

Feeding FHIR with LHC-Forms

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What is LHC-Forms and what can it do?



LHC-Forms- how it works and what it can do?

- ❑ A fast, web based and MU standards based, open source JavaScript program (300kB) generates live forms from JSON form descriptions on the fly
- ❑ Accommodates nested groups and repeating groups of questions
- ❑ Has all of the usual form functions: Skip logic, rich validation checks, auto complete menus, score calculation, etc.
- ❑ Many different layout styles and a responsive design that fits any screen size

Associated Tools Services

- ❑ Form builder for creating new forms and editing old ones
- ❑ Clinical table linker provides auto complete look-up for questions whose answers come from external tables
- ❑ All LOINC panels are LHC forms (most LHC forms are LOINC panels)
- ❑ Implements FHIR questionnaire plus a bit more
- ❑ Can store captured data as:
 - ❖ FHIR Questionnaire responses
 - ❖ FHIR Diagnostic reports
 - ❖ HL7 Messages
- ❑ Docker for delivering packages
- ❑ Units validation and converter package
- ❑ See last slide for access to code and demo pages

Secret Sauce in Clinical table linker

- ❖ Via the URL, users can specify what fields in the external table are searched, and which answers are returned as part of selection grid, and which are stored in the index value field as hidden variables
- ❖ Other fields in the form can use these hidden variables as answer lists, default values, or help messages.
- ❖ Explore the tables we have created so far at:
<https://clin-table-search.lhc.nlm.nih.gov/>
- ❖ Tables include IDC9, ICD10, genetic tables (ClinVar, dbSNP, etc.), RxTerms, NPI (coming soon), etc.

LHC forms are standards based

- ❑ All 2000+ LOINC panels including hundreds of validated surveys. Are LHC forms
- ❑ NIH's Common Data elements can be presented as LHC forms:
<https://cde.nlm.nih.gov/home>
- ❑ LHC on FHIR
- ❑ Form is also a FHIR questionnaire (plus)
- ❑ Can generate FHIR questionnaire responses FHIR Diagnostic reports (mostly but not limited to SMART on FHIR) or HL7 V2 messages,
- ❑ UCUM for units of measure
- ❑ Tied to many external, MU Standard and genetic standard coding system NPI coming

Lots of rich survey instruments and assessments available as LOINC forms

- ❑ Most CMS clinical forms (OASIS, MDS 3.0 nursing home assessments, dialysis reports) are represented as LOINC panels/forms.
 - ❖ CMS is unifying all of its assessments as LOINC forms with LOINC codes—some which will use the LOINC codes for existing CMS data items where possible and obtain new ones when needed
- ❑ CDC standard forms for birth and death certificates are LOINC forms
- ❑ Lots and lots of psychosocial surveys
 - ❖ PHQ, PROMIS,
 - ❖ Lots of clinical test panels and nursing assessment forms
 - ❖ Ventilator variables, 12 lead EKG, Pulmonary function tests (Mayo), cardiac echoes (DICOM), Lab panels, Ophthalmology measures (NEI), etc., etc.

Examples

- ❑ <https://lhc-forms.lhc.nlm.nih.gov/>
- ❑ Will show live examples of
 - ❖ PHQ-4 form – Demo – Score calculation
 - ❖ Surgeon General's family health history (Demo - repeats of many questions and skip logic)
 - ❖ Form for reporting genetic results (represents early draft of HL7 genetic message proposal demo):
 - ❖ Using LHC form to implement an application
 - PHR lite

Surgeon Generals family health history as an LHC-Form

Multiple levels of nesting-
Proband can have many
diagnoses with dates AND many
relatives who also have many
diagnoses and dates

US Surgeon General family health portrait [54127-6]

Date Done	Time Done	Where Done	Comment
MM/DD/YYYY	Type a value	Select or type a value	Type a value

Name	Value	Units
My health history [54126-8]		
Name [54125-0]	Mr good doctor	
Gender [54131-8]	Male	
Birth Date [21112-8]	12/16/1944	{mm/dd/yyyy}
Twin [54132-8]	No	
Adopted [54128-4]	Yes	
Parents related [54135-9]	No	
Body height [8302-2]	70	
Weight [29463-7]	70	
Race [54134-2]	2106-3. White	
Ethnicity [54133-4]	Unknown/No answer	
1.1 Diseases history panel [54137-5]		
History of diseases [54140-9]	Diabetes - type 2 (adult, non-insulin-independent)	
Age range at onset of disease [54130-0]	30-39	
1.2 Diseases history panel [54137-5]		
History of diseases [54140-9]	Congestive heart failure (CHF)	
Age range at onset of disease [54130-0]	OVER 60	
Add another "Diseases history panel"		
1 Family member health history [54114-4]		
Relationship to patient [54136-7]	GRNDDAU. Granddaughter	
Name [54138-3]	mary	
Gender [54123-5]	Female	
Living? [54139-1]	Yes	
Date of Birth [54124-3]	12/20/1190	{mm/dd/yyyy}
Current Age [54141-7]	Type a number	a
Twin [54121-9]	No	
Adopted [54122-7]	No	

multiple repeats per person recording

PHQ-9 Depression survey with score computed on the fly

As an LHC-Form

PHQ-9 quick depression assessment panel [44249-1] ©

Date Done	Time Done	Where Done	Comment
MM/DD/YYYY	Type a value	Select or type a value	Type a value
Name		Value	Units
Over the last 2 weeks, how often have you been bothered by any of the following problems? [44257-4] ©			
Little interest or pleasure in doing things? [44250-0] ©		1. Several days	
Feeling down, depressed, or hopeless? [44255-8] ©		2. More than half the days	
Trouble falling or staying asleep, or sleeping too much [44250-0] ©		1. Several days	
Feeling tired or having little energy [44254-1] ©		1. Several days	
Poor appetite or overeating [44251-7] ©		1. Several days	
Feeling bad about yourself-or that you are a failure or have let yourself or your family down [44258-2] ©		1. Several days	
Trouble concentrating on things, such as reading the newspaper or watching television [44252-5] ©		0. Not at all	
Moving or speaking so slowly that other people could have noticed. Or the opposite-being so fidgety or restless that you have been moving around a lot more than usual [44253-3] ©		0. Not at all	
Thoughts that you would be better off dead, or of hurting yourself in some way [44280-8] ©		1. Several days	
Patient health questionnaire 9 item total score [44281-8] ? ©		8	{score}
How difficult have these problems made it for you to do your work, take care of things at home, or get along with other people? [89722-7] ? ©		Select one	

form adds up the score for the answers given



Secret sauce : Code stored in one field can generate code answer lists for succeeding fields- to be illustrated on the PHR form
Enter Lasix oral and get selection menu of available pill sizes

	Z-PAK (Pack)		Stopped	▼	mixed Pack	tal
	Beclomethasone (Nasal)		Active	▼	40 mcg/puff Metered dose sp	1 p
	LA SIX (Oral Pill)		Active	▼	Select one or type a value	Ty

1: 20 mg Tab
 2: 40 mg Tab
 3: 80 mg Tab

Add another 'Medications'

Allergies and Other Dangerous Reactions



Name

Reaction

Effect




Frequency




Choices of combo boxes, radio buttons, check boxes and grids when appropriate




Braden scale skin assessment panel  




Date Done Time Done Where




Name




Sensory perception Braden Scale    ☒ Completely ☐ No impairment


Moisture exposure Braden Scale    ☐ Constantly moist ☐ Very moist ☐ Occasionally moist ☐ Rarely moist




Physical Activity Braden Scale    ☐ Bedfast ☐ Chairfast ☐ Walks occasionally ☐ Walks frequently

Physical mobility Braden Scale    ☐ Completely immobile ☐ Very limited ☒ Slightly limited ☐ No limitation

Nutrition Intake Pattern Braden Scale    ☐ Very poor ☒ Probably inadequate ☐ Adequate ☐ Excellent

Friction+Shear Braden Scale    ☐ Problem ☒ Potential problem ☐ No apparent problem

Braden Scale Total Score  {score}

Pressure ulcer risk Braden Scale    ☐ Very high ☐ High ☐ Moderate ☐ Mild ☐ No risk

☐ Combo box ☒ Radio buttons

Display format:

gear gives choice of combo box or buttons and the

gear clicked

Can enter multiple fields in one field (or as separate fields illustrated with PHR)

Medications assessed [51963-7]

* Ampicillin

* coumarin

Search for or type values

Gene(s) assessed [48018-6]

* CFTR

* AAGAB

* FDXACB1

Search for values

make multiple
setions in one
field. Remove them
by clicking on x

Secret sauce: record for Id in one field generates defaults for others

Before

Genetic variant coding system [02122-9]

Discrete genetic variant [81252-9]

Transcript specification

Gene studied	Transcript RefSeq ID	DNA change c.HGVS	Amino acid change p.HGVS	DNA change type	Amino acid change type
<input type="text" value="Search for or type a value"/>	<input type="text" value="Search for or type a value"/>	<input type="text" value="Search for or type a value"/>	<input type="text" value="Search for or type a value"/>	<input type="text" value="Select one or type a value"/>	<input type="text" value="Select one or type a value"/>

Genomic specification

Genomic reference sequence	Genomic DNA change (gHGVS)	Genomic ref allele	Genomic allele start-end	Genomic alt allele
<input type="text" value="Search for or type a value"/>	<input type="text" value="Type a value"/>	<input type="text" value="Type a value"/>	<input type="text" value="Type a value"/>	<input type="text" value="Type a value"/>

After

Discrete genetic variant [81252-9]

Transcript specification

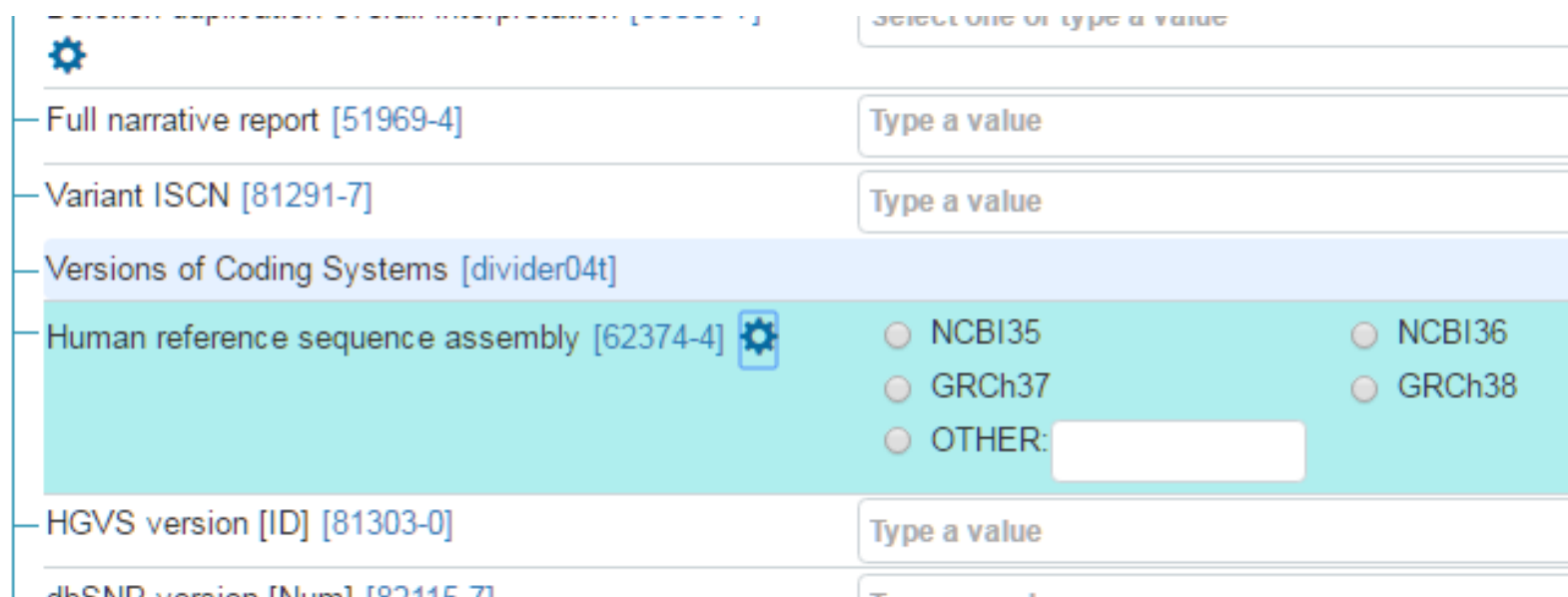
Gene studied	Transcript RefSeq ID	DNA change c.HGVS	Amino acid change p.HGVS	DNA change type	Amino acid change type
<input type="text" value="CFTR"/>	<input type="text" value="NM_000492.3"/>	<input type="text" value="c.1373G>T"/>	<input type="text" value="p.Gly458Val"/>	<input type="text" value="SNV"/>	<input type="text" value="Select one or type a value"/>

Genomic specification

Genomic reference sequence	Genomic DNA change (gHGVS)	Genomic ref allele	Genomic allele start-end	Genomic alt allele
<input type="text" value="NC_000007.13"/>	<input type="text" value="Type a value"/>	<input type="text" value="G"/>	<input type="text" value="117188858^117188858"/>	<input type="text" value="T"/>

Responsive design-example from HL7 V2 genetics reporting form

Wide screen




Wide screen view of the HL7 V2 genetics reporting form. The form is displayed in a single column layout. The 'Human reference sequence assembly' section is expanded, showing radio button options for NCBI35, GRCh37, NCBI36, GRCh38, and OTHER. A gear icon is visible next to the 'Human reference sequence assembly' label.

Full narrative report [51969-4]

Variant ISCN [81291-7]

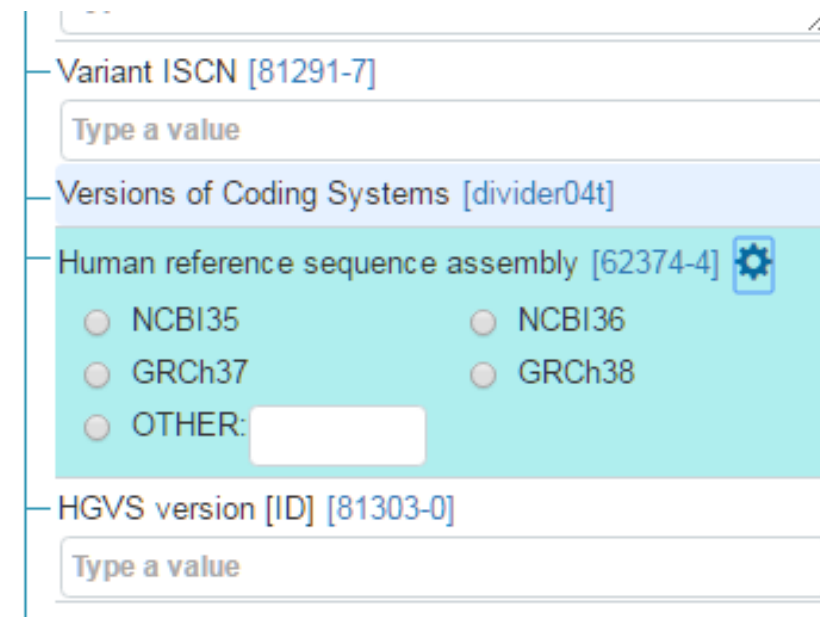
Versions of Coding Systems [divider04t]

Human reference sequence assembly [62374-4]  ☐ NCBI35 ☐ NCBI36 ☐ GRCh37 ☐ GRCh38 ☐ OTHER:

HGVS version [ID] [81303-0]

dbSNP version [Num] [81415-7]


Skinny screen



Skinny screen view of the HL7 V2 genetics reporting form. The form is displayed in a single column layout. The 'Human reference sequence assembly' section is expanded, showing radio button options for NCBI35, GRCh37, NCBI36, GRCh38, and OTHER. A gear icon is visible next to the 'Human reference sequence assembly' label.

Variant ISCN [81291-7]

Versions of Coding Systems [divider04t]

Human reference sequence assembly [62374-4]  ☐ NCBI35 ☐ NCBI36 ☐ GRCh37 ☐ GRCh38 ☐ OTHER:

HGVS version [ID] [81303-0]

dbSNP version [Num] [81415-7]

Lots of options at the top of the LHC demo page to show different features -won't dwell on them

[Load From File](#)[Save To File](#)[Show FHIR SDC Questionnaire](#)[Show FHIR SDC QuestionnaireResponse](#)[Show FHIR DiagnosticReport](#)[Show HL7 Message](#)

☒ Display Question Code ☐ Show Help/Description ☐ Keyboard Navigation On Input Fields Total # of Questions: 104

Master HL7 genetic variant reporting panel (2016-11-21, table version) [X2000-0] 

- | | | |
|---|--|---|
| <input checked="" type="checkbox"/> Display question code | <input type="checkbox"/> Show help/description | <input type="checkbox"/> Hide form controls |
| <input checked="" type="checkbox"/> Display form's option button | <input checked="" type="checkbox"/> Display form's option panel | <input type="checkbox"/> Display item's option button |
| <input type="checkbox"/> Hide units | <input type="checkbox"/> Allow multiple empty repeating questions/sections | <input type="checkbox"/> Allow HTML content in instructions |
| <input checked="" type="checkbox"/> Display form header questions | <input checked="" type="checkbox"/> Display column headers | <input checked="" type="checkbox"/> Tree line style |

Date Done

MM/DD/YYYY



Making Applications from forms – Implemented PHR close to what it was in previous Ruby on Rails applications (will demo)

Save To File

Use "Label Above" Style

Use "Label on Left" Style

Show HL7 Message

☐ Display Question Code☒ Show Help/Description☐ Keyboard Navigation On Input Fields

Total # of Questions: 44

Personal Health Record ⚙

Medical Conditions

	Medical condition		Status	Started	Stopped	Description/Comment
-	Chest pain	🔍	Active ▼	04/20/2016 📅	MM/DD/YYYY 📅	Sounds anginal. Worrse with exertion, but young and no family history
-	Pneumonia - bronchial	🔍	Inactive ▼	03/17/2017 📅	04/22/2016 📅	Treated wish Zpack on ambulatorybais
-	Hay fever (allergic rhinitis)	🔍	Active ▼	03/20/2012 📅	MM/DD/YYYY 📅	Every spring
-	bac	🔍	Select one or 1 ▼	MM/DD/YYYY 📅	MM/DD/YYYY 📅	Type a value

Add another 'Medical Conditions'

Medications

	Medication name	Status	Strength	Instructions	Started	Stopped	Why stopped	Resupply
-	Z-PAK (Pack)	🔍 Stopped ▼	mixed Pack	take until gone	03/17/2016 📅	04/22/2016 📅	Finished the prescription ▼	MM/DD/YYYY 📅
-	Beclomethasone (Nasal)	🔍 Active ▼	40 mcg/puff Metered dose sp ▼	1 puff twice day in season	03/20/2012 📅	MM/DD/YYYY 📅	Select one or type a value ▼	MM/DD/YYYY 📅

Add another 'Medications'

Allergies and Other Dangerous Reactions

	Name	Reaction	Started	Comment
-	Pollen	▼ Sneezing or stuffy nose ▼	▼ 03/15/2017 📅	Worse when maple trees bloom
-	Select one or type a value	▼ Select one or type a value ▼	▼ MM/DD/YYYY 📅	Type a value

Add another 'Allergies and Other Dangerous Reactions'



HL7 message generated from completion of genetics form- only top 2/3ds showing (Hand out)

```

OBR|1|X1000-0^HL7 Genetic Test Panel for Variants - 20160322^LN|
OBX|1|CNE|XXXXX-12^Choose kind of mutations targeted^LN|1|C01^Simple variants^LN~C02^Complex
variants^LN|
OBX|2|CNE|XXXXX-10^Choose region of interest specification^LN|1|C01^Specific targeted mutations^LN|
OBX|3|CWE|51967-8^Genetic disease assessed^LN|1|C0010674^Cystic fibrosis^LN|
OBX|4|CNE|48002-0^Genomic source class^LN|1|LA6683-2^Germline^LN|
OBX|5|CNE|48018-6^Gene(s) examined^LN|1|1884^CFTR^LN|
OBX|6|CNE|51968-6^Genetic analysis overall interpretation^LN|1|LA6576-8^Positive^LN|
OBR|2|XXXXX-9^Simple variants^LN|
OBX|1|CNE|XXXXX-5^Variant ID^LN|1.1|44487^35823^LN|
OBX|2|ST|XXXXX-13^Variant name^LN|1.1|NM_000492.3(CFTR):c.1400T>C (p.Leu467Pro)|
OBR|3|XXXX1-1^Variant specifics^LN|
OBX|1|CNE|XXXXX-19^Type^LN|1.1.1|SNP^SNP^LN|
OBX|2|CNE|48018-6^Gene^LN|1.1.1|44487^CFTR^LN|
OBX|3|CNE|48013-7^NM_RefSeq^LN|1.1.1|44487^NM_000492.3^LN|
OBX|4|CNE|41103-3^DNA change^LN|1.1.1|44487^c.1400T>C^LN|
OBX|5|CNE|48005-3^AA change^LN|1.1.1|44487^p.Leu467Pro^LN|
OBX|6|ST|XXXXX-17^NC/NG_RefSeq^LN|1.1.1|NC_000007.13|
OBX|7|ST|69547-8^Ref allele^LN|1.1.1|T|
OBX|8|ST|X0029^Allele loc^LN|1.1.1|117199525|
OBX|9|ST|69551-0^Alt allele^LN|1.1.1|C|
OBX|3|CWE|X1001-0^Cytogenetic location^LN|1.1|44487^7q31.2^LN|
OBX|4|CWE|X1002-0^Possible associated phenotype^LN|1.1|C0010674^Cystic fibrosis^LN|
OBR|4|XXXXX-9^Simple variants^LN|
OBX|1|CNE|XXXXX-5^Variant ID^LN|2.1|44494^35830^LN|
OBX|2|ST|XXXXX-13^Variant name^LN|2.1|NM_000492.3(CFTR):c.1684G>A (p.Val562Ile)|
OBR|5|XXXX1-1^Variant specifics^LN|
OBX|1|CNE|XXXXX-19^Type^LN|2.1.1|SNP^SNP^LN|
OBX|2|CNE|48018-6^Gene^LN|2.1.1|44494^CFTR^LN|
OBX|3|CNE|48013-7^NM_RefSeq^LN|2.1.1|44494^NM_000492.3^LN|
OBX|4|CNE|41103-3^DNA change^LN|2.1.1|44494^c.1684G>A^LN|
OBX|5|CNE|48005-3^AA change^LN|2.1.1|44494^p.Val562Ile^LN|
OBX|6|ST|XXXXX-17^NC/NG_RefSeq^LN|2.1.1|NC_000007.13|

```

LHC form producing Diagnostic report JSON and or questionnaire response For delivery to FHIR server (Handout)

Form Builder

After selecting a starter form

list of all of the form questions at the start and their hierarchy

User can add questions or remove levels and re-order questions within a level

Detailed attributes about the current question. In this case, the first one in the heirarchy. Can edit cardinality, skip logic, validation checks etc

Full live form for what has been created so far. Will look just like it would look in real use. This space can also show the JSON output that underlie the form

For

Save

Title

AD

INC

1 Vital signs, weig...

1.1 SaO2 % BldC Oximetry

1.2 Weight Measured

1.3 Head Circumf OFC ...

1.4 Bdy height

1.5 Bdy height lying

1.6 Body temperature

1.7 BP dias

1.8 BP sys

1.9 Heart rate

1.10 Resp rate

1.11 BSA Derived

1.12 BMI

1 Vital signs, weight, height, head circumference, BMI, & BSA panel [74728-7]

Name	Value	Units
Text ?	Vital signs, weight, height, h	
Coding System ?	LOINC	
Code ?	74728-7	
Local code ?	Type a value	
Question instructions ?	This panel was created to co	
Repeat this item? ?	Select one	
Add conditional show/hide logic? ?	No	

PRE

Name	Value	Units
Vital signs, weight, height, head circumference, oximetry, BMI, & BSA panel ?		
SaO2 % BldC Oximetry	Type a number	%
Weight Measured	Type a value	
Head Circumf OFC by Tape measure	Type a number	cm
Bdy height	Type a value	
Bdy height lying	Type a number	Select c
Body temperature	Type a value	
BP dias	Type a number	mm[Hg]
BP sys	Type a number	mm[Hg]
Heart rate	Type a number	{beats}/mi
Resp rate	Type a number	{breaths}/i

- ☐ Clicked on one variable, BP diastolic
- ☐ Shows Controls for managing cardinality
- ☐ Input required
- ☐ Data type
- ☐ Default value
- ☐ Formulae
- ☐ Show/Hide rules (Skip logic)

Title

ADD NEW OR IMPORT FROM LOINC

1 Vital signs, weig...

1.1 SaO2 % BldC Oximetry

1.2 Weight Measured

1.3 Head Circumf OFC ...

1.4 Bdy height

1.5 Bdy height lying

1.6 Body temperature

1.7 BP dias

1.8 BP sys

1.9 Heart rate

1.10 Resp rate

1.11 BSA Derived

1.12 BMI

Repeat this item?

Select one

Editable

Editable

Answer required?

No

Type

Decimal

Default answer

Type a value

Units

mm[Hg]

Select one or more or ty

Formula

Select one

Add Restrictions

No

Add conditional show/hide logic?

Yes

Criteria to show this item

Show this item when

Any condition is true

1.1 Condition

Select Source Field

Select one

Add another 'Condition'



The FHIR connection

What is working

□ Using Smart on FHIR

❖ Can pull up form service,

- Pick a patient from the sample patient registry file
- Pick a form
- Enter data
- Store it in the Diagnostic report resource - using related observations as needed to implement that hierarchical – and repeating group structure
- Retrieve if and view it - back in the form
- Provides an ecosystem for LHC forms and LOINC panels
- Questionnaire response is other option – But most panel/survey kind of data will have to be converted to a diagnostic study to be usefully absorbed in an EMR

[illegible]

Author Lister Hill National Center for Biomedical Communications (LHNCBC)

Website <https://ifforms-demo.nlm.nih.gov>

Last Update Monday, October 17, 2016

Tags Clinical Care Diagnosis Clinical Data Capture Featured

Try It

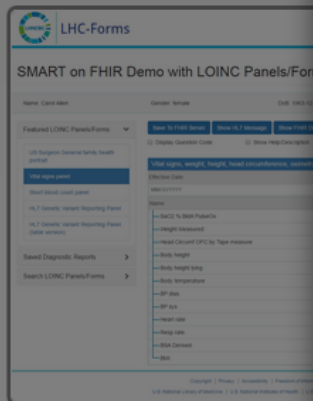
LHC-Forms (a.k.a. LForms) is a light-weight, feature-rich, open-source widget that creates input forms for Web-based medical applications or to integrate into electronic health records (EHRs), personal health records (PHRs), and mobile health apps.

Related Apps

Other apps by [Lister Hill National Center for Biomedical Communications \(LHNCBC\)](#)

No other items found

LHC-Forms



App Description

LHC-Forms (a.k.a. LForms) forms for Web-based medical applications or to integrate into electronic health records (EHRs), personal health records (PHRs), and mobile health apps.

Other apps by **Walter Hill National Center for Biomedical Communications (LHNCBC)**

No other items found

Select Sample Patient

Search Patients

	Gender	Name	Family Name	Born
<input type="radio"/>	♀	Brittany Ackerman	Ackerman	1942-11-09
<input type="radio"/>	♂	Daniel X. Adams	Adams	1925-12-23
<input checked="" type="radio"/>	♀	Deborah Adams	Adams	1948-01-09
<input type="radio"/>	♀	Emilie Adams	Adams	1935-09-22
<input type="radio"/>	♂	Aaron Alexis	Alexis	1989-10-26
<input type="radio"/>	♀	Carol G. Allen	Allen	1963-12-26
<input type="radio"/>	♀	Beryl Bachmann	Bachmann	1974-02-13
<input type="radio"/>	♀	Paulene Bachmann	Bachmann	1985-02-02
<input type="radio"/>	♀	Magda Bachmann	Bachmann	1937-02-15
<input type="radio"/>	♀	Trudy Belson	Belson	1945-08-30

← Prev 10

Patients 1 to 10 of 176

Next 10 →

1 patient selected

OK

Cancel



SMART on FHIR Demo with LOINC Panels/Forms

Name: Deborah Adams

Gender: female

DoB: 1948-01-09

ID: hca-pat-18

Featured LOINC Panels/Forms

US Surgeon General family health portrait

Vital signs panel

Short blood count panel

HL7 Genetic Variant Reporting Panel

HL7 Genetic Variant Reporting Panel (table version)

Please select a LOINC Panel/Form from left side.

Saved Diagnostic Reports >

Search LOINC Panels/Forms >

URLS for exploring

(Ye Wang, Paul Lynch, Ajay Kanduru, Lee Mericle, Clem McDonald)

❑ LHC-Forms

- ❖ Project page: <https://lhncbc.nlm.nih.gov/project/lforms>
- ❖ Software download and documentation: <https://github.com/lhncbc/lforms>
- ❖ Demo site: <https://lhc-forms.lhc.nlm.nih.gov/>

❑ Lister Hill Table Connector (aka Autocompleter)

- ❖ <https://clin-table-search.lhc.nlm.nih.gov/>
- ❖ <http://lhncbc.github.io/autocomplete-lhc>
- ❖ <https://github.com/lhncbc/autocomplete-lhc>

❑ Form Builder

- ❖ <https://lhc-formbuilder.lhc.nlm.nih.gov/lforms/demo>

❑ Units of measure (UCUM) validator and converter

- ❖ <http://lhncbc.github.io/ucum-lhc/>

URLS for exploring - cont.

(Ye Wang, Paul Lynch, Ajay Kanduru, Lee Mericle, Clem McDonald)

□ JSON & Screenshot of genetic form (use Chrome)

- ❖ Screenshot: <http://lhncbc.github.io/lforms/samples/genetic-panel/screenshot.png>
- ❖ - Form as FHIR Questionnaire:
<http://lhncbc.github.io/lforms/samples/genetic-panel/fhir-questionnaire.json>
- ❖ - Form response as FHIR QuestionnaireResponse:
<http://lhncbc.github.io/lforms/samples/genetic-panel/fhir-questionnaire-response.json>
- ❖ - Form response as FHIR DiagnosticReport:
<http://lhncbc.github.io/lforms/samples/genetic-panel/fhir-diagnostic-report.json>
- ❖ - LHC-Forms format (with user data):
<http://lhncbc.github.io/lforms/samples/genetic-panel/lforms-data.json>