A Guide to the OLIS Nomenclature

Nomenclature Toolkit

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Authorized Reader

This document is authorized to the following organizational roles

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• End Users

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1.0 Introduction

1.1 Purpose of Document

Clinical use of the Ontario Laboratories Information System (OLIS) is dependent on conformance to the OLIS Nomenclature and OLIS Interface Specification. The OLIS Nomenclature supports standardization of the manner in which test requests (orders) are ordered and test results are reported to facilitate the meaningful exchange of laboratory test information and to maintain data quality and interoperability. This document describes the terminology of the OLIS Nomenclature (test requests, test results, specimen (source) and microorganism codes) and the process for its maintenance.

1.2 Intended Audience

This document is intended to be used by laboratory personnel responsible for mapping laboratory test request, test result, specimen (source) and microorganism codes and users of the information in OLIS. This document may also be of interest to laboratory directors, managers and vendors.

1.3 Desired Outcomes

Use of this document will result in an understanding of:

- Terminology, concepts and principles associated with the OLIS Nomenclature
- Data and schema used in test request, test result, specimen (source) and microorganism codes
- Mapping local laboratory test requests and test results datasets to the OLIS Nomenclature
- The process for requesting new codes for incorporation in the OLIS Nomenclature, as required
- The requirement to maintain mappings between the local laboratory test requests and test results datasets and the OLIS Nomenclature

1.4 Reference Documents

- *Nomenclature Kick-Off Presentation*
- *Logical Observation Identifiers Names and Codes (LOINC) User Guide* (Refer to http://loinc.org/downloads/files/LOINCManual.pdf)
- *RELMA Manual* (Refer to http://loinc.org/downloads/files/RELMAManual.pdf)
- *OLIS Mapping Tool User Guide*
- *OLIS Interface Specifications*

2.0 Before You Begin

2.1 What is the OLIS Nomenclature?

The OLIS uses 4 tables within the OLIS Nomenclature:

1. **Test Requests Nomenclature**: Used to order laboratory test requests
2. **Specimen (Source)**: Used in combination with the OLIS Test Requests Nomenclature to order laboratory test requests
3. **Test Results Nomenclature:** Used to report laboratory test results
4. **OLIS List of Microorganisms:** Used in combination with OLIS Test Results Nomenclature to report microorganisms

2.2 About the OLIS Nomenclature

The OLIS Nomenclature is:

- Evaluated and aligned with updates to the LOINC Nomenclature and Pan-Canadian Laboratory Nomenclature
- Continually being refined due to the addition and deprecation of codes
- Limited to specific panels as part of the OLIS Test Requests Nomenclature
- Specific to the Ontario jurisdiction for the OLIS List of Microorganisms
- Is a large file and requires access to the OLIS Program Collaboration Portal

2.3 When to Begin Using the OLIS Nomenclature?

The local laboratory test request, test result, specimen (source) and microorganism codes can be mapped to the OLIS Nomenclature when the following activities have been completed:

1. All Agreements with eHealth Ontario are signed
2. The governance structure between all stakeholders is established
3. A Gap Analysis is completed to assess laboratory business processes and gaps in technology
4. Project resources are identified and assigned
5. Pre-Mapping Activities are completed (Refer to OLIS Mapping Tool for more information)

3.0 OLIS Test Requests Nomenclature

3.1 What is the OLIS Test Requests Nomenclature?

The OLIS Test Requests Nomenclature is a coding system for identifying laboratory test requests. These codes are used by practitioners to order test requests and to communicate this information to laboratory service providers through OLIS. The OLIS Test Requests Nomenclature is based on the Schedule of Benefits and Logical Observation Identifier Names and Codes (LOINC), where appropriate. Refer to Appendix A for an excerpt of the OLIS Test Requests Nomenclature.

The OLIS Test Requests Nomenclature is categorized by the following laboratory disciplines:

- Blood Bank
- Chemistry
- Hematology
- Microbiology
- Pathology

3.2 How to Use the OLIS Test Requests Nomenclature and Specimen (Source) Table?

The OLIS Test Requests Nomenclature is used in combination with the Specimen (Source) table so ordering practitioners can send test requests into OLIS and laboratory service providers can receive test requests from OLIS.

Organizations can choose to modify their information systems and business processes to directly use the OLIS Test Requests Nomenclature or can keep their internal nomenclature. If an organization chooses to retain their own nomenclature, these organizations are responsible for mapping their test requests nomenclature to the OLIS Test Requests Nomenclature and Specimen (Source) table. Organizations must use the correct specimen (source) when mapping their local test request codes to the OLIS test request code. These organizations are also responsible for maintaining mapped test request codes in accordance with newer versions of the OLIS Test Requests Nomenclature. In situations when test result codes are difficult to map to the OLIS Test Requests Nomenclature, contact the OLIS Business Service Desk (BSD) for resolution.

The *OLIS Mapping Tool User Guide* describes in detail the process of comparative mapping between a local laboratory test requests dataset and the OLIS Test Requests Nomenclature. For information on how test requests are submitted to OLIS using HL7 Order (ORM) and Unsolicited Result (ORU) messages, refer to the OLIS Interface Specifications.

3.3 Structure of the OLIS Test Requests Nomenclature

The structure of the OLIS Test Requests Nomenclature consists of the following data elements (some of these elements were developed for maintenance and reporting purposes and do not need to be considered when mapping local test request codes to the OLIS Test Requests Nomenclature):

- Test Request Name
- Request Alternate Name 1
- Request Alternate Name 2
- Request Alternate Name 3
- Comments
- Test Request Category
- Test Request Sub-category
- Effective Date
- End Date
- Workflow Status Indicator
- Validation Status Indicator
- Change Note

3.3.1 OLIS Test Request Code

Most laboratory information systems use a code to identify orderable tests. Within the OLIS Test Requests Nomenclature, a code is assigned to each test request. Use of OLIS test request codes ensures the local test request code is appropriately mapped to a specific OLIS code.

3.3.2 OLIS Test Request Name

The Test Request Name is an unambiguous OLIS test name that identifies an orderable test. The following sub-sections describe attributes of the Test Request Name and the criteria used for selecting the test request name.

3.3.2.1 Test Request Naming Conventions

The LOINC naming conventions, as used by the Regenstrief Institute, are the basis for developing the Test Request Names. LOINC conventions have been applied where appropriate. These conventions include the following:

- The identifier of the substance being measured is placed first (e.g., *Hepatitis A antibodies*, not *Antibodies, Hepatitis A*)
- The generic name of a drug is used, not a brand name (e.g., *acetaminophen*, not *Tylenol*)
- The full name of an organism or virus name is used, not the disease (e.g., *Rickettsii AB*, not *Rocky Mountain Spotted Fever AB*)
- A vitamin is named by its chemical name (e.g., *Thiamine* not *Vitamin B1*)
- The name must specify if a serological technique measures an antibody or an antigen (e.g., *Smooth Muscle Antibody* or *Smooth Muscle Antigen*)
- The noun form of the target (e.g., *Myocardium Antibody* not *Myocardial Antibody*) of the antibody is used
- The anionic name for chemicals is used, not the acid name (e.g., *lactate*, not *lactic acid*)
- Single word names are used for alcohols (e.g., *methanol* not *methyl alcohol*)
- Full names are used as much as possible, and not abbreviations
- Greek letters, alpha, beta, gamma etc. are spelled out
- Avoid case-sensitive issues by using the word "little" in front of the letter (e.g., *Lipoprotein Little A* not *Lipoprotein a*)
- Avoid the use of "total" except when it is part of a fraction (e.g., *protein*, not *total protein*)

When defining Test Request Names, attributes such as specimen type, test method, and timing/state of the patient must be considered and specified. If a specific attribute needs to be highlighted by a practitioner to a laboratory service provider, the attribute must be incorporated into the Test Request Name.

3.3.2.2 Specimen (Source) Type

A Specimen (Source) allows for test requests to be differentiated by the type of specimen source (e.g., blood, urine, cerebrospinal fluid). Specimen types are not part of the test request name, but can be indicated separately by selecting the specimen type from the OLIS Specimen (Source) table (Refer to Appendix C).

The number of specimen types that are specified vary based on the category of test requests. The OLIS Specimen (Source) table provides flexibility in order to accommodate the various scenarios involved in handling test requests. In some cases, an ordering practitioner may specify specimen type information and in other cases the laboratory service provider will specify this information.

The OLIS Specimen (Source) table is based on Table 0070 in the HL7 Standard and consists of following data elements:

- **Value** – the mnemonic (acronym) of the specimen (source) type; and
- **Description** – the full name of the specimen type (Refer to Table 3-1 for examples).

Value	Description
BLD	Whole Blood
SER	Serum
UR	Urine

Table 3-1: Example of Value and Description

3.3.2.3 Method

Ordering practitioners may specify the type of analytical method required for a test request. The type of method can differentiate between qualitative and quantitative procedures, or between screening and confirmatory procedures. Characteristics of the method (e.g., qualitative/screen or fractionation) are incorporated into test request names, where applicable. Examples include: Chorionic Gonadotropin; Chorionic Gonadotropin Screen (Related name - Pregnancy Test); Acetone; and Acetone Screen.

3.3.2.4 Timing and State

In some cases, it is important for a test to be done at a specific time or based on a patient's state (e.g., during fasting or before the next therapeutic drug dose (trough)). This information must be communicated to the patient and laboratory service provider. A test request name should be differentiated by the timing and patient's state. The following timing and states are incorporated in the OLIS Test Request Name:

- Peak and trough for aminoglycoside therapeutic drugs. Examples include:
    - Amikacin, Peak
    - Amikacin, Trough
    - Amikacin, Random
- Fasting and 2 hr post challenge (pc). Examples include:
    - Glucose, Fasting
    - Glucose, Random
    - Glucose, 2 hr pc
- Post vasectomy. Examples include:
    - Semen Analysis Complete
    - Semen Analysis, Post Vasectomy
- Challenge tests such as Glucose Tolerance. Examples include:
    - Glucose Tolerance, 3 hr
    - Glucose Tolerance, 5 hr

  - Glucose Tolerance, Gestational
- Immunity (IgG) and active disease state (IgM). Examples include:
  - Rubella Virus Antibody, IgM (Related name – German Measles Diagnosis)
  - Rubella Virus Antibody, IgG (Related name – German Measles Immune status)
- Morning and evening state. Examples include:
  - Cortisol Morning
  - Cortisol Evening
- Acute and convalescent. Examples include:
  - Toxoplasma Antibody, Acute
  - Toxoplasma Antibody, Convalescent
- Prenatal. Examples include:
  - Syphilis Prenatal Screen
  - Rubella Virus Antibody, IgG, Prenatal Screen

3.3.3 Test Request Alternate Names 1, 2 and 3

Currently laboratory service providers and practitioners use names that are common to their organization and are easily used in their laboratory information systems. To facilitate the mapping of the OLIS Test Requests Nomenclature to locally defined test request codes, up to 3 alternate names (including abbreviations) can be used.

3.3.4 Comments

The comment data element is a free text field that allows for the recording of user defined information (e.g., to clarify why a specific test request is being used). It also allows the user to differentiate mapping of different test request codes.

3.3.5 Test Request Categories

The OLIS Test Requests Nomenclature is separated into different categories of laboratory testing. These categories include:

- Chemistry
- Hematology
- Immunology
- Allergens
- Serology
- Pathology
- Microbiology
- Clinical
- Microscopy

Additional categories of laboratory testing can be added as new disciplines develop

3.3.6 Test Request Sub-Categories

The OLIS Test Requests Nomenclature is further differentiated by sub-categories. These sub-categories allow specialists to focus on a smaller group of tests. For example, the Hematology category has sub-categories that include Coagulation and Flow Cytometry (Refer to Table 3-2 for more examples).

Category	**Sub-Category**
Allergens	Animal Epidermals & Proteins Regular Allergens
	Animal Epidermals & Proteins Special Allergens
	Drugs
	Foods Regular Allergens
	Foods Special Allergens
	Grass Pollens Regular Allergens
	Grass Pollens Special Allergens
	House Dust
	Insects - Regular Allergens
	Insects - Special Allergens
	Microorganisms - Regular Allergens
	Microorganisms - Special Allergens
	Misc. Regular Allergens
	Misc. Special Allergens
	Mites
	Occupational Regular Allergens
	Occupational Special Allergens
	Parasites
	Tree Pollens Regular Allergens
	Tree Pollens Special Allergens
	Weed Pollens Regular Allergens
	Weed Pollens Special Allergens
Categories	**Sub-categories**
Chemistry	Amino Acid
	Challenge
	Drug/Tox
	Endocrine
	Enzyme
	Fetal Status
	Glucose
	Hematin
	Lipid

Category	Sub-Category
	Metabolism
	Mineral
	Nutrition
	Oncology
	Protein
Categories	**Sub-categories**
Immunology	Autoantibody
	Protein Analysis
Categories	**Sub-categories**
Hematology	Fetal Status
	Coagulation
	Flow Cytometry

Table 3-2: Categories and Sub-Categories

3.3.7 Effective Date

The effective date identifies the first date the record is "active" within the OLIS Test Requests Nomenclature. The word "active" refers to the Validation Status Indicator described in *Section 3.2.10*. This indicator specifies that the OLIS test request code can be used to submit data into OLIS.

3.3.8 End Date

The end date identifies the last date the record is "active" within the OLIS Test Requests Nomenclature. The presence of the end date in the table is conditional and is based on whether the status is "retired". If the Workflow Status Indicator (Refer to *Section 3.2.9*) is "retired", an end date must be specified. If the Validation Status Indicator changes to "inactive", the end date is manually created and maintained.

3.3.9 Workflow Status Indicator

The Workflow Status Indicator in the OLIS Test Requests Nomenclature is used to describe the stage of development of an OLIS test request code from its creation to its retirement. The values used to describe the Workflow Status Indicator identify the status of each test request and include the following statuses:

- **Temporary**: The status assigned to a new OLIS test request code created by the OLIS Nomenclature Maintenance Working Group[1], when an urgent test request code is required. Codes with this status are ready to be used for the purpose of submitting data into OLIS. However, this test request code will still need to be reviewed by the OLIS Nomenclature Maintenance Working Group.

[1] The OLIS Nomenclature Maintenance Working Group consists of subject matter experts within the OLIS Program that are responsible for maintenance of the OLIS Nomenclature.

If the codes are clinically approved their status will change to "Released" in the next OLIS Nomenclature release

- **Released:** The status assigned to a new or modified OLIS test request code that has been reviewed and approved by the OLIS Nomenclature Maintenance Working Group. Codes with this status can be used for the purpose of submitting data into OLIS. These codes are subject to periodic review
- **Retired Withdrawn**: The status assigned to an OLIS test request code that has been replaced with a new laboratory test request code. Records with this status cannot be used for the purpose of submitting data into OLIS
- **Retired Deleted**: The status assigned to laboratory test request codes that were created due to an error. Records with this status cannot be used for the purpose of submitting data into OLIS

Note: Test request codes with "Released" and "Temporary" Workflow Status Indicators can be used to submit data into OLIS.

3.3.10 Validation Status Indicator

The Validation Status Indicator indicates which laboratory test requests are published in the current version of OLIS Test Requests Nomenclature and can be used to submit data into OLIS.

The Validation Status Indicator has an interdependent relationship with the Workflow Status Indicator and is automatically determined by it. The Validation Status Indicator options include:

- Active: Indicates that the OLIS test request code can be used to submit data into OLIS. OLIS laboratory test requests with the Workflow Status Indicator "Temporary" or "Released" have a Validation Status of "Active"
- Inactive: Indicates that the OLIS test request code cannot be used to submit data into OLIS. OLIS laboratory test requests with the Workflow Status Indicator "Retired Deleted" or "Retired Withdrawn" have a Validation Status of "Inactive"

3.3.11 Change Note

The Change Note is used to provide detailed information on the reasons for modifying any element within the record of the OLIS Test Requests Nomenclature. Users can use this feature for tracking purposes.

3.3.12 Panels

Many organizations and their practitioners use a profile or a panel of tests when ordering test requests. Panels are a common grouping of test requests that facilitate ordering and reporting. Panels are ordered with one name (e.g., electrolytes are a panel that can include test requests such as sodium, potassium and chloride). Panels are not consistently defined across laboratories. Currently, the OLIS supports the panels identified in Table 3-3:

OLIS Test Request Code	OLIS Test Request Name
TR10169-1	Drug Screen Broad Spectrum
TR10170-9	Drugs Of Abuse Screen
TR10286-3	Maternal Screen
TR11390-2	Blood Gases
TR10453-9	Urinalysis Chemical
TR10477-8	Complete Blood Count
TR11629-3	Lipid Assessment
TR10454-7	Urinalysis, Microscopic
TR11663-2	Electrolytes
TR10593-2	Von Willebrand Factor Screen

Table 3-3: Panels in OLIS

The OLIS Program recognizes that organizations may have multiple panels or groups of tests that are different from the panels supported by the OLIS Nomenclature. In this case, the OLIS Program requires that all panels that do not conform with OLIS panels are divided into individual test requests and are sent into OLIS.

4.0 OLIS Test Results Nomenclature

4.1 What is the OLIS Test Results Nomenclature?

The OLIS Test Results Nomenclature is a coding system for identifying laboratory test observations (test results, components of test results such as microorganisms and their sensitivities, and specific (e.g., Body Fluid) and not specific (XXX) specimen sources). It also includes identifiers for observations (e.g., height and weight) to ensure that results or interpretations are reported correctly. Refer to Appendix B for an excerpt of the OLIS Test Results Nomenclature. These codes are used to communicate test results to practitioners from laboratory service providers through OLIS.

The OLIS Test Results Nomenclature has adopted a subset of the entire LOINC Nomenclature Standard. This is because the LOINC Nomenclature Standard includes: codes for environmental, veterinary, donor and other non-clinical test results; and non-Canadian codes. These codes were not included in the OLIS Nomenclature. The LOINC Nomenclature Standard was adopted by the OLIS Program since it is a comprehensive and internationally recognized nomenclature standard that is; flexible, stable, and has a nomenclature maintenance process through Regenstrief Institute Inc. The LOINC Nomenclature Standard is flexible since it provides multiple options for reporting test results based on a combination of component name and attributes.

The OLIS Test Results Nomenclature is also supplemented with regional jurisdictional codes (XON and XCA codes) that are not included in the LOINC Nomenclature Standard. These jurisdictional codes are assigned by the OLIS Program or Canada Health Infoway (CHI) when new test result codes are required, and an application is sent to Regenstrief Institute Inc. for inclusion in the LOINC Nomenclature Standard. Once LOINC codes have been generated the local jurisdictional codes are replaced by the new LOINC codes.

4.2 How to Use the OLIS Test Results Nomenclature?

The OLIS Test Results Nomenclature is used to allow laboratory service providers to send test results information into OLIS and to allow practitioners to retrieve test results information from OLIS. Organizations can choose to modify their laboratory information systems and business processes to directly use the OLIS Test Results Nomenclature or can choose to keep their internal nomenclature. If an organization chooses to retain their own nomenclature, these organizations are responsible for mapping their test results nomenclature to the OLIS Test Results Nomenclature. Organizations must use

the correct specimen (source) when mapping their local test result code to the OLIS test result code. These organizations are also responsible for maintaining mapped codes in accordance with newer versions of the OLIS Test Results Nomenclature.

In most cases, the process of mapping local test result codes to the OLIS Test Results Nomenclature is straightforward. However, for test codes which are difficult to map to the OLIS Test Results Nomenclature, contact the OLIS BSD for resolution.

The *OLIS Mapping Tool User Guide* describes in details the process of comparative mapping between a local test results dataset and the OLIS Test Results Nomenclature. The Result Code and the Result Fully Specified Name (i.e., Result Component Name, Result Property, Result System, Result Time, Result Scale, and Result Method) must be submitted in the appropriate HL7 field. For information on how OLIS test results are submitted to OLIS, refer to the OLIS Interface Specifications.

4.3 Structure of the OLIS Test Results Nomenclature

The structure of OLIS Test Results Nomenclature is based on data elements of the LOINC Nomenclature Standard.

The following examples demonstrate how the LOINC Nomenclature Standard has been adapted to the OLIS Test Results Nomenclature:

1. The LOINC Nomenclature Standard provides codes for test results based on a DNA or RNA measurement of an analyte and identifies the test result using DNA or RNA in the *component name*. However, most laboratories identify the result in their local test results nomenclature by the specific methodology used to measure the DNA or RNA. The OLIS Test Results Nomenclature uses the *common name* used by laboratories with the specific DNA or RNA method.
    - Example – A Chlamydia result with a specimen (source) of cervix is identified in the following manner:
        - Component name - *Chlamydia trachomatis* DNA
        - Common name - *Chlamydia trachomatis* PCR

2. The LOINC Nomenclature Standard provides codes for some drug levels in which the method element indicates “screen/confirm” as a differentiator as well as codes in which no method is indicated. The OLIS Test Results Nomenclature contains only the LOINC codes for drug levels in which no method is indicated in the LOINC method field. A laboratory can choose to include additional information separately. For example, the fact that an

assay was screened at a specific level can be specified as a note in an HL7 message. The LOINC options for reporting a quantitative Amobarbital test on urine are provided in Table 4-1:

Result Code	Component Name	Method
11230-0	Amobarbital	No method specified
16239-6	Amobarbital	Confirm
19341-7	Amobarbital cutoff	Screen
19342-5	Amobarbital cutoff	Confirm

Table 4-1: Example of LOINC Options for Reporting Test Result

The structure of the OLIS Test Results Nomenclature consists of the following data elements (some of these elements were developed for maintenance and reporting purposes and do not need to be considered when mapping local test result codes to the OLIS Test Results Nomenclature):

- LOINC Code
- LOINC Component Name
- LOINC Property
- Units
- LOINC Time
- LOINC System
- LOINC Scale
- LOINC Method
- LOINC Short Name
- LOINC Fully Specified Name
- Result Display Name (Alternate Name 1)
- Result Alternate Name 2
- Result Alternate Name 3
- Result Category
- Result Sub-Category
- LOINC Answer List
- LOINC Status
- Change Note
- Effective Date

- End Date
- Workflow Status Indicator
- Validation Status Indicator

4.3.1 LOINC Code

Most laboratory information systems use a code to identify test results. Within the OLIS Test Results Nomenclature, a LOINC code is uniquely assigned to each test result.

When a LOINC code is not available, a jurisdictionally unique identifier is created. These codes are prefixed by an X and followed by two characters for the region generating the code. The OLIS Program uses XON as a prefix for Ontario specific codes. CHI uses XCA codes for Canada specific codes. The OLIS Program aligns with CHI's use of jurisdictionally unique identifiers. The "XAAnnnnn-n" code consists of the following information:

- "XAA" represents the jurisdiction. This can include: XCA, XBC, XAB, XSK, XMB, XON, XQC, XNB, XNS, XPE, XNL, XNU, XYT, XNW and XGC
- "nnnnn" is a five digit sequential number that increases by one for each new observation code
- "n" is the last two characters in which the last character is a check digit

The OLIS Nomenclature Maintenance Working Group is involved in aligning the Pan-Canadian Standard with the OLIS Test Results Nomenclature when LOINC codes are not available. As of January 2009 (version 1.1.3), the OLIS Program has been referring requests for new codes to CHI. CHI generates an XCA code and submits a request for a new LOINC code to Regenstrief Institute Inc.

4.3.2 LOINC Component Name

The OLIS Test Results Nomenclature uses the principle name (e.g., the name of the analyte or the measurement) from LOINC as the observation identifier. For the Ontario specific test result codes, the principle name from LOINC is used, wherever possible. The naming conventions for LOINC and Ontario codes are the same as those described in *Section 3.2.2.1.*

4.3.3 LOINC Property

The following dataset example contains local and OLIS data values as well as a comma as a text separator. There are no data element headers or text qualifiers.

The property component distinguishes between different quantities relating to the same substance (e.g., substance concentration, number concentration and

interpretation). This is typically represented by the type of units. The OLIS Test Results Nomenclature uses the property component developed by LOINC. The main property categories include:

- Mass: Observation is reported with mass (milligrams, grams etc.) in the numerator of the unit
- Substance: Observation is reported with moles or milliequivalents in the numerator of the units
- Catalytic Activity: Observation that reports enzymatic activity
- Arbitrary: Observation that reports arbitrary units in the numerator of the unit
- Number: Counts that begin with a number (e.g., White Blood Cell (WBC) count is reported as the number of WBCs divided by the volume of blood)

Each property has a number of derivatives. These include:

- Concentrations: An amount divided by a volume such as "/L"
- Contents: An amount divided by a mass such as "/G sample"
- Ratios – An amount that results from one measure being divided by another within the same system. For example, the substance concentration of "substance A" divided by the "substance concentration of Creatinine" in a urine sample is equivalent to the "Substance Concentration Ratio (SCRTO)"
- Fractions – Fractions are ratios of a part over a whole and usually reported as percentages. For example, Creatine Kinase.MB/Creatine Kinase. If it is measured in grams, it is a Mass Fraction Ratio property (MFR)

Table 4-2 provides an example of how a property is used as part of OLIS Test Results Nomenclature.

Result Code	Component Name	Property
14957-5	Albumin (urine)	MCNC (Mass Concentration)
6941-9	Albumin (24 hr urine)	MRAT (Mass rate)
1753-3	Albumin (urine)	ACNC (Arbitrary Concentration)

Table 4-2: Example of a Property in OLIS Test Results Nomenclature

4.3.4 Units of Measure

The Units of Measure component is the unit of measure reported to a specific test result. This component assists in identifying the appropriate property during the mapping process. Units are directly interdependent with a property since each property can only have certain types of units.

Note: test observations do not always require a unit of measure. Refer to Table 4-3.

	A	B	C	D	E	F	G	H	I	J	K	
1	Local_Code_Mnemc	Local_Name	Local_Category	OLIS_Code	OLIS_Test_Request_Name	Specimen_value	Specimen_Description	Specimen_Site_Modif	Comments	Local_Comments	Mapping_Date	Mappi
2	115	COMPLETE BLOOD COUNT	Hematology	TR10477-8	Complete Blood Count	SER	Whole blood	Exudate		Used for manual	2010-09-09 12:12:33	shar
3	2512	GENTAMICIN PEAK	Chemistry	TR10207-9	Gentamicin Peak	SER	Serum	Exudate			2010-09-09 12:12:33	shar
4	2521	AMIKACIN PEAK	Chemistry	TR10025-5	Amikacin Peak	SER	Serum	Exudate			2010-09-09 12:12:33	shar
5	180	RH GENOTYPE+ANTIBODY S	Immunohematol	TR11565-9	RH Genotype	SER	Whole blood	Exudate			2010-09-09 12:12:33	shar
6	348	CHOLINESTERASE-RBC	Chemistry	TR10123-8	Cholinesterase	SER	Erythrocytes	Exudate			2010-09-09 12:12:33	shar

Figure 4-3: Test Results Dataset File Example

4.3.5 LOINC Time

The OLIS Test Results Nomenclature uses the time component developed by LOINC. An observation can be measured at a point in time or over a time interval. Intervals are relevant for rate measurements such as excretion or clearance such as Creatinine Clearance. The code "XXX" can be used to identify a time that is not specified in the codes. If "XXX" is used, the time must be specified separately. Table 4-4 demonstrates how time is used within the OLIS Test Results Nomenclature.

Result Code	Component Name	Time
13441-1	Creatinine Renal Clearance	4 hr
33558-8	Creatinine Renal Clearance	XXX
2164-2	Creatinine Renal Clearance	24 hr
2163-4	Creatinine Renal Clearance	12 hr
13442-9	Creatinine Renal Clearance	6 hr
26752-6	Creatinine Renal Clearance	2 hr
13443-7	Creatinine Renal Clearance	8 hr

Table 4-4: Example of LOINC Time in OLIS Test Results Nomenclature

A list of the current LOINC Time codes and descriptions are provided in Table 4-5.

Time Code	Time Description
10H	10 Hours
10H^MAX	Maximum value over 10 Hours
10H^MEAN	Mean value over 10 Hours
10H^MIN	Minimum value over 10 Hours
12H	12 Hours
12H^MAX	Maximum value over 12 Hours
12H^MEAN	Mean value over 12 Hours
12H^MIN	Minimum value over 12 Hours
1H	1 Hour
1H^MAX	Maximum value over 1 Hour
1H^MEAN	Mean value over 1 Hour
1H^MIN	Minimum value over 1 Hour
24H	24 Hours
24H^MAX	Maximum value over 24 Hours
24H^MEAN	Mean value over 24 Hours
24H^MIN	Minimum value over 24 Hours
2H	2 Hours

Time Code	Time Description
1M	1 Minute
15M	15 Minutes
30M	30 Minutes
45M	45 Minutes
1D	1 Day
ENCTR	Duration of an encounter
ENCTR^FRST	First value during encounter
EPISODE	Duration of an episode
EPISODE^FRST	First value during episode
PROCEDURE DUR	Duration of the procedure
PT	Point in time
PT/ENCTR	Point in time / Duration of an encounter
STDY	Duration of a study
STDY^MAX	Maximum value during a study
STDY^MEAN	Mean value during a study
STDY^MIN	Minimum value during a study
SURG	Duration of surgery

Time Code	Time Description
48H	48 Hours
4H	4 Hours
5H	5 Hours
6H	6 Hours
72H	72 Hours
8H	8 Hours
8H^MAX	Maximum value over 8 Hours
8H^MEAN	Mean value over 8 Hours
8H^MIN	Minimum value over 8 Hours

Time Code	Time Description
XXX	Time not specified. Time will be reported in another part of the electronic message

Table 4-5: List of LOINC Time Codes and Descriptions

4.3.6 LOINC System (Specimen Type)

The OLIS Test Results Nomenclature uses the specimen types in the OLIS Specimen (Source) table. This table consists of the "system" elements developed by LOINC. LOINC uses the term "system" to refer to specimen type.

The code "XXX" is used to indicate that the system (specimen type) is not specified in the test result and is an unusual system for the record. For this reason, it must be communicated separately. Table 4-6 shows how a system is used in test results within the OLIS Test Results Nomenclature.

Result Code	Component Name	System
1745-9	Albumin	Amniotic Fluid
14957-5	Albumin	Urine
1746-7	Albumin	CSF
1747-5	Albumin	Fluid
1748-3	Albumin	Pleural Fluid
2863-9	Albumin	Synovial Fluid
32293-3	Albumin	XXX
2862-1	Albumin	Serum/Plasma
1749-1	Albumin	Peritoneal Fluid
10558-5	Albumin	Seminal Fluid

Table 4-6: Example of LOINC System (Specimen Type) in OLIS Test Results Nomenclature

4.3.7 LOINC Scale

The OLIS Test Results Nomenclature uses the scale component that is used by LOINC. The type of scale differs based on how the content of an analyte is being measured. For example:

- A quantitative measurement has a scale that is tied to some physical quantity

- An ordinal measurement has values that are well ordered, such as 1+, 2+, 3+, present, absent, negative, positive. However, these values have no linear relationship to one another

Table 4-7 provides examples of how the LOINC scale is used in tests results within the OLIS Test Results Nomenclature.

Scale code	Type of Scale	Description
DOC	Document	Used for clinical documentation
MULTI	Multiple	Many separate results as one text "glob" and reported as one observation, with or without an imbedded display format
NAR	Narrative	Text narrative, such as the description of a microscopic part of a papule test
NOM	Nominal	Nominal or categorical responses that do not have a natural ordering (e.g., names of bacteria, categories of appearances such as yellow, clear, bloody)
ORD	Ordinal	Ordered categorical responses (e.g., 1+, 2+, 3+; positive, negative)
ORDQN	Quantitative Or Ordinal	Test can be reported as either ORD or ON (e.g., a test that may be reported as negative or if positive for a titer)
QN	Quantitative	The result of the test is a numerical value that relates to a continuous numerical scale
SET	Set	Used for clinical attachments

Table 4-7: Example of LOINC Scale in OLIS Test Results Nomenclature

4.3.8 LOINC Method

The OLIS Test Results Nomenclature uses the method component that is developed by LOINC for test result codes that have been adopted from LOINC. For test result codes that are not adapted from LOINC, the method may or may not be specified. The type of method differentiates in more detail how the analyte is measured relative to the scale component. The LOINC Method is used only where it is clinically relevant to distinguish results performed by different techniques. For example, White Blood Cells such as lymphocytes in the Hematology category can be further differentiated by a manual method, automated method or no method (Table 4-8).

Result Code	Component Name	Method
731-0	Lymphocytes	Automated count
732-8	Lymphocytes	Manual count
26474-7	Lymphocytes	

Table 4-8: Example of LOINC Method in OLIS Test Results Nomenclature

4.3.9 LOINC Short Name

The OLIS Test Results Nomenclature uses the short name that has been developed by LOINC. This component provides users with a concatenation of the Fully Specified LOINC Name.

4.3.10 LOINC Fully Specified Name

The OLIS Test Results Nomenclature uses the fully specified name developed by LOINC. This is a combination of the component name, property, time, system, scale and method. Along with the OLIS test result code, this component must be submitted in the HL7 messages transmitted to OLIS.

4.3.11 Test Result Alternate Names 1(OLIS Display Name), 2 and 3

It is not uncommon for a test result to be referred to by different names. The OLIS Nomenclature for up to 3 alternative names to be recorded for each test result code. This is meant to simplify mapping since the test code can be identified by searching for any of the alternate names.

Alternative Names are particularly useful for tests such as vitamins in which the scientific name is used as the component name in LOINC (e.g., Vitamin B_{12} is a common name for component name Cobalamins).

Note: OLIS uses the information in "Result Alternate Name 1" to display results on the OLIS Web Viewer. For that reason, this field is also called the "OLIS Display Name".

4.3.12 Test Result Categories

The OLIS Test Results Nomenclature is separated into the following categories of laboratory testing (Table 4-9). Additional categories of laboratory testing can be added as new disciplines develop (e.g., Molecular Diagnostics).

AXBACT	ALLERGY	BDYHGT.ATOM
BDYSURF.ATOM	BDYTEMP.ATOM	BDYWGT.MOLEC
BLDBK	CARD.US	CELLMARK
CHALSKIN	CHAL	CLIN
CYTO	CHEM	COAG
DRUG/TOX	DOSAGE	H&P.HX
FERT	HEME	HEM/BC
HLA	HEMODYN.MOLECULAR	MISC
MICRO	MOLPATH.MUT	MOLPATH
OBGYN	OB.US	PANEL.BLDBK
PANEL.AXBACT	PANEL.CHEM	PANEL.CHAL
PANEL.HEM/BC	PANEL.DRUG/TOX	PANEL.MICRO
PANEL.SERO	PANEL.UA	PATH
PATH.PROTOCOL	PULM	RAD
SERO	SPEC	TUMRRGT
UA	VACCIN	

Table 4-9: Test Result Categories

4.3.13 Sub-Categories

The OLIS Test Results Nomenclature is further differentiated by sub-categories. These sub-categories allow specialists to focus on a smaller group of tests.

4.2.14 LOINC Answer List

The OLIS Test Results Nomenclature uses the answer list developed by LOINC. This component has no direct purpose in the OLIS Test Results Nomenclature. It is only present to meet the LOINC copyright and terms of use.

4.2.15 LOINC Status

LOINC status is used to identify records within the OLIS Nomenclature that have been deleted by Regenstrief Institute Inc. If a record is deleted in future LOINC Nomenclature Standard versions, the status that will appear in this field is “DEL”. However, the OLIS Test Results Nomenclature may continue to use a record that has been deleted by Regenstrief Institute Inc. This component is present to meet the LOINC copyright and terms of use.

4.2.16 Change Note

The Change Note is used to provide detailed information on the reasons for modifying any elements within the record of the OLIS Test Results Nomenclature. Users can use this feature for tracking purposes.

4.2.17 Effective Date

The effective date identifies the first date the record is “active” within the OLIS Test Results Nomenclature. The word “active” refers to the Validation Status Indicator described in *Section 4.2.20*. This indicator specifies that the OLIS test result code can be used to submit data into OLIS.

4.2.18 End Date

The end date identifies the last date the record is "active" within the OLIS Test Results Nomenclature. The presence of the end date in the table is conditional and is only filled in when the status is "retired". If the Workflow Status Indicator (Refer to *Section 3.2.9*) is "retired", an end date must be specified. If the Validation Status Indicator changes to "inactive", the end date is manually created and maintained.

4.2.19 Workflow Status Indicator

The Workflow Status Indicator in the OLIS Test Results Nomenclature is used to describe the stage of development of an OLIS test request code from its creation to its retirement. The values used to describe the Workflow Status Indicator identify the status of each test result and include the following statuses:

- **Temporary**: The status assigned to a new OLIS test result code created by the OLIS Nomenclature Maintenance Working Group, when an urgent test result code is required. Codes with this status are ready to be used for the purpose of submitting data into OLIS. However, this test result code will still need to be reviewed the OLIS Nomenclature Maintenance Working Group. If the codes are clinically approved their status will change to "Released" in the next OLIS Nomenclature release
- **Released**: The status assigned to a new or modified OLIS test result code that has been reviewed and approved by the OLIS Nomenclature Maintenance Working Group. Codes with this status can be used for the purpose of submitting data into OLIS. These codes are subject to periodic review
- **Retired Withdrawn**: The status assigned to an OLIS test result code that has been replaced with a new laboratory test result. Records with this status cannot be used for the purpose of submitting data into OLIS
- **Retired Deleted**: The status assigned to laboratory test result codes that were created due to an error. Test results with this status cannot be used for the purpose of submitting data into OLIS

Note: Test result codes with "Released" and "Temporary" Workflow Status Indicators can be used to submit the data into OLIS.

4.2.20 Validation Status Indicator

The Validation Status Indicator indicates which laboratory test result codes are published in the current version of OLIS Test Results Nomenclature and can be used to submit data into OLIS.

The Validation Status Indicator has an interdependent relationship with the Workflow Status Indicator and is automatically determined by it. The Validation Status Indicator options include:

- Active: Indicates that the OLIS test result code can be used to submit data into OLIS. OLIS laboratory test result codes with the Workflow Status Indicator "Temporary" or "Released" have a Validation Status of "Active"

- Inactive: Indicates that the OLIS test result code cannot be used to submit data into OLIS. OLIS laboratory test result codes with the Workflow Status Indicator “Retired Deleted” or “Retired Withdrawn” have a Validation Status of “Inactive”

5.0 OLIS Test Results Nomenclature for Microbiology (OLIS List of Microorganisms)

5.1 What is the OLIS Test Results Nomenclature for Microbiology?

As part of the OLIS Test Results Nomenclature, there is an OLIS List of Microorganisms that identifies microorganisms that can be reported in a test result. Refer to Appendix D for an excerpt of the OLIS List of Microorganisms. The OLIS List of Microorganisms is used in conjunction with specific OLIS test result codes to report the results of cultures in a codified manner that allow the data to be used for epidemiological studies. Codifying the reporting of microorganisms also ensures results reported in different laboratories are reported consistently when they are retrieved from the OLIS repository. Since each microorganism has a unique microorganism code, the OLIS List of Microorganisms standardizes the manner that results are transferred to OLIS.

The OLIS List of Microorganisms was created based on a list of common and esoteric microorganisms identified in the public, community and hospital laboratories. Every microorganism name listed in the OLIS List of Microorganisms has been checked for compliance against international naming standards (Table 5-1).

Microorganism Name	Source of Standard
Viruses	• International Committee on Taxonomy of Viruses • (iCTVdb)
Bacteria	• International Journal for Systematic and Evolutionary Microbiology (IJSEM) • Deutsche Sammlung von Microbiologischen Zellkulturen (DSMZ) • List of Prokaryotic names with Standing in Nomenclature (J.P. Euzeby).
Fungi (Molds) and Yeasts)	• Deutsche Sammlung von Microbiologischen Zellkulturen (DSMZ)
Parasites	• Species 2000

Table 5-1: International Naming Standards for OLIS List of Microorganisms

5.2 How to Use the OLIS List of Microorganisms?

The OLIS List of Microorganisms is used to allow laboratory service providers to report microorganism results into OLIS and to allow practitioners to retrieve these results from OLIS. The OLIS List of Microorganisms is used to code a

specific microorganism as a value or result in conjunction with the OLIS Test Results Nomenclature.

Organizations can choose to modify their laboratory information systems and business processes to directly use the OLIS List of Microorganisms or can choose to keep their internal nomenclature. If an organization chooses to retain their own nomenclature, these organizations are responsible for correctly mapping their test results nomenclature to the OLIS List of Microorganisms. These organizations are also responsible for maintaining mapped codes in accordance with newer versions of the OLIS Nomenclature.

In most cases, the process of mapping local test result codes to the OLIS List of Microorganisms is straightforward. However, for test codes which are difficult to map to the OLIS List of Microorganisms, contact the OLIS BSD for resolution.

5.3 Structure of the OLIS List of Microorganisms

The structure of the OLIS List of Microorganisms consists of the following data elements:

5.3.1 OLIS Microorganism Code

The OLIS Microorganism code uniquely identifies the microorganism. This code consists of a leading capital letter “M” (for the full official microorganism name) or a “P” (for a phenotype).

Examples of “M” codes include:

- Staphylococcus aureus (M00920)
- Klebsiella pneumoniae (M00533)

Examples for “P” Codes (for a general Microorganism) include:

- Gram negative bacilli (P00025)
- Anaerobic non spore forming bacilli (P00006)

5.3.2 Microorganism Type

The Microorganism Type classifies the microorganism at the highest hierarchical level (e.g., virus, bacteria, fungi etc.). The values are pre-determined and include:

- Virus
- Subviral
- Bacteria
- Fungus

- Yeast
- Parasite

5.3.3 Taxonomic Level

The Taxonomic Level further classifies the level of a microorganism within a particular microorganism type (e.g., Genus, Family, Species, Subspecies etc.). The values are pre-determined and include:

- Kingdom
- Family
- Genus
- Species
- Subspecies
- Serotype
- Prion

5.3.4 Microorganism Name

The Microorganism Name provides the fully spelled out name of the microorganism as it is defined by the international standards (e.g., Staphylococcus aureus).

5.3.5 Alternative Names 1 and 2

Alternate name fields provide standardized or common fully spelled out names for microorganisms. These files facilitate searching for the microorganism codes since they improve the chance of finding records that have different common and scientific names. For example:

- "Angiostrongylus cantonesis" is "round worm"
- Alternate names are also used for archaic or obsolete names due to microorganism reclassification. For example, the official alternate name for "Blastoschizomyces capitatus is "Geotrichum capitatum"
- Certain types of parasites are given English translation. For example, the official English translation of "Ixodes scapularis" is "Deer Tick"

Note: Abbreviations of standard names should not be used as alternate names. For example, "*S. aureus*" should not be used as an alternate name for "*Staphylococcus aureus.*

5.3.6 Short name

A short name is the standard short form of a microorganism name. This is most commonly used for viruses. For example the short form for "Human herpesvirus 3" (alternate name "Varicella-zoster virus") is "VZV".

5.3.7 Source

The source identifies the Standards organization developing the naming system used to validate the microorganism name, type or taxonomic level.

5.3.8 External Link

An External Link provides a link to the URL of the standard organization used to validate a microorganism name, type or taxonomic level.

5.3.9 Effective Start Date

The effective date identifies the first date the record is “active” within the OLIS List of Microorganisms.

5.3.10 Effective End Date

The effective end date identifies the last date the record is “active” within the OLIS List of Microorganisms.

5.3.11 Change Note

The Change Note is used to provide detailed information on the reasons for modifying any elements within the record of the OLIS List of Microorganisms. This feature can be used for the purpose of tracking by users.

5.3.12 Comments

The comment data element is a free text field that allows for the recording of user defined information (e.g., to clarify why a specific microorganism is being used).

5.3.13 Reportable

This component is no longer used.

5.3.14 Reportable Context

This component is no longer used.

5.4 Reporting of the OLIS List of Microorganisms

When reporting the test results of bacterial cultures, an OLIS test result code and description (such as 626-2^Bacteria Identified) must be transmitted in OBX-3.1 and OBX.3.2 to indicate the type of results being transmitted. The data type must be specified in OBX-2 to indicate the results will be in Coded Entry (CE) format. In OBX-5, three parameters must be transmitted:

- -OBX-5.1 must include the M- or P-code for the microorganism
- OBX-5.2 must include the microorganism name related to the M- or P-code included in OBX-5.1
- OBX-5.3 must contain HL79905 (the table code number for the OLIS Test Results Nomenclature)

An example of a OBX segment for reporting a bacterial culture might include:

OBX|1|CE|626-2^ BACTERIA IDENTIFIED:PRID:PT:THRT:NOM:CULTURE| |
M00963^Streptococcus group A^HL79905|

It is strongly recommended that the most specific OLIS test result code be used to report a microorganism. For example OLIS Test Result code 14491-5 (“VIRUS IDENTIFIED”) is preferred over XON10312-7 (“INTERPRETATION MICRO”).

In cases where a laboratory is not able to report a specific microorganism code, the OLIS test result code XON10312-7 Interpretation Micro can be used. In this instance, the laboratory may supply a textual interpretation culture report. An example of a textual interpretation of an OBX segment used for a culture in this situation might include:

OBX|1|ST|XON10312-7^ INTERPRETATION.MICRO:IMP:PT:XXX:NAR | |
Branching Gram positive bacilli resembling Actinomyces species seen|

6.0 Nomenclature Maintenance

6.1 Background

The OLIS Nomenclature is continually being refined. The OLIS Nomenclature Maintenance Working Group consists of subject matter experts within the OLIS Program that are responsible for maintenance and publication of the OLIS Nomenclature. Organizations that have adopted the OLIS must modify and maintain their nomenclature in accordance with each newly released OLIS Nomenclature.

6.2 Guiding Principles

To make changes to the OLIS Nomenclature (test requests, test results, specimen (source) or microorganism codes), the OLIS Nomenclature Maintenance Working Group abides by the following principals:

- The OLIS Nomenclature uses the Pan-Canadian standards developed by CHI where possible
- The OLIS Nomenclature follows standards developed by LOINC® and Regenstrief Institute Inc., where possible
- The OLIS Nomenclature adopts codes which are general and inclusive for naming test requests, test results, specimens (sources), and microorganisms. Separate codes will not be created unless there is a clinical distinction justifying a distinct code
- Having disparate reference intervals for the test is not sufficient to justify using a different OLIS or LOINC code since reference intervals are reported along with the test results
- Separate test codes will not be created because of variations in the methodology unless there is clinical relevance or significant differences in reference intervals
- The OLIS Program will not delete codes from the OLIS repository once they have been promoted to the Production domain. When codes are no longer in use, they will be made inactive
- When a test code has relevance to a number of sites with a common community of interest, the OLIS Program will consult with laboratory representatives before introducing new test request, result, and specimen (source) or microorganism codes
- Test requests for a new or modified test request, result, specimen (source), or microorganism will be referred to a panel of clinical experts before being added to the OLIS repository

- Where a request for a new test request, result, specimen (source), or microorganism code affects more than one OLIS Adopter organization, it will be referred to a panel of subject matter experts from a community of interest for review and recommendations[2]
- If an OLIS Adopter has concerns about a refusal to add or modify a test request, result, specimen (source), or microorganism codes, they may submit their concerns in writing to the OLIS BSD accompanied by sufficient supporting information (e.g., articles from recognized scientific publications that support the request for reconsideration)
- A Change Request Form should be used to submit all requests for test request, test result, specimen (source), or microorganism code additions or modifications. If full details about the code request are not supplied, the OLIS Nomenclature Maintenance Working Group will consult the requester to clarify missing details
- When an XON code is created to report a test result, the code will be sent to Regenstrief Institute Inc. with a request to include it in the LOINC Nomenclature Standard

6.3 Process for Requesting New or Modifying Test Codes by Adopters

Laboratory test requests and test results within the OLIS Nomenclature are continually changing with the introduction of new testing methodologies. Adopters are permitted to request the addition of new codes or modification to existing codes to the OLIS Nomenclature. Figure 6-1 outlines the process and provides estimates for the duration of time for each step.

The process for requesting new codes is:

1. Complete a Change Request Form (refer to attached Form) to submit all test requests, test results, specimen (source), or microorganism code additions or modifications
2. Submit the form to the OLIS BSD
3. The OLIS BSD creates an entry for each request and submits the request to the OLIS Nomenclature Maintenance Working Group
4. The OLIS Nomenclature Maintenance Working Group reviews the change request form

[2] A Panel of Subject Matter Experts is a group of individuals from organizations that have adopted the OLIS and have subject matter expertise in a Clinical discipline.

a. If the OLIS Maintenance Working Group determines that there is an urgent need for adding a new laboratory test request, test result or test component that currently is not in the OLIS Nomenclature, the OLIS Nomenclature Maintenance Working Group will add the individual test to the OLIS Nomenclature within 24 hours with a Temporary status flag and promote it to OLIS. Individual test requests and test results will be available for immediate use by Adopters. This code is sent to a panel of experts before it is added to the Client Self Test (CST) environment for testing and validation.
    - If the panel of experts approves the use of the code, it is updated to the CST and Production environment and the temporary status of the code changes to "released" status
    - If the panel of experts rejects the addition of the new code, it is removed from the Production environment by changing the status to "retired-deleted", unless it is appealed by the requesting site.

b. If a test request, test result, specimen (source), or microorganism code is not required urgently, it will be considered for addition in the interim release. In this case, the OLIS Nomenclature Maintenance Working Group assesses and determines whether test codes should be modified or added in conjunction with a panel of experts.
    - If it is approved, it is added to the CST environment for testing before being promoted to the OLIS Production environment
    - If it is rejected, it is archived, unless it is appealed by the requesting site

5. On the approval of the Nomenclature Maintenance Working Group:
    - BSD updates the OLIS Mapping Tool with new nomenclature files and publishes the updated version of the OLIS Mapping Tool and the OLIS Nomenclature file on the OLIS Program Collaboration Portal and
    - BSD communicates the release of the updated OLIS Nomenclature to OLIS Adopters in timely and efficient manner *(*Refer to *Section 6.5)*
6. Recommendations for additions/changes to the LOINC Nomenclature Standard are sent to CHI for acceptance. The Nomenclature Maintenance Working Group manages the process for integration of new LOINC codes to the OLIS Nomenclature. This includes the publication of updated Nomenclature through the OLIS Program Collaboration Portal.

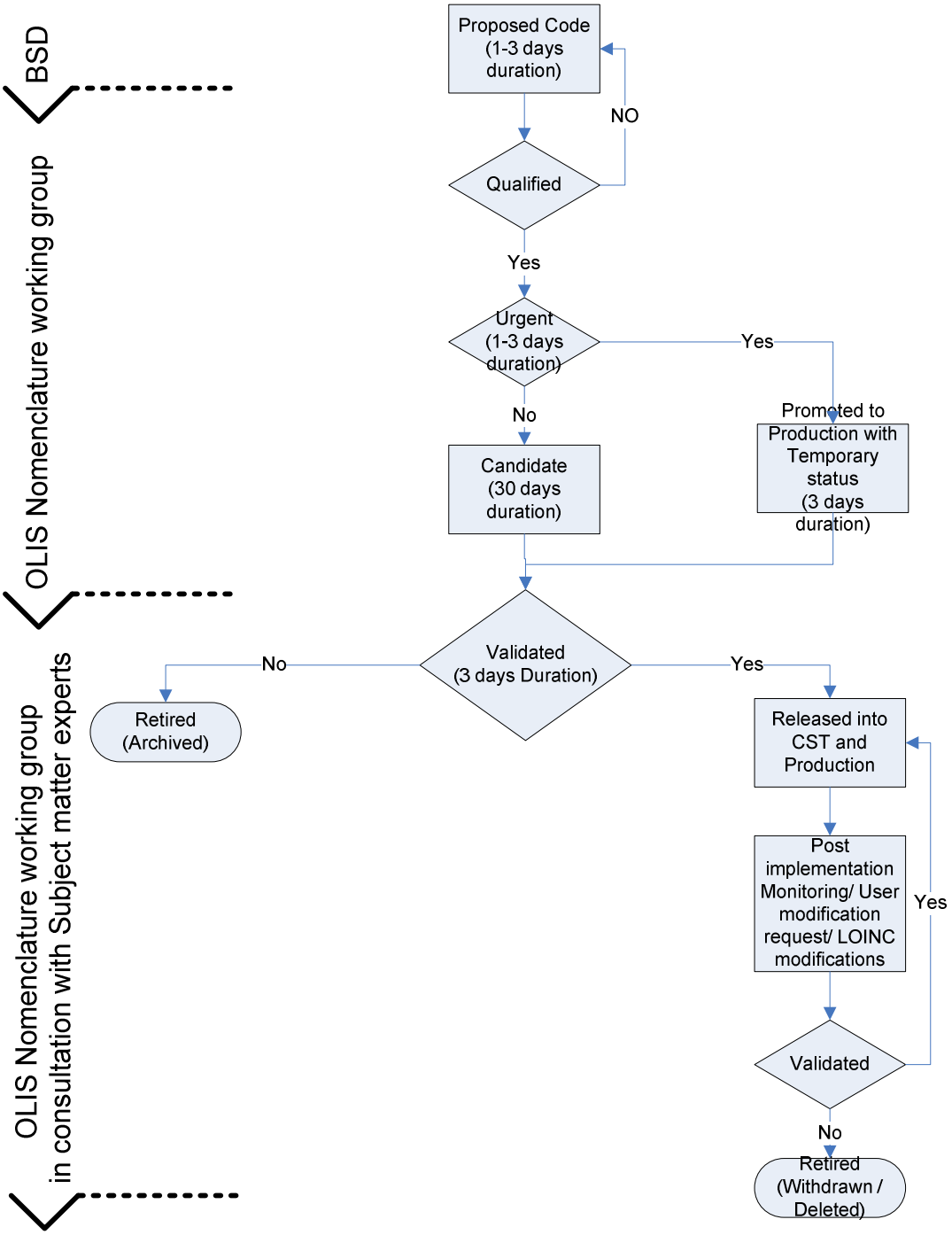

Figure 6-1: Code Request and Validation Workflow

6.4 Process for Adding or Modifying Test Codes by the OLIS Program

During the validation of an Adopter's nomenclature mapping, the OLIS Adoption Coordinator may request the addition and/or modification of test request, test result, specimen (source) and microorganism codes.

6.5 Releases

When changes are made to the OLIS Nomenclature, Adopters are notified through individual, interim and major Releases. OLIS Adopters are informed of all these releases through the OLIS Program Collaboration Portal and email. The OLIS Nomenclature is available to the Adopter in Microsoft Excel format. This section provides information on each release.

6.5.1 Individual Releases

Individual releases take place in situations where an Adopter has requested the addition of an urgent code (i.e., codes for H1N1). The process for addressing these requests is explained in *Section 6.3*.

6.5.2 Interim Releases

Interim releases take place in situations when changes requested to test codes or any test component is necessary but not urgent; and when an entire set of laboratory test codes from a laboratory discipline is added to the OLIS Nomenclature. These releases take place each month.

Adopters will be provided with two to three weeks to apply the changes to their local laboratory information system from the date of the Interim release. During this period, Adopters can keep submitting laboratory test information into OLIS using the previous version of the OLIS Nomenclature.

6.5.3 Major Releases

Major releases involve compiling all individual and interim releases that occurred since the last Major release. Major releases are also used to align the OLIS Nomenclature with national or international standards. The most significant part of any Major release is the application of LOINC updates, since the LOINC Nomenclature Standard is the underlying basis of the OLIS Test Results Nomenclature. While alignment with national and international standards is important, changes that impact the meaning of a system code previously used in the OLIS Nomenclature will be appealed by the OLIS Nomenclature Maintenance Working Group to CHI. These changes may or may not be adopted.

Major releases occur twice a year. The exact date of the release is determined by the OLIS Nomenclature Maintenance Working Group and is determined by the number of changes being proposed.

Adopters will be provided with two to three weeks to apply the changes from the Major release to their local laboratory information system from the date of the Major release. During this period, Adopters can keep submitting laboratory test information into OLIS using the previous version of the OLIS Nomenclature.

7.0 Glossary

Terms, Acronyms and Abbreviations	Definition
Adopter	A user of the Ontario Laboratories Information System.
American Standard Code for Information Interchange (ASCII)	A coding system for representing English characters as numbers, with each letter assigned a number from 0 to 127. For example, the ASCII code for uppercase M is ASCII 77. Most computers use ASCII codes to represent text, which makes it possible to transfer data from one computer to another.
Battery	A group of laboratory tests which are performed on the same specimen and one order is placed for the entire group of tests. A Battery is typically performed in a specific clinical specialty and using a common laboratory instrument (e.g., CBC).
Binary large object (BLOB)	In computer programming, the verb glob or globbing is used to refer to an instance of pattern matching behavior. [3] The noun "glob" is used to refer to a particular pattern (e.g., "use the glob *.log to match all those log files").
Business Service Desk (BSD)	A team within the OLIS Program that is the first line of contact for Adopters on issues relevant to operation and usage of OLIS. Email: OLIS.BusinessSupport@ehealthontario.on.ca
Canada Health Infoway (CHI)	Infoway is an independent not-for-profit corporation created by Canada's First Ministers in 2001 to foster and accelerate the development and adoption of electronic health record (EHR) systems with compatible standards and communications technologies. CHI works with the country's ten provinces and three territories to implement private, secure EHR systems, enabling best practices and successful projects in one region to be shared or replicated in other regions.
Change Request Form	An electronic form which is completed by an OLIS Adopter to request a new OLIS Nomenclature code (test request, test result, specimen (source) or microorganism code).
Client Self Test (CST) Environment	A computer server running the most current version of the OLIS software that can be used to develop and test LIS to OLIS interfaces or CMS to OLIS interfaces. The environment simulates the OLIS Production environment but only contains fictitious patient and practitioner data to safeguard patient confidentiality.
Clinical Management System (CMS)	A computer system used by practitioners to manage data related to their patients. This term has the same meaning as Electronic Medical Record (EMR).
Common Name	A name in general use within a laboratory community and is often contrasted with a scientific name. A common name is not necessarily a commonly used name, nor is it necessarily considered less correct than

[3] Wikipedia (http://en.wikipedia.org/wiki/Blob_(computing)).

Terms, Acronyms and Abbreviations	Definition
	a scientific name.
Component Name	The name of the analyte being measured.
Descriptive Name	A textual description which clearly describes a laboratory test.
Clinical Discipline (Modality)	A sub-specialty within the laboratory that is dedicated to performing groups of tests based on the area of science (discipline).
Duplicate codes	Two or more LIS codes that refer to the same test request or test result.
Effective Date	The first date the record is “active” within the OLIS Nomenclature.
Element	An atomic unit of data that has precise meaning or precise semantics.
End Date	The last date the record is “active” within the OLIS Nomenclature.
Extract	The publication of the local laboratory test request and local laboratory test result codes from the local LIS.
HL7 Message	A hierarchical structure associated with a trigger event. The HL7 standard defines trigger event as "an event in the real world of health care (that) creates the need for data to flow among systems".
Health Level Seven Standard (HL7)	A standard for the electronic data exchange of health care information. HL7 endeavours to standardize the format and protocol of the exchange of certain key sets of data among health care computer application systems, such as patient administration/registration, discharge, and requisitions for laboratory testing, results and clinical observations.
Hospital Information System (HIS)	A comprehensive, integrated information system designed to manage the administrative, financial and clinical aspects of a hospital.
Inactive Fag	A data element in the OLIS Nomenclature file which indicates whether the code is active (available for use) or inactive (no longer available for use).
Laboratory Information System (LIS)	A class of software which handles receiving, processing and storing information generated by laboratory testing processes. These systems often must interface with instruments and other information systems such as hospital information systems (HIS).
Laboratory Information System (LIS) codes	Codes used in a laboratory information system to define test request, specimen (source), test result and microorganism codes
Laboratory Service Provider	Is a facility that performs laboratory testing on specimens derived from humans for the purpose of providing information for the diagnosis, prevention, or the treatment of or impairment of disease, or for the assessment of health.
Laboratory Test	A laboratory test is a common term for laboratory test requests and laboratory test results. A laboratory test is a scientific analysis performed on a wide variety of specimens such as blood, urine, stool, body fluid, tissue, or from sources derived from a patient during their care or treatment (e.g., swabs, iv solutions, medication, aspirate or biopsies). Laboratory tests are used to determine physiological and biochemical states, such as disease, mineral content, drug effectiveness, and organ function. They are also used for diagnosis, monitoring, therapeutic drug monitoring, or genetic assessment of a patient.
Local Test Request Code	A test request code that resides in the Laboratory Information system (LIS), Clinical Management System (CMS) or Hospital Information

Terms, Acronyms and Abbreviations	Definition
	System (HIS).
Local Test Result Code	A test result code that resides in the Laboratory Information system (LIS), Clinical Management System (CMS) or Hospital Information System (HIS).
Logic Observation Identifier Names and Codes (LOINC®) Nomenclature Standard	A set of standard codes and universal nomenclature for identifying and encoding laboratory terms and clinical observations. The LOINC Nomenclature Standard has over 50,000 codes which provides a structured means of identifying and naming laboratory and medical tests or procedures. http://www.regenstrief.org/medinformatics/loinc/
Live System	Transmitting laboratory test requests and test results to the OLIS repository from a LIS to OLIS, or from a CMS to OLIS.
Local Laboratory Test Requests Dataset	A collection of information about test requests that a laboratory can perform. This list is also referred to in some laboratory information systems as a dictionary or data dictionary or data dictionary (since it defines the test requests that can be requested).
Local Laboratory Test Results Dataset	A collection of information about test results that a laboratory can report. This list is also referred to in some laboratory information systems as a dictionary or data dictionary (since it defines the test results that can be requested).
Mapping	The process of matching an OLIS test code and description to an organization's local test code and description.
Metadata	Defined as data about data. Metadata is a concept that applies mainly to electronically archived or presented data and is used to describe the a) definition, b) structure and c) administration of data files with all contents in context to ease the use of the captured and archived data for further use. For example, a web page may include metadata specifying what language it is written in, what tools were used to create it, where to go for more on the subject and so on. Attributes are the assigned qualities for specific elements of the data.
Mnemonic	Is a mind memory and/or learning aid. Commonly, mnemonics are verbal—such as a very short poem or a special word used to help a person remember something—but may be visual, kinesthetic or auditory. Mnemonics rely on associations between easy-to-remember constructs which can be related back to the data that is to be remembered.
Observation	The result of something seen or noted.
Ontario Laboratories Information System (OLIS)	An integrated, province-wide, information and order fulfillment system that allows for the electronic exchange of laboratory test information between authorized practitioners, specimen collection centres and laboratories.
OLIS Collaboration Portal	An area of the eHealth Ontario portal that provides information and tools to registered OLIS users.
OLIS List of Microorganisms	Describes names and unique identifier codes for medically significant bacteria, fungi, and viruses. It is used to code a specific microorganism as the value or result of the culture when a code from the OLIS Results Nomenclature such as "microorganism or agent identified" is used.

Terms, Acronyms and Abbreviations	Definition
OLIS Nomenclature	A naming schema which provides an unambiguous and consistent system of names, unique codes and related information which a laboratory information system, hospital information system or clinical management system uses to exchange data with OLIS. The OLIS Nomenclature includes the OLIS Test Requests and Test Results Nomenclature.
OLIS Nomenclature Maintenance Working Group	Subject matter experts within the OLIS Program who are responsible for maintenance of the OLIS Nomenclature.
OLIS Program	A division within eHealth Ontario responsible for the delivery of OLIS.
OLIS Program Coordinator	An individual from the OLIS Program responsible for liaising and supporting OLIS Adopters during the development and implementation of their LIS to OLIS interface.
OLIS Interface Specification	A technical document outlining the requirements that must be followed when developing an interface between a laboratory information system, hospital information system or clinical management system and the OLIS. The current OLIS Interface Specification is Version 1.07 (September 2010).
OLIS Test Requests Nomenclature	A naming schema used within OLIS to uniquely identify and describe test requests.
OLIS Test Results Nomenclature	A naming schema used within OLIS to uniquely identify and describe test results and observations.
OLIS Web Viewer	Software that has been developed for eHealth Ontario to allow queries to be submitted to the OLIS repository and to display laboratory test results returned by those queries.
Order (Orderable)	A collective term used to refer to one or more test requests.
Pan-Canadian Nomenclature Standard	A naming schema proposed by CHI for identifying and reporting laboratory test request and test results. This naming schema is based on the HL7 version 3.0 Standard and the LOINC Nomenclature Standard and takes into consideration Ontario and British Columbia's reporting requirements for laboratory test data.
Panel	A common group of test requests and test results that facilitate ordering and reporting.
Practitioner	OLIS recognizes four types of practitioners (physicians, dentists, nurse practitioners and midwives) that are authorized to order medical laboratory tests.
Production System	The final version of a particular product in which the release is considered to be very stable and relatively bug-free with a quality suitable for wide distribution and use by end users. It is sometimes referred to as the LIVE system.
Production Environment	A suite of computer servers running OLIS software which receive, store and respond to queries. This environment contains copies of patient test requests and test results including confidential personal health information and practitioner information.
Profile	A group of laboratory tests which are performed on two or more specimens and can belong to a specific clinical specialty or different clinical specialties.
Record	A row in database table.
Regenstrief Institute Inc.	Provides a Windows-based mapping utility called the Regenstrief

Terms, Acronyms and Abbreviations	Definition
	LOINC Mapping Assistant (RELMA)® to facilitate searches through the LOINC Nomenclature Standard and to assist mapping of local codes to LOINC codes.
Retired codes	An OLIS test request or test result code that is no longer available to submit new laboratory test request or result codes to OLIS.
Schedule of Benefits	A listing of the physician services that are covered by the Ontario Health Insurance Plan. For laboratories there is a separate schedule which lists the insured laboratory procedures.
Specialty (Sub-type)	A branch of medical laboratory science.
Specimen (Source)	Allows for test requests to be differentiated by the specimen that was used for the analysis (e.g., blood, urine, cerebrospinal fluid).
Specimen (Source) File	A specimen list from HL7 version 2.5 Table 0070.
Test	A medical procedure or analysis performed to detect, diagnose, or evaluate disease, disease processes and susceptibility.
Test Request	A request for a laboratory test or medical procedure that is generated by a licences health care provider.
Test Result	The results of a laboratory test or medical procedure that is generated in response to a test request.
Testing System	A computer environment which contains either the current version or an unreleased version of LIS software and fictitious patient information. This system is used for development and training purposes.
XCA Code	A prefix for Canadian specific codes in OLIS Results Nomenclature.
XON Code	A prefix for Ontario specific codes in OLIS Results Nomenclature.

8.0 Appendices

8.1 Appendix A: OLIS Test Request Nomenclature Table Excerpt

OLIS Test Request Code	Test Request Name	Request Alternate Name 1	Test Request Category	Test Request sub-cat	Workflow Status Indicator	Validation Status Indicator
TR10000-8	11-Deoxycortisol		Chem	Endocrine	RELEASED	ACTIVE
TR10007-3	17-Hydroxycorticosteroids		Chem	Endocrine	RELEASED	ACTIVE
TR10019-8	17-Hydroxyprogesterone		Chem	Endocrine	RELEASED	ACTIVE
TR10033-9	17-Ketogenic Steroids		Chem	Endocrine	RELEASED	ACTIVE
TR10044-6	17-Ketosteroids		Chem	Endocrine	RELEASED	ACTIVE
TR10055-2	17-Ketosteroids Fractionated		Chem	Endocrine	RELEASED	ACTIVE
TR10066-9	5-Flurocytosine		Chem	Metabolism	RELEASED	ACTIVE
TR10078-4	5-Hydroxyindoleacetate	5HIAA	Chem	Endocrine	RELEASED	ACTIVE
TR10089-1	5-Hydroxyindoleacetate Screen	5HIAA Screen	Chem	Endocrine	RELEASED	ACTIVE
TR10100-6	5-Nucleotidase		Chem	Metabolism	RELEASED	ACTIVE
TR10111-3	7-Dehydrocholesterol		Chem	Nutrition	RELEASED	ACTIVE
TR10683-1	Acanthamoeba Detection		Micro		RELEASED	ACTIVE
TR10927-2	Acarus siro	Storage mite	Allergen	Mites	RELEASED	ACTIVE
TR10122-0	Acetaminophen		Chem	Drug/Tox	RELEASED	ACTIVE
TR10137-8	Acetone		Chem	Metabolism	RELEASED	ACTIVE
TR10139-4	Acetone Screen		Chem	Metabolism	RELEASED	ACTIVE
TR10621-1	Acetylcholine Receptor Antibody	ACR	Immuno	Autoantibody	RELEASED	ACTIVE
TR10001-6	Acetylcholinesterase	Cholinesterase True	Chem	Metabolism	RELEASED	ACTIVE
TR10002-4	Acid Phosphatase	ACP	Chem	Enzyme	RELEASED	ACTIVE
TR10003-2	Acid Phosphatase Prostatic	PAP	Chem	Enzyme	RELEASED	ACTIVE

8.2 Appendix B: Test Result Nomenclature Table Excerpt

LOINC Code	LOINC Component Name	LOINC Property	Units	LOINC Time	LOINC System	LOINC Scale	LOINC Method	LOINC Short Name	LOINC Fully Specified Name
10332-5	Cortisol^pre 250 ug corticotropin IM	MCnc	ug/dL	Pt	Ser/Plas	Qn		Cortis pre 250 ug ACTH IM SerPl-mCnc	Cortisol^pre 250 ug corticotropin IM:MCnc:Pt:Ser/Plas:Qn
10333-3	Appearance	Aper		Pt	CSF	Nom		Appearance CSF	APPEARANCE:APER:PT:CSF:NOM
10334-1	Cancer Ag 125	ACnc	u/mL	Pt	Ser/Plas	Qn		Cancer Ag125 SerPl-aCnc	CANCER AG 125:ACNC:PT:SER/PLAS:QN
10335-8	Color	Type		Pt	CSF	Nom		Color CSF	COLOR:TYPE:PT:CSF:NOM
10336-6	Gonadotropin peptide	MCnc		Pt	Urine	Qn		GP Ur-mCnc	GONADOTROPIN PEPTIDE:MCNC:PT:URINE:QN
10338-2	Barbiturates	MCnc	mg/dL	Pt	Ser/Plas	Qn		Barbiturates SerPl-mCnc	Barbiturates:MCnc:Pt:Ser/Plas:Qn
10339-0	Fluoxetine+Norfluoxetine	MCnc	ng/mL	Pt	Ser/Plas	Qn		Fluoxetine+Nor SerPl-mCnc	Fluoxetine+Norfluoxetine:MCnc:Pt:Ser/Plas:Qn
10340-8	Molindone	MCnc		Pt	Ser/Plas	Qn		Molindone SerPl-mCnc	MOLINDONE:MCNC:PT:SER/PLAS:QN
10341-6	Norpropoxyphene	MCnc		Pt	Ser/Plas	Qn		Norpropoxyph SerPl-mCnc	NORPROPOXYPHENE:MCNC:PT:SER/PLAS:QN
10342-4	Sulfamethoxazole	MCnc	mcg/mL ; ug/mL	Pt	Ser/Plas	Qn		Sulfamethoxazole SerPl-mCnc	Sulfamethoxazole:MCnc:Pt:Ser/Plas:Qn
11124-5	Pronormoblasts/100 cells	NFr	%	Pt	Bone mar	Qn	Microscopy	Pronormoblasts Fr Mar Micro	Pronormoblasts/100 cells:NFr:Pt:Bone mar:Qn:Microscopy
10346-5	Hemoglobin A	ACnc		Pt	Bld	Qn	Electrophoresis	Hgb A Bld Elph-aCnc	Hemoglobin A:ACnc:Pt:Bld:Qn:Electrophoresis

8.3 Appendix C: OLIS Specimen Source Table Excerpt

Value	Description
24H	Urine 24 Hour
ABS	Abscess
AMN	Amniotic fluid
ANGI	Catheter Tip, Angio
ANTW	Lavage, Antral
ARTC	Catheter Tip, Arterial
ASC	Ascitic Fluid
24H	Urine 24 Hour
ASP	Aspirate
AUGS	Auger Suction
AUTP	Autopsy
AX	Axilla
BBL	Blood bag
BC	Buffy Coat
BDY	Whole body
BIFL	Bile fluid
BLD	Whole blood
BLDA	Blood arterial
BLDC	Blood capillary
BLDCO	Cord blood
BLDCOA	Cord blood arterial
BLDCOV	Cord blood venous
BLDV	Blood venous
BLIST	Blister
BON	Bone
BPH	Basophiles
BPU	Blood product unit
BRN	Burn
BRO	Bronchial

8.4 Appendix D: OLIS List of Microorganisms Table Excerpt

OLIS Microorganism code	Microorganism Type	Taxonomic level	Microorganism Name	Alternative Name 1	Short Name
M00002	Virus	Species	Adeno-associated virus 1		AAV-1
M00003	Virus	Family	Adenoviridae	Adenovirus	
M00004	Virus	Species	African horse sickness virus		AHSV
M00005	Virus	Species	AG8O-663 virus		
M00006	Virus	Species	Anopheles A virus		ANAV
M00009	Virus	Species	Aura virus		AURAV
M00010	Virus	Species	Avian influenza virus		AIV
M00002	Virus	Species	Adeno-associated virus 1		AAV-1
M00019	Virus	Family	Bunyaviridae		
M00020	Virus	Species	Bwamba virus		BWAV
M00021	Virus	Family	Caliciviridae		
M00190	Subviral	Prion	Scrapie	spongiform encephalopathy	Scrapie prion
M00244	Bacteria	Species	Actinomyces pyogenes		
M00246	Bacteria	Genus	Actinomyces sp.		
M00247	Bacteria	Species	Actinomyces turicensis		
M00248	Bacteria	Species	Actinomyces viscosus		
M00249	Bacteria	Species	Aerococcus sanguicola	Aerococcus sanguicola	
M00250	Bacteria	Genus	Aerococcus sp.		
P00306	Bacteria	Phenotype	Escherichia coli O2:H7		
P00307	Bacteria	Phenotype	Escherichia coli O75:HNM		
P00308	Parasite	Phenotype	Fasciola hepatica ova		
P00309	Fungus	Phenotype	Filamentous fungus		
P00310	Ectoparasite	Phenotype	Flesh fly		
P00311	Parasite	Phenotype	Free living protozoan		