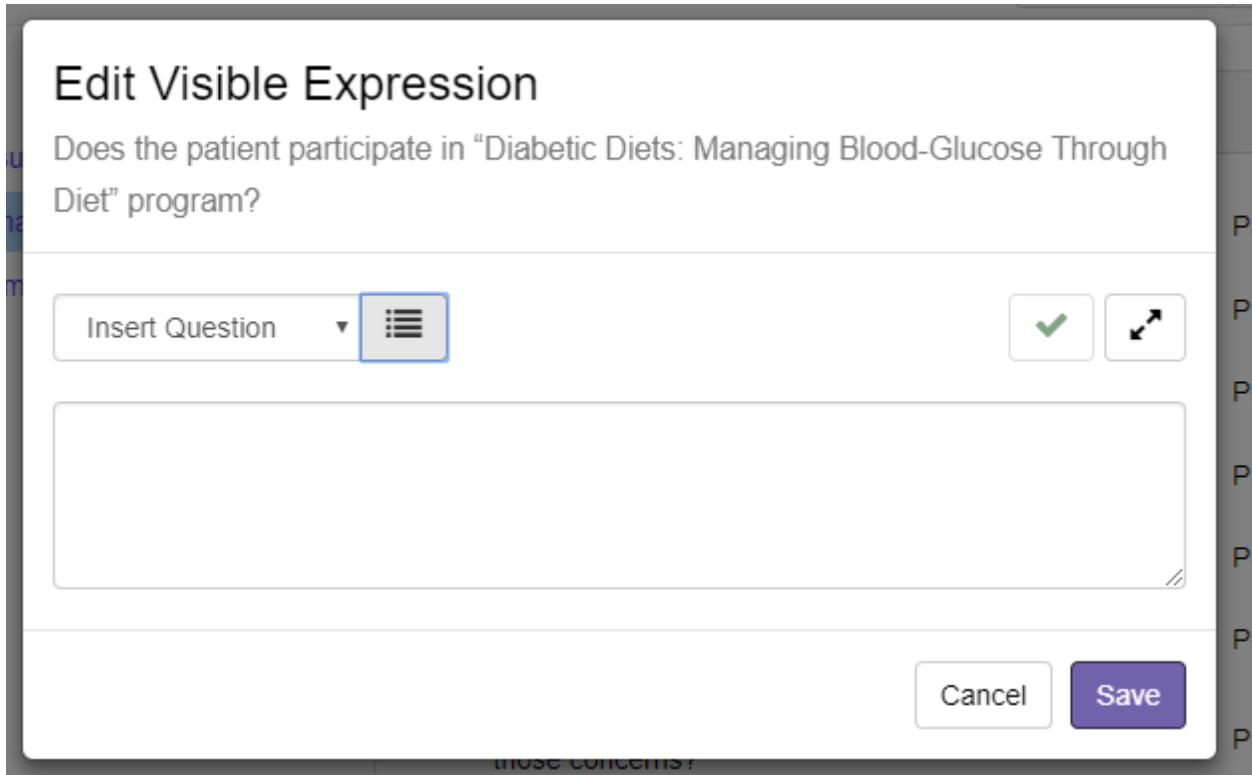
<input checked="" type="checkbox"/>	Diabetic Management	Procedure
<input checked="" type="checkbox"/>	Does the patient participate in “Diabetic Diets: Managing Blood-Glucose Through Diet” program?	Procedure
<input checked="" type="checkbox"/>	Specify the oral medication being used	Procedure
<input checked="" type="checkbox"/>	Specify the injected medication being used	Procedure

It will be important to note the value of the answers for the parent question which will be controlling the visibility of the child questions. Here is what that looks like, in this case, so we have it for reference:

▼ Choices

Seq. #	Value	Text	
1	1	None	✘
2	2	Self-monitoring of blood glucose (SMBG)	✘
3	3	Dietary and exercise modifications	✘
4	4	Medication (Oral)	✘
5	5	Medication (Injected)	✘

Next, we will add the visible expression logic to the 3 child questions. Select the first child question and open the Visible Expression editor:



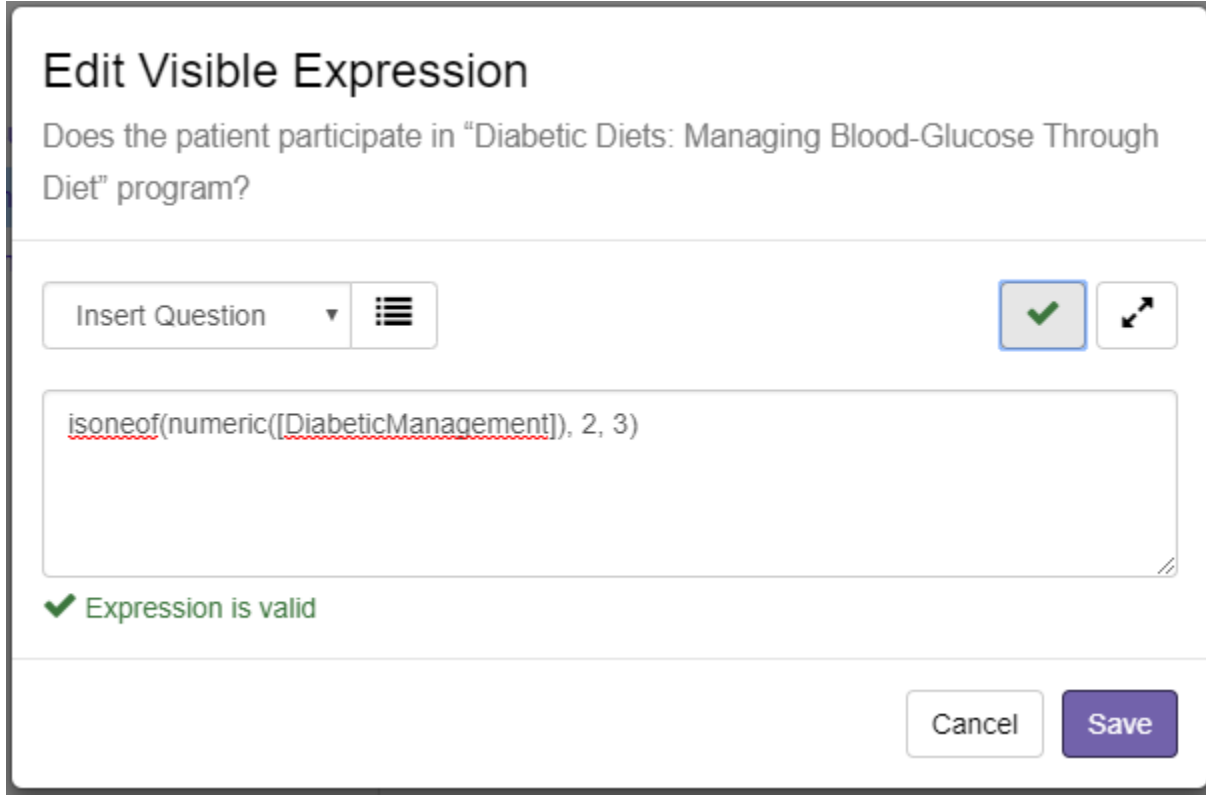
Add a short code for the parent question:

Edit question short codes	
Question	Short Code
Diabetic Management	DiabeticManagement 

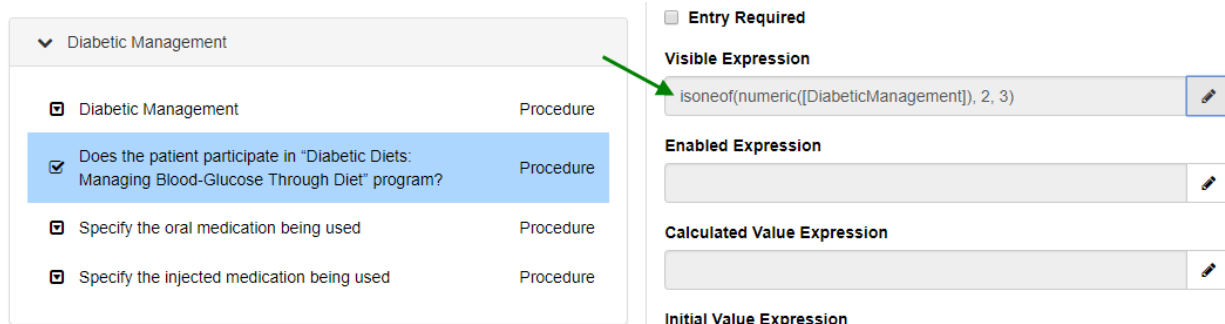
Now create the logic for when this question should be visible. In this case, we have two different answers to the parent question which would make this child question visible. We need to know the value of those answers. This child question should appear when “Dietary and exercise modifications”

(value: 2) or “Self-monitoring of blood glucose (SMBG)” (value: 3) are selected. This is done with the following expression `isoneof(numeric([<shortcode>]), <value list>)`. In our case this would be `isoneof(numeric([DiabeticManagement]), 2, 3)`.

Here is a screenshot showing validating the expression:






And the completed entry after save:




Next, use a similar process to create the visible expression for the remaining two child questions. As there is only a single value, you could still use the “isoneof” function, and update the value list to correspond to the desired answer in the parent, or you could use an equality test. Here are the two options which both yield the same results:

Edit Visible Expression

Specify the oral medication being used

Insert Question   




isoneof(numeric([DiabeticManagement]), 4)

 Expression is valid


Cancel Save

Edit Visible Expression

Specify the oral medication being used

Insert Question   

numeric([DiabeticManagement]) = 4

 Expression is valid

Cancel Save

Often for a Single Choice Question, leaving the visibility expression using the “isoneof” formula is helpful. The reason is that if you later add a new choice to the parent then, it is easier to update by simply adding the new value to the list in the visible expression, rather than having to re-write the whole expression.

Here are screenshots of the finished properties for each:

<div style="border: 1px solid #ccc; padding: 5px;"> <p>Diabetic Management</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Diabetic Management Procedure <input checked="" type="checkbox"/> Does the patient participate in "Diabetic Diets: Managing Blood-Glucose Through Diet" program? Procedure <li style="background-color: #e0f0ff;"><input checked="" type="checkbox"/> Specify the oral medication being used Procedure <input checked="" type="checkbox"/> Specify the injected medication being used Procedure </div>	<div style="border: 1px solid #ccc; padding: 5px;"> <p>Suffix</p> <p><input type="text"/></p> <p><input type="text"/></p> <p><input type="checkbox"/> Entry Required</p> <p>Visible Expression</p> <p>isoneof(numeric([DiabeticManagement]), 4) ✎</p> <p>Enabled Expression</p> <p><input type="text"/></p> </div>
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<div style="border: 1px solid #ccc; padding: 5px;"> <p>Diabetic Management</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Diabetic Management Procedure <input checked="" type="checkbox"/> Does the patient participate in "Diabetic Diets: Managing Blood-Glucose Through Diet" program? Procedure <input checked="" type="checkbox"/> Specify the oral medication being used Procedure <li style="background-color: #e0f0ff;"><input checked="" type="checkbox"/> Specify the injected medication being used Procedure </div>	<div style="border: 1px solid #ccc; padding: 5px;"> <p>Suffix</p> <p><input type="text"/></p> <p><input type="text"/></p> <p><input type="checkbox"/> Entry Required</p> <p>Visible Expression</p> <p>isoneof(numeric([DiabeticManagement]), 5) ✎</p> <p>Enabled Expression</p> <p><input type="text"/></p> </div>
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And here are the custom questions in action on a data form:

Diabetic Management

Diabetic Management

(unspecified) ▼

Diabetic Management

Diabetic Management

Dietary and exercise modifications ▼

Does the patient participate in "Diabetic Diets: Managing Blood-Glucose Through Diet" program?

(unspecified) No Yes

Diabetic Management

Diabetic Management

Medication (Oral) ▼

Specify the oral medication being used

(unspecified) ▼

Diabetic Management

Diabetic Management

Medication (Injected) ▼

Specify the injected medication being used

(unspecified) ▼

Data Levels

When creating a custom question, you are prompted to select a data level.

Add Element

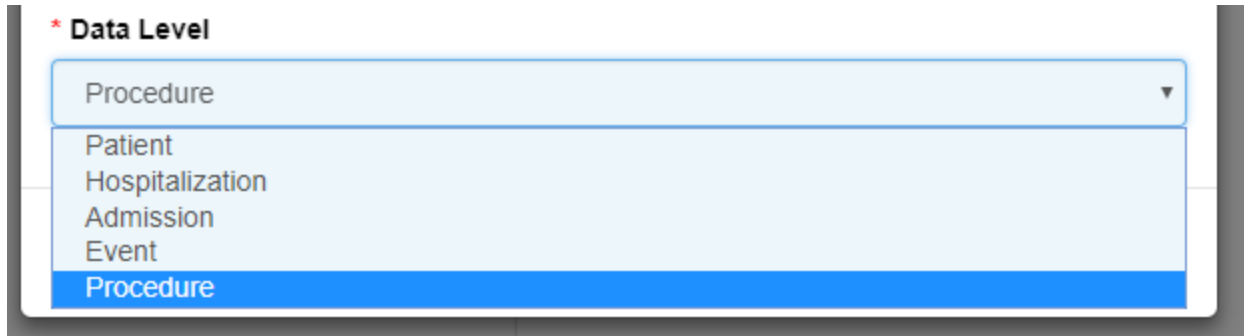
*** Question Text**

*** Data Level** ←

Procedure ▼

Cancel Save

This menu has the following options: Patient, Hospitalization, Admission, Event, Procedure, as seen in this screenshot:



For most cases, you will be creating Procedure level custom questions. These are questions which have an answer that can vary from one procedure to the next. For example, the patient’s weight is not a patient level question, but is a procedure level question, as the patient’s weight could change between two procedures.

There are considerations to be aware of when creating questions at different data levels, most especially when creating dependencies (such as relationships) between questions.

A general rule of thumb is that you should make the data level of the question you are creating, similar to the data level of the questions it is going next to.

Here is a brief description of the various data levels:

Procedure – This is likely the most common data level for custom questions. This data level covers any question where the answer can change for a second procedure done during the same episode of care or admission.

Event – This data level is rarely used. Before using the event data level, extra discussion should be taken with Cedaron.

Admission – This data level covers questions about admission, discharge, and items which do not change between admissions. Often when users consider an “episode of care”, it falls under this data level.

Hospitalization – Very few items are stored at this data level. An example of what would go here is an item which would stay the same on an immediate re-admission after a discharge – for example a patient was discharged, collapsed in the parking lot, and was therefore re-admitted.

Patient – The patient data level is really only suitable for base level demographics. Items at the patient level are things that rarely change such as patient name and contact information. However, even contact information, if specified as “at time of admission” or similar, may not be appropriate at the patient data level.

For additional information about the data levels, please contact Cedaron.