FPAR VSAC value sets and LOINC

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LOINC Fall 2017 meeting
Recall: Family Practice Annual Report is represented in LOINC with a Panel

- Each data element was modeled and a LOINC code associated with it.
  - Including a few panels of Lab concepts
- Value sets were created for each data element where required
- Value sets have been published in VSAC, and the VSAC value set is indicated using the VSAC API in the FHIR profile.
RESTful API connections

- E.g. FHIR profile binding using **FHIR Terminology Server**

  ```xml
  <binding>
    <strength value="preferred"/>
    <description value="A VSAC value set that describes one's sexual activity state used by FPAR."/>
    <valueSetReference>
    </valueSetReference>
  </binding>
  ```

- USE VSAC directly, see [https://www.nlm.nih.gov/vsac/support/usingvsac/vsacvsapiv2.html](https://www.nlm.nih.gov/vsac/support/usingvsac/vsacvsapiv2.html)
Alternative to APIs: Collaboration Web Site

https://vsaccollab.nlm.nih.gov/collab/page/site/2x16x840x1x113762x1x4x1143x255/dashboard
Panels of LOINC labs: HPV tests - FPAR 2.0 set

Example value set:
Human Papilloma Virus Tests, FPAR VSAC OID:
2.16.840.1.113762.1.4.1166.12

Applies to LOINC code: 86658-2
https://r.details.loinc.org/LOINC/86658-2.html?sections=Comprehensive
SNOMED CT answers: Human papilloma virus 16+18+31+33+35+39+45+51+52+56+58+66 DNA

Example value set:
Positive Negative VSAC OID: 2.16.840.1.113762.1.4.1166.6
https://vsac.nlm.nih.gov/valueset/2.16.840.1.113762.1.4.1166.6/expansion

Applies to LOINC code: 73959-9
LOINC answers: Annual Household Income

Example value set:
FPAR Annual Household Income Ranges VSAC OID: 2.16.840.1.113762.1.4.1166.25
https://vsac.nlm.nih.gov/valueset/2.16.840.1.113762.1.4.1166.25/expansion

Applies to LOINC code: 77244-2
https://r.details.loinc.org/LOINC/77244-2.html?sections=Comprehensive
Source of Payment Typology: ‘Payer for Visit’

Example value set:
Source of Payment Typology VSAC OID:
2.16.840.1.114222.4.11.3591
https://vsac.nlm.nih.gov/valueset/2.16.840.1.114222.4.11.3591/expansion

Applies to LOINC code: To be finalized
Note: For ‘Payer for Visit’, we recommend using LOINC 52556-8. In the instance of the FPAR set, we will point to the Source of Payment typology.
Methods used by Intermountain to determine values for LOINCs with coded values
Query

with
loinc_codes as (select column_value "loinc_code"
from table(sys.dbms_debug_vc2coll('32146-3','16126-5','40750-2','801-1','5393-4','38506-2','22415-4','32637-1','19295-5','32140-6','33910-1','28005-7','15218-1','11266-4','22587-0','5034-4','29641-8','11276-3','15210-8','22131-7','19415-9','19141-1','8234-7','8191-9','28008-1','39080-0','21033-6','56491-4','56490-6','5876-8','32765-0','48035-0','20513-8','9327-8','5199-5','46735-7','4023-8','3297-9','5639-0','6565-6','5353-8','5351-2','10976-9','10998-3','20404-0','3414-0','10900-9','7792-5','13954-3','16131-5','2006-5','5866-9','20444-6','13953-5','5222-5','24012-7','31204-1','31219-4','20512-0','22496-4','17859-0','3299-5','11259-9','32764-3','45371-2','5862-8','6357-8','46154-1','72314-9','12248-1','5332-2','14314-9','5813-1','40752-8','21440-3','34468-9','8284-7','34701-3','10459-6','5774-5','41477-1','19554-3','802-9','19343-3','703-9','33804-6','25160-3','13532-7','3779-6','2761-5','19550-3','14563-1','44877-9','1977-8','4993-2','2118-8','14565-6','14564-9','9588-5','9596-8','9595-0','9598-4','9599-2','9592-7','9591-9','9589-3','9594-3','9590-1','9593-5','11004-9','9597-6','47238-1','6561-5','13951-9','18390-5','9587-7','10362-2','46765-4','3389-4','11006-4','546-2','3376-1','25145-4','49541-6','29891-9','20761-3','65633-0','803-7','13952-7','21110-5','5560-9','24475-6','11232-5','38479-2','38486-7','29571-7','32854-2','29574-1','19312-8','7918-6','16128-1','8246-1','7790-9','4073-0','3773-9','10381-2','38478-4','1305-2','13955-0','17790-7','5783-6','19162-7','22322-2','3426-0','800-3','7791-7','547-0','31201-7','3936-2','25428-4','32356-8','779-9','3397-7','15199-3','3393-6','33051-4','15198-5','15150-6','35691-5','19659-2','11258-0','15180-3','12454-5','774-0','702-1','5195-3','33903-6','3349-8','8061-4','3377-9','48345-3','3390-2','3879-4','25162-9','10378-0','20453-7','9317-9','5818-0','8247-9','728-6','2349-9','741-9','2514-8','738-5','20454-5','5794-3','5799-2','5770-3','5804-2'))

loinc_ncids as (select r.representation "loinc_code"
, r.ncid "loinc_nclid"
, r1.representation "loinc_name"
from loinc_codes, cdr.rsform r, cdr.rsform_context rc, cdr.rsform r1, cdr.rsform_context r1
where r.rsform_id = rc.rsform_id
and rc.context_ncid = 223
and rc.preferred_score = 0
and loinc_codes."loinc_code" = r.representation
and r1.rsform_id = r1.rsform_id
and r1.context_ncid = 521106494
and r1.preferred_score = 0
and r.ncid = r1.ncid
and r.representation in (select * from loinc_codes)
)
testresult_ncids as (select loinc_codes."loinc_code"
, loinc_ncids."loinc_nclid"
, loinc_ncids."loinc_name"
, cr.concept_relation_ncid "testresult_nclid"
from loinc_codes, loinc_ncids, loinc_ncids, loinc_name, cr.concept_relation_ncid
where loinc_codes."loinc_code" = loinc_ncids."loinc_nclid"
and loinc_ncids."loinc_nclid" = testresult_ncids."testresult_nclid"
<table>
<thead>
<tr>
<th>loinc_code</th>
<th>loinc_name</th>
<th>testresult</th>
<th>COUNT(*)</th>
<th>code_disp</th>
</tr>
</thead>
<tbody>
<tr>
<td>10362-2</td>
<td>Endomyosium IgA Ab [Presence] in Serum</td>
<td>25407</td>
<td>19</td>
<td>Not detected</td>
</tr>
<tr>
<td>10362-2</td>
<td>Endomyosium IgA Ab [Presence] in Serum</td>
<td>25407</td>
<td>6</td>
<td>See Note</td>
</tr>
<tr>
<td>10362-2</td>
<td>Endomyosium IgA Ab [Presence] in Serum</td>
<td>25407</td>
<td>2</td>
<td>See reference lab report</td>
</tr>
<tr>
<td>10362-2</td>
<td>Endomyosium IgA Ab [Presence] in Serum</td>
<td>25407</td>
<td>1</td>
<td>AB not detected</td>
</tr>
<tr>
<td>10362-2</td>
<td>Endomyosium IgA Ab [Presence] in Serum</td>
<td>25407</td>
<td>1</td>
<td>See additional report form</td>
</tr>
<tr>
<td>10378-8</td>
<td>Polychromasia [Presence] in Blood by Light microscopy</td>
<td>20144</td>
<td>329535</td>
<td>1+</td>
</tr>
<tr>
<td>10378-8</td>
<td>Polychromasia [Presence] in Blood by Light microscopy</td>
<td>20144</td>
<td>56158</td>
<td>2+</td>
</tr>
<tr>
<td>10378-8</td>
<td>Polychromasia [Presence] in Blood by Light microscopy</td>
<td>20144</td>
<td>4855</td>
<td>3+</td>
</tr>
<tr>
<td>10378-8</td>
<td>Polychromasia [Presence] in Blood by Light microscopy</td>
<td>20144</td>
<td>258</td>
<td>4+</td>
</tr>
<tr>
<td>10378-8</td>
<td>Polychromasia [Presence] in Blood by Light microscopy</td>
<td>20144</td>
<td>280</td>
<td>Occasional</td>
</tr>
<tr>
<td>10378-8</td>
<td>Polychromasia [Presence] in Blood by Light microscopy</td>
<td>20144</td>
<td>21</td>
<td>Few</td>
</tr>
<tr>
<td>10378-8</td>
<td>Polychromasia [Presence] in Blood by Light microscopy</td>
<td>20144</td>
<td>17</td>
<td>Specimen Integrity questionable.</td>
</tr>
<tr>
<td>10378-8</td>
<td>Polychromasia [Presence] in Blood by Light microscopy</td>
<td>20144</td>
<td>16</td>
<td>Space</td>
</tr>
<tr>
<td>10378-8</td>
<td>Polychromasia [Presence] in Blood by Light microscopy</td>
<td>20144</td>
<td>14</td>
<td>Rare</td>
</tr>
<tr>
<td>10378-8</td>
<td>Polychromasia [Presence] in Blood by Light microscopy</td>
<td>20144</td>
<td>6</td>
<td>Negative</td>
</tr>
<tr>
<td>10378-8</td>
<td>Polychromasia [Presence] in Blood by Light microscopy</td>
<td>20144</td>
<td>2</td>
<td>Slight Increase</td>
</tr>
<tr>
<td>10378-8</td>
<td>Polychromasia [Presence] in Blood by Light microscopy</td>
<td>20144</td>
<td>1</td>
<td>Other Specimen</td>
</tr>
<tr>
<td>10378-8</td>
<td>Polychromasia [Presence] in Blood by Light microscopy</td>
<td>20144</td>
<td>1</td>
<td>Present</td>
</tr>
</tbody>
</table>
Usage of results

• Reviewed results to determine appropriateness of values, where values existed.
• Compared them to LOINC answer list for the LOINC code, if one exists
• Created our value sets based on the following criteria:
  • If LOINC answer list is normative, create value set with equivalent SNOMED codes
  • If no LOINC answer list, use SNOMED codes equivalent to local values
  • If no local values but LOINC answer list exists, use SNOMED equivalents to LOINC
  • If neither exist, no value set created.