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HL7 Version 2.5.1 Implementation Guide: Standards & Interoperability (S&I) Framework Laboratory Test Compendium Framework (eDOS) Ask at Order Entry (AOE)

Release 2, STU Release 3.1 - US Realm
HL7 Standard for Trial Use

January 2021

Also referred to as eDOS (Electronic Directory Of Service)

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Following this 24 month evaluation period, this standard, revised as necessary, will be submitted to a normative ballot in preparation for approval by the American National Standard Institute (ANSI) as an American National Standard. Implementations of this trial use standard shall be viable throughout the normative ballot process and for up to six months after publication of the relevant normative standard.

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SNOMED CT	SNOMED International http://www.snomed.org/snomed-ct/get-snomed-ct or info@ihtsdo.org
Logical Observation Identifiers Names & Codes (LOINC)	Regenstrief Institute
International Classification of Diseases (ICD) codes	World Health Organization (WHO)
National Uniform Claim Committee (NUCC) Health Care Provider Taxonomy code set	American Medical Association. Please see www.nucc.org. AMA licensing contact: 312-464-5022 (AMA IP services)

Acknowledgments

Release 1 (R1) of this Implementation Guide was published in June 2011 and titled: *HL7 Version 2 Implementation Guide: Laboratory Test Compendium Framework, Release 1*. Release 2 STU 3, published in January 2017 was facilitated through a collaborative effort of the American Clinical Laboratory Association (ACLA), the California Health Care Foundation (CHCF), the Office of the National Coordinator's (ONC) Standards and Interoperability Framework Lab US Realm Tech Lab Initiative, and the Health Level Seven International. This release is sponsored by the HL7 Orders and Observations (OO) Work Group.

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1   INTRODUCTION

The American Clinical Laboratory Association (ACLA) represents national, regional and local laboratories that collectively have an extensive history of providing the nation's hospitals and physicians with leading-edge Health Information Technology (HIT) to streamline the laboratory test requisition process and speed the delivery of test results. A subgroup of ACLA, the HIT Data Standards Committee is dedicated to the review and development of HIT initiatives (standards and government regulatory items) that might impact the clinical laboratory industry.

The development of a framework for the Laboratory Test Compendium and associated capability of electronic exchange of Directory of Services (eDOS) content as outlined in this Implementation Guide is a critical step in the increased interoperability required between commercial Electronic Health Record (EHR), Hospital Laboratory Information System (HLIS), Health Information Exchange (HIE) vendors and Laboratory Information systems (LIS) and/or other entities hereafter defined as Compendium Consumers and laboratory service providers, hereafter defined as Compendium Producers. This development effort fills a gap in the current electronic data exchange and will enable the reduction of costs for providers, laboratories and vendors while further decreasing error rates by simplifying the exchange of data related to a directory of service (DOS).

Release 2, STU 3 of the eDOS Implementation Guide was the result of work by the eDOS Work Group under the sponsorship of the Office of National Coordinator (ONC) Standards and Interoperability Framework (SIF) and is designed to work in concert with the companion Lab Result Interface (LRI) and Laboratory Order Interface (LOI) Implementation Guides.

Release 2, STU 3.1 is an update to include STU and Peer Review Comments. This document is an extract of the appendix of Ask at Order Entry questions, which is standards version agnostic, from the HL7 Version 2.5.1 Implementation Guide: Standards & Interoperability (S&I) Framework Laboratory Test Compendium Framework (eDOS). This document includes AOE updates due to the COVID-19 pandemic necessary to meet US Realm requirements for laboratory result reporting.

- The SIF Lab Result Interface Work Group published a V2.5.1 draft for trial use (DSTU) Implementation Guide for Lab Results through the Health Level Seven (HL7) standards development organization (SDO) in July 2012. This Implementation Guide was selected by ONC for Meaningful Use Stage 2.

- The SIF Lab Orders Interface Work Group published a V2.5.1 draft for trial use (DSTU) Implementation Guide for Laboratory Orders through the Health Level Seven (HL7) standards development organization (SDO) in December 2013.

- The SIF eDOS Work Group published this V2.5.1 draft for trial use (DSTU) Implementation Guide for the electronic directory of service (test compendium) through the Health Level Seven (HL7) standards development organization (SDO) in early 2015.

- Several elements in the laboratory's test compendium are subsequently used in the laboratory orders and laboratory results reporting. For additional detail, refer to Appendix A – eDOS-LOI-LRI Field Comparison in the eDOS IG. Figure 1-1 below illustrates the flow of some of the data elements from eDOS to LOI and LRI uses.
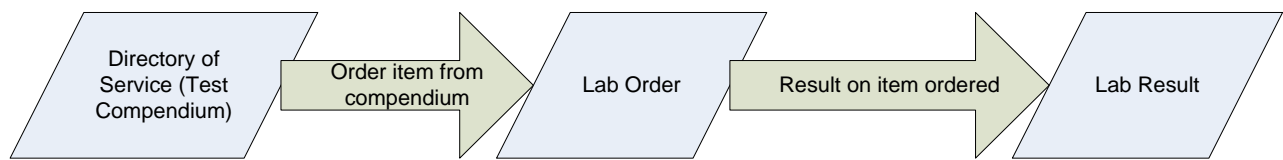
Figure 1-1. eDOS Data Flow

The American Recovery and Reinvestment Act of 2009 (ARRA)/ Health Information Technology for Economic and Clinical Health (HITECH) rules have specified HL7 Version 2.5.1 as the requirement for laboratory reporting for both Meaningful Use 1 and Meaningful Use 2, and referenced in ONC Certification Editions (2014, 2015, etc.). Release 1 of the Laboratory Test Compendium Framework (eDOS) was developed using Chapter 8 of the HL7 Version 2.6 but Release 2, STU 3 is defined for V2.5.1 to synch with the Lab US Realm suite of implementation guides listed in Section 1.2.1 Relevant Laboratory Implementation Guides, which are published as Standards for Trial Use (STU).

Additionally, eDOS is referenced by the ONC Interoperability Standards Advisory.

1.1 Purpose

The content of the Laboratory Test Compendium Framework is a Laboratory's DOS. The content is owned by the sending laboratory for the purpose of being used by the compendium consumer to be able to order laboratory services and to understand the requirements and components of those services. The consumer (and consuming systems) should not modify or delete the content unless instructed to do so by the producer via eDOS updates or some other form of written communication. Adding to the content to provide additional information specific to the consumer's needs such as cross reference to local codes and/or other performing labs, or other information that does not change or conflict with the content of the original information provided by the performing laboratory, is permitted.

1.2 Audience

This guide is designed for use by analysts and developers who require guidance on data elements and components of this publication relative to the Laboratory Orders Interface (LOI) initiative. Users of this guide must be familiar with the details of HL7 message construction and processing. This guide is not intended to be a tutorial on that subject.

1.2.1 RELEVANT LABORATORY IMPLEMENTATION GUIDES

There are multiple Implementation Guides that have been developed under the Office of the National Coordinator's (ONC) Standards and Interoperability Framework Initiative. These guides have been created using the same processes, are stylistically similar and designed to work together. The set includes but is not limited to:

- This publication[1], the *HL7 Version 2.5.1 Implementation Guide: S&I Framework Laboratory Test Compendium Framework (eDOS); Release 2, STU Release 3.1 (US Realm); HL7 Standard for Trial Use; June 2018* in support of the transmission of a laboratory's directory of services to an EHR using HL7 Master File messages;

- *HL7 Version 2.5.1 Implementation Guide: Laboratory Orders from EHR (LOI); Release 1, STU Release 3 (US Realm); HL7 Standard for Trial Use; June 2018*, in support of the lab test

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[1] This is the product brief page for all versions of the IG, this ballot document is only available through the HL7 ballot portal until published.

ordering in the inter-organizational care setting and to provide data needed for reporting to Public Health;

- *HL7 Version 2.5.1 Implementation Guide: Lab Results Interface (LRI); Release 1, STU Release 3 (US Realm); HL7 Standard for Trial Use; June 2018* in support of the lab result reporting to ambulatory care providers and Public Health;

- *HL7 Version 2 Implementation Guide: Laboratory Value Set Companion Guide; Release 1.3 (US Realm); HL7 Standard for Trial Use; June 2018* providing cross-IG value set definitions and harmonized requirements.

- *HL7 EHR-S Functional Requirements: S&I Framework Laboratory Results Messages, Release 1, US Realm (EHR-S)*, providing processing, display, and storage requirements for regulated result data.

The EHR-S and lab information systems (LIS) will conform to this family of Implementation Guides; a laboratory that receives an order conforming to the LOI IG should be capable of reporting results with a conformant LRI message.

1.2.2 REQUISITE KNOWLEDGE

This implementation guide is intended to augment and operationalize the base standard and concepts of HL7 V2.x messages. As such, only new or unique items are fully explained in this document; foundational knowledge that is required to apply this IG appropriately such as HL7 concepts, terms and definitions (e.g., OBX, etc.) are not replicated here but their sources are noted below.

- HL7 V2.5.1 through V2.8.2 Messaging (www.HL7.org) – contains all basic concepts, terms, and definitions such as types Messages, Segments (e.g., MSH, OBX), Data Types (e.g., CWE) and field names (e.g., Nature of Abnormal Test)

HL7 Version 2.5.1 Chapter 8 Master Files was used to develop this Implementation Guide. Pre-adoption from V2.7.1, V2.8, V2.8.1, and V2.8.2 is indicated where appropriate.

- HL7 V2.5.1 through V2.8.2 Messaging (www.HL7.org)

  - [HL7 V2.5.1](HL7 V2.5.1)

  - [HL7 V2.8.2](HL7 V2.8.2)

- LOINC (http://loinc.org)

- SNOMED CT (http://www.ihtsdo.org/snomed-ct)

- Object Identifiers (OIDS) (http://www.hl7.org/oid)

1.2.3 REFERENCED PROFILES – ANTECEDENTS

This specification documents an Electronic Directory of Service (eDOS) message profile for Senders and Receivers based on the HL7 Version 2.5.1[2]. Other laboratory ordering profiles are referenced and used as source materials in the development of this guide, including:

- HL7 Version 2.5.1 Implementation Guide: S&I Framework Laboratory Orders from EHR, Release 1 – US Realm January 2013

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[2] The referenced documents are all available from HL7 at www.hl7.org.

- EHR-Laboratory Interoperability and Connectivity Specification for Orders, EHR-Laboratory Interoperability and Connectivity Specification (ELINCS) Orders, v1.0 June 28, 2011

This document should not be considered the source of truth for any statement or assertion in regards to the referenced profiles. They are provided here as antecedent documentation and are not required for successful implementation of this Guide.

2   ASK AT ORDER ENTRY

The initial text below is excerpted from HL7 Version 2.5.1 Implementation Guide: S&I Framework Laboratory Orders from EHR, Release 1 – US Realm, Section 2.6.6 Ask at Order Entry (AOE) Observations, to explain how Ask at Order Entry questions are "answered" in a laboratory order.

---------- *start citation*---------

2.6.6 Ask at Order Entry (AOE) Observations

Ask at Order Entry (AOE) responses are recorded as observations that provide critical information for the calculation or interpretation of some lab results or to satisfy state and federal health agency mandated information gathering requirements, e.g., for blood lead testing. Not every order will have the need for AOE questions and associated observations. The lab will indicate if and which AOEs to include with the order in their test compendium.

Examples of the type of information gathered from a patient include employment information, pregnancy status, the date of the last menstrual period, mother's age, and questions about family and personal history. In some cases there may be AOEs that request the outcome of previous results phrased as a question, e.g., "Was your previous pap abnormal?"

AOE responses can take several formats, including but not limited to:

- Yes/No (and coded) to answer questions like "Is this your first pregnancy?"
- A code drawn from a value set to provide a coded response to, e.g., "What ethnicity do you consider yourself to be?"
- A number with units for the mother's age
- A date format for the patient's last menstrual period.

The Observation/Result (OBX) segments under the Common Order (ORC)/ Observation Request (OBR) pair must be used in the order messages to convey these Ask at Order Entry questions.

Although not strictly asked at order entry, other supporting clinical information about the patient collected during specimen collection, e.g., fasting status of the patient, are considered AOE observations for purposes of this guide and must be communicated using the OBX segment under the ORC/OBR segments as well.

LOINC shall be used as the standard coding system for AOE questions if an appropriate and valid LOINC code exists. The LOINC and local code describing the question will be placed in OBX-3 (Observation Identifier). Appropriate and valid status is defined in the LOINC Manual Section 11.2 Classification of LOINC Term Status. If a local coding system is in use, both the LOINC and the local code should also be sent to help with identification of coding issues. When no valid LOINC exists, the local code may be the only code sent.

2.6.6.1 SPECIAL CONSIDERATIONS

Note that various Ask at Order Entry questions may appear to have specific fields in the Patient Identification (PID), Next of Kin / Associated Parties (NK1), or other segments. When a clinically relevant value is asked through an Ask at Order Entry question it must be conveyed through the OBX segments as described above as these values are used for clinical interpretations rather than through a seemingly similar field in PID, NK1, or other segment. The

following provide specific examples and guidance whether to use an existing field or the OBX segment. This is list is not meant to be exhaustive.

- Date of Birth - Always use PID-7 (Date/Time of Birth) and should never be asked as an AOE as there is only one at any point in time.

- Race - PID-10 (Race) is provided for demographic (administrative/billing), not clinical use. The lab must provide an AOE for those tests where Race drives the interpretation of results. The value must be determined by the Ordering Provider and must be sent as an AOE OBX. Note that state and/or national regulations may dictate other behaviors.

- Ethnicity – PID-22 (Ethnic Group) is provided for demographic (administrative/billing), not clinical use. The lab must provide an AOE where Ethnicity drives the interpretation of results. The value must be determined by the Ordering Provider and must be sent as an AOE OBX. Note that state and/or national regulations may dictate other behaviors.

Note: More specific PID-10 (Race) and PID-22 (Ethnicity) values are available, but not limited to, those found in the CDCREC document
http://www.cdc.gov/nchs/data/dvs/Race_Ethnicity_CodeSet.pdf.

---------- end citation---------

2.1 Example AOE for Race using CDC Race and Ethnicity Code Set (CDCREC)[3]

The example below illustrates how an AOE messaged in OMC-4 Clinical Information Request is "answered" in a laboratory order. This example uses the expanded terminology available in CDC's Race and Ethnicity Code Set (CDCREC):

AOE Question in eDOS (electronic Directory of Service) message

```
32624-9^Race^LN
```

AOE Answer in LOI IG (Laboratory Orders Interface Implementation Guide) message

```
OBX|1|CWE|32624-9^Race^LN||1010-
8^APACHE^CDCREC|||||||||201210310800|
```

2.2 Proposed AOEs with a LOINC Code

In the eDOS Implementation Guide, ask at order entry questions are associated with an orderable test using Observation batteries master file (OMC)[4]-4 (Clinical Information Request). OMC-4 lists all observations that must be captured at the time the order is created. Multiple AOE questions are allowed for an individual orderable test; each instance in the OMC-4 represents a single AOE question.

Because Meaningful Use has supported "Structured Data" for lab results, beginning with Meaningful Use Stage 1, the AOE examples below suggest HL7 data types to be used when the EHR system

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3 PID-10 (Race) value is provided for demographic, not clinical use. An AOE must be provided for those tests where Race drives the interpretation of results. The value must be determined by the Ordering Provider and must be sent as an AOE OBX. Refer to LOINC for suggested answer list. More specific race values are available, but not limited to, those found in the CDCREC document if needed for AOE. (http://www.cdc.gov/nchs/data/dvs/Race_Ethnicity_CodeSet.pdf).

4 OMC - Supporting Clinical Information Segment pre-adopted from V2.8.2.

returns the "answer" to the lab's compendium test question. For example, the XAD (Extended Address), data type is suggested when reporting the employer address "answer" for blood lead test question about employer address.

The LOINC encoded AOE examples in the table below are provided as guidance and focus on the most commonly used Ask at Order Entry questions. This is not an exhaustive list and does not attempt to include all possible AOEs. Implementers can incorporate additional AOEs as needed for their specific environment.

LOINC codes may change in newer versions of the data base so it is suggested you verify that the LOINC codes are valid before using. Some LOINC codes in the list below were "Trial" codes at the time of publication and are designated with an '*' following the LOINC code. As defined on the LOINC website "Trial terms are experimental in nature. Use with caution as they may change."

Some LOINC codes in the list below were "Pre-release" codes at the time of publication and are designated with a '+' following the LOINC code. As defined on the LOINC website "Pre-release terms are those which have not yet been published in a public release. They are also available on the LOINC pre-release page. Once they are published, they will no longer be on the pre-release page, but will still be included on this page with the appropriate Version value." The Pre-release LOINC codes included in this 2021 AOE publication are SARS-CoV-2/COVID-19 codes based on the most up to date information available at the time of their creation.

The Department of Health and Human Resources (HHS) published "COVID-19 Pandemic Response, Laboratory Data Reporting: CARES Act Section 18115" guidance for laboratories reporting COVID-19 results June 4, 2020 with an August 1, 2020 implementation date. This is a static document.

This HHS guidance was updated in August 2020 to provide clarification to the June 4 document. The guidance documents below may be subject to revision and the content included in this implementation guide is current at the time of publication, but implementers are advised to validate the most HHS current guidance when they implement.

- FAQ 3026 - Is additional information for Laboratory Data Reporting Guidance for COVID-19 Testing, including technical specifications, available to support laboratories with implementation?
- COVID-19 Lab Data Reporting Implementation Specifications

We encourage implementers to use the HL7 defined message structure to communicate AOE information where possible.

Table 2-1. Example LOINC AOE Questions (with LOINC Code) on the next page includes the following information.

2.2.1 LOINC CODE
A direct hyperlink to each LOINC code is provided in the table below. You will need to "Accept" the Copyright Notice and License to enable the hyperlinks. Additional information, including related names, is available on the LOINC website.

2.2.2 LOINC LONG NAME
From the LOINC database, associated with the LOINC code.

2.2.3 SUGGESTED COMMON QUESTION NAME

When present, alternate wording for the LOINC Long Name.

2.2.4 ALIAS NAME

When present, alias name which is another alternate for the LOINC long name.

2.2.5 SUGGESTED HL7 DATA TYPE OBX RESPONSE

For numeric data types (e.g. age) Unified Code for Units of Measure (UCUM) is recommended but not required. If used, be sure to populate OBX-6 Units (e.g. years, months, days). Further information on UCUM can be found at http://unitsofmeasure.org/

The data types below are suggested but not required; other data types may be used where applicable. LOINC codes may dictate additional structure for the AOE, please refer to LOINC for additional information. Data type flavors used in the Laboratory Interoperability Implementation Guides are not included but should be considered depending on your implementation.

2.2.6 USAGE NOTE

Recommended value sets for the answers are included in the Usage Notes. Other value sets may be used as agreed upon by trading partners.

The following excerpt from the June 2020 LOINC User Guide[5] explains LOINC types of answer lists: "normative", "preferred", or "example". This Implementation Guide may suggest alternate value sets for preferred and example lists.

> We identify the binding of LOINC observation codes to answer lists as "normative", "preferred", or "example".
>
> **Normative** lists are those specifically defined by a validated instrument or other authoritative source. When using LOINC codes bound to normative answer lists, only answers in the specified set are allowed as result values. Examples of sources for Normative answer lists are PROMIS or the Clinical Pharmacogenetics Implementation Consortium (CPIC).
>
> **Preferred** lists contain a set of answers that users are strongly encouraged to use. They represent a recommended set, however, in contrast to a Normative list, alternate result values may be used if necessary. Preferred lists may come from a variety of sources, including professional organizations (e.g., American Physical Therapy Association), device manufacturers, and government (e.g., Centers for Diseases Control and Prevention, National Eye Institute).
>
> **Example** lists are meant to be illustrative of possible result values. Users can also think of them as a starter set to which they may add or subtract depending on their use case. Many of the **Example** answer lists are in the lab domain, where different labs may report similar results in a variety of ways, such as "Positive", "Present", "Detected", "Abnormal" or "Out of range" but for which we have a single **Example** answer list.

2.2.7 TEST TYPE GROUP

The "Group" column is intended to provide examples of the type of test that may be applicable for the AOE, for example "any test"," pregnancy maternal serum screening", "Toxicology, Public Health", Reportable condition e.g. COVID-19, etc.

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[5] https://loinc.org/learn/

TABLE 2-2. EXAMPLE LOINC AOE QUESTIONS (WITH LOINC CODE)						
LOINC Code[6]	LOINC Long Name	Suggested Common Question Name	Alias Name	Suggested HL7 Data Type OBX response	Usage Note	Test Type Group
49089-6	[Identifier] Sonographer	Sonographer ID	Sonographer ID	ST (String Data)	This is a sonographer credential number that is assigned by a credentialing agency; Fetal Medicine Foundation Organization (FMF) and the Nuchal Translucency Quality Review (NTQR) are the current accepted credentialing agencies.	Pregnancy maternal serum screening
63746-2	About how long have you worked for your employer in your occupation [NHANES]	About how long have you worked for your employer in your occupation		NM (Numeric)	Patient's current employment by one employer Be sure to populate the units in OBX-6.	Toxicology Public Health
30525-0	Age			NM	Be sure to populate the units in OBX-6.	Reportable condition e.g. COVID-19
63888-2	Age at first menstrual period	Age at first menstrual period		NM	Be sure to populate the units in OBX-6.	Reproductive Cancer risk
42797-1	Age at first pregnancy	Age at first pregnancy		NM	Be sure to populate the units in OBX-6.	Reproductive Cancer risk
63890-8	Age at last menstrual period	Age at last menstrual period		NM	Not needed if we have DOB and Post-menopausal years - can then be calculated. Be sure to populate the units in OBX-6.	Reproductive Cancer risk
35659-2	Age at specimen collection			NM	Use this AOE, when a specimen that was previously collected is re-submitted for evaluation at a later point in time Be sure to populate the units in OBX-6.	Any Test
71471-7	Antibiotic administered Medication			CWE (Coded with Exceptions)	If using CWE, RxNorm[7] or other code systems may be used, or you may use the CWE.9 (Original Text) component of the CWE data type.	

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[6] An * in this column indicates the code was "trial" at time of publication.

[7] http://www.nlm.nih.gov/research/umls/rxnorm/index.html

TABLE 2-2. EXAMPLE LOINC AOE QUESTIONS (WITH LOINC CODE)						
LOINC Code[6]	LOINC Long Name	Suggested Common Question Name	Alias Name	Suggested HL7 Data Type OBX response	Usage Note	Test Type Group
93027-1	Are you a refugee			CWE	LOINC Example Answer List: Yes - © http://snomed.info/sct ID:373066001 Yes (qualifier value) No - © http://snomed.info/sct ID:373067005 No (qualifier value) I choose not to answer this question HL7 V2 Example answer list Y^Yes^HL70136 N^No^HL70136 UNK^Unknown^NULLFL	
8302-2	Body Height (Methodless)	Patient Height	Patient Height (inches)	NM	Patient's height - no method described - this could be reported by the patient, estimated or measured. Be sure to populate the units in OBX-6.	Any Test
3137-7	Body height Measured			NM	Be sure to populate the units in OBX-6.	
3138-5	Body height Stated			NM	Be sure to populate the units in OBX-6.	
29463-7	Body weight	Patient Weight		NM	Methodless Be sure to populate the units in OBX-6. Patient's weight - no method described - this could be reported by the patient, estimated or measured.	Any Test
3141-9	Body weight Measured		Patient weight (measured)	NM	Be sure to populate the units in OBX-6.	
8344-4	Body weight Measured --post dialysis		Body weight^post dialysis	NM	For Kt/v – Dialysis Be sure to populate the units in OBX-6.	
8347-7	Body weight Measured --pre dialysis		Body weight^pre dialysis	NM	For Kt/v – Dialysis Be sure to populate the units in OBX-6.	
3142-7	Body weight Stated		Patient weight (stated)	NM	Be sure to populate the units in OBX-6.	

TABLE 2-2. EXAMPLE LOINC AOE QUESTIONS (WITH LOINC CODE)						
LOINC Code[6]	LOINC Long Name	Suggested Common Question Name	Alias Name	Suggested HL7 Data Type OBX response	Usage Note	Test Type Group
8661-1	Chief Complaint - Reported			TX	Note: There is no LOINC answer list	
69544-5	Chief complaint – ICD code [Identifier]			CWE	LOINC Normative Answer List Externally Defined Link to External List: http://www.cdc.gov/nchs/icd.htm	
56063-1*	Circumference at maximal protrusion of gluteus muscles Pelvis			NM	Be sure to populate the units in OBX-6.	
55752-0	Clinical information	Clinical history of patient pertinent to order – narrative	Additional information pertinent to order	TX (Text Data)	Free text answer This includes illness onset date, risk factors like exposure to infectious agents or toxins, travel history including duration and location, prior abnormal tests and relevant diagnosis not submitted as "reason for testing", for example if patient is immunocompromised, had previous infection etc. When this AOE is used, the laboratory should use the special instructions field in eDOS to specify which information might be relevant for the test in question.	Any Test
11294-6	Current employment Narrative - reported	What is your current employment	Current employment	TX	Free text answer about what current employment is	Toxicology Public Health
64234-8	Current smoker			CWE	LOINC Example Answer list. Yes © http://snomed.info/sct ID:373066001 Yes (qualifier value) No © http://snomed.info/sct ID:373067005 No (qualifier value) Unknown © http://snomed.info/sct ID:261665006 Unknown (qualifier value)	

TABLE 2-2. EXAMPLE LOINC AOE QUESTIONS (WITH LOINC CODE)						
LOINC Code[6]	LOINC Long Name	Suggested Common Question Name	Alias Name	Suggested HL7 Data Type OBX response	Usage Note	Test Type Group
19774-9	Cytology study comment Cervical or vaginal smear or scraping Cyto stain	Provide results of previous cytology/biopsy and the date and testing location and specimen ID		TX	Free Text for prior cytology results of cervical or vaginal smear or scraping, This should really be handled in Prior result group of order message.	Reproductive Pap
65222-2	Date and time of symptom onset			DTM – (date/time)	From HHS:[8] Date of Symptom Onset	Reportable condition e.g. COVID-19
30952-6	Date and time of vaccination	Date and time of vaccination		DT (Date)	This is covered by "Prior and/or current therapy relevant to this order?" and is not helpful, unless combined with the information on which vaccination this specific question refers to.	Any Test
29742-4	Date last dose	Date and time of last treatment dose		DT	This is used for drug level testing and should be asked separately for test request for peak and trough values. The diagnosis should be considered to be meaningful.	Any Test
80395-7*	Date of gestational age estimate	Date of gestational age estimate		DT		
60431-4	Date of previous biopsy	Date of previous biopsy		DT	When grouping pap smear questions, this could be a drill down question after the type of biopsy has been identified. It is covered by the more generic relevant prior treatment AOE, but some places may want to use separately here.	AP Pap

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[8] From August 2020 HHS Guidance

January 2021

	TABLE 2-2. EXAMPLE LOINC AOE QUESTIONS (WITH LOINC CODE)					
LOINC Code[6]	LOINC Long Name	Suggested Common Question Name	Alias Name	Suggested HL7 Data Type OBX response	Usage Note	Test Type Group
60432-2	Date of previous PAP smear	Date of previous pap smear		DT	The granularity could be left up to the year, so that precise dates are not needed, but a ball park of how many years since the last pap smear can be established - if used.	Pap
63936-9	Date of start of treatment or therapy PhenX	Date treatment or therapy started		DT	Use only for PhenX survey	Any Test
63939-3	End date of treatment or therapy	End date treatment or therapy		DT	This is covered by "Prior and/or current therapy relevant to this order?" and is not helpful, unless combined with the information on which treatment this specific question refers to.	Any Test
11778-8	Delivery date Estimated	Delivery date Estimated	Estimated due date	DT	Needs to be combined with method used to determine this date - this should be the future harmonized question that allows the calculation of gestational age.	Pregnancy maternal serum screening
33248-6	Diabetes status [identifier]	What type of diabetes does the patient have?		CWE	Note: There is no LOINC answer list Example Answer list: Suspected Confirmed Diabetes mellitus Type I Diabetes mellitus Type II gestational Diabetes mellitus None	Pregnancy maternal serum screening
8462-4	Diastolic blood pressure			CWE	Note: There is no LOINC answer list	
53948-6	Donated egg [Presence]	Is the pregnancy from a donated egg?	Donor egg	CNE_01 (Coded with no exceptions)	Note: There is no LOINC answer list HL7 Expected answers: Y/N (HL7 Table 0136)	Reproductive
68327-6	Egg donor age	Egg donor's age at time of egg donation		NM	Be sure to populate the units in OBX-6	Reproductive maternal serum screening

	TABLE 2-2. EXAMPLE LOINC AOE QUESTIONS (WITH LOINC CODE)					
LOINC Code[6]	LOINC Long Name	Suggested Common Question Name	Alias Name	Suggested HL7 Data Type OBX response	Usage Note	Test Type Group
42784-9	Ethnic background Stated	Patient's clinically relevant Ethnic background		CWE	Note: There is no LOINC answer list PID-22 (Ethnic Group) value is provided for demographic, not clinical use. An AOE must be provided for those tests where Ethnic Group drives the interpretation of results. The value must be determined by the Ordering Provider and should be from a limited list, like Hispanic, not Hispanic, Ashkenazi Jewish etc. - this should be the clinically relevant ethnic group, and must be sent as an AOE OBX. More specific ethnicity values are available, but not limited to, those found in the CDCREC document if needed for AOE. http://www.cdc.gov/nchs/data/dvs/Race_Ethnicity_CodeSet.pdf	Any Test
49541-6	Fasting status - Reported	Patient's reported fasting status	Fasting status	CWE	Note: There is no LOINC answer list Fasting status obtained at time of specimen collection – answers are limited to Y/N (HL7 Table 0136) If extending HL7 Table 0136, additional values may be found in HL7 Table 0532 - Expanded Yes/no Indicator to accommodate unknown. Can also be sent in OBR-13 using HL70912 values.	Any Test
11951-1	Fetal [Identifier] Identifier	Fetal Identifier	Fetus ID	ST	This is needed to identify each fetus, when there is more than one	Pregnancy

TABLE 2-2. EXAMPLE LOINC AOE QUESTIONS (WITH LOINC CODE)						
LOINC Code[6]	LOINC Long Name	Suggested Common Question Name	Alias Name	Suggested HL7 Data Type OBX response	Usage Note	Test Type Group
11957-8	Fetal Crown Rump length US	Fetal Crown Rump Length by US	Fetal Crown Rump length	NM	Used during first Trimester screening only and needs to be repeated for each fetus. 'US' is Ultrasound Be sure to populate the units in OBX-6.	Pregnancy maternal serum screening
11820-8	Fetal Head Diameter.biparietal US			NM	Be sure to populate the units in OBX-6.	
42479-6	Fetal Narrative [Interpretation] Study observation general, multiple fetuses US			ST		
12146-7	Fetal Nuchal fold Thickness US	Fetal Nuchal translucency by US	Nuchal translucency	NM	Used during first Trimester screening only and needs to be repeated for each fetus. 'US' is Ultrasound Be sure to populate the units in OBX-6.	Pregnancy maternal serum screening
63741-3	For whom did you work at your main job or business [NHANES]	For whom did you work at your main job or business		XON (extended composite name and identification number for organizations)	Employer Name – Organization example.	Toxicology Public Health
63741-3	For whom did you work at your main job or business [NHANES]	For whom did you work at your main job or business		XPN (extended person name)	Employer Name - Person example.	Toxicology Public Health
11884-4	Gestational age Estimated	Gestational age Estimated	Gestational age	SN (structured numeric)	When this AOE is used, need to also include the date estimate was made using LOINC 80395-7. In effort to reduce AOEs suggestion is to use Estimated delivery date (EDD) instead Be sure to populate the units in OBX-6.	Pregnancy maternal serum screening

TABLE 2-2. EXAMPLE LOINC AOE QUESTIONS (WITH LOINC CODE)

LOINC Code[6]	LOINC Long Name	Suggested Common Question Name	Alias Name	Suggested HL7 Data Type OBX response	Usage Note	Test Type Group
49052-4	Gestational age in days	Gestational age in days	Gestational age (days)	NM	This LOINC is used in conjunction with 49051-6 and lists the days in the current week of gestation. When this AOE is used, need to also include the date estimate was made using LOINC 80395-7. In effort to reduce AOEs suggestion is to use Estimated delivery date (EDD) instead. Be sure to populate the units in OBX-6.	Pregnancy maternal serum screening
49051-6	Gestational age in weeks	Gestational age in weeks	Gestational age (weeks)	NM	This LOINC is used in conjunction with 49052-4 and lists the completed weeks of gestation. When this AOE is used, need to also include the date estimate was made using LOINC 80395-7. In effort to reduce AOEs suggestion is to use Estimated delivery date (EDD) instead. Be sure to populate the units in OBX-6.	Pregnancy maternal serum screening
21299-3	Gestational age method	Gestational age method	Gestational age calculation method	CWE	Note: There is no LOINC answer list Example response may include: US LMP Ovulation Date Conception Date Quickening Date	Pregnancy maternal serum screening

TABLE 2-2. EXAMPLE LOINC AOE QUESTIONS (WITH LOINC CODE)						
LOINC Code[6]	LOINC Long Name	Suggested Common Question Name	Alias Name	Suggested HL7 Data Type OBX response	Usage Note	Test Type Group
64663-8	Have you ever had the HPV vaccination			CWE	LOINC Example Answer List: Yes © http://snomed.info/sct ID:373066001 Yes (qualifier value) No © http://snomed.info/sct ID:373067005 No (qualifier value) Refused © http://snomed.info/sct ID:443390004 Refused (qualifier value) Doctor refused when asked Don't know/not sure	Pap
8867-4	Heart rate			NM	Be sure to populate the units in OBX-6.	
58957-2	Heparin given [Type]	Type of Heparin given		ST		Coagulation Studies
8670-2	History of family member diseases	History of biological family member diseases relevant to the order		CWE	Note: There is no LOINC answer list Refer to LOINC for suggested answer list. For each of the more common tests this should contain the list of relevant diseases in the Family History related to the disease(s) this test is designed to detect / rule out. This is NOT a LOINC to actually use, but rather to start from and create a new LOINC with a normative answer list for the respective test order - until a LOINC is obtained the local code would identify this AOE. The OMC-11 field defines the expected answers. Multiple answers should be allowed.	Any Test

TABLE 2-2. EXAMPLE LOINC AOE QUESTIONS (WITH LOINC CODE)						
LOINC Code[6]	LOINC Long Name	Suggested Common Question Name	Alias Name	Suggested HL7 Data Type OBX response	Usage Note	Test Type Group
53827-2	History of Neural tube defect Qualitative	Family history of neural tube defect?	History of ONTD	CNE_01	LOINC Example Answer List: Yes © http://snomed.info/sct ID:373066001 Yes (qualifier value) No © http://snomed.info/sct ID:373067005 No (qualifier value) Not given HL7 V2 Example answer list Y^Yes^HL70136 N^No^HL70136	Pregnancy maternal serum screening
67471-3	History of Pregnancy			CWE	LOINC Normative Answer List No ©http://snomed.info/sct ID:373067005 No (qualifier value) Possible, unconfirmed Yes, confirmed greater than 20 weeks Yes, confirmed 12 to 20 weeks Yes, confirmed less than 12 weeks Yes, Weeks Unknown	
67803-7	History of Procedures	History of procedures reported by patient	Previous treatment	ST	Short text answer about previous treatment as reported by the patient for relevant disease being worked up. This is covered by relevant clinical history. When this AOE is used, the laboratory should use the special instructions field in eDOS to specify which information might be relevant for the test in question.	Any Test

TABLE 2-2. EXAMPLE LOINC AOE QUESTIONS (WITH LOINC CODE)						
LOINC Code[6]	LOINC Long Name	Suggested Common Question Name	Alias Name	Suggested HL7 Data Type OBX response	Usage Note	Test Type Group
8691-8	History of Travel	Where has the patient traveled to and when?		CWE	Note: There is no LOINC answer list The physician should ask open ended questions to illicit maximum information from the patient, and then evaluate, if it is pertinent to the test ordered to support the suspected differential diagnosis – the data element therefore is pertinent travel location and Travel start and end date/time – but that is not how the questions is to be asked. This is covered by relevant clinical history. When this AOE is used, the laboratory should use the special instructions field in eDOS to specify which information might be relevant for the test in question. Should be picked from a list - can use the ISO-3166 (3 alpha) for Countries or United States Postal Service (USPS) for States. There are also some region codes from the WHO that could be applicable - for example Sub-Saharan Africa, if a specific list of visited countries is not provided.	Infection Risk/Related to Infection Public Health
11368-8	Illness or injury onset date and time	Date/time of onset of injury or illness		DT	It is covered by clinical history but may be desired to be used separately. When this AOE is used, the laboratory should use OM1-54 (Special Instructions) field in eDOS to specify which information might be relevant for the test in question.	Any Test

TABLE 2-2. EXAMPLE LOINC AOE QUESTIONS (WITH LOINC CODE)						
LOINC Code[6]	LOINC Long Name	Suggested Common Question Name	Alias Name	Suggested HL7 Data Type OBX response	Usage Note	Test Type Group
89089-7	Immigration status			CWE	LOINC Preferred Answer List: Alien Asylee Immigrant Lawful permanent resident (LPR) Native-born citizen Naturalized citizen Parolee Public charge Refugee Returning resident	
44877-9	Insulin dependent diabetes mellitus [Presence]		Insulin dependent DM	CWE	Note: There is no LOINC answer list HL7 V2 Example answer list Y^Yes^HL70136 N^No^HL70136	
53796-9	Interferon drug given [Identifier]			ST		
88636-6	Known exposure [Identifier]				LOINC Example Answer List: None known Zika virus Human immunodeficiency virus (HIV) Lead Pesticides Mold	
8665-2	Last menstrual period start date	What is the start date of the patient's last menstrual period?		DT		Reproductive Pap Maternal serum screening

TABLE 2-2. EXAMPLE LOINC AOE QUESTIONS (WITH LOINC CODE)						
LOINC Code[6]	LOINC Long Name	Suggested Common Question Name	Alias Name	Suggested HL7 Data Type OBX response	Usage Note	Test Type Group
85473-7	Male sexual partner in last 12 months			CWE	LOINC Example Answer List Y - Yes © http://snomed.info/sct ID:373066001 Yes (qualifier value) N - No © http://snomed.info/sct ID:373067005 No (qualifier value) UNK - Unknown No © http://snomed.info/sct ID:373067005 No (qualifier value)	STD Public Health
29303-5	Medication administered			CWE	Note: There is no LOINC answer list If using CWE, RxNorm[9] or other code systems may be used, or you may use the CWE.9 (Original Text) component of the CWE data type.	
29305-0	Medication prescribed			CWE	Note: There is no LOINC answer list	
69461-2	Mother's body weight -- at delivery			NM	Be sure to populate the units in OBX-6.	
54125-0	Name		Partner Name	XPN		
11878-6	Number of Fetuses by US	Number of Fetuses by US	Number of Fetuses	NM	'US' is Ultrasound .	Pregnancy maternal serum screening
85736-7	Number of sexual partners in last 12 months			NM	~~Be sure to populate the units in OBX-6.~~	STD Public Health
80397-3*	Number of weeks postpartum	List the number of weeks postpartum		NM	Be sure to populate the units (# of weeks) in OBX-6. There is a fixed value for weeks in UCUM: w^week^UCUM	Pregnancy

TABLE 2-2. EXAMPLE LOINC AOE QUESTIONS (WITH LOINC CODE)						
LOINC Code[6]	LOINC Long Name	Suggested Common Question Name	Alias Name	Suggested HL7 Data Type OBX response	Usage Note	Test Type Group
77974-4	Patient was hospitalized because of this condition	Whether the patient was hospitalized for condition of interest		CWE	LOINC Example Answer List Yes © http://snomed.info/sct ID:373066001 Yes (qualifier value) No © http://snomed.info/sct ID:373067005 No (qualifier value) Unknown © http://snomed.info/sct ID:261665006 Unknown (qualifier value) From HHS:[10] Hospitalized? From: Proposed HHS ELR Submission Guidance using HL7 v2 Messages Y^Yes^HL70136 N^No^HL70136 UNK^Unknown^NULLFL From HHS:[11] If Yes, SNOMED-CT Values: • 840544004 Suspected disease caused by 2019 novel coronavirus (situation) • 840539006 Disease caused by 2019 novel coronavirus (disorder)	Reportable condition e.g. COVID-19

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[10] From August 2020 HHS Guidance

[11] From August 2020 HHS Guidance

TABLE 2-2. EXAMPLE LOINC AOE QUESTIONS (WITH LOINC CODE)						
LOINC Code[6]	LOINC Long Name	Suggested Common Question Name	Alias Name	Suggested HL7 Data Type OBX response	Usage Note	Test Type Group
82810-3	Pregnancy Status			CWE	LOINC Example Answer List Pregnant Not pregnant Unknown - © http://snomed.info/sct ID:261665006 Unknown (qualifier value) From HHS:[12] Pregnant SNOMED-CT Pregnancy Status: • 77386006 Pregnant • 60001007 Not Pregnant • Unknown/Null From: Proposed HHS ELR Submission Guidance using HL7 v2 Messages 77386006^Patient currently pregnant^SCT 102874004^Possible pregnancy^SCT 60001007^Not pregnant^SCT UNK^Unknown^NULLFL	Reportable condition e.g. COVID-19

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[12] From August 2020 HHS Guidance

TABLE 2-2. EXAMPLE LOINC AOE QUESTIONS (WITH LOINC CODE)						
LOINC Code[6]	LOINC Long Name	Suggested Common Question Name	Alias Name	Suggested HL7 Data Type OBX response	Usage Note	Test Type Group
11449-6	Pregnancy status [Interpretation] – Reported	Pregnancy status reported by patient		CWE	LOINC Example Answer List Pregnant Not pregnant Unknown © http://snomed.info/sct ID:261665006 Unknown (qualifier value) Answers from a limited list as reported by patient: Pregnant / not pregnant / known / pregnant can be expanded to include trimesters, if desired for certain tests, where Estimated Delivery Date (EDD) is not also asked – Should be coded using: SNOMED CT (77386006^Patient currently pregnant (finding)^SCT 60001007^Not pregnant (finding)^SCT) / HL7 null flavor (UNK) respectively HL7 0352 was published in prior releases of eDOS IG, but maps to SNOMED-CT Y – maps to 77386006 N – maps to 60001007 Unknown – maps to U in HL70352	Any Test
18771-6	Provider signing name		Reading physician ID	XPN		

TABLE 2-2. EXAMPLE LOINC AOE QUESTIONS (WITH LOINC CODE)						
LOINC Code[6]	LOINC Long Name	Suggested Common Question Name	Alias Name	Suggested HL7 Data Type OBX response	Usage Note	Test Type Group
32624-9	Race			CWE	LOINC Example answer List American Indian or Alaska Native Asian Black or African American Native Hawaiian or Other Pacific Islander White Unknown © http://snomed.info/sct ID:261665006 Unknown (qualifier value) PID-10 (Race) value is provided for demographic, not clinical use. An AOE should be provided for those tests where Race drives the interpretation of results. The value should be determined by the Ordering Provider and should be from a predetermined list, like white, African American, Asian, pacific islander etc. This should be the clinically relevant race. More specific race values are available, but not limited to, those found in the CDCREC document if needed for AOE. (http://www.cdc.gov/nchs/data/dvs/Race_Ethnicity_CodeSet.pdf).	Any Test

TABLE 2-2. EXAMPLE LOINC AOE QUESTIONS (WITH LOINC CODE)

LOINC Code[6]	LOINC Long Name	Suggested Common Question Name	Alias Name	Suggested HL7 Data Type OBX response	Usage Note	Test Type Group

75617-1	Residence			CWE	LOINC Example Answer List
					Client's or patient's home
					Nursing Home
					Homeless
					Other
					Unknown © http://snomed.info/sct
					ID:261665006 Unknown (qualifier value)
					
					From HHS:[13]
					SNOMED-CT Values:
					• 22232009 Hospital
					    • 2081004 Hospital ship
					    • 32074000 Long term care hospital
					    • 224929004 Secure hospital
					• 42665001 Nursing home
					• 30629002 Retirement home
					• 74056004 Orphanage
					• 722173008 Prison-based care site
					• 20078004 Substance abuse treatment center
					• 257573002 Boarding house
					• 224683003 Military accommodation
					• 284546000 Hospice
					• 257628001 Hostel
					• 310207003 Sheltered housing
					• 257656006 Penal institution
					• 285113009 Religious institutional residence
					• 285141008 Work (environment)
					261665006 Unknown
						Reportable condition e.g. COVID-19

TABLE 2-2. EXAMPLE LOINC AOE QUESTIONS (WITH LOINC CODE)						
LOINC Code[6]	LOINC Long Name	Suggested Common Question Name	Alias Name	Suggested HL7 Data Type OBX response	Usage Note	Test Type Group
90369-0	Sample collection timing related to drug dose			CWE	LOINC Preferred Answer List: Peak Trough Random	
46098-0	Sex			CWE	Per LOINC Description: "…Refers to the biological sex of an organism … based on anatomy and physiology or genetic (chromosome)" LOINC Example Answer List: Male, Code 1 Female, Code 2	

TABLE 2-2. EXAMPLE LOINC AOE QUESTIONS (WITH LOINC CODE)						
LOINC Code[6]	LOINC Long Name	Suggested Common Question Name	Alias Name	Suggested HL7 Data Type OBX response	Usage Note	Test Type Group
76689-9	Sex assigned at birth	Patient's clinically relevant Gender		CWE	In most cases the administrative gender normally transmitted in PID-8 (Administrative Sex) will be sufficient. If a different value set with more clinical terms is needed than available in the Administrative Sex table (HL70001) or if known, that administrative gender is NOT the clinically relevant one, then this code can be used as AOE in an OBX. The value should be determined by the Ordering Provider and should be from a predetermined list, like male female, hermaphrodite. LOINC Preferred Answer List. Male Female Unknown © http://snomed.info/sct ID:261665006 Unknown (qualifier value) Answer list may be extended by agreement of trading partners to support other clinical genders.	Any Test
85656-7	Sexual activity with a new partner in past 60D	Sex new partner past 60D		CWE	LOINC Example Answer List: Y-Yes © http://snomed.info/sct ID:373066001 Yes (qualifier value) N-No © http://snomed.info/sct ID:373067005 No (qualifier value) UNK-Unknown © http://snomed.info/sct ID:261665006 Unknown (qualifier value)	
49088-8	Sonographer name	Sonographer name		XPN		Pregnancy maternal serum screening

TABLE 2-2. EXAMPLE LOINC AOE QUESTIONS (WITH LOINC CODE)						
LOINC Code[6]	LOINC Long Name	Suggested Common Question Name	Alias Name	Suggested HL7 Data Type OBX response	Usage Note	Test Type Group
80581-2	Specimen incubation date and time range			DR		
81744-5	Submitter's laboratory test method [Type] in Specimen			CWE	LOINC Example Answer List: Culture-independent Culture	
81658-7	Suspected organism [Identifier] in Unspecified specimen			CWE	LOINC Example Answer List (abridged) Human herpes simplex virus © http://snomed.info/sct ID:19965007 Cyclospora © http://snomed.info/sct ID:103560006 Cyclospora (organism) Cryptosporidium © http://snomed.info/sct ID:83821001 Cryptosporidium (organism)	

TABLE 2-2. EXAMPLE LOINC AOE QUESTIONS (WITH LOINC CODE)						
LOINC Code[6]	LOINC Long Name	Suggested Common Question Name	Alias Name	Suggested HL7 Data Type OBX response	Usage Note	Test Type Group
75325-1	Symptom			CWE	LOINC Example Answer List Externally Defined http://snomed.info/sct From HHS:[14] SNOMED-CT Values: • 426000000 Fever over 104F • 103001002 Feeling feverish • 43724002 Chills • 49727002 Cough • 267036007 Shortness of breath • 230145002 Difficulty breathing • 84229001 Fatigue • 68962001 Muscle or body aches • 25064002 Headache • 36955009 New loss of taste • 44169009 New loss of smell • 162397003 Sore throat • 68235000 Nasal congestion • 64531003 Runny nose • 422587007 Nausea • 422400008 Vomiting • 62315008 Diarrhea	Reportable condition e.g. COVID-19
8480-6	Systolic blood pressure			CWE	Note: There is no LOINC answer list	

	TABLE 2-2. EXAMPLE LOINC AOE QUESTIONS (WITH LOINC CODE)					
LOINC Code[6]	LOINC Long Name	Suggested Common Question Name	Alias Name	Suggested HL7 Data Type OBX response	Usage Note	Test Type Group
72166-2	Tobacco Smoking Status [NHIS]	Tobacco Smoking Status	Smoking Status	CWE	LOINC Preferred List Current every day smoker Current some day smoker Former smoker Never smoker Smoker, current status unknown Unknown if ever smoked Heavy tobacco smoker Light tobacco smoker For suggested answer list. (CMS requirement to capture in MU stage 2 in patient over 13 years (http://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/downloads/Stage2_EPCore_5_RecordSmokingStatus.pdf)	Public Health
34970-4	Ultrasound Date	Ultrasound Date		DT		Pregnancy maternal serum screening
19153-6 (Timing=XXX)	Volume in Urine collected for unspecified duration	Total amount of urine collected		NM	Need to include appropriate units of the originally collected urine, especially when not all is sent to the lab for testing Be sure to populate the units in OBX-6.	Any Test
13620-0	Volume of 12 hour Urine		Specimen Volume	NM	Be sure to populate the units in OBX-6. Can also be calculated (if available) from: SPM-4 (Specimen Type) (CWE_03); SPM-12 (Specimen Collection Amount); Or messaged in OBR-9 (Collection Volume)	

TABLE 2-2. EXAMPLE LOINC AOE QUESTIONS (WITH LOINC CODE)						
LOINC Code[6]	LOINC Long Name	Suggested Common Question Name	Alias Name	Suggested HL7 Data Type OBX response	Usage Note	Test Type Group
3167-4	Volume of 24 hour Urine		Specimen Volume	NM	Be sure to populate the units in OBX-6. Can also be calculated (if available) from: SPM-4 (Specimen Type) (CWE_03); SPM-12 (Specimen Collection Amount); Or messaged in OBR-9 (Collection Volume).	
28009-9 (Timing=Pt)	Volume of urine	Total amount of urine collected		NM	Need to include appropriate units of the originally collected urine, especially when not all is sent to the lab for testing Be sure to populate the units in OBX-6.	Any Test
8280-0	Waist Circumference at umbilicus by Tape measure	Waist Circumference at umbilicus by Tape measure		NM	Waist Circumference, inches. Be sure to populate the units in OBX-6. Use only if actually obtained by the lab at specimen collection.	Pregnancy
63758-7	What was the location of this company [Address] [NHANES]	Address of employer	Employer Address	XAD	Employer Address	Toxicology Public Health

TABLE 2-2. EXAMPLE LOINC AOE QUESTIONS (WITH LOINC CODE)						
LOINC Code[6]	LOINC Long Name	Suggested Common Question Name	Alias Name	Suggested HL7 Data Type OBX response	Usage Note	Test Type Group
95418-0+[15]	Whether patient is employed in a healthcare setting	Employed in a healthcare setting		CWE	LOINC Answer List Yes © http://snomed.info/sct ID:373066001 Yes (qualifier value) No © http://snomed.info/sct ID:373067005 No (qualifier value) Refused to answer Asked by unknown Unknown © http://snomed.info/sct ID:261665006 Unknown (qualifier value) From HHS:[16] Employed in healthcare? From Proposed HHS ELR Submission Guidance using HL7 v2 Messages: Y^Yes^HL70136 N^No^HL70136 UNK^Unknown^NULLFL	Reportable condition e.g. COVID-19

[15] A + in this column indicates the code was "pre-release" at time of publication.
[16] From August 2020 HHS Guidance

	TABLE 2-2. EXAMPLE LOINC AOE QUESTIONS (WITH LOINC CODE)					
LOINC Code[6]	LOINC Long Name	Suggested Common Question Name	Alias Name	Suggested HL7 Data Type OBX response	Usage Note	Test Type Group
95421-4+	Whether patient resides in a congregate care setting	Resides in a congregate care setting		CWE	LOINC Answer List Yes © http://snomed.info/sct ID:373066001 Yes (qualifier value) No © http://snomed.info/sct ID:373067005 No (qualifier value) Refused to answer Asked by unknown Unknown © http://snomed.info/sct ID:261665006 Unknown (qualifier value) From: Proposed HHS ELR Submission Guidance using HL7 v2 Messages Y^Yes^HL70136 N^No^HL70136 UNK^Unknown^NULLF From HHS:[17] Resident in a congregate care setting (including nursing homes, residential care for people with intellectual and developmental disabilities, psychiatric treatment facilities, group homes, board and care homes, homeless shelter, foster care or other setting) If yes: LOINC: 75617-1 Residence Type	Reportable condition e.g. COVID-19

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[17] From August 2020 HHS Guidance

TABLE 2-2. EXAMPLE LOINC AOE QUESTIONS (WITH LOINC CODE)						
LOINC Code[6]	LOINC Long Name	Suggested Common Question Name	Alias Name	Suggested HL7 Data Type OBX response	Usage Note	Test Type Group
95419-8+	Whether the patient has symptoms related to condition of interest	Has symptoms related to condition of interest		CWE	LOINC Answer List Yes © http://snomed.info/sct ID:373066001 Yes (qualifier value) No © http://snomed.info/sct ID:373067005 No (qualifier value) Refused to answer Asked by unknown Unknown © http://snomed.info/sct ID:261665006 Unknown (qualifier value) From HHS:[18] Symptomatic as defined by CDC? From: Proposed HHS ELR Submission Guidance using HL7 v2 Messages Y^Yes^HL70136 N^No^HL70136 UNK^Unknown^NULLFL	Reportable condition e.g. COVID-19

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[18] From August 2020 HHS Guidance

	TABLE 2-2. EXAMPLE LOINC AOE QUESTIONS (WITH LOINC CODE)					
LOINC Code[6]	LOINC Long Name	Suggested Common Question Name	Alias Name	Suggested HL7 Data Type OBX response	Usage Note	Test Type Group
95420-6+	Whether the patient was admitted to intensive care unit (ICU) for condition of interest	Admitted to intensive care unit for condition of interest		CWE	LOINC Answer List Yes © http://snomed.info/sct ID:373066001 Yes (qualifier value) No © http://snomed.info/sct ID:373067005 No (qualifier value) Refused to answer Asked by unknown Unknown © http://snomed.info/sct ID:261665006 Unknown (qualifier value) From HHS:[19] ICU? From: Proposed HHS ELR Submission Guidance using HL7 v2 Messages Y^Yes^HL70136 N^No^HL70136 UNK^Unknown^NULLFL From HHS:[20] If Yes, SNOMED-CT Value: • 309904001 Intensive care unit (environment)	Reportable condition e.g. COVID-19

[19] From August 2020 HHS Guidance

[20] From August 2020 HHS Guidance

TABLE 2-2. EXAMPLE LOINC AOE QUESTIONS (WITH LOINC CODE)						
LOINC Code[6]	LOINC Long Name	Suggested Common Question Name	Alias Name	Suggested HL7 Data Type OBX response	Usage Note	Test Type Group
95417-2+	Whether this is the patient's first test for condition of interest	First test for condition of interest		CWE	LOINC Answer List Yes © http://snomed.info/sct ID:373066001 Yes (qualifier value) No © http://snomed.info/sct ID:373067005 No (qualifier value) Refused to answer Asked by unknown Unknown © http://snomed.info/sct ID:261665006 Unknown (qualifier value) From HHS:[21] First Test From: Proposed HHS ELR Submission Guidance using HL7 v2 Messages Y^Yes^HL70136 N^No^HL70136 UNK^Unknown^NULLFL	Reportable condition e.g. COVID-19
89088-9	WIC services recipient			CWE	LOINC Example Answer List: Yes © http://snomed.info/sct ID:373066001 Yes (qualifier value) No © http://snomed.info/sct ID:373067005 No (qualifier value) Unknown © http://snomed.info/sct ID:261665006 Unknown (qualifier value)	

2.3 Proposed AOEs without a LOINC Code

The common AOE questions below are examples encountered, that are being submitted for LOINC[22] code requests to Regenstrief and should be available in the future. The table provides these suggested terms, data type and Usage Note - all may be modified through this

[21] From August 2020 HHS Guidance

[22] http://search.loinc.org/

process. If attempting to use any of these concepts, proceed with caution and refer to LOINC to determine if a code has been assigned before using a local code.

TABLE 2-3. EXAMPLE AOE QUESTIONS (WITHOUT LOINC CODE)[23]					
AOE Question	Suggested Common Question Name	Alias Question Name, when different from LOINC Long Name, where applicable	Suggested HL7 Data Type OBX response	Usage Note	Test Type Group
Animal Exposed to Rabies	Animal Exposed to Rabies		CWE	This is related to rabies testing and asked if the animal whose parts are being tested has been exposed to rabies. Y/N/UNK (HL7 Table 0532 - Expanded Yes/No Indicator)	Infection Risk/Related to Infection Public Health
Animal species	Animal species		CWE	Identifies the species name from a pick list SNOMED Organism Hierarchy may be used for the answer list.	Infection Risk/Related to Infection Public Health
Any history of exposure to infectious disease?			CWE	Y/N/UNK (HL7 Table 0532 - Expanded Yes/No Indicator) This is typically asked in conjunction with 'Type of Exposure'.	
Blood lead classification status	What is the reason blood lead testing is being requested?		CWE	Example answers can vary by state, but examples include initial, repeat, follow up.	Specimen Blood Lead

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[23] LOINC codes may be assigned in the future.

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TABLE 2-3. EXAMPLE AOE QUESTIONS (WITHOUT LOINC CODE)[23]					
AOE Question	Suggested Common Question Name	Alias Question Name, when different from LOINC Long Name, where applicable	Suggested HL7 Data Type OBX response	Usage Note	Test Type Group
Blood lead source			CWE	Example answers can vary by state, but examples include: initial repeat follow up Required for State reporting; should also be reported in SPM-4 (Specimen Type)	Specimen Blood Lead

TABLE 2-3. EXAMPLE AOE QUESTIONS (WITHOUT LOINC CODE)[23]					
AOE Question	Suggested Common Question Name	Alias Question Name, when different from LOINC Long Name, where applicable	Suggested HL7 Data Type OBX response	Usage Note	Test Type Group
Chief Complaint	Chief Complaint		CWE	For each of the more common tests this should contain the list of relevant chief complaints related to the disease(s) this test is designed to detect / rule out. This is NOT a LOINC to actually use, but rather to start from and create a new LOINC with a normative answer list for the respective test order - until a LOINC is obtained the local code would identify this AOE. The OMC-11 field defines the expected answers. For free text, use 55752-0 Clinical Information. There are additional LOINC codes for Chief Complaint that may be appropriate for implementer use cases. See 8661-1 and 69544-5.	Any Test
Chorionicity	Chorionicity		CWE	Expected Answer list: Monochorionic Dichorionic Unknown	Reproductive maternal serum screening

TABLE 2-3. EXAMPLE AOE QUESTIONS (WITHOUT LOINC CODE)[23]					
AOE Question	Suggested Common Question Name	Alias Question Name, when different from LOINC Long Name, where applicable	Suggested HL7 Data Type OBX response	Usage Note	Test Type Group
Clinical history of patient pertinent for Maternal Serum Screening order	List the clinical history of patient pertinent for Maternal Serum Screening order		CWE	Prescribed answer list: Donor Egg from self Donor Egg from non-self Diabetes mellitus Type I Diabetes mellitus Type II gestational Diabetes mellitus previously elevated Alpha-fetoprotein levels Family history of neural tube defect Prior pregnancy with Down Syndrome Should other information be needed send 55752-0 narrative in addition	Reproductive maternal serum screening

TABLE 2-3. EXAMPLE AOE QUESTIONS (WITHOUT LOINC CODE)[23]					
AOE Question	Suggested Common Question Name	Alias Question Name, when different from LOINC Long Name, where applicable	Suggested HL7 Data Type OBX response	Usage Note	Test Type Group
Clinical history of patient pertinent for pap smear order	List the clinical history of patient pertinent for pap smear order	Additional information pertinent to order	CWE	Prescribed answer list: Pregnant Post-Partum Lactating Menopausal Hormone Therapy Postmenopausal Bleeding Postcoital Bleeding History of High Risk HPV Infection Hysterectomy, Cervix Absent Hysterectomy, Cervix Present	Pap
Current Contraceptive Use	What method of contraception does the patient currently use?		CWE	Prescribed answer list: Birth Control Pill IUD Norplant Depo' Other	Reproductive Pap
Current use of hormone therapy	Is patient currently on hormone therapy other than oral contraceptives?		CWE	Expected answers: Y/N/UNK (HL7 Table 0532 - Expanded Yes/no Indicator) Covered by "Prior and/or current therapy relevant to this order" but could be asked specifically.	Reproductive pap

TABLE 2-3. EXAMPLE AOE QUESTIONS (WITHOUT LOINC CODE)[23]					
AOE Question	**Suggested Common Question Name**	**Alias Question Name, when different from LOINC Long Name, where applicable**	**Suggested HL7 Data Type OBX response**	**Usage Note**	**Test Type Group**
Current use of oral contraceptives	Is patient currently using oral contraceptives?		CWE	Expected answers: Y/N/UNK (HL7 Table 0532 - Expanded Yes/no Indicator) Covered by "Prior and/or current therapy relevant to this order" but could be asked specifically.	Reproductive pap
Date of animal's death	Date of animal's death		DT	This is related to rabies testing.	Infection Risk/Related to Infection Public Health
DES exposure	Does the patient have a history of Exposure to DES?		CWE	Expected answers: Y/N/UNK (HL7 Table 0532 - Expanded Yes/no Indicator)	Pap
Did the patient have a previous abnormal pap report, treatment, or biopsy?	Did the patient have a previous abnormal pap report, treatment, or biopsy?		CWE	Expected answers: Y/N/UNK (HL7 Table 0532 - Expanded Yes/no Indicator)	Pap
Does patient currently have an IUD	Does patient currently have an IUD		CWE	Expected answers: Y/N/UNK (HL7 Table 0532 - Expanded Yes/no Indicator) Covered by "Current contraceptive use" but could be asked specifically.	Reproductive pap
Does patient have postcoital bleeding	Does patient have postcoital bleeding?		CWE	Expected answers: Y/N/UNK (HL7 Table 0532 - Expanded Yes/no Indicator) Is covered under relevant clinical history question but could be asked specifically.	Pap

TABLE 2-3. EXAMPLE AOE QUESTIONS (WITHOUT LOINC CODE)[23]					
AOE Question	Suggested Common Question Name	Alias Question Name, when different from LOINC Long Name, where applicable	Suggested HL7 Data Type OBX response	Usage Note	Test Type Group
Egg Provider's Race			CWE	More specific race values are available, but not limited to, those found in the CDCREC document if needed for AOE. (http://www.cdc.gov/nchs/data/dvs/Race_Ethnicity_CodeSet.pdf)	
Gestational age (decimal weeks)	Gestational age in weeks in decimal form	Gestational age (decimal)	NM	When this AOE is used, need to also include the date estimate was made In effort to reduce AOEs suggestion is to use Estimated delivery date (EDD) instead. Reported as Number of days/7. This gives you the weeks in decimal format. Be sure to populate the appropriate age units in OBX-6.	Reproductive maternal serum screening
Gestational age date of calculation	Date of calculation of gestational age		DT		Reproductive Maternal serum screening
Hip circumference, inches			NM	Be sure to populate the units in OBX-6.	
History HR HPV Infection, abnormal pap (last 3yrs), treatment or biopsy	Does the patient have any of the following risk factors: High risk HPV Infection, abnormal pap in the last 3yrs or treatment or biopsy for GYN abnormality?		CWE	Expected answers: Y/N/UNK (HL7 Table 0532 - Expanded Yes/no Indicator)	Pap

TABLE 2-3. EXAMPLE AOE QUESTIONS (WITHOUT LOINC CODE)[23]					
AOE Question	Suggested Common Question Name	Alias Question Name, when different from LOINC Long Name, where applicable	Suggested HL7 Data Type OBX response	Usage Note	Test Type Group
History of abnormal bleeding (postcoital, postmenopausal)	Does the patient have a history of abnormal bleeding (postcoital, postmenopausal)?		CWE	Expected answers: Y/N/UNK (HL7 Table 0532 - Expanded Yes/no Indicator)	Pap
History of Cystic Fibrosis	Has patient had a prior pregnancy with Cystic Fibrosis?		CWE	Expected answers: Y/N/UNK (HL7 Table 0532 - Expanded Yes/no Indicator)	Pregnancy maternal serum screening
History of Down Syndrome	Has patient had a prior pregnancy with Down Syndrome?		CWE	Expected answers: Y/N/UNK (HL7 Table 0532 - Expanded Yes/no Indicator)	Pregnancy maternal serum screening
History of exposure to animal	History of exposure to animal		CWE	Was the patient exposed to the animal tested for rabies? Answers from a list of Y/N/UNK (HL7 Table 0532 - Expanded Yes/no Indicator)	Infection Risk/Related to Infection Public Health
History of exposure to infectious disease	History of exposure to infectious disease, include when and where		ST	Free text entry	Infection Risk/Related to Infection Public Health

	TABLE 2-3. EXAMPLE AOE QUESTIONS (WITHOUT LOINC CODE)[23]				
AOE Question	**Suggested Common Question Name**	**Alias Question Name, when different from LOINC Long Name, where applicable**	**Suggested HL7 Data Type OBX response**	**Usage Note**	**Test Type Group**
History of HPV Infection	History of high risk HPV Infection		CWE	Expected answers: Yes – history of high risk HPV infection / Yes – history of low risk HPV infection / Yes – Unknown HPV risk type No / Unknown This question is evaluating the type of HPV that caused the previous infection. Is covered under relevant clinical history question, but could be asked specifically.	Infection Risk/Related to Infection STD Pap
History of pelvic radiation	Does the patient have a history of pelvic radiation?		CWE	Expected answers: Y/N/UNK (HL7 Table 0532 - Expanded Yes/no Indicator) Covered by "Prior and/or current therapy relevant to this order", but could be asked specifically.	Reproductive pap
History of postmenopausal bleeding	Does patient have a history of postmenopausal bleeding?		CWE	Expected answers: Y/N/UNK (HL7 Table 0532 - Expanded Yes/no Indicator) Should be covered under abnormal GYN exam - aspect uterus, but is left in, because it should not be forgotten to ask for.	Reproductive pap

TABLE 2-3. EXAMPLE AOE QUESTIONS (WITHOUT LOINC CODE)[23]					
AOE Question	Suggested Common Question Name	Alias Question Name, when different from LOINC Long Name, where applicable	Suggested HL7 Data Type OBX response	Usage Note	Test Type Group
HX of STD	Does the patient have a history of sexually transmitted diseases (STD)?		CWE	Expected answers: Y/N/UNK (HL7 Table 0532 - Expanded Yes/no Indicator)	STD Pap Public Health
If the egg was frozen or not from the patient, what was the age of the egg at the time of egg retrieval?			NM	Be sure to populate the units in OBX-6.	
Insulin Dependent Diabetic Egg Provider			CWE	Y/N/UNK (HL7 Table 0532 - Expanded Yes/no Indicator)	
Is patient lactating	Is the patient currently lactating?		CWE	Expected answers: Y/N/UNK (HL7 Table 0532 - Expanded Yes/no Indicator) Is covered under relevant clinical history question, but could be asked specifically.	Reproductive pap
Is patient post-menopausal?	Is patient post-menopausal?		CWE	Expected answers: Y/N/UNK (HL7 Table 0532 - Expanded Yes/no Indicator) Covered by "Prior and/or current therapy relevant to this order", but could be asked specifically.	Reproductive pap
Is patient postpartum	Is patient postpartum?		CWE	Expected answers: Y/N/UNK (HL7 Table 0532 - Expanded Yes/no Indicator)	Reproductive pap
Is this your first pregnancy (Y/N)	Is this your first pregnancy (Y/N)		CNE_01	(Y/N) HL7 Table 0136	Pregnancy
List the number of years postmenopausal					

	TABLE 2-3. EXAMPLE AOE QUESTIONS (WITHOUT LOINC CODE)[23]				
AOE Question	Suggested Common Question Name	Alias Question Name, when different from LOINC Long Name, where applicable	Suggested HL7 Data Type OBX response	Usage Note	Test Type Group
Multiple Sexual Partners	Does the patient have a history of sexually transmitted diseases (STD)?		CWE	Expected answers: Y/N/UNK (HL7 Table 0532 - Expanded Yes/no Indicator)	STD Pap
Ordering Diagnosis	Ordering Diagnosis		CWE	Sent in Diagnosis Segment) (DG1), DG1-3 in the order message. If needed in a result message consider OBR-31 (Reason for study). If there is a need for an OBX, would need to consider, if the status of the diagnosis - ordering/working, final/admission/discharge is also needed, or if this could be more generic diagnosis Picked from a list of diagnosis codes, usually ICD-9 or ICD-10 - supports the reason for ordering the procedure	Any Test
Other risk factors (early onset of sexual activity, multiple sexual partners, Hx of STD/HIV, Immunocompromised, 5 or more pregnancies	Does the patient have any of the following risk factors: early onset of sexual activity, multiple sexual partners, Hx of STD/HIV, Immunocompromised, 5 or more pregnancies?		CWE	Expected answers: Y/N/UNK (HL7 Table 0532 - Expanded Yes/no Indicator)	STD Pap

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TABLE 2-3. EXAMPLE AOE QUESTIONS (WITHOUT LOINC CODE)[23]					
AOE Question	Suggested Common Question Name	Alias Question Name, when different from LOINC Long Name, where applicable	Suggested HL7 Data Type OBX response	Usage Note	Test Type Group
Partner Ethnicity			CWE	More specific ethnicity values are available, but not limited to, those found in the CDCREC document if needed for AOE. (http://www.cdc.gov/nchs/data/dvs/Race_Ethnicity_CodeSet.pdf)	
Patient or family Hx of GYN malignancy	Does the patient have a family history of GYN malignancy?		CWE	Expected answers: Y/N/UNK (HL7 Table 0532 - Expanded Yes/no Indicator)	Pap
Pelvic irritation	Does the patient have a history of pelvic irritation?		CWE	Expected answers: Y/N/UNK (HL7 Table 0532 - Expanded Yes/no Indicator)	Pap
Previous cytology results for Pap Smear or Biopsy	Previous Cytology results for Pap Smear or Biopsy		CWE	See row below for answer list. In order to provide additional information about the date and specimen ID for the related diagnosis use 19774-9 narrative text. For actual results, rather than this summary, use the prior results.	Reproductive Pap

TABLE 2-3. EXAMPLE AOE QUESTIONS (WITHOUT LOINC CODE)[23]					
AOE Question	Suggested Common Question Name	Alias Question Name, when different from LOINC Long Name, where applicable	Suggested HL7 Data Type OBX response	Usage Note	Test Type Group
Previous cytology results for Pap Smear, continued Suggested Answer list: • Unsatisfactory • Abnormal result, details unknown • Normal or NILM (negative for intraepithelial lesion or malignancy)		Abnormal Squamous: •LSIL (low-grade squamous intraepithelial lesion / mild dysplasia) •HSIL (high-grade squamous intraepithelial lesion / Moderate dysplasia, severe dysplasia and/or squamous cell carcinoma in situ) •ASC-US (Atypical squamous cells of uncertain significance) Cytology only •ASC-H (Atypical squamous cells cannot exclude HSIL) Cytology only		Abnormal glandular: Note: "Cytology only" means when talking about biopsy results, those would not apply •Atypical endocervical cells (NOS or specify in comments) Cytology only •Atypical endometrial cells (NOS or specify in comments) Cytology only •Atypical glandular cells (NOS or specify in comments) Cytology only •Atypical endocervical cells, favor neoplastic Cytology only •Atypical glandular cells, favor neoplastic Cytology only •Endocervical adenocarcinoma in situ •Adenocarcinoma – endocervical •Adenocarcinoma – endometrial •Adenocarcinoma – extrauterine •Adenocarcinoma – not otherwise specified •Other malignant neoplasm	
Previous GYN exam results and related testing	What were the results of the prior GYN exam and related testing		CWE	Note: More than one answer is allowed. Normal Abnormal Pap Mass Ulceration Visible lesion HPV	

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TABLE 2-3. EXAMPLE AOE QUESTIONS (WITHOUT LOINC CODE)[23]					
AOE Question	Suggested Common Question Name	Alias Question Name, when different from LOINC Long Name, where applicable	Suggested HL7 Data Type OBX response	Usage Note	Test Type Group
Previous hysterectomy	Has the patient had a hysterectomy?		CWE	Expected answers: Yes - Total hysterectomy, Yes - hysterectomy with cervix present No Unknown Covered by "Prior and/or current therapy relevant to this order",but could be asked specifically.	Reproductive pap
Previously elevated Alpha-fetoprotein values?	Has patient previously had elevated Alpha-fetoprotein levels?		CWE	Expected answers: Y/N/UNK (HL7 Table 0532 - Expanded Yes/no Indicator)	Pregnancy maternal serum screening
Previously treated for prior GYN malignancy	Has the patient been previously treated for prior GYN abnormality?		CWE	Expected answers: Y/N/UNK (HL7 Table 0532 - Expanded Yes/no Indicator) Covered by "Prior and/or current therapy relevant to this order", but could be asked specifically.	Reproductive pap

TABLE 2-3. EXAMPLE AOE QUESTIONS (WITHOUT LOINC CODE)[23]					
AOE Question	Suggested Common Question Name	Alias Question Name, when different from LOINC Long Name, where applicable	Suggested HL7 Data Type OBX response	Usage Note	Test Type Group
Prior and/or current treatment relevant for pap smear	What type of treatment was previously or is currently received for an abnormal pap test?		CWE	Suggested answer list: None Laser Vaporization (LEEP) Cryosurgery Conization Pelvic Radiation Colposcopy/Biopsy Hysterectomy, Total Hysterectomy, Partial (Supracervical) Curettage (D and C) Chemotherapy Laser ablation	Treatment pap Pap
Prior Pap exam specimenID, testing location and date performed	Provide the specimenID, testing location and date of prior abnormal Pap test		TX	19774-9 LOINC = cytology study comment	
Prior Transplant	Has patient received a transplant?		TX	Answers from a limited list as reported by patient: Y/N/No Information (HL7 Table 0532 - Expanded Yes/no Indicator).	Any Test

TABLE 2-3. EXAMPLE AOE QUESTIONS (WITHOUT LOINC CODE)[23]					
AOE Question	Suggested Common Question Name	Alias Question Name, when different from LOINC Long Name, where applicable	Suggested HL7 Data Type OBX response	Usage Note	Test Type Group
Prior Treatment	Prior and/or current treatment relevant to this order?		TX	Free text answer describing previous treatment This includes relevant treatment start and end dates for treatment like vaccinations, medications, transplants and other pertinent procedures, for example dialysis. - Physicians should evaluate the differential diagnosis and include supporting information to be meaningful. When this AOE is used, the laboratory should use the special instructions field in eDOS to specify which information might be relevant for the test in question.	Any Test
Self donated egg	Was the donated egg from self?		CNE_01	(Y/N) HL7 Table 0136	Reproductive maternal serum screening
Sexual contact with CT or NG positive person	Has the patient had sexual contact with a Chlamydia Trachomatis and/or Neisseria Gonorrhoeae positive person?		CWE	Expected answers: Y/N/UNK (HL7 Table 0532 - Expanded Yes/no Indicator)	STD Public Health

		TABLE 2-3. EXAMPLE AOE QUESTIONS (WITHOUT LOINC CODE)[23]			
AOE Question	**Suggested Common Question Name**	**Alias Question Name, when different from LOINC Long Name, where applicable**	**Suggested HL7 Data Type OBX response**	**Usage Note**	**Test Type Group**
Site of GYN abnormality	What GYN exam site had previous abnormal findings?		CWE	Expected answer list (created hierarchical by area of GYN exam also referred to as aspect): cervix - endocervix, ectocervix vagina vulva - labium majus -labium minus uterus – endometrium ovaries tube urethral orifice anus	Reproductive
Sonographer Name and ID with Assigning Authority	Sonographer Name and ID with Assigning Authority	Sonographer Name and ID with Assigning Authority	XCN (extended composite ID number and name for persons)	This is a sonographer name and credential number that is assigned by a credentialing agency (Assigning Authority), Fetal Medicine Foundation Organization (FMF) and Nuchal Translucency Quality Review (NTQR) are the current accepted credentialing agencies. Use AC – Accreditation/Certification[24] Identifier as the Identifier Type Code in XCN.13.	Pregnancy maternal serum screening

TABLE 2-3. EXAMPLE AOE QUESTIONS (WITHOUT LOINC CODE)[23]					
AOE Question	Suggested Common Question Name	Alias Question Name, when different from LOINC Long Name, where applicable	Suggested HL7 Data Type OBX response	Usage Note	Test Type Group
Sonography reading physician ID with assigning authority	Sonography reading physician ID with assigning authority		CX (extended composite ID with check digit)	This is a physician certificate number that is assigned by one of the two credentialing agencies, either Fetal Medicine Foundation Organization (FMF) or the Nuchal Translucency Quality Review (NTQR)	Reproductive maternal serum screening
Sonography site ID with assigning authority	Sonography site ID with assigning authority		XON	This is a sonography site number that is assigned by the Nuchal Translucency Quality Review (NTQR)	Reproductive maternal serum screening
Travel date range			DR (date/time range)	This should include the start and end date of the travel; setting up the travel history to ask for relevant incubation times based on suspected diseases.	
Treatment for CT or NG in last 3 to 12 month	Has the patient had a previous positive Chlamydia Trachomatis and/or Neisseria Gonorrhoeae test and been treated ≥ 3 months but ≤ 12 months ago?		CWE	Expected answers: Y/N/UNK (HL7 Table 0532 - Expanded Yes/no Indicator)	STD Public Health
Treatment time for dialysis	Length of time of dialysis treatment		NM	Treatment time for dialysis. Be sure to populate the units in OBX-6.	

TABLE 2-3. EXAMPLE AOE QUESTIONS (WITHOUT LOINC CODE)[23]					
AOE Question	Suggested Common Question Name	Alias Question Name, when different from LOINC Long Name, where applicable	Suggested HL7 Data Type OBX response	Usage Note	Test Type Group
Type of abnormal GYN exam	What was the cytology result of the previous GYN exam?		CWE	Example answers: Negative Atypical Ca-in-Situ Invasive Dysplasia Low Dysplasia High HPV Other	Pap
Viral load	Previously measured viral load		NM	Patient's viral load as previously determined – Expected answer list: "no known viral load" "greater than x cut off limit" Be sure to populate the units in OBX-6.	Infection Risk/Related to Infection STD
Was there a previous abnormal GYN exam	Does the patient have a prior abnormal GYN exam?		CWE	Expected answers: Y/N/UNK (HL7 Table 0532 - Expanded Yes/no Indicator)	Reproductive

2.4 Specimen List

This AOE information is provided to indicate how to map former AOEs to the Specimen (SPM) segment. This IG recommends using the SPM segment instead of AOEs for the following items. If you are implementing the HL7 Version 2.5.1 Implementation Guide: S&I Framework Laboratory Orders from EHR, Release 1 – US Realm (LOI) or HL7 Version 2.5.1 Implementation Guide: S&I Framework Laboratory Results Interface (LRI), Release 1, published July for Meaningful Use in the US Realm, the SPM segment is required in the Lab Order and Lab Result messages.

For suggested data types, refer to HL7 Version 2.5.1 Implementation Guide: S&I Framework Laboratory Orders from EHR, Release 1 – US Realm (LOI).

			TABLE 2-4. EXAMPLE SPECIMEN LOINC AOE QUESTIONS			
LOINC Code	LOINC Long Name	Suggested Common Question Name	Alias Name	HL7 field to use	Usage Note	Test Type Group
14725-6	[Type] of Body fluid	Type of Body fluid		SPM-4	Sample type sent in SPM-4 (Specimen Type).	
13363-7	Collection duration of Stool				Can be calculated from: SPM-4 (Specimen Type) (CWE_03) SPM-17 (Specimen Collection Date/Time) (DR_1)	
13362-9	Collection duration of Urine				Can be calculated from: SPM-4 (Specimen Type) (CWE_03) SPM-17 (Specimen Collection Date/Time) (DR_1)	
53903-1	Collection technique	Collection technique	Pap test collection technique	SPM-7	Expected answers: Swab-spatula, Brush-spatula, Spatula alone, brush alone, broom alone, other technique Should be identified in SPM-7 (Specimen Collection Method).	
53903-1	Collection technique	Collection technique	Blood lead collection method	SPM-7	Expected answers: Fingerstick or venous seems to be substitute for knowing if capillary or venous blood is used, so could be combined with the Blood lead specimen question. Specimen collection method should be messaged in SPM-7 (Specimen Collection Method).	
49049-0	Collection time of Unspecified Specimen	Collection date/time of Unspecified Specimen		SPM-17	Should be messaged in SPM-17 (Specimen Collection Date/Time) (DR_1.1 [Range Start Date/Time])	

		TABLE 2-4. EXAMPLE SPECIMEN LOINC AOE QUESTIONS				
LOINC Code	LOINC Long Name	Suggested Common Question Name	Alias Name	HL7 field to use	Usage Note	Test Type Group
48557-3	Origin of Stone			SPM-8	SPM-8 (Specimen Source Site) CWE_03	
19151-0	Specimen drawn [Date and time] of Serum or Plasma			SPM-17	SPM-17 (Specimen Collection Date/Time) (DR_1.1 [Range Start Date/Time])	
	Specimen identification	Specimen identification		SPM-2	Should be identified in SPM-2 (Specimen Identifier). If slide and/or blocks provided - enter label identifier	
19763-2	Specimen source [Identifier] in Cervical or vaginal smear or scraping by Cyto stain	GYN specimen source site	Gynecological Source	SPM-8	Should be messaged in SPM-8 (Specimen Source Site) Picked from a list of body sites – Example answers: Vagina, Cervix, Vulva, Endocervix, Endometrium, Labium Majus, Labium Minus	Pap
31208-2	Specimen source [Identifier] of Unspecified specimen	Specimen source		SPM-4	Should be messaged in SPM-4 (Specimen Type) if known. If type unknown, but source is known, then message in SPM-8 (Specimen Source Site).	
31208-2	Specimen source [Identifier] of Unspecified specimen	Specimen source	Blood lead specimen type	SPM-4	Required for State reporting	
	Type of Fixative	Type of Fixative		SPM-6	Should be identified in SPM-6 (Specimen Additive) – codes should be drawn either from substance or product hierarchy in SNOMED CT or HL7 Table 371 Additives	

2.5 Common AOEs Which Should be Messaged Elsewhere in HL7

In the process of developing this Implementation Guide, participants submitted candidate AOE terms for inclusion. Several proposed AOEs submitted should be messaged elsewhere in the HL7 message. This IG recommends using the HL7 segment/field as documented in the Usage Note, instead of messaging as an AOE. The table below is informative guidance to indicate how to map commonly used AOEs to the specified HL7 segment. If the appropriate HL7 field is optional, trading partners should change the usage of the 'O' fields to 'RE', if the information is required for processing.

Prior laboratory results needed for testing or interpretation should be messaged in the Prior Results segment group of the lab order message, versus messaging as an AOE; refer to OM1-53 (Prior Resuts Instructions) for additional information.

LOINC Code[25]	LOINC Long Name	Suggested Common Question Name	Alias Name	Usage Note	Test Type Group
56799-0	Address	Patient's Address		PID-11 (Patient Address)	
21112-8	Birth date	Patient's Date/Time of birth		Patient Date/Time of Birth in PID-7	
N/A	Call or Fax Results Back	Call or Fax Results Back		Indicator to Notify provider when results are ready. OBR-49 (Result Handling) where HL70507 Observation Result Handling table Code = N (Notify provider when ready). The actual number to use is sent in (Participation Information Segment), (PRT), PRT-15 (Participant Telecommunication Address).	
76541-2	Clinical Diagnosis ICD Code	Ordering Diagnosis		Sent in DG1-3 in the order message. If needed in a result message consider OBR-31 (Reason for study). If there is a need for an OBX, would need to consider, if the status of the diagnosis - ordering/working, final/admission/discharge is also needed, or if this could be more generic diagnosis Picked from a list of diagnosis codes, usually International Classification of Diseases (ICD), ICD-9 or ICD-10 - supports the reason for ordering the procedure.	

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[25] An * in this column indicates the code was "trial" at time of publication.

LOINC Code[25]	LOINC Long Name	Suggested Common Question Name	Alias Name	Usage Note	Test Type Group
66477-1	Country of current residence [PhenX]	Patient's country of residence	Country of current residence	Send in PID-11.6 (Patient Address) Is picked from a list - uses International Organization for Standardization (ISO)-3166 Country Codes (alpha 3 character codes) PhenX is a survey method in LOINC	
29308-4	Diagnosis	Diagnosis		In the order message this should be sent in DG1-3 (Diagnosis Code) In result message could be messaged in OBR-31. Picked from a list of diagnosis codes, usually ICD-9 or ICD-10.	
69490-1	Ethnicity OMB 1997	Ethnicity limited to OMB values Ethnicity given by Provider limited to OMB values	Ethnicity	PID-22 (Ethnic Group) Use 42784-9 for clinically relevant ethnicity. Picklist here is limited to the OMB 1997 defined values - Refer to LOINC for normative answer list.	
56794-1	Internal identifier	Internal identifier		For example, patient identifier used within the ordering provider's office. PID-3 (Patient Identifier List) where HL70203 Identifier type table code = PI (Patient internal identifier)	
22020-2	Maiden name			Send Patient Maiden Name in PID-5 (Patient Name), where PID-5.7 (Name type code) is 'M'.	
	Mother's Maiden Name	Mother's Maiden Name		Send Mother's Maiden Name in PID-6 (**Mother's Maiden Name)**	
21484-1	Mother's race			NK1-35 (Race), if NK1-3 (Relationship) (CWE_01) = 'MTH' (Mother).	
18780-7	Ordering Practitioner ID	Ordering Practitioner ID		OBR-16 (Ordering Provider) component 1(ID Number) (ST). Identifier for the ordering provider - should be the NPI number, but can be any identifier.	
	Partner's Name		Partner Name	Send in NK1-2 (Name), where NK1-3 (Relationship) is 'DOM' (Life partner) or 'SPO' (Spouse)	

LOINC Code[25]	LOINC Long Name	Suggested Common Question Name	Alias Name	Usage Note	Test Type Group
44951-2	Physician NPI [Identifier]	Physician NPI		The NPI (National Provider Identifier) code for another physician involved in the care of the patient. This could be any physician involved in the care that may need results. Send in PRT (Participation Information Segment), where PRT-5 (Participation Person) carries the NPI.	
44833-2	Preliminary diagnosis	Preliminary diagnosis		In the order message this should be sent in DG1-3 (Diagnosis Code) when DG1-6 (Diagnosis Type) is 'P' from HL70052. In result message could be messaged in OBR-31. Picked from a list of diagnosis codes, usually ICD-9 or ICD-10.	
72826-1	Race OMB.1997	Patient's Race		PID-10 (Race) Use 32624-9 for clinically relevant race. An AOE should be provided for those tests where Race drives the interpretation of results. The value should be determined by the Ordering Provider and should be from a predetermined list, like White, African American, Asian, Pacific Islander etc.	
45396-9	Social security number	Patient's Social security number		PID-3 (Patient Identifier List) where PID-3.5 (Identifier Type) is 'SS'	
46499-0	State of residence	State of Patient's residence		Send in PID-11.4 (Patient Address)	
42077-8	Telephone	Patient's contact information - can be home phone, work phone or email		Patient's contact information - can be home phone, work phone or email Use PID-13 (home phone) or PID-14 (business phone)	
45401-7	ZIP code	Patient's Address Zip Code		Send in PID-11.5 (Patient Address)	

3   APPENDIX A – GLOSSARY

Refer to the Glossary published in the *HL7 VERSION 2.5.1 Implementation Guide: Laboratory Orders From EHR, Release 2, STU Release 3 US REALM*