DESIGNING AN XML SCHEMA REPRESENTATION

FOR TERMINOLOGICAL MAPPING

The Minimal Standard Terminology and SNOMED Clinical Terms

by

Kristel Hackett Dobratz

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Kristel Hackett Dobratz

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has been approved

Judith R. Logan, MD MS

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ABSTRACT

Medical terminologies and vocabularies describing the semantics of medical knowledge aim to improve communication of ideas between clinicians and researchers. Often more than one organization will produce terminologies that cover the same conceptual domain. This complicates the goal of communicating ideas with a common understanding of the intended meaning. In situations like these, it is important to define the interface between two overlapping medical vocabularies to avoid semantic drift when converting between terminologies.

This paper describes a method for defining the interface between overlapping terminologies using XML. The method is demonstrated using two overlapping standards in common usage, the Minimal Standard Terminology for Digestive Endoscopy (MST) and SNOMED Clinical Terms (SNOMED CT). This provides the foundation for a full mapping between these two domains and illustrates how we can achieve mappings like this with many other medical terminologies.

1 Introduction

The difference between the almost right word and the right word is really a large matter—'tis the difference between the lightning-bug and the lightning.
- Mark Twain

Using words to communicate our thoughts and ideas can bring either clarity or confusion depending on both the content of the message and the context in which the message is received. When we represent clinical ideas and information with natural language, the almost right word or phrase can change the entire message. Imagine a child telling a doctor that she was bit by lightning. Was she bit by a harmless lightning bug or was she hit by a lightning bolt? If the patient herself delivered the message, the doctor may be able to understand the meaning from the rest of the context and other signs. But if the words were written in a note somewhere with no other information, it could be nearly impossible to tell.

Describing the syntax and semantics of medical knowledge is important to improve the communication of ideas between different clinicians and researchers. Defining these concepts and making them available in the form of standards facilitates exchange of ideas. There are many organizations involved in developing or proposing standards for medical vocabulary. These organizations present their knowledge in the form of dictionaries and thesauri to preserve meaning and taxonomies and ontologies to record structural relationships between concepts. Often more than one organization will

produce terminologies that cover the same conceptual domain. This complicates the goal of communicating ideas with a common understanding of the intended meaning. In situations like these, it is important to define the interface between two overlapping medical vocabularies to avoid semantic drift when converting between terminologies.

This paper describes a method for defining the interface between overlapping terminologies using XML. An XML schema was created that defines the format of an XML document that contains mappings from one vocabulary to another. This schema was used to create an XML document that demonstrates the mapping ability using two overlapping standards in common usage, the Minimal Standard Terminology for Digestive Endoscopy (MST) and SNOMED Clinical Terms (SNOMED CT). This will provide the foundation for a full mapping between these two domains and illustrate how we can achieve mappings like this with many other medical terminologies.

2 Vocabularies and Mapping

2.1 Minimal Standard Terminology

The Minimal Standard Terminology is a list of standard terms used to describe reasons for examination, findings, diagnoses, procedures and anatomical sites listed in gastrointestinal endoscopy reports. It was not designed to be exhaustive, but the "minimal standard" of terms in the field of gastrointestinal endoscopy. These terms should be encountered in about 1 out of every 100 patients examined [4].

Terms in the Minimal Standard Terminology are organized hierarchically. At the top of this hierarchy, terms are divided into the following major categories, called titles.

- Complication
- Detail
- Diagnosis
- Endoscopic Procedure
- Finding
- Procedure
- Reason
- Site

Within these title groupings are narrower categories called heads or headings. Specific findings, procedures or sites are called terms, which can be qualified with more detail using attributes and values. In the case of anatomic sites, modifiers are used instead of attribute/value pairs to further refine the meaning. These modifiers are sometimes called attributes, though they have no corresponding value. The full MST hierarchy for esophageal findings is shown in Appendix G, a small part of which is shown in Table 1.

Table 1: Example of MST Esophageal Findings

HEADINGS	TERMS	ATTRIBUTES	ATTRIBUTE VALUES	SITES
Normal	**Normal**	Z line	Distance in cm	cm from incisors
Lumen				
	Dilated			Site(s)
	Stenosis	Appearance	Extrinsic	cm from incisors
			Benign intrinsic	
			Malignant intrinsic	

Adapted from: Delvaux M, Korman LY. Digestive Endoscopy: Minimal Standard Terminology. Version 2.0h. March 9, 1999.

Some representations of the MST, such as the UMLS version of the Minimal Standard Terminology (MTHMST), do not preserve the hierarchical structure and instead flatten the MST hierarchy by combining each heading with each of its terms, attributes and qualifiers. The MTHMST contains every possible combination of heading, term, attribute, value and site from the MST. Table 2 shows the MTHMST representation of the MST terms shown in the previous table. The full list of MTHMST representation of MST terms is shown in Appendix H.

Table 2: Example of Pre-Coordinated MTHMST Esophageal Findings

UMLS CUI	NAME
C0577006	Esophageal finding
C0577015	Normal esophagus
C0940013	Normal Z line
C0940014	Distance in cm of the Z line from incisors
C0940015	Esophageal lumen lesion
C0940016	Dilated esophageal lumen
C0014866	Esophageal stenosis
C0940017	Appearance of esophageal stenosis
C0940018	Extrinsic appearance of esophageal stenosis
C0940019	Benign intrinsic appearance of esophageal stenosis
C0940020	Malignant intrinsic appearance of esophageal stenosis
C0940021	Length in cm of esophageal stenosis

Adapted from: National Library of Medicine. UMLS Knowledge Sources 2006AB. May 2006.

2.2 SNOMED Clinical Terms

SNOMED Clinical Terms is a clinical terminology with an intentionally broad scope covering the entire healthcare domain [3]. The coverage can be quite deep in some areas of content while remaining relatively shallow in others. The basic components of SNOMED CT are called concepts, each of which is assigned a numeric Concept Unique Identifier (CUI). One SNOMED CT concept may have several SNOMED CT terms, also known as descriptions, which are human-readable names. The main hierarchical branches in SNOMED CT include the following [3]:

- Body structure
- Clinical finding
- Environments/geographical locations
- Event
- Linkage concept
- Observable entity
- Organism
- Pharmaceutical/biologic product
- Physical force
- Physical object
- Procedure
- Qualifier value
- Record artifact
- Situation with explicit context
- Social context
- Staging and scales
- Substance
- Specimen
- Special concept

Concepts in SNOMED CT must have at least one IS_A relationship that links it to a parent. This IS_A relationship forms a hierarchy that links all SNOMED CT concepts back to the root concept named "SNOMED CT Concept." In addition to these IS_A relationships, concepts in SNOMED CT are also defined by over 50 other attributes [3]. Each branch of the hierarchy limits both the defining attributes and the concepts that can be used as values. The defining attribute FINDING SITE is one of the allowed attributes for defining concepts in the clinical finding branch. The permissible values for FINDING SITE are restricted to two branches, "Anatomical structure (body structure" and "Acquired body structure". So, a concept like "Lung disease (disorder)" could be defined by a relationship of FINDING SITE with the value "Lung structure (body

structure)". In this way, it is possible to group several existing SNOMED CT concepts to create a new meaning. If these concepts are grouped together and assigned a SNOMED CT CUI, they are said to be pre-coordinated. Pre-coordinated concepts are a convenience so that commonly used meanings do not have to be reconstructed every time they are used. Since SNOMED CT does not have a CUI for every possible meaning, concepts are post-coordinated, by users, using the same relationships as pre-coordinated concept definitions. These post-coordinated concepts can be represented many ways, but they must be able to be transformed into a SNOMED CT definition so that it can be tested for equivalence with existing SNOMED CT concepts.

2.3 Vocabulary Maps

The scope of SNOMED CT overlaps many other healthcare terminologies including the Minimal Standard Terminology. Because SNOMED CT is so broad and widely recognized and because the MST is so specialized and universally used within gastrointestinal endoscopy, it is important to create mappings by finding or defining equivalent concepts in order to facilitate exchange and reuse of information without losing the original semantics. This problem is not unique to the MST and SNOMED CT. This paper will demonstrate, using the MST and SNOMED CT, how mappings can be achieved between any vocabularies.

A vocabulary map is a group that contains a unit of meaning (a term or concept) from a source vocabulary with a representation from a target vocabulary with the same meaning. The ideal representation is always one term or concept that is exactly equivalent to the original concept. If an exact match is not found, then the concept

should be represented with one or more parent concepts with or without additional refinements. Care should be taken so that the constructed representation satisfies any modeling or post-coordinating constraints in the target vocabulary. In the case of SNOMED CT, the representation must be semantically equivalent to a SNOMED CT definition [2]. Satisfying these constraints is important so that the mapped information will be meaningful.

In general, a map should contain the following information in some form. It should have both a code and a name (for human readability) of the source concept or term. If an exact match is found, then the map should have a code and a name for the concept or term in the target vocabulary. For example, the MTHMST term "Upper third of esophagus" can be mapped to the SNOMED CT concept code 19000002, with the name "Structure of upper third of esophagus (body structure)". If an exact match is not found, then the map should contain a code and a name for at least one parent concept from the target vocabulary. These parent concepts should be as granular (specific) as possible while still preserving the intended meaning. The MTHMST term "Esophageal anastomosis (site)" does not have an exact match in SNOMED CT, but a map can be made to two SNOMED CT parents:

- 32849002 "Esophageal structure (body structure)"
- 41796003 "Anastomosis (morphologic abnormality)"

In addition to parent-child (is-a) relationships, other qualifiers may be used to refine the meaning. Each qualifier contains at least a code and a name for the modifier or value of an attribute. The qualifier may also contain a code and a name for the role or attribute that is being qualified. For example, the MTHMST term "Fluid aspiration" can be mapped indirectly to a parent SNOMED CT concept 14766002, "Aspiration

(procedure)", with a SNOMED CT qualifier of 33463005, "Liquid substance (substance)", having the role of 363701004, "Direct substance (attribute)". Information about how concepts in the target vocabulary are constructed or defined will inform the mapping process.

2.4 Mapping Process

The initial step in any mapping process is to get access to the vocabularies to be mapped. In this project, both the MTHMST and SNOMED CT are available as part of the Unified Medical Language System (UMLS). These code sets are easily retrieved from a UMLS installation with the following SQL statements. The value for the SAB field will depend on the version of UMLS.

- select CUI, CODE, STR from MRCONSO where SAB='MTHMST2001'
- select CUI, CODE, STR from MRCONSO where SAB='SNOMEDCT_2006_01_31'

The MTHMST is a flat version of the MST. The hierarchical nature of the original MST has an important role in maintaining consistency during the mapping process so the MST documentation is also vital to the mapping activity. The MST is a relatively small terminology, so the UMLS tables and the MST documentation were sufficient tools for browsing.

With a vocabulary as big as SNOMED CT, it is important to be able to have a tool with search and query mechanism to browse terms. This ability aids any hand mapping that must be done when an appropriate term cannot be found automatically. Tools used to browse SNOMED CT include the CLUE Browser, the UMLS database tables and the National Cancer Institute's (NCI) Terminology Browser [5].

Because every term entered into the UMLS must first be mapped to a UMLS concept, if an MTHMST term and SNOMED term are attached to the same UMLS CUI, then they are probably very close in meaning, if not identical. A simple search to find MTHMST and SNOMED terms with matching UMLS CUIs results in over 500 SNOMED matches for 328 MTHMST terms. The reason for getting more than one SNOMED term for every MTHMST term is because often more than one SNOMED term is attached to the same UMLS CUI. Based on the UMLS CUI matching, the MTHMST term "Upper gastrointestinal tract" matches the SNOMED codes for "Upper digestive tract structure (body structure)" and "Upper gastrointestinal tract structure (body structure)". Either SNOMED term may be a good match. In another example, however, the MTHMST term for "Stomach" matches the SNOMED codes for "Stomach structure (body structure)" and "Gastric (qualifier value)". Stomach structure is a good match, while the gastric qualifier, though related, has a clearly different meaning. The results of UMLS CUI matches must still be reviewed by hand to determine the best match, but it does provide a starting point for approximately 20% of MTHMST terms. The other 80% of the MTHMST terms do not match any SNOMED terms using the UMLS CUI.

The rest of the mapping for this project was done manually by searching for terms in the UMLS database or the NCI Terminology Browser. Wildcard searches in the database such as "%middle third of esophagus%" will find the SNOMED term "Structure of middle third of esophagus (body structure)". The NCI Terminology Browser was perhaps the most useful tool for mapping by hand. Searching for the finding "esophageal ulcer" only found one SNOMED result, "Esophageal ulcer due to aspirin (disorder),"

which is too specific. Clicking on the concept details button reveals some defining

relationships that could be used to create an indirect map if an exact match is not found.

- Finding site (attribute):   Esophageal structure (body structure)
- Associated morphology (attribute):   Ulcer (morphologic abnormality)

However, since the term, "Esophageal ulcer due to aspirin (disorder)" is too specific, it is

easy to find an appropriate ancestor, "Ulcer of esophagus (disorder)," using the tree

browser.

Each time a good match is found, the CUI and name for the SNOMED term that

is an exact match and any qualifiers are recorded in an xml representation so that

mapping information can be saved and used by applications that translate between MST

and SNOMED CT terms. The following section illustrates a generic xml representation

for vocabulary maps and an extended version that improves readability for maps

involving MST and SNOMED CT. Similar extensions can be made for mapping any

vocabularies, but the original format is a fully functional mapping representation on its

own.

3 An XML Representation for Mapping

3.1 Generic Schema

The generic mapping schema has four top-level elements defined in the MAP.xsd

document (Appendix A): mapping, map, concept and qualifier.

```
<xs:element name="mapping" type="map:mappingType"/>
<xs:element name="map" type="map:mapType" />
<xs:element name="concept" type="map:conceptType"/>
<xs:element name="qualifier" type="map:qualifierType"/>
```

These definitions allow xml elements (tags) in the instance document with the same

name: <mapping>, <map>, <concept> and <qualifier>. The contents of these elements

are defined in the schema by their types: mappingType, mapType, conceptType and

qualifierType.

3.1.1 Mapping

The <mapping> element of type mappingType contains a sequence of zero to

many <map> elements.

```
<xs:complexType name="mappingType">
  <xs:sequence>
    <xs:element ref="map:map" minOccurs="0" maxOccurs="unbounded" />
  </xs:sequence>
</xs:complexType>
```

3.1.2 Map

The <map> element with type mapType contains a sequence of zero to many <concept> elements.

```
<xs:complexType name="mapType">
  <xs:sequence>
    <xs:element ref="map:concept" minOccurs="0" maxOccurs="unbounded"/>
  </xs:sequence>
</xs:complexType>
```

3.1.3 Concept

The <concept> element with type conceptType has three optional string attributes: code, name and system. The anyAttribute line allows additional attributes from any namespace. In addition to the attributes, <concept> also contains a group of elements called the qualifierGroup.

```
<xs:complexType name="conceptType">
  <xs:group ref="map:qualifierGroup"/>
  <xs:attribute name="code" type="xs:string" use="optional"/>
  <xs:attribute name="name" type="xs:string" use="optional"/>
  <xs:attribute name="system" type="xs:string" use="optional"/>
  <xs:anyAttribute namespace="##any" />
</xs:complexType>
```

3.1.4 Qualifier

The qualifierGroup is a sequence of zero to many <qualifier> elements. These elements are defined by qualifierType, which has two required string attributes (code and name) and three optional string attributes (roleCode, roleName and system). In addition, <qualifier> elements may contain additional qualifiers as defined by the reference to the qualifierGroup.

```
<xs:group name="qualifierGroup">
  <xs:sequence>
```

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```
        <xs:element ref="map:qualifier" minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
</xs:group>

<xs:complexType name="qualifierType">
    <xs:group ref="map:qualifierGroup"/>
    <xs:attribute name="code" type="xs:string" use="required"/>
    <xs:attribute name="name" type="xs:string" use="required"/>
    <xs:attribute name="roleCode" type="xs:string" use="optional"/>
    <xs:attribute name="roleName" type="xs:string" use="optional"/>
    <xs:attribute name="system" type="xs:string" use="optional"/>
</xs:complexType>
```

The following is an example of the generic schema described, above. The first map is an exact match and the second map contains two qualifiers. At least one of these qualifiers should be a parent. The example shows an MST / SNOMED CT mapping (with the UMLS version of the MST). There is an exact match for the MST term "Esophagus", while the MST term "Esophageal anastomosis" is defined using two qualifiers with the "Is a" role.

```
<mapping>
  <map>
    <concept code="C0014876" name="Esophagus" system="mthmst" />
    <concept code="32849002" name="Esophageal structure (body structure)"
                                          system="snomed" />
  </map>
  <map>
    <concept code="C0940040" name="Esophageal anastomosis (site)" system="mthmst" />
    <concept system="snomed">
      <qualifier code="32849002" name="Esophageal structure (body structure)"
                              roleCode="116680003" roleName="Is a (attribute)" />
      <qualifier code="41796003" name="Anastomosis (morphologic abnormality)"
                              roleCode="116680003" roleName="Is a (attribute)" />
    </concept>
  </map>
</mapping>
```

3.2   Extended Schema

A refinement of MAP.xsd, the MST-SNO-MAP.xsd (Appendix B) extends the MAP.xsd schema specifically for maps between the MTHMST and SNOMED CT. The extension makes constant the values of some attributes so that they need not be displayed over and over in the instance document. This saves space, reduces potential errors and

makes the instance document more human readable. The MST-SNO-MAP.xsd schema

defines an <isa> and a <partof> element that can be substituted for the <qualifier>

element defined in the generic MAP.xsd schema. These special qualifiers have the

system fixed to SNOMED CT and the roleCode and roleName fixed to the SNOMED CT

attributes for isa and partof relationships. The MST-SNO-MAP.xsd schema also defines

an <mthmst> and <snomed> element that can be substituted for the generic <concept>

element. These have the system name fixed so that it does not need to be repeated in the

instance document. The example substitution group (for the isa qualifier) is shown,

below.

```
<xs:element name="isa" substitutionGroup="map:qualifier">
  <xs:complexType>
    <xs:complexContent>
      <xs:restriction base="map:qualifierType">
        <xs:group ref="map:qualifierGroup"/>
        <xs:attribute name="code" type="xs:string" use="required"/>
        <xs:attribute name="name" type="xs:string" use="required"/>
        <xs:attribute name="roleCode" type="xs:string" fixed="116680003"/>
        <xs:attribute name="roleName" type="xs:string" fixed="Is a (attribute)"/>
        <xs:attribute name="system" type="xs:string" fixed="snomed"/>
      </xs:restriction>
    </xs:complexContent>
  </xs:complexType>
</xs:element>
```

The following is an example of the MST - SNOMED CT specific schema, described

above. It follows all the same structure as the generic mapping document, but some of

the xml attributes have default values, which do not need to be displayed in the xml

instance document, and the names of some of the xml elements are substituted. The same

concepts in the generic example are shown using the extended schema.

```
<mapping>
  <map>
    <mthmst code="C0014876" name="Esophagus"/>
    <snomed code="32849002" name="Esophageal structure (body structure)"/>
  </map>
  <map>
    <mthmst code="C0940040" name="Esophageal anastomosis (site)"/>
    <snomed>
```

```
            <isa code="32849002" name="Esophageal structure (body structure)"/>
            <isa code="41796003" name="Anastomosis (morphologic abnormality)"/>
        </snomed>
    </map>
</mapping>
```

The following example shows a mapping of two MTHMST procedures. The first is a
direct map for "Diagnostic procedure" and the second is an indirect map for "Fluid
aspiration." The indirect map shows the use of both the extended schema with the <isa>
qualifier along with the generic qualifiers to refine the method and substance of the
procedure.

```
<mapping>
    <map>
        <mthmst code="C0430022" name="Diagnostic procedure"/>
        <snomed code="103693007" name="Diagnostic procedure (procedure)"/>
    </map>
    <map>
        <mthmst code="C0941215" name="Fluid aspiration"/>
        <snomed>
            <isa code="14766002" name="Aspiration (procedure)"/>
                <qualifier roleCode="260686004" roleName="Method (attribute)"
                        code="129316008" name="Aspiration - action (qualifier value)"/>
                <qualifier roleCode="363701004" roleName="Direct substance (attribute)
                        code="33463005" name="Liquid substance (substance)"/>
        </snomed>
    </map>
</mapping>
```

An example from the findings axis follows. The MST term "Esophageal finding" has a
direct map to "Finding of esophagus (finding)" while "Clot in the esophagus" is
represented by qualifying the "Finding of esophagus (finding)" term.

```
<mapping>
    <map>
        <mthmst code="C0940012" name="Esophageal finding"/>
        <snomed code="300284004" name="Finding of esophagus (finding)"/>
    </map>
    <map>
        <mthmst code=" C0941145" name="Clot in the esophagus"/>
        <snomed>
            <isa code="300284004" name="Finding of esophagus (finding)"/>
                <qualifier roleCode="116676008" roleName="Associated morphology (attribute)"
                        code="75753009" name="Blood clot (morphologic abnormality)"/>
        </snomed>
    </map>
</mapping>
```

4 Discussion

The XML formats described in this paper provide a method for expressing mappings between vocabularies in general and specifically for mapping the MTHMST to SNOMED CT. Appendix C shows a complete mapping of the MTHMST site axis to SNOMED CT concepts. The site mapping includes mostly direct matches and several indirect maps using SNOMED CT defining attributes. Appendix D shows a partial mapping of the procedure axis and Appendix E shows a partial mapping of findings and diagnoses. Appendix F shows mappings achieved using UMLS CUIs. These mappings demonstrate how a complete MTHMST - SNOMED CT mapping can be expressed.

The interface between vocabularies with overlapping scope and content must be defined to facilitate the exchange of information between systems without loss of meaning. This XML format provides an important means for expressing the vocabulary interface. However, the act of defining the mapping is a time-consuming task that almost always requires human involvement by vocabulary and subject matter experts. Tools can facilitate this task by making recommendations for human review.

Many tools that assist vocabulary mapping rely on text processing to compare the lexical relationships between terms. The Specialist Lexical Tools distributed with the UMLS knowledge sources can normalize terms that have lexical variations such as case, punctuation and word order, which do not affect meaning. Tools like this can automatically identify possible synonyms such as "body of stomach" and "Stomach,

Body". Indexes of synonyms contribute by identifying additional terms such as "Gastric body" and "Gastric corpus". These tools can provide useful mapping feedback by identifying many synonyms between vocabularies.

When direct synonymous matches cannot be found using lexical tools, another technique could facilitate mapping by making use of already established maps in addition to other vocabulary relationships. Consider the mapping of the MTHMST concept "Gastric anastomosis (site)" which has no direct synonym in SNOMED CT. If, for example, the structure of the MST says that "Gastric anastomosis (site)" is a child of "Stomach" and a map has already been found between the MTHMST term "Stomach" and the SNOMED CT term "Stomach structure (body structure)", then a tool that can make logical inferences may be able to suggest an indirect map between "Gastric anastomosis (site)" and the parent SNOMED CT term "Stomach structure (body structure)". A tool such as this will have to make use of existing maps and therefore, can only work in conjunction with other tools. The XML format in this paper provides a method for storing and exchanging that mapping information.

Mapping is important so that medical concepts can be communicated and translated while still maintaining the intended meaning. New terminologies with different purposes and scope are constantly evolving and it becomes even more important that these different vocabularies are interoperable. Without accurate mappings, it is impossible for an automated system to tell the difference between being bit by a lightning bug and being hit by a lightning bolt. An accurate way to store and transmit these vocabulary interfaces will make sure that the right words are communicated and may go a long way in preventing errors and miscommunication in the clinical setting.

5 References

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[8]   UMLS Knowledge Sources, 13th Edition – Summer Release: 2002AC Addendum to 2002AA Documentation. August 15, 2002.

Appendix A: MAP.xsd

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:map="kristel.hackett@gmail.com/map"
   targetNamespace="kristel.hackett@gmail.com/map">
   <xs:element name="mapping" type="map:mappingType"/>
   <xs:element name="map" type="map:mapType" />
   <xs:element name="concept" type="map:conceptType"/>
   <xs:element name="qualifier" type="map:qualifierType"/>

   <xs:group name="qualifierGroup">
      <xs:sequence>
         <xs:element ref="map:qualifier" minOccurs="0" maxOccurs="unbounded"/>
      </xs:sequence>
   </xs:group>

   <xs:complexType name="mappingType">
      <xs:sequence>
         <xs:element ref="map:map" minOccurs="0" maxOccurs="unbounded" />
      </xs:sequence>
   </xs:complexType>
   <xs:complexType name="mapType">
      <xs:sequence>
         <xs:element ref="map:concept" minOccurs="0" maxOccurs="unbounded"/>
      </xs:sequence>
   </xs:complexType>
   <xs:complexType name="conceptType">
      <xs:group ref="map:qualifierGroup"/>
      <xs:attribute name="code" type="xs:string" use="optional"/>
      <xs:attribute name="name" type="xs:string" use="optional"/>
      <xs:attribute name="system" type="xs:string" use="optional"/>
      <xs:anyAttribute namespace="##any" />
   </xs:complexType>
   <xs:complexType name="qualifierType">
      <xs:group ref="map:qualifierGroup"/>
      <xs:attribute name="code" type="xs:string" use="required"/>
      <xs:attribute name="name" type="xs:string" use="required"/>
      <xs:attribute name="roleCode" type="xs:string" use="optional"/>
      <xs:attribute name="roleName" type="xs:string" use="optional"/>
      <xs:attribute name="system" type="xs:string" use="optional"/>
   </xs:complexType>
</xs:schema>
```

Appendix B: MST-SNO-MAP.xsd

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:map="kristel.hackett@gmail.com/map"
targetNamespace="kristel.hackett@gmail.com/map">
    <xs:include schemaLocation="./MAP.xsd" />
    <xs:annotation>
        <xs:documentation>
            In this schema, mthmst refers to the UMLS Forms of the Minimal Standard
Terminology
            and snomed refers to the Systematized Nomenclature of Medicine (SNOMED CT
2006AB)
        </xs:documentation>
    </xs:annotation>
    <xs:element name="isa" substitutionGroup="map:qualifier">
        <xs:complexType>
            <xs:complexContent>
                <xs:restriction base="map:qualifierType">
                    <xs:group ref="map:qualifierGroup"/>
                    <xs:attribute name="code" type="xs:string" use="required"/>
                    <xs:attribute name="name" type="xs:string" use="required"/>
                    <xs:attribute name="roleCode" type="xs:string" fixed="116680003"/>
                    <xs:attribute name="roleName" type="xs:string" fixed="Is a (attribute)"/>
                    <xs:attribute name="system" type="xs:string" fixed="snomed"/>
                </xs:restriction>
            </xs:complexContent>
        </xs:complexType>
    </xs:element>
    <xs:element name="partof" substitutionGroup="map:qualifier">
        <xs:complexType>
            <xs:complexContent>
                <xs:restriction base="map:qualifierType">
                    <xs:group ref="map:qualifierGroup"/>
                    <xs:attribute name="code" type="xs:string" use="required"/>
                    <xs:attribute name="name" type="xs:string" use="required"/>
                    <xs:attribute name="roleCode" type="xs:string" fixed="partof-code"/>
                    <xs:attribute name="roleName" type="xs:string" fixed="Part Of"/>
                    <xs:attribute name="system" type="xs:string" fixed="snomed"/>
                </xs:restriction>
            </xs:complexContent>
        </xs:complexType>
    </xs:element>
    <xs:element name="mthmst" substitutionGroup="map:concept">
        <xs:complexType>
            <xs:complexContent>
                <xs:restriction base="map:conceptType">
                    <xs:group ref="map:qualifierGroup"/>
```

```
                <xs:attribute name="code" type="xs:string" use="required"/>
                <xs:attribute name="name" type="xs:string" use="required"/>
                <xs:attribute name="system" type="xs:string" fixed="mthmst"/>
                <xs:attribute name="axis" type="xs:string" />
            </xs:restriction>
        </xs:complexContent>
    </xs:complexType>
</xs:element>
<xs:element name="snomed" substitutionGroup="map:concept">
    <xs:complexType>
        <xs:complexContent>
            <xs:restriction base="map:conceptType">
                <xs:group ref="map:qualifierGroup"/>
                <xs:attribute name="code" type="xs:string" use="optional"/>
                <xs:attribute name="name" type="xs:string" use="optional"/>
                <xs:attribute name="system" type="xs:string" fixed="snomed"/>
            </xs:restriction>
        </xs:complexContent>
    </xs:complexType>
</xs:element>
</xs:schema>
```

Appendix C: Site Mapping

```xml
<?xml version="1.0" encoding="UTF-8"?>
<mapping xmlns="kristel.hackett@gmail.com/map"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="kristel.hackett@gmail.com/map ./MST-SNO-MAP.xsd">

    <map>
        <mthmst axis="Site.Title" code="C0226874" name="Upper gastrointestinal tract"/>
        <snomed code="62834003" name="Upper gastrointestinal tract structure (body
structure)"/>
    </map>
    <map>
        <mthmst axis="Site.Heading" code="C0014876" name="Esophagus"/>
        <snomed code="32849002" name="Esophageal structure (body structure)"/>
    </map>
    <map>
        <mthmst axis="Site.Term" code="C0939942" name="Esophagus, crico-pharyngeus"/>
        <snomed code="28276008" name="Structure of cricopharyngeal part of inferior
constrictor pharyngeus muscle (body structure)"/>
        <snomed>
           <isa code="32849002" name="Esophageal structure (body structure)"/>
        </snomed>
    </map>
    <map>
        <mthmst axis="Site.Term" code="C0227187" name="Upper third of esophagus"/>
        <snomed code="54738009" name="Structure of upper third of esophagus (body
structure)"/>
    </map>
    <map>
        <mthmst axis="Site.Term" code="C0227189" name="Middle third of esophagus"/>
        <snomed code="19000002" name="Structure of middle third of esophagus (body
structure)"/>
    </map>
    <map>
        <mthmst axis="Site.Term" code="C0227191" name="Lower third of esophagus"/>
        <snomed code="67173009" name="Structure of lower third of esophagus (body
structure)"/>
    </map>
    <map>
        <mthmst axis="Site.Term" code="C0939943" name="Esophageal cardia"/>
        <snomed code="25271004" name="Cardioesophageal junction structure (body
structure)"/>
    </map>
    <map>
        <mthmst axis="Site.Term" code="C0939944" name="Whole examined esophagus"/>
        <snomed>
           <isa code="32849002" name="Esophageal structure (body structure)"/>
```

```
            <isa code="181245004" name="Entire esophagus (body structure)"/>
        </snomed>
    </map>
    <map>
        <mthmst axis="Site.Term" code="C0940040" name="Esophageal anastomosis
(site)"/>
        <snomed>
            <isa code="32849002" name="Esophageal structure (body structure)"/>
            <isa code="41796003" name="Anastomosis (morphologic abnormality)"/>
        </snomed>
    </map>
    <map>
        <mthmst axis="Site.Heading" code="C0038351" name="Stomach"/>
        <snomed code="69695003" name="Stomach structure (body structure)"/>
    </map>
    <map>
        <mthmst axis="Site.Term" code="C0007144" name="Gastric cardia"/>
        <snomed code="62898002" name="Cardia structure (body structure)"/>
    </map>
    <map>
        <mthmst axis="Site.Term" code="C0017129" name="Gastric fundus"/>
        <snomed code="314728002" name="Fundus structure of stomach (body structure)"/>
    </map>
    <map>
        <mthmst axis="Site.Attribute" code="C0939946" name="Greater curvature of gastric
fundus"/>
        <snomed code="413270000" name="Greater curvature of fundus of stomach (body
structure)"/>
    </map>
    <map>
        <mthmst axis="Site.Attribute" code="C0939945" name="Lesser curvature of gastric
fundus"/>
        <snomed code="413271001" name="Lesser curvature of fundus of stomach (body
structure)"/>
    </map>
    <map>
        <mthmst axis="Site.Attribute" code="C0736134" name="Anterior wall of gastric
fundus"/>
        <snomed code="127869006" name="Anterior wall of fundus of stomach (body
structure)"/>
    </map>
    <map>
        <mthmst axis="Site.Attribute" code="C0736138" name="Posterior wall of gastric
fundus"/>
        <snomed code="127870007" name="Posterior wall of fundus of stomach (body
structure)"/>
    </map>
    <map>
        <mthmst axis="Site.Term" code="C0227230" name="Gastric body"/>
        <snomed code="68560004" name="Gastric corpus structure (body structure)"/>
    </map>
    <map>
        <mthmst axis="Site.Attribute" code="C0939948" name="Greater curvature of gastric
body"/>
        <snomed code="127874003" name="Greater curvature of body of stomach (body
structure)"/>
    </map>
    <map>
```

```xml
    <mthmst axis="Site.Attribute" code="C0947638" name="Lesser curvature of gastric
body"/>
    <snomed code="127873009" name="Lesser curvature of body of stomach (body
structure)"/>
</map>
<map>
    <mthmst axis="Site.Attribute" code="C0939947" name="Anterior wall of gastric
body"/>
    <snomed code="127871006" name="Anterior wall of body of stomach (body structure)
"/>
</map>
<map>
    <mthmst axis="Site.Attribute" code="C0736139" name="Posterior wall of gastric
body"/>
    <snomed code="127872004" name="Posterior wall of body of stomach (body
structure)"/>
</map>
<map>
    <mthmst axis="Site.Term" code="C0227222" name="Gastric incisura"/>
    <snomed code="360962002" name="Incisure of stomach (body structure)"/>
</map>
<map>
    <mthmst axis="Site.Term" code="C0034193" name="Gastric antrum"/>
    <snomed code="66051006" name="Pyloric antrum structure (body structure)"/>
</map>
<map>
    <mthmst axis="Site.Attribute" code="C0939949" name="Greater curvature of gastric
antrum"/>
    <snomed code="127878000" name="Greater curvature of antrum of stomach (body
structure)"/>
</map>
<map>
    <mthmst axis="Site.Attribute" code="C0947629" name="Lesser curvature of gastric
antrum"/>
    <snomed code="127877005" name="Lesser curvature of antrum of stomach (body
structure)"/>
</map>
<map>
    <mthmst axis="Site.Attribute" code="C0736136" name="Anterior wall of gastric
antrum"/>
    <snomed code="127875002" name="Anterior wall of antrum of stomach (body
structure)"/>
</map>
<map>
    <mthmst axis="Site.Attribute" code="C0736140" name="Posterior wall of gastric
antrum"/>
    <snomed code="127876001" name="Posterior wall of antrum of stomach (body
structure)"/>
</map>
<map>
    <mthmst axis="Site.Term" code="C0939950" name="Pre-pyloric stomach"/>
    <snomed code="367602001" name="Structure of pre-pylorus (body structure)"/>
</map>
<map>
    <mthmst axis="Site.Attribute" code="C0939954" name="Greater curvature of pre-
pyloric stomach"/>
    <snomed code="413273003" name="Greater curvature of pre-pylorus (body
structure)"/>
</map>
```

```
<map>
     <mthmst axis="Site.Attribute" code="C0939953" name="Lesser curvature of pre-
pyloric stomach"/>
     <snomed code="413274009" name="Lesser curvature of pre-pylorus (body
structure)"/>
   </map>
   <map>
     <mthmst axis="Site.Attribute" code="C0939951" name="Anterior wall of pre-pyloric
stomach"/>
     <snomed code="413272008" name="Anterior wall of pre-pylorus (body structure)"/>
   </map>
   <map>
     <mthmst axis="Site.Attribute" code="C0939952" name="Posterior wall of pre-pyloric
stomach"/>
     <snomed code="413275005" name="Posterior wall of pre-pylorus (body structure)"/>
   </map>
   <map>
     <mthmst axis="Site.Term" code="C0034196" name="Pylorus"/>
     <snomed code="280119005" name="Pyloric structure of stomach (body structure)"/>
   </map>
   <map>
     <mthmst axis="Site.Term" code="C0941253" name="Whole examined stomach"/>
     <snomed>
       <isa code="181246003" name="Entire stomach (body structure)"/>
     </snomed>
   </map>
   <map>
     <mthmst axis="Site.Term" code="C0941156" name="Gastric anastomosis (site)"/>
     <snomed>
       <isa code="69695003" name="Stomach structure (body structure)"/>
       <isa code="41796003" name="Anastomosis (morphologic abnormality)"/>
     </snomed>
   </map>
   <map>
     <mthmst axis="Site.Term" code="C0192489" name="Pyloroplasty (site)"/>
     <snomed>
       <isa code="280119005" name="Pyloric structure of stomach (body structure)"/>
       <isa code="245849007" name="Post-surgical anatomy (morphologic
abnormality)"/>
     </snomed>
   </map>
   <map>
     <mthmst axis="Site.Heading" code="C0013303" name="Duodenum"/>
     <snomed code="38848004" name="Duodenal structure (body structure)"/>
   </map>
   <map>
     <mthmst axis="Site.Term" code="C0227299" name="Duodenal bulb"/>
     <snomed code="9999005" name="Duodenal ampulla structure (body structure)"/>
   </map>
   <map>
     <mthmst axis="Site.Attribute" code="C0939955" name="Anterior bulb of duodenum"/>
     <snomed code="110607009" name="Anterior wall of duodenal bulb (body
structure)"/>
   </map>
   <map>
     <mthmst axis="Site.Attribute" code="C0939956" name="Posterior bulb of
duodenum"/>
     <snomed code="110608004" name="Posterior wall of duodenal bulb (body
structure)"/>
```

```
    </map>
    <map>
        <mthmst axis="Site.Attribute" code="C0939957" name="Proximal bulb of
duodenum"/>
        <snomed code="110609007" name="Proximal portion of duodenal bulb (body
structure)"/>
    </map>
    <map>
        <mthmst axis="Site.Attribute" code="C0941133" name="Distal bulb of duodenum"/>
        <snomed code="110610002" name="Distal portion of duodenal bulb (body
structure)"/>
    </map>
    <map>
        <mthmst axis="Site.Term" code="C0227301" name="2nd part of the duodenum"/>
        <snomed code="72031006" name="Structure of descending portion of duodenum
(body structure)"/>
    </map>
    <map>
        <mthmst axis="Site.Term" code="C0939958" name="Area of papilla"/>
        <snomed code="78540008" name="Duodenal papilla structure (body structure)"/>
    </map>
    <map>
        <mthmst axis="Site.Term" code="C0939959" name="Duodenal anastomosis"/>
        <snomed>
            <isa code="38848004" name="Duodenal structure (body structure)"/>
            <isa code="41796003" name="Anastomosis (morphologic abnormality)"/>
        </snomed>
    </map>
    <map>
        <mthmst axis="Site.Term" code="C0939960" name="Whole examined duodenum"/>
        <snomed>
            <isa code="181247007" name="Entire duodenum (body structure)"/>
        </snomed>
    </map>
    <map>
        <mthmst axis="Site.Heading" code="C0022378" name="Jejunum"/>
        <snomed code="21306003" name="Jejunal structure (body structure)"/>
    </map>
    <map>
        <mthmst axis="Site.Term" code="C0939961" name="Jejunum, afferent jejunal loop"/>
        <snomed code="413248003" name="Afferent loop of jejunum (body structure)"/>
    </map>
    <map>
        <mthmst axis="Site.Term" code="C0939962" name="Jejunum, efferent jejunal loop"/>
        <snomed code="413249006" name="Efferent loop of jejunum (body structure)"/>
    </map>
    <map>
        <mthmst axis="Site.Term" code="C0939963" name="Jejunum, jejunal crest"/>
        <snomed code="413250006" name="Jejunal crest (body structure)"/>
    </map>
    <map>
        <mthmst axis="Site.Title" code="C0226875" name="Lower gastrointestinal tract"/>
        <snomed code="5668004" name="Lower gastrointestinal tract structure (body
structure)"/>
    </map>
    <map>
        <mthmst axis="Site.Heading" code="C0009368" name="Colon"/>
        <snomed code="71854001" name="Colon structure (body structure)"/>
    </map>
```

```
<map>
    <mthmst axis="Site.Term" code="C0003461" name="Anus"/>
    <snomed code="53505006" name="Anal structure (body structure)"/>
</map>
<map>
    <mthmst axis="Site.Term" code="C0034896" name="Rectum"/>
    <snomed code="34402009" name="Rectum structure (body structure)"/>
</map>
<map>
    <mthmst axis="Site.Term" code="C0227391" name="Sigmoid colon"/>
    <snomed code="60184004" name="Sigmoid colon structure (body structure)"/>
</map>
<map>
    <mthmst axis="Site.Term" code="C0227389" name="Descending colon"/>
    <snomed code="32622004" name="Descending colon structure (body structure)"/>
</map>
<map>
    <mthmst axis="Site.Term" code="C0227387" name="Splenic colon"/>
    <snomed code="72592005" name="Structure of left colic flexure (body structure)"/>
</map>
<map>
    <mthmst axis="Site.Term" code="C0227386" name="Transverse colon"/>
    <snomed code="485005" name="Transverse colon structure (body structure)"/>
</map>
<map>
    <mthmst axis="Site.Term" code="C0227385" name="Hepatic colon"/>
    <snomed code="48338005" name="Structure of right colic flexure (body structure)"/>
</map>
<map>
    <mthmst axis="Site.Term" code="C0227375" name="Ascending colon"/>
    <snomed code="9040008" name="Ascending colon structure (body structure)"/>
</map>
<map>
    <mthmst axis="Site.Term" code="C0007531" name="Cecum"/>
    <snomed code="32713005" name="Cecum structure (body structure)"/>
</map>
<map>
    <mthmst axis="Site.Term" code="C0020880" name="Ileo-cecal valve"/>
    <snomed code="23153004" name="Ileocecal valve structure (body structure)"/>
</map>
<map>
    <mthmst axis="Site.Term" code="C0448971" name="Colon, stoma"/>
    <snomed code="264585001" name="Colostomy - stoma (morphologic abnormality)"/>
</map>
<map>
    <mthmst axis="Site.Term" code="C0941134" name="Whole examined colon"/>
    <snomed>
        <isa code="302508007" name="Entire colon (body structure)"/>
    </snomed>
</map>
<map>
    <mthmst axis="Site.Term" code="C0852681" name="Colon anastomosis"/>
    <snomed>
        <isa code="71854001" name="Colon structure (body structure)"/>
        <isa code="41796003" name="Anastomosis (morphologic abnormality)"/>
    </snomed>
</map>
<map>
    <mthmst axis="Site.Term" code="C0939964" name="Rectal pouch"/>
```

```
<snomed>
    <isa code="256874006" name="Intestinal pouch (morphologic abnormality)"/>
</snomed>
</map>
<map>
    <mthmst axis="Site.Heading" code="C0020885" name="Ileum"/>
    <snomed code="34516001" name="Ileal structure (body structure)"/>
</map>
<map>
    <mthmst axis="Site.Title" code="C0939965" name="Biliary and pancreatic system"/>
    <snomed code="110621006" name="Pancreatic duct and bile duct systems (combined
site)(body structure)"/>
</map>
<map>
    <mthmst axis="Site.Heading" code="C0030274" name="Pancreas"/>
    <snomed code="15776009" name="Pancreatic structure (body structure)"/>
</map>
<map>
    <mthmst axis="Site.Term" code="C0939966" name="Whole examined pancreas"/>
    <snomed>
        <isa code="181277001" name="Entire pancreas (body structure)"/>
    </snomed>
</map>
<map>
    <mthmst axis="Site.Term" code="C0227579" name="Head of pancreas"/>
    <snomed code="64163001" name="Structure of head of pancreas (body structure)"/>
</map>
<map>
    <mthmst axis="Site.Term" code="C0227582" name="Body of pancreas"/>
    <snomed code="40133006" name="Structure of body of pancreas (body structure)"/>
</map>
<map>
    <mthmst axis="Site.Term" code="C0227590" name="Tail of pancreas"/>
    <snomed code="73239005" name="Structure of tail of pancreas (body structure)"/>
</map>
<map>
    <mthmst axis="Site.Term" code="C0447557" name="Main duct of pancreas"/>
    <snomed code="367606003" name="Structure of duct of Wirsung (body structure)"/>
</map>
<map>
    <mthmst axis="Site.Term" code="C0227573" name="Accessory duct of pancreas"/>
    <snomed code="113288006" name="Structure of accessory pancreatic duct (body
structure)"/>
</map>
<map>
    <mthmst axis="Site.Term" code="C0734992" name="Branches of pancreas"/>
    <snomed code="20004003" name="Structure of pancreatic branch of splenic artery
(body structure)"/>
</map>
<map>
    <mthmst axis="Site.Heading" code="C0005423" name="Biliary system"/>
    <snomed code="34707002" name="Biliary tract structure (body structure)"/>
</map>
<map>
    <mthmst axis="Site.Term" code="C0227296" name="Papilla"/>
    <snomed code="78540008" name="Duodenal papilla structure (body structure)"/>
</map>
<map>
    <mthmst axis="Site.Term" code="C0939967" name="Biliary-pancreatic junction"/>
```

```xml
        <snomed code="413244001" name="Biliary-pancreatic junction (body structure)"/>
    </map>
    <map>
        <mthmst axis="Site.Term" code="C0009437" name="Main biliary duct"/>
        <snomed code="79741001" name="Common bile duct structure (body structure) "/>
        <!-- in documentation main biliary duct is a combined site of common bile duct and
common hepatic duct -->
    </map>
    <map>
        <mthmst axis="Site.Attribute" code="C0939968" name="Whole examined main biliary
duct"/>
        <snomed>
           <isa code="362199009" name="Entire common bile duct (body structure)"/>
        </snomed>
    </map>
    <map>
        <mthmst axis="Site.Attribute" code="C0939969" name="Lower third of main biliary
duct"/>
        <snomed code="245397000" name="Distal third of main bile duct (body structure)"/>
    </map>
    <map>
        <mthmst axis="Site.Attribute" code="C0447552" name="Middle third of main biliary
duct"/>
        <snomed code="245396009" name="Middle third of main bile duct (body structure)"/>
    </map>
    <map>
        <mthmst axis="Site.Attribute" code="C0939970" name="Upper third of main biliary
duct"/>
        <snomed code="245395008" name="Proximal third of main bile duct (body
structure)"/>
    </map>
    <map>
        <mthmst axis="Site.Term" code="C0010672" name="Cystic duct"/>
        <snomed code="77452001" name="Cystic duct structure (body structure)"/>
    </map>
    <map>
        <mthmst axis="Site.Term" code="C0939971" name="Biliary system, bifurcation"/>
        <snomed>
           <isa code="34707002" name="Biliary tract structure (body structure)"/>
        </snomed>
    </map>
    <map>
        <mthmst axis="Site.Term" code="C0917710" name="Liver ducts"/>
        <snomed code="56732008" name="Structure of hepatic duct (body structure)"/>
    </map>
    <map>
        <mthmst axis="Site.Attribute" code="C0227560" name="Left main liver duct"/>
        <snomed code="64281006" name="Structure of left hepatic duct (body structure)"/>
    </map>
    <map>
        <mthmst axis="Site.Attribute" code="C0227557" name="Right main liver duct"/>
        <snomed code="78000005" name="Structure of right hepatic duct (body structure)"/>
    </map>
    <map>
        <mthmst axis="Site.Attribute" code="C0939972" name="Liver ducts, left intrahepatic
branches"/>
        <snomed code="110615007" name="Left intrahepatic bile duct branches (body
structure)"/>
    </map>
```

```
<map>
     <mthmst axis="Site.Attribute" code="C0939973" name="Liver ducts, right intrahepatic
branches"/>
     <snomed code="110614006" name="Right intrahepatic bile duct branches (body
structure)"/>
  </map>
  <map>
     <mthmst axis="Site.Attribute" code="C0545796" name="Liver ducts, all intrahepatic
branches"/>
     <snomed code="245402001" name="Entire intrahepatic duct (body structure)"/>
  </map>
  <map>
     <mthmst axis="Site.Heading" code="C0016976" name="Gallbladder"/>
     <snomed code="28231008" name="Gallbladder structure (body structure)"/>
  </map>

</mapping>
```

Appendix D: Procedure Mapping Example

```xml
<?xml version="1.0" encoding="UTF-8"?>
<mapping xmlns="kristel.hackett@gmail.com/map"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="kristel.hackett@gmail.com/map ./MST-SNO-MAP.xsd">

   <map>
      <mthmst code="C0940824" axis="Procedure.Title" name="Additional procedure"/>
      <snomed>
         <isa code="71388002" name="Procedure (procedure)"/>
         <qualifier roleCode="260507000" roleName="Access (attribute)" code="129238008"
name="Endoscopic approach - access (qualifier value)"/>
         <qualifier code="262134003" name="Secondary procedure (qualifier value)" />
      </snomed>
   </map>
   <map>
      <mthmst code="C0430022" axis="Procedure.Heading" name="Diagnostic procedure"/>
      <snomed code="103693007" name="Diagnostic procedure (procedure)"/>
   </map>
   <map>
      <mthmst code="C0005558" axis="Procedure.Term" name="Biopsy"/>
      <snomed code="86273004" name="Biopsy (procedure)"/>
   </map>
   <map>
      <mthmst code="C0492861" axis="Procedure.Attribute" name="Biopsy device"/>
      <snomed>
         <isa code="37759000" name="Surgical instrument, device (physical object)" />
         <isa code="405815000" name="Procedure device (attribute)" />
      </snomed>
   </map>
   <map>
      <mthmst code="C0180936" axis="Procedure.Attribute.Value" name="Biopsy forceps"/>
      <snomed>
         <isa code="86273004" name="Biopsy (procedure)"/>
         <qualifier roleCode="363699004" roleName="Direct device (attribute)"
code="29319002" name="Forceps, device (physical object)"/>
      </snomed>
   </map>
   <map>
      <mthmst code="C0947626" axis="Procedure.Attribute.Value" name="Biopsy snare"/>
      <snomed>
         <isa code="86273004" name="Biopsy (procedure)"/>
         <qualifier roleCode="363699004" roleName="Direct device (attribute)"
code="25005004" name="Snare, device (physical object)"/>
      </snomed>
   </map>
   <map>
```

```xml
        <mthmst code="C0492861" axis="Procedure.Attribute.Value" name="Other biopsy
device"/>
      <snomed>
         <isa code="86273004" name="Biopsy (procedure)"/>
         <qualifier roleCode="363699004" roleName="Direct device (attribute)" code=""
name=""/>
      </snomed>
   </map>
   <map>
      <mthmst code="C0940825" axis="Procedure.Attribute.Value" name="Biopsy method,
cold"/>
      <snomed>
         <isa code="86273004" name="Biopsy (procedure)"/>
         <qualifier roleCode="260686004" roleName="Method (attribute)" code=""
name="Cold - action (qualifier value)"/>
      </snomed>
   </map>
   <map>
      <mthmst code="C0441493" axis="Procedure.Attribute.Value" name="Biopsy method,
hot"/>
      <snomed>
         <isa code="86273004" name="Biopsy (procedure)"/>
         <qualifier roleCode="260686004" roleName="Method (attribute)" code=""
name="Hot - action (qualifier value)"/>
      </snomed>
   </map>
   <map>
      <mthmst code="C0344441" axis="Procedure.Attribute.Value" name="Histology (as
purpose of biopsy)"/>
      <snomed>
         <isa code="86273004" name="Biopsy (procedure)"/>
         <qualifier roleCode="363702006" roleName="Has focus (attribute)"
code="168394000" name="Histology (procedure)"/>
      </snomed>
   </map>
   <map>
      <mthmst code="C0085672" axis="Procedure.Attribute.Value" name="Microbiology (as
purpose of biopsy)"/>
      <snomed>
         <isa code="86273004" name="Biopsy (procedure)"/>
         <qualifier roleCode="363702006" roleName="Has focus (attribute)"
code="269934003" name="Microbiology (procedure)"/>
      </snomed>
   </map>
   <map>
      <mthmst code="C0940827" axis="Procedure.Attribute.Value" name="Helicobacter Pylori
test (as purpose of biopsy)"/>
      <snomed>
         <isa code="86273004" name="Biopsy (procedure)"/>
         <qualifier roleCode="363702006" roleName="Has focus (attribute)"
code="122214008" name="Helicobacter pylori culture (procedure)"/>
      </snomed>
   </map>
   <map>
      <mthmst code="C0849088" axis="Procedure.Term" name="Cytology"/>
      <snomed code="168440009" name="Cytology examination - general (procedure)"/>
   </map>
   <map>
```

```xml
        <mthmst code="C0940829" axis="Procedure.Attribute" name="Lesion sampled for
cytology"/>
        <snomed>
            <isa code="118168003" name="Specimen source morphology (attribute)"/>
        </snomed>
    </map>
    <map>
        <mthmst code="C0941215" axis="Procedure.Term" name="Fluid aspiration"/>
        <snomed>
            <isa code="14766002" name="Aspiration (procedure)"/>
            <qualifier roleCode="260686004" roleName="Method (attribute)" code="129316008"
name="Aspiration - action (qualifier value)"/>
            <qualifier roleCode="363701004" roleName="Direct substance (attribute)"
code="33463005" name="Liquid substance (substance)"/>
        </snomed>
    </map>
    <map>
        <mthmst code="C0016356" axis="Procedure.Term" name="Fluoroscopy"/>
        <snomed code="44491008" name="Fluoroscopy (procedure)"/>
    </map>
    <map>
        <mthmst code="C0940834" axis="Procedure.Term" name="Cholangioscopy"/>
        <snomed code="413195008" name="Cholangioscopy (procedure)"/>
    </map>
    <map>
        <mthmst code="C0087111" axis="Procedure.Heading" name="Therapeutic
procedure"/>
        <snomed code="277132007" name="Therapeutic procedure (procedure)"/>
    </map>
    <map>
        <mthmst code="C0393264" axis="Procedure.Term" name="Foreign body removal"/>
        <snomed code="180506000" name="Endoscopic removal of foreign body from organ
NOC (procedure)"/>
    </map>
    <map>
        <mthmst code="C0521210" axis="Procedure.Term" name="Polypectomy"/>
        <snomed code="82035006" name="Resection of polyp (procedure)"/>
    </map>
    <map>
        <mthmst code="C0940839" axis="Procedure.Attribute.Value" name="Polypectomy
forceps"/>
        <snomed>
            <isa code="82035006" name="Resection of polyp (procedure)"/>
            <qualifier roleCode="363699004" roleName="Direct device (attribute)"
code="29319002" name="Forceps, device (physical object)"/>
        </snomed>
    </map>
    <map>
        <mthmst code="C0940840" axis="Procedure.Attribute.Value" name="Polypectomy
snare"/>
        <snomed>
            <isa code="82035006" name="Resection of polyp (procedure)"/>
            <qualifier roleCode="363699004" roleName="Direct device (attribute)"
code="25005004" name="Snare, device (physical object)"/>
        </snomed>
    </map>
    <map>
        <mthmst code="C0940841" axis="Procedure.Attribute" name="Polypectomy method"/>
        <snomed>
```

```xml
            <isa code="" name=""/>
        </snomed>
    </map>
    <map>
        <mthmst code="C0941218" axis="Procedure.Attribute.Value" name="Cold
polypectomy"/>
        <snomed>
            <isa code="82035006" name="Resection of polyp (procedure)"/>
            <qualifier roleCode="260686004" roleName="Method (attribute)" code=""
name="Cold - action (qualifier value)"/>
        </snomed>
    </map>
    <map>
        <mthmst code="C0940842" axis="Procedure.Attribute.Value" name="Hot
polypectomy"/>
        <snomed>
            <isa code="82035006" name="Resection of polyp (procedure)"/>
            <qualifier roleCode="260686004" roleName="Method (attribute)" code=""
name="Hot - action (qualifier value)"/>
        </snomed>
    </map>
    <map>
        <mthmst code="C0940844" axis="Procedure.Attribute.Value" name="Complete
polypectomy"/>
        <snomed>
            <isa code="82035006" name="Resection of polyp (procedure)"/>
            <qualifier roleCode="260858005" roleName="Extent (attribute)" code="255594003"
name="Complete (qualifier value)"/>
        </snomed>
    </map>
    <map>
        <mthmst code="C0940845" axis="Procedure.Attribute.Value" name="Incomplete
polypectomy"/>
        <snomed>
            <isa code="82035006" name="Resection of polyp (procedure)"/>
            <qualifier roleCode="260858005" roleName="Extent (attribute)" code="255599008"
name="Incomplete (qualifier value)"/>
        </snomed>
    </map>
    <map>
        <mthmst code="C0940849" axis="Procedure.Attribute.Value" name="Successful
sphincterotomy" />
        <snomed>
            <qualifier roleCode="260858005" roleName="Extent (attribute)" code="385669000"
name="Successful (qualifier value)" />
        </snomed>
    </map>
    <map>
        <mthmst code="C0940850" axis="Procedure.Attribute.Value" name="Unsuccessful
sphincterotomy" />
        <snomed>
            <qualifier roleCode="260858005" roleName="Extent (attribute)" code="385671000"
name="Unsuccessful (qualifier value)" />
        </snomed>
    </map>
    <map>
        <mthmst code="C0941278" axis="Procedure.Attribute.Value" name="Complete stone
extraction"/>
        <snomed>
```

```
        <qualifier roleCode="260858005" roleName="Extent (attribute)" code="255594003"
name="Complete (qualifier value)"/>
      </snomed>
    </map>
    <map>
      <mthmst code="C0940851" axis="Procedure.Attribute.Value" name="Incomplete stone
extraction"/>
      <snomed>
        <qualifier roleCode="260858005" roleName="Extent (attribute)" code="255599008"
name="Incomplete (qualifier value)"/>
      </snomed>
    </map>
    <map>
      <mthmst code="C0023878" axis="Procedure.Term" name="Lithotripsy"/>
      <snomed code="133864008" name="Lithotripsy (procedure)"/>
    </map>
    <map>
      <mthmst code="C0940855" axis="Procedure.Attribute.Value" name="Successful
lithotripsy"/>
      <snomed>
        <isa code="133864008" name="Lithotripsy (procedure)"/>
        <qualifier roleCode="260858005" roleName="Extent (attribute)" code="385669000"
name="Successful (qualifier value)"/>
      </snomed>
    </map>
    <map>
      <mthmst code="C0940856" axis="Procedure.Attribute.Value" name="Unsuccessful
lithotripsy"/>
      <snomed>
        <isa code="133864008" name="Lithotripsy (procedure)"/>
        <qualifier roleCode="260858005" roleName="Extent (attribute)" code="385671000"
name="Unsuccessful (qualifier value)"/>
      </snomed>
    </map>
    <map>
      <mthmst code="C0940863" axis="Procedure.Attribute.Value" name="Successful guide-
wire placement"/>
      <snomed>
        <qualifier roleCode="260858005" roleName="Extent (attribute)" code="385669000"
name="Successful (qualifier value)"/>
      </snomed>
    </map>
    <map>
      <mthmst code="C0940864" axis="Procedure.Attribute.Value" name="Unsuccessful
guide-wire placement"/>
      <snomed>
        <qualifier roleCode="260858005" roleName="Extent (attribute)" code="385671000"
name="Unsuccessful (qualifier value)"/>
      </snomed>
    </map>
    <map>
      <mthmst code="C0940871" axis="Procedure.Attribute.Value" name="Successful
tube/drain placement"/>
      <snomed>
        <qualifier roleCode="260858005" roleName="Extent (attribute)" code="385669000"
name="Successful (qualifier value)"/>
      </snomed>
    </map>
    <map>
```

```
    <mthmst code="C0940872" axis="Procedure.Attribute.Value" name="Unsuccessful
tube/drain placement"/>
    <snomed>
        <qualifier roleCode="260858005" roleName="Extent (attribute)" code="385671000"
name="Unsuccessful (qualifier value)"/>
    </snomed>
</map>
<map>
    <mthmst code="C0176751" axis="Procedure.Term" name="Percutaneous gastrostomy
(procedure)"/>
    <snomed code="235159007" name="Percutaneous endoscopic gastrostomy
(procedure)"/>
</map>
<map>
    <mthmst code="C0940878" axis="Procedure.Attribute.Value" name="Successful
percutaneous gastrostomy"/>
    <snomed>
        <qualifier roleCode="260858005" roleName="Extent (attribute)" code="385669000"
name="Successful (qualifier value)"/>
    </snomed>
</map>
<map>
    <mthmst code="C0940879" axis="Procedure.Attribute.Value" name="Unsuccessful
percutaneous gastrostomy"/>
    <snomed>
        <qualifier roleCode="260858005" roleName="Extent (attribute)" code="385671000"
name="Unsuccessful (qualifier value)"/>
    </snomed>
</map>
<map>
    <mthmst code="C0940883" axis="Procedure.Attribute.Value" name="Successful
dilation"/>
    <snomed>
        <qualifier roleCode="260858005" roleName="Extent (attribute)" code="385669000"
name="Successful (qualifier value)"/>
    </snomed>
</map>
<map>
    <mthmst code="C0940884" axis="Procedure.Attribute.Value" name="Unsuccessful
dilation"/>
    <snomed>
        <qualifier roleCode="260858005" roleName="Extent (attribute)" code="385671000"
name="Unsuccessful (qualifier value)"/>
    </snomed>
</map>
<map>
    <mthmst code="C0021485" axis="Procedure.Term" name="Injection"/>
    <snomed code="28289002" name="Injection of therapeutic agent (procedure)"/>
</map>
<map>
    <mthmst code="C0941224" axis="Procedure.Attribute.Value" name="Injection purpose,
hemostasis"/>
    <snomed>
        <isa code="28289002" name="Injection of therapeutic agent (procedure)"/>
        <qualifier roleCode="363701004" roleName="Direct substance (attribute)"
code="372681003" name="Hemostatic agent (substance)"/>
    </snomed>
</map>
<map>
```

```xml
    <mthmst code="C0940889" axis="Procedure.Attribute.Value" name="Injection purpose,
tumor destruction"/>
    <snomed>
        <isa code="28289002" name="Injection of therapeutic agent (procedure)"/>
        <qualifier roleCode="363702006" roleName="Has focus (attribute)"
code="120609008" name="Destruction of lesion (procedure)"/>
    </snomed>
    </map>
    <map>
    <mthmst code="C0940891" axis="Procedure.Attribute.Value" name="Injection purpose,
tattooing"/>
    <snomed>
        <isa code="28289002" name="Injection of therapeutic agent (procedure)"/>
        <qualifier roleCode="363702006" roleName="Has focus (attribute)"
code="14792009" name="Tattooing (procedure)"/>
    </snomed>
    </map>
    <map>
    <mthmst code="C0940892" axis="Procedure.Attribute.Value" name="Successful
injection"/>
    <snomed>
        <isa code="28289002" name="Injection of therapeutic agent (procedure)"/>
        <qualifier roleCode="260858005" roleName="Extent (attribute)" code="385669000"
name="Successful (qualifier value)"/>
    </snomed>
    </map>
    <map>
    <mthmst code="C0940893" axis="Procedure.Attribute.Value" name="Unsuccessful
injection"/>
    <snomed>
        <isa code="28289002" name="Injection of therapeutic agent (procedure)"/>
        <qualifier roleCode="260858005" roleName="Extent (attribute)" code="385671000"
name="Unsuccessful (qualifier value)"/>
    </snomed>
    </map>
    <map>
    <mthmst code="C0023690" axis="Procedure.Term" name="Ligation"/>
    <snomed code="70751009" name="Ligation (procedure)"/>
    </map>
    <map>
    <mthmst code="C0940896" axis="Procedure.Attribute.Value" name="Successful
ligation"/>
    <snomed>
        <isa code="70751009" name="Ligation (procedure)"/>
        <qualifier roleCode="260858005" roleName="Extent (attribute)" code="385669000"
name="Successful (qualifier value)"/>
    </snomed>
    </map>
    <map>
    <mthmst code="C0940897" axis="Procedure.Attribute.Value" name="Unsuccessful
ligation"/>
    <snomed>
        <isa code="70751009" name="Ligation (procedure)"/>
        <qualifier roleCode="260858005" roleName="Extent (attribute)" code="385671000"
name="Unsuccessful (qualifier value)"/>
    </snomed>
    </map>
    <map>
    <mthmst code="C0525024" axis="Procedure.Term" name="Prosthesis"/>
```

```
        <snomed code="118663006" name="Implantation of prosthetic device (procedure)"/>
    </map>
    <map>
        <mthmst code="C0940900" axis="Procedure.Attribute.Value" name="Successful
prosthesis"/>
        <snomed>
            <isa code="118663006" name="Implantation of prosthetic device (procedure)"/>
            <qualifier roleCode="260858005" roleName="Extent (attribute)" code="385669000"
name="Successful (qualifier value)"/>
        </snomed>
    </map>
    <map>
        <mthmst code="C0940901" axis="Procedure.Attribute.Value" name="Unsuccessful
prosthesis"/>
        <snomed>
            <isa code="118663006" name="Implantation of prosthetic device (procedure)"/>
            <qualifier roleCode="260858005" roleName="Extent (attribute)" code="385671000"
name="Unsuccessful (qualifier value)"/>
        </snomed>
    </map>
    <map>
        <mthmst code="C0940905" axis="Procedure.Attribute.Value" name="Successful
mucosal resection"/>
        <snomed>
            <qualifier roleCode="260858005" roleName="Extent (attribute)" code="385669000"
name="Successful (qualifier value)"/>
        </snomed>
    </map>
    <map>
        <mthmst code="C0940906" axis="Procedure.Attribute.Value" name="Unsuccessful
mucosal resection"/>
        <snomed>
            <qualifier roleCode="260858005" roleName="Extent (attribute)" code="385671000"
name="Unsuccessful (qualifier value)"/>
        </snomed>
    </map>
    <map>
        <mthmst code="C0454527" axis="Procedure.Term" name="Thermal therapy"/>
        <snomed code="229569007" name="Thermal techniques (regime/therapy)"/>
    </map>
    <map>
        <mthmst code="C0940914" axis="Procedure.Attribute.Value" name="Thermal therapy
for tumor destruction"/>
        <snomed>
            <isa code="229569007" name="Thermal techniques (regime/therapy)"/>
            <qualifier roleCode="363702006" roleName="Has focus (attribute)"
code="120609008" name="Destruction of lesion (procedure)"/>
        </snomed>
    </map>
    <map>
        <mthmst code="C0940915" axis="Procedure.Attribute" name="Thermal therapy
result"/>
    </map>
    <map>
        <mthmst code="C0940916" axis="Procedure.Attribute.Value" name="Successful
thermal therapy"/>
        <snomed>
            <isa code="229569007" name="Thermal techniques (regime/therapy)"/>
```

```xml
            <qualifier roleCode="260858005" roleName="Extent (attribute)" code="385669000"
name="Successful (qualifier value)"/>
        </snomed>
    </map>
    <map>
        <mthmst code="C0940917" axis="Procedure.Attribute.Value" name="Unsuccessful
thermal therapy"/>
        <snomed>
            <isa code="229569007" name="Thermal techniques (regime/therapy)"/>
            <qualifier roleCode="260858005" roleName="Extent (attribute)" code="385671000"
name="Unsuccessful (qualifier value)"/>
        </snomed>
    </map>
    <map>
        <mthmst code="C0031740" axis="Procedure.Term" name="Photodynamic therapy"/>
        <snomed code="257891001" name="Photodynamic therapy (procedure)"/>
    </map>
    <map>
        <mthmst code="C0940921" axis="Procedure.Attribute.Value" name="Successful
photodynamic therapy"/>
        <snomed>
            <isa code="257891001" name="Photodynamic therapy (procedure)"/>
            <qualifier roleCode="260858005" roleName="Extent (attribute)" code="385669000"
name="Successful (qualifier value)"/>
        </snomed>
    </map>
    <map>
        <mthmst code="C0940922" axis="Procedure.Attribute.Value" name="Unsuccessful
photodynamic therapy"/>
        <snomed>
            <isa code="257891001" name="Photodynamic therapy (procedure)"/>
            <qualifier roleCode="260858005" roleName="Extent (attribute)" code="385671000"
name="Unsuccessful (qualifier value)"/>
        </snomed>
    </map>
    <map>
        <mthmst code="C0940927" axis="Procedure.Attribute.Value" name="Successful
intraluminal radiation"/>
        <snomed>
            <qualifier roleCode="260858005" roleName="Extent (attribute)" code="385669000"
name="Successful (qualifier value)"/>
        </snomed>
    </map>
    <map>
        <mthmst code="C0940928" axis="Procedure.Attribute.Value" name="Unsuccessful
intraluminal radiation"/>
        <snomed>
            <qualifier roleCode="260858005" roleName="Extent (attribute)" code="385671000"
name="Unsuccessful (qualifier value)"/>
        </snomed>
    </map>
</mapping>
```

Appendix E: Finding and Diagnosis Mapping Example

```
<mapping>
   <map>
      <mthmst code="C0940012" axis="Finding.Title" name="Esophageal finding"/>
      <snomed code="300284004" name="Finding of esophagus (finding)"/>
   </map>
   <map>
      <mthmst code="C0940015" axis="Finding.Head" name="Esophageal lumen lesion"/>
      <snomed>
         <isa code="300286002" name="Lesion of esophagus (finding)">
            <qualifier roleCode="363698007" roleName="Finding site (attribute)"
                     code="55977007" name="Structure of esophageal lumen (body structure)"/>
         </isa>
      </snomed>
   </map>
   <map>
      <mthmst code="C0940046" axis="Finding.Term" name="Esophageal foreign body"/>
      <snomed code="47609003" name="Foreign body in esophagus (disorder)"/>
   </map>
   <map>
      <mthmst code="C0941145" axis="Finding.Attribute.Value" name="Clot in the
esophagus"/>
      <snomed code="300284004" name="Finding of esophagus (finding)">
         <qualifier roleCode="116676008" roleName="Associated morphology (attribute)"
                  code="75753009" name="Blood clot (morphologic abnormality)"/>
      </snomed>
   </map>
   <map>
      <mthmst code="C0941255" axis="Finding.Term" name="Food in the esophagus"/>
      <snomed code="300284004" name="Finding of esophagus (finding)">
         <qualifier roleCode="246075003" roleName="Causative agent (attribute)"
                  code="255620007" name="Foods (substance)"/>
      </snomed>
   </map>
   <map>
      <mthmst code="C0940052" axis="Finding.Term" name="Bile in the esophagus"/>
      <snomed code="300284004" name="Finding of esophagus (finding)">
         <qualifier roleCode="246075003" roleName="Causative agent (attribute)"
                  code="70150004" name="Bile (substance)"/>
      </snomed>
   </map>
   <map>
      <mthmst code="C0940998" axis="Diagnosis.Title" name="Diagnosis for esophagus"/>
      <snomed code="37657006" name="Disorder of esophagus (disorder)" />
   </map>
   <map>
```

```
        <mthmst code="C0577015" axis="Diagnosis.Term" name="Normal esophagus
(diagnosis)"/>
        <snomed code="300294009" name="Esophagus normal (finding)"/>
    </map>
    <map>
        <mthmst code="C0014867" axis="Diagnosis.Term" name="Esophageal varices
(diagnosis)"/>
        <snomed code="28670008" name="Esophageal varices (disorder)"/>
    </map>
    <map>
        <mthmst code="C0341130" axis="Diagnosis.Term" name="Esophageal benign
stricture"/>
        <snomed code="235616003" name="Benign esophageal stricture (disorder)"/>
    </map>
    <map>
        <mthmst code="C0546837" axis="Diagnosis.Term" name="Esophageal malignant
tumor"/>
        <snomed code="363402007" name="Malignant tumor of esophagus (disorder)"/>
    </map>
    <map>
        <mthmst code="C0004763" axis="Diagnosis.Term" name="Barrett's esophagus
(diagnosis)"/>
        <snomed code="302914006" name="Barrett's esophagus (disorder)"/>
    </map>
    <map>
        <mthmst code="C0151970" axis="Diagnosis.Term" name="Esophageal ulcer
(diagnosis)"/>
        <snomed code="30811009" name="Ulcer of esophagus (disorder)"/>
    </map>
</mapping>
```

Appendix F: Mapping from UMLS CUI

```xml
<?xml version="1.0" encoding="UTF-8"?>
<mapping xmlns="kristel.hackett@gmail.com/map"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="kristel.hackett@gmail.com/map ./mst-sno-map.xsd">

    <map>
        <mthmst code="C0226874" name="Upper gastrointestinal tract" />
        <snomed code="62834003" name="Upper gastrointestinal tract structure (body
structure)" />
    </map>
    <map>
        <mthmst code="C0014876" name="Esophagus" />
        <snomed code="32849002" name="Esophageal structure (body structure)" />
    </map>
    <map>
        <mthmst code="C0227187" name="Upper third of esophagus" />
        <snomed code="54738009" name="Structure of upper third of esophagus (body
structure)" />
    </map>
    <map>
        <mthmst code="C0227189" name="Middle third of esophagus" />
        <snomed code="19000002" name="Structure of middle third of esophagus (body
structure)" />
    </map>
    <map>
        <mthmst code="C0227191" name="Lower third of esophagus" />
        <snomed code="67173009" name="Structure of lower third of esophagus (body
structure)" />
    </map>
    <map>
        <mthmst code="C0038351" name="Stomach" />
        <snomed code="69695003" name="Stomach structure (body structure)" />
    </map>
    <map>
        <mthmst code="C0007144" name="Gastric cardia" />
        <snomed code="62898002" name="Cardia structure (body structure)" />
    </map>
    <map>
        <mthmst code="C0017129" name="Gastric fundus" />
        <snomed code="414003" name="Gastric fundus structure (body structure)" />
    </map>
    <map>
        <mthmst code="C0736134" name="Anterior wall of gastric fundus" />
        <snomed code="127869006" name="Anterior wall of fundus of stomach (body
structure)" />
    </map>
```

```xml
<map>
    <mthmst code="C0736138" name="Posterior wall of gastric fundus" />
    <snomed code="127870007" name="Posterior wall of fundus of stomach (body
structure)" />
</map>
<map>
    <mthmst code="C1446342" name="Lesser curvature of gastric fundus" />
    <snomed code="413271001" name="Lesser curvature of fundus of stomach (body
structure)" />
</map>
<map>
    <mthmst code="C1446341" name="Greater curvature of gastric fundus" />
    <snomed code="413270000" name="Greater curvature of fundus of stomach (body
structure)" />
</map>
<map>
    <mthmst code="C0227230" name="Gastric body" />
    <snomed code="68560004" name="Gastric corpus structure (body structure)" />
</map>
<map>
    <mthmst code="C0736139" name="Posterior wall of gastric body" />
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(body structure)" />
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structure)" />
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```
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(procedure)" />
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(procedure)" />
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structure)" />
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anastomosis (procedure)" />
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(procedure)" />
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```xml
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```xml
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(procedure)" />
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```xml
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        <snomed code="85316008" name="Hypertrophied anal papilla (disorder)" />
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        <snomed code="70153002" name="Hemorrhoids (disorder)" />
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        <snomed code="51551000" name="Bleeding hemorrhoids (disorder)" />
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        <snomed code="413256000" name="Pancreas divisum - incomplete (disorder)" />
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```xml
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```xml
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Appendix G: MST Esophageal Findings Hierarchy

HEADINGS	TERMS	ATTRIBUTES	ATTRIBUTE VALUES	SITES
Normal	Normal	Z line	Distance in cm	cm from incisors
Lumen				
	Dilated			Site(s)
	Stenosis	Appearance	Extrinsic	cm from incisors
			Benign intrinsic	
			Malignant intrinsic	
		Length (cm)		
		Traversed	Yes	
			After dilatation	
			No	
	Extrinsic Impression	Size	Small	Site(s)
			Large	
	Web			Site(s)
	Ring (includes Schatzki Ring)			Site(s)
	Hiatus Hernia	Size / Volume	Small	
			Medium	
			Large	
		Site of Z-line	cm from incisors	
		Site of Hiatal Narrowing	cm from incisors	
	Lower Esophageal Sphincter	Tone	Gaping	
			Hypertonic	
	Evidence of previous surgery	Anastomosis	Esophago-jejunal	cm from teeth
			Esophago-gastric	
			Esophago-colonic	

		Suture material visible	Yes	Site(s)
			No	Site(s)
Contents				
	Foreign Body	Type	Specify...	Site(s)
	Blood	Kind of blood	Red	Site(s)
			Clot	
			Hematin (Altered Blood)	
	Food			Site(s)
	Bile			Site(s)
	Stent	Type	Specify	Site(s)
	Band	Number		Site(s)
		Position	Free	
			Attached	
Mucosa				
	Erythematous (Hyperemic)	Extent	Localised	Site(s)
			Patchy	
			Diffuse	
	Esophagitis	Grade	Grade I	Upper border (cm from incisors)
			Grade II	
			Grade III	
			Grade IV	
		Bleeding	Yes	
			No	
	Barrett's Esophagus	Distance:	Z- line	cm from incisors
		Distance:	Upper end of Gastric Folds	cm from incisors
	Candidiasis	Extent	Localised	Site(s)
			Patchy	
			Diffuse	

	Mucosal sclerosis	Type	Spontaneous	Site(s)
			Post-therapy	
		Extent	Localised	
			Patchy	
			Diffuse	Site(s)
Flat lesions				
	Ectopic gastric mucosa	Number	Single	Site(s)
			Multiple	
	Plaque	Number	Single	Site(s)
			Multiple	
Protruding lesions				
	Nodule	Number	Single	Site(s)
			Few	
			Many	
		Extent	Localized	
			Patchy	
			Diffuse	
	Tumor/Mass	Size	Small	Site(s)
			Medium	
			Large	
		Type	Submucosal	
			Fungating	
			Ulcerated	
		Circumferential	Yes	
			No	
		Obstructing	Partial	
			Complete	
		Bleeding	Yes	
			No	
		Stigmata of bleeding	Yes	
			No	
	Varices	Grade	Grade I	Site(s)
			Grade II	
			Grade III	
		Size	Estimated width in mm	

				cm from incisors
		Upper limit		
		Bleeding	Yes: Spurting	
			Yes: Oozing	
			No	
		Stigmata of recent bleeding	Yes	
			No	
		Red signs	Yes	
			No	
				Site(s)
Excavated lesions				
	Mallory-Weiss tear	Bleeding	Yes: Spurting	
			Yes: Oozing	
			No	
		Stigmata of bleeding	Yes	
			No	
	Erosion	Number	Single	Site(s)
			Few	
			Many	
	Ulcer	Number		Site(s)
		Size (mm)		Site (cm from incisor)
		Bleeding	Yes: Spurting	
			Yes: Oozing	
			No	
		Stigmata of recent bleeding	Yes	
			No	
	Scar			Site(s)
	Diverticulum			Site(s)
	Fistula			Site(s)
Other			Specify	Site(s)

Source: Delvaux M, Korman LY. Digestive Endoscopy: Minimal Standard Terminology. Version 2.0h. March 9, 1999.

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Appendix H: MTHMST

UMLS-CUI	NAME
C0226874	Upper gastrointestinal tract
C0014876	Esophagus
C0939942	Esophagus, crico-pharyngeus
C0227187	Upper third of esophagus
C0227189	Middle third of esophagus
C0227191	Lower third of esophagus
C0939943	Esophageal cardia
C0939944	Whole examined esophagus
C0940040	Esophageal anastomosis (site)
C0038351	Stomach
C0007144	Gastric cardia
C0017129	Gastric fundus
C0736134	Anterior wall of gastric fundus
C0736138	Posterior wall of gastric fundus
C1446342	Lesser curvature of gastric fundus
C1446341	Greater curvature of gastric fundus
C0227230	Gastric body
C0939947	Anterior wall of gastric body
C0736139	Posterior wall of gastric body
C1267583	Lesser curvature of gastric body
C1267584	Greater curvature of gastric body
C0227222	Gastric incisura
C0034193	Gastric antrum
C1267585	Anterior wall of gastric antrum
C1267586	Posterior wall of gastric antrum
C0947629	Lesser curvature of gastric antrum
C0939949	Greater curvature of gastric antrum
C0939950	Pre-pyloric stomach
C0939951	Anterior wall of pre-pyloric stomach
C0939952	Posterior wall of pre-pyloric stomach
C0939953	Lesser curvature of pre-pyloric stomach
C0939954	Greater curvature of pre-pyloric stomach
C0034196	Pylorus
C0941253	Whole examined stomach
C0941156	Gastric anastomosis (site)
C0192489	Pyloroplasty (site)
C0013303	Duodenum

C0227300	Duodenal bulb
C0939955	Anterior bulb of duodenum
C0939956	Posterior bulb of duodenum
C0939957	Proximal bulb of duodenum
C0941133	Distal bulb of duodenum
C0227301	2nd part of the duodenum
C0939958	Area of papilla
C0939959	Duodenal anastomosis
C0939960	Whole examined duodenum
C0022378	Jejunum
C0939961	Jejunum, afferent jejunal loop
C0939962	Jejunum, efferent jejunal loop
C0939963	Jejunum, jejunal crest
C0226875	Lower gastrointestinal tract
C0009368	Colon
C0003461	Anus
C0034896	Rectum
C0227391	Sigmoid colon
C0227389	Descending colon
C0227387	Splenic colon
C0227386	Transverse colon
C0227385	Hepatic colon
C0227375	Ascending colon
C0007531	Cecum
C0020880	Ileo-cecal valve
C0448971	Colon, stoma
C0941134	Whole examined colon
C0852681	Colon anastomosis
C0939964	Rectal pouch
C0020885	Ileum
C0939965	Biliary and pancreatic system
C0030274	Pancreas
C0939966	Whole examined pancreas
C0227579	Head of pancreas
C0227582	Body of pancreas
C0227590	Tail of pancreas
C0447557	Main duct of pancreas
C0227573	Accessory duct of pancreas
C0734992	Branches of pancreas
C0005423	Biliary system
C0227296	Papilla
C0939967	Biliary-pancreatic junction
C0009437	Main biliary duct
C0939968	Whole examined main biliary duct
C0939969	Lower third of main biliary duct
C0447552	Middle third of main biliary duct
C0939970	Upper third of main biliary duct

C0010672	Cystic duct
C0939971	Biliary system, bifurcation
C0917710	Liver ducts
C0227560	Left main liver duct
C0227557	Right main liver duct
C0939972	Liver ducts, left intrahepatic branches
C0939973	Liver ducts, right intrahepatic branches
C0545796	Liver ducts, all intrahepatic branches
C0016976	Gallbladder
C0079304	Upper gastrointestinal tract examination
C0009378	Lower gastrointestinal tract examination
C0939974	Extent and limits of examination
C0455052	Preparation
C0939975	Method of preparation
C0939976	Quality of preparation
C0939977	Excellent preparation
C0939978	Adequate preparation
C0939979	Inadequate preparation: examination completed
C0939980	Inadequate preparation: precluding a complete examination
C0939981	Extent of examination
C0806665	Limitation of examination
C0939982	Reason of limitation
C0939983	Adhesion as reason of limitation
C0939984	Colonic loop as reason of limitation
C0941135	Stenosis as reason of limitation
C0939985	Poor preparation as reason of limitation
C0939986	Patient unstable as reason of limitation
C0939987	Equipment malfunction as reason of limitation
C0008310	ERCP
C0939988	Access to the papilla
C0939989	Not reached papilla
C0939990	Not found papilla
C0939991	Unaccessible papilla
C0939992	Reason for unaccessible papilla
C0941136	Duct cannulation
C0400522	Pancreatic duct cannulation
C0939993	Biliary duct cannulation
C0939994	Duct cannulation result
C0941137	Deep duct cannulation
C0941254	Superficial duct cannulation
C0939995	Failed duct cannulation
C0939996	Not attempted duct cannulation
C0941138	Submucosal injection as duct cannulation result
C0939997	Duct cannulation method
C0939998	Free cannulation
C0939999	Cannulation over a guide-wire
C0940000	Cannulation after precut

C0940001	Duct cannulation device
C0520453	Cannula
C0940002	Metal tip cannula
C0182180	Papillotome
C0441127	Balloon catheter
C0941139	Manometry catheter
C0940003	Duct opacification
C0940004	Pancreatic duct opacification
C0940005	Biliary duct opacification
C0941140	Duct opacification result
C0940006	Complete duct opacification
C0940007	Partial duct opacification
C0940008	Failed duct opacification
C0940009	Not attempted duct opacification
C0940010	Reflux of contrast medium
C0015378	Extravasation of contrast medium
C0577006	Esophageal finding
C0577015	Normal esophagus
C0940013	Normal Z line
C0940014	Distance in cm of the Z line from incisors
C0940015	Esophageal lumen lesion
C0940016	Dilated esophageal lumen
C0014866	Esophageal stenosis
C0940017	Appearance of esophageal stenosis
C0940018	Extrinsic appearance of esophageal stenosis
C0940019	Benign intrinsic appearance of esophageal stenosis
C0940020	Malignant intrinsic appearance of esophageal stenosis
C0940021	Length in cm of esophageal stenosis
C0940022	Traversability of esophageal stenosis
C0940023	Traversed esophageal stenosis
C0940024	Traversed esophageal stenosis, after dilatation
C0940025	Non traversed esophageal stenosis
C0940026	Extrinsic impression of the esophageal lumen
C0940027	Size of the extrinsic impression of the esophageal lumen
C0940028	Extrinsic impression of the esophageal lumen of small size
C0940029	Extrinsic impression of the esophageal lumen of large size
C0392495	Esophageal web
C0267081	Esophageal ring
C0019291	Esophageal hiatal hernia
C0940030	Size of esophageal hiatal hernia
C0940031	Esophageal hiatal hernia of small size
C0940032	Esophageal hiatal hernia of medium size
C0940033	Esophageal hiatal hernia of large size
C0940034	Site of z-line in esophageal hiatal hernia
C0941141	Distance in cm of the z line from incisors in esophageal hiatal hernia
C0940035	Site of hiatal narrowing in esophageal hiatal hernia
C0940036	Distance in cm from incisors of the hiatal narrowing in esophageal hiatal hernia

C0227192	Lower esophageal sphincter
C0940037	Tone of the lower esophageal sphincter
C0940038	Gaping lower esophageal sphincter
C0940039	Hypertonic lower esophageal sphincter
C0941142	Evidence of previous esophageal surgery
C0940040	Esophageal anastomosis
C0940041	Esophago-jejunal anastomosis
C0940042	Esophago-gastric anastomosis
C0940043	Esophago-colonic anastomosis
C0941143	Suture material visible in the esophagus
C0940044	Presence of suture material visible in the esophagus
C0940045	Absence of suture material visible in the esophagus
C0227195	Esophageal contents
C0940046	Esophageal foreign body
C0941144	Type of esophageal foreign body
C0940047	Specification of esophageal foreign body
C0940048	Blood in the esophagus
C0940049	Kind of blood in the esophagus
C0940050	Red blood in the esophagus
C0941145	Clot in the esophagus
C0940051	Hematin in the esophagus
C0941255	Food in the esophagus
C0940052	Bile in the esophagus
C0183514	Esophageal stent
C0941146	Type of esophageal stent
C0940053	Specification of esophageal stent
C0940054	Esophageal band
C0940055	Number of esophageal band
C0941147	Position of esophageal band
C0940056	Free esophageal band
C0940057	Attached esophageal band
C0940058	Esophageal mucosa lesion
C0940059	Erythematous esophageal mucosa
C0940060	Extent of erythematous esophageal mucosa
C0940061	Localized erythematous esophageal mucosa
C0940062	Patchy erythematous esophageal mucosa
C0940063	Diffuse erythematous esophageal mucosa
C0014868	Esophagitis
C0940064	Grade of esophagitis
C0940065	Grade I esophagitis
C0940066	Grade II esophagitis
C0940067	Grade III esophagitis
C0940068	Grade IV esophagitis
C0940069	Bleeding of esophagitis
C0940070	Bleeding esophagitis
C0940071	Non bleeding esophagitis
C0004763	Barrett's esophagus

C0940072	Distance of Barrett's esophagus
C0940073	Distance of Z-line from incisors in Barrett's esophagus
C0940074	Distance of upper end of gastric folds from incisors in Barrett's esophagus
C0239295	Esophageal candidiasis
C0940075	Extent of esophageal candidiasis
C0940076	Localized esophageal candidiasis
C0941256	Patchy esophageal candidiasis
C0940077	Diffuse esophageal candidiasis
C0940078	Mucosal esophageal sclerosis
C0940079	Type of mucosal esophageal sclerosis
C0940080	Spontaneous mucosal esophageal sclerosis
C0940081	Post-therapy mucosal esophageal sclerosis
C0940082	Extent of mucosal esophageal sclerosis
C0940083	Localized mucosal esophageal sclerosis
C0940084	Patchy mucosal esophageal sclerosis
C0940085	Diffuse mucosal esophageal sclerosis
C0940086	Esophageal flat lesion
C0345180	Ectopic gastric mucosa
C0940087	Number of ectopic gastric mucosa
C0940088	Single ectopic gastric mucosa
C0940089	Multiple ectopic gastric mucosa
C0940090	Esophageal plaque
C0941148	Number of esophageal plaques
C0940091	Single esophageal plaque
C0940092	Multiple esophageal plaques
C0940093	Esophageal protruding lesion
C0940094	Esophageal nodule
C0941149	Number of esophageal nodules
C0940095	Single esophageal nodule
C0940096	Few esophageal nodules
C0940097	Many esophageal nodules
C0941150	Extent of esophageal nodules
C0940098	Localized esophageal nodules
C0940099	Patchy esophageal nodules
C0940100	Diffuse esophageal nodules
C0014859	Esophageal tumor
C0941103	Size of esophageal tumor
C0940101	Small esophageal tumor
C0940102	Medium esophageal tumor
C0940103	Large esophageal tumor
C0940104	Type of esophageal tumor
C0941104	Submucosal esophageal tumor
C0941105	Fungating esophageal tumor
C0940105	Ulcerated esophageal tumor
C0940106	Circumferentiality of esophageal tumor
C0940107	Circumferential esophageal tumor
C0941106	Non circumferential esophageal tumor

C0940108	Obstructing esophageal tumor
C0940109	Partial obstructing esophageal tumor
C0940110	Complete obstructing esophageal tumor
C0941107	Bleeding of esophageal tumor
C0941107	Bleeding esophageal tumor
C0940111	Non bleeding esophageal tumor
C0940112	Stigmata of bleeding of esophageal tumor
C0940113	Presence of stigmata of bleeding in esophageal tumor
C0940114	Absence of stigmata of bleeding in esophageal tumor
C0014867	Esophageal varices
C0940115	Grade of esophageal varices
C0940116	Grade I esophageal varices
C0940117	Grade II esophageal varices
C0940118	Grade III esophageal varices
C0940119	Size of esophageal varices
C0940120	Estimated width in mm of esophageal varices
C0940121	Upper limit of esophageal varices
C0155789	Bleeding esophageal varices
C0940122	Spurting bleeding of esophageal varices
C0940123	Oozing bleeding of esophageal varices
C0940124	Non bleeding esophageal varices
C0940125	Stigmata of recent bleeding of esophageal varices
C0940126	Presence of stigmata of recent bleeding of esophageal varices
C0941257	Absence of stigmata of recent bleeding of esophageal varices
C0940127	Red signs on esophageal varices
C0940128	Presence of red signs on esophageal varices
C0940129	Absence of red signs on esophageal varices
C0940130	Esophageal excavated lesion
C0024633	Mallory-Weiss tear
C0940131	Bleeding Mallory-Weiss tear
C0940132	Spurting bleeding Mallory-Weiss tear
C0940133	Oozing bleeding Mallory-Weiss tear
C0940134	Non bleeding Mallory-Weiss tear
C0940135	Stigmata of bleeding of Mallory-Weiss tear
C0940136	Presence of stigmata of bleeding of Mallory-Weiss tear
C0940137	Absence of stigmata of bleeding of Mallory-Weiss tear
C0341117	Esophageal erosion
C0940138	Number of esophageal erosions
C0940139	Single esophageal erosion
C0940140	Few esophageal erosions
C0940141	Many esophageal erosions
C0151970	Esophageal ulcer
C0940142	Number of esophageal ulcers
C0940143	Size (in mm) of esophageal ulcer
C0236127	Bleeding esophageal ulcer
C0941151	Spurting bleeding esophageal ulcer
C0940144	Oozing bleeding esophageal ulcer

C0940145	Non bleeding esophageal ulcer
C0940146	Stigmata of recent bleeding of esophageal ulcer
C0940147	Presence of stigmata of recent bleeding of esophageal ulcer
C0941152	Absence of stigmata of recent bleeding of esophageal ulcer
C0940148	Esophageal scar
C0014854	Esophageal diverticulum
C0014856	Esophageal fistula
C0940149	Other esophageal lesion
C0940150	Specification of other esophageal lesion
C0455811	Gastric finding
C0577026	Normal stomach
C0940151	Gastric lumen lesion
C0585012	Gastric stenosis
C0941154	Appearance of gastric stenosis
C0940152	Extrinsic appearance of gastric stenosis
C0940153	Benign intrinsic appearance of gastric stenosis
C0940154	Malignant intrinsic appearance of gastric stenosis
C0940155	Traversability of gastric stenosis
C0941155	Traversed gastric stenosis
C0940156	Non traversed gastric stenosis
C0941258	Deformity of gastric lumen
C0940157	Extrinsic impression of gastric lumen
C0940158	Evidence of previous gastric surgery
C0941156	Gastric anastomosis
C0192440	Billroth I gastric anastomosis
C0192444	Billroth II gastric anastomosis
C0017164	Gastroenterostomy
C0192489	Pyloroplasty
C0940159	Anti-reflux surgery
C0181019	Banded gastroplasty
C0940160	Suture material visible in the stomach
C0940161	Presence of suture material visible in the stomach
C0940162	Absence of suture material visible in the stomach
C0546256	Gastrostomy
C0445619	Type of gastrostomy
C0017196	Surgical gastrostomy
C0176751	PEG
C0176751	Endoscopic gastrostomy
C0038352	Gastric contents
C0940163	Blood in the stomach
C0940164	Kind of blood in the stomach
C0940165	Red blood in the stomach
C0940166	Clot in the stomach
C0940167	Hematin in the stomach
C0941108	Food in the stomach
C0940168	Type of food in the stomach
C1321581	Bezoar

C0940169	Fluid in the stomach
C0940170	Appearance of fluid in the stomach
C0940171	Clear fluid in the stomach
C0940172	Excessive fluid in the stomach
C0940173	Bilious fluid in the stomach
C0161019	Gastric foreign body
C0940174	Type of gastric foreign body
C0940175	Specification of gastric foreign body
C0940176	Gastric stent
C0940177	Type of gastric stent
C0940178	Specification of type of gastric stent
C0854441	Gastric mucosa lesion
C0940180	Erythematous gastric mucosa
C0940181	Extent of erythematous gastric mucosa
C0940182	Localized erythematous gastric mucosa
C0940183	Patchy erythematous gastric mucosa
C0940184	Striped erythematous gastric mucosa
C0941109	Diffuse erythematous gastric mucosa
C0940185	Bleeding of erythematous gastric mucosa
C0940186	Presence of bleeding erythematous gastric mucosa
C0940187	Absence of bleeding erythematous gastric mucosa
C0940188	Stigmata of bleeding of erythematous gastric mucosa
C0941110	Congested gastric mucosa
C0940189	Extent of congested gastric mucosa
C0940190	Localized congested gastric mucosa
C0940191	Patchy congested gastric mucosa
C0941111	Diffuse congested gastric mucosa
C0940192	Granular gastric mucosa
C0941259	Extent of granular gastric mucosa
C0940193	Localized granular gastric mucosa
C0940194	Patchy granular gastric mucosa
C0941157	Diffuse granular gastric mucosa
C0940195	Friable gastric mucosa
C0940196	Extent of friable gastric mucosa
C0940197	Localized friable gastric mucosa
C0940198	Patchy friable gastric mucosa
C0941158	Diffuse friable gastric mucosa
C0940199	Bleeding of friable gastric mucosa
C0940200	Spontaneous bleeding of friable gastric mucosa
C0940201	Contact bleeding of friable gastric mucosa
C0940202	Non bleeding friable gastric mucosa
C0941159	Nodular gastric mucosa
C0940203	Extent of nodular gastric mucosa
C0940204	Localized extent of nodular gastric mucosa
C0940205	Patchy nodular gastric mucosa
C0940206	Diffuse nodular gastric mucosa
C0941160	Atrophic gastric mucosa

C0940207	Extent of atrophic gastric mucosa
C0940208	Localized atrophic gastric mucosa
C0940209	Patchy atrophic gastric mucosa
C0940210	Diffuse atrophic gastric mucosa
C0940211	Hemorrhagic gastric mucosa
C0940212	Extent of hemorrhagic gastric mucosa
C0940213	Localized hemorrhagic gastric mucosa
C0940214	Patchy hemorrhagic gastric mucosa
C0940215	Diffuse hemorrhagic gastric mucosa
C0940216	Gastric petechia
C0940217	Number of gastric petechiae
C0940218	Single gastric petechia
C0940219	Few gastric petechiae
C0940220	Multiple gastric petechiae
C0940221	Extent of gastric petechiae
C0940222	Localized gastric petechiae
C0940223	Diffuse gastric petechiae
C0940224	Gastric flat lesion
C0940225	Gastric spot
C0941112	Number of gastric spots
C0940226	Single gastric spot
C0940227	Few gastric spots
C0940228	Multiple gastric spots
C0940229	Extent of gastric spots
C0940230	Localized gastric spots
C0940231	Patchy gastric spots
C0940232	Diffuse gastric spots
C0940233	Bleeding of gastric spot
C0940234	Presence of bleeding gastric spot
C0940235	Subepithelial bleeding gastric spot
C0940236	Absence of bleeding gastric spot
C0940237	Stigmata of bleeding gastric spot
C0940238	Presence of stigmata of bleeding gastric spot
C0940239	Absence of stigmata of bleeding gastric spot
C0341217	Dieulafoy lesion
C0940240	Bleeding of Dieulafoy lesion
C0940241	Spurting bleeding Dieulafoy lesion
C0940242	Oozing bleeding Dieulafoy lesion
C0940243	Non bleeding Dieulafoy lesion
C0941161	Stigmata of bleeding of Dieulafoy lesion
C0940244	Presence of stigmata of bleeding of Dieulafoy lesion
C0940245	Absence of stigmata of bleeding of Dieulafoy lesion
C0940246	Gastric angioectasia
C0940247	Number of gastric angioectasia
C0941162	Single gastric angioectasia
C0940248	Few gastric angioectasia
C0940249	Multiple gastric angioectasia

C0940250	Extent of gastric angioectasia
C0940251	Localized gastric angioectasia
C0941163	Patchy gastric angioectasia
C0940252	Diffuse gastric angioectasia
C0940253	Bleeding gastric angioectasia
C0941260	Presence of bleeding gastric angioectasia
C0940254	Absence of bleeding gastric angioectasia
C0941164	Stigmata of bleeding of gastric angioectasia
C0940255	Presence of stigmata of bleeding of gastric angioectasia
C0940256	Absence of stigmata of bleeding of gastric angioectasia
C0940257	Gastric protruding lesion
C0940258	Enlarged gastric folds
C0941165	Extent of enlarged gastric folds
C0940259	Localized enlarged gastric folds
C0940260	Diffuse enlarged gastric folds
C0940261	Type of enlarged gastric folds
C0940262	Thick enlarged gastric folds
C0941166	Giant enlarged gastric folds
C0940263	Gastric papule
C0940264	Number of gastric papules
C0940265	Single gastric papule
C0940266	Few gastric papules
C0941113	Multiple gastric papules
C0940267	Bleeding of gastric papule
C0940268	Presence of bleeding of gastric papule
C0940269	Absence of bleeding of gastric papule
C0940270	Stigmata of bleeding of gastric papule
C0940271	Presence of stigmata of bleeding gastric papule
C0940272	Absence of stigmata of bleeding of gastric papule
C0236048	Gastric polyp
C0940273	Number of gastric polyps
C0940274	Single gastric polyp
C0940275	Few gastric polyps
C0236048	Multiple gastric polyps
C0941261	Pedicle of gastric polyp
C0940276	Sessile gastric polyp
C0940277	Pedunculated gastric polyp
C0940278	Size of gastric polyp
C0940279	Small (< 5 mm) gastric polyp
C0940280	Medium (5-20 mm) gastric polyp
C0940281	Large (> 20 mm) gastric polyp
C0940282	Bleeding of gastric polyp
C0940283	Presence of bleeding of gastric polyp
C0940284	Absence of bleeding of gastric polyp
C0940285	Stigmata of bleeding of gastric polyp
C0940286	Presence of stigmata of bleeding of gastric polyp
C0940287	Absence of stigmata of bleeding of gastric polyp

C0038356	Gastric tumor
C0940288	Size of gastric tumor
C0940289	Small gastric tumor
C0940290	Medium gastric tumor
C0940291	Large gastric tumor
C0940292	Diameter in mm of gastric tumor
C0940293	Type of gastric tumor
C0940294	Submucosal type of gastric tumor
C0940295	Fungating type of gastric tumor
C0940296	Ulcerated type of gastric tumor
C0940297	Infiltrative type of gastric tumor
C0940298	Circumferentiality of gastric tumor
C0941114	Circumferential gastric tumor
C0940299	Non circumferential gastric tumor
C0940300	Bleeding gastric tumor
C0940301	Spurting bleeding gastric tumor
C0940302	Oozing bleeding gastric tumor
C0941115	Non bleeding gastric tumor
C0941116	Stigmata of bleeding of gastric tumor
C0940303	Presence of stigmata of bleeding of gastric tumor
C0940304	Absence of stigmata of bleeding of gastric tumor
C0017145	Gastric varices
C0267209	Bleeding of gastric varices
C0940305	Spurting bleeding gastric varices
C0940306	Oozing bleeding gastric varices
C0940307	Non bleeding gastric varices
C0940308	Stigmata of bleeding of gastric varices
C0941167	Presence of stigmata of bleeding of gastric varices
C0940309	Absence of stigmata of bleeding of gastric varices
C0940310	Gastric suture granuloma
C0940311	Gastric excavated lesion
C1384498	Gastric erosion
C0941168	Number of gastric erosions
C0940312	Single gastric erosion
C0940313	Few gastric erosions
C0341177	Multiple gastric erosions
C0940314	Extent of gastric erosions
C0941169	Localized gastric erosions
C0940315	Dispersed gastric erosions
C0940316	Bleeding of gastric erosion
C0585142	Bleeding gastric erosion
C0940317	Non bleeding gastric erosion
C0941170	Stigmata of bleeding of gastric erosion
C0940318	Presence of stigmata of bleeding of gastric erosion
C0940319	Absence of stigmata of bleeding of gastric erosion
C0038358	Gastric ulcer
C0940320	Number of gastric ulcers

C0940321	Size of gastric ulcer
C0940322	Largest diameter in mm of gastric ulcer
C0940323	Shape of gastric ulcer
C0940324	Superficial shape of gastric ulcer
C0940325	Cratered shape of gastric ulcer
C0940326	Linear shape of gastric ulcer
C0341164	Bleeding gastric ulcer
C0940327	Spurting bleeding gastric ulcer
C0940328	Oozing bleeding gastric ulcer
C0940329	Non bleeding gastric ulcer
C0940330	Stigmata of bleeding of gastric ulcer
C0940331	Visible vessel on gastric ulcer
C0940332	Clot on gastric ulcer
C0940333	Pigmented material on gastric ulcer
C0940334	No stigmata of bleeding of gastric ulcer
C0941262	Gastric scar
C0940335	Number of gastric scars
C0940336	Single gastric scar
C0940337	Multiple gastric scars
C0038355	Gastric diverticulum
C0940338	Duodenal finding
C0940339	Normal duodenum
C0940340	Duodenal lumen lesion
C0238093	Duodenal stenosis
C0940341	Appearance of duodenal stenosis
C0940342	Extrinsic appearance of duodenal stenosis
C0940343	Benign intrinsic appearance of duodenal stenosis
C0940344	Malignant intrinsic appearance of duodenal stenosis
C0940345	Traversability of duodenal stenosis
C0940346	Traversed duodenal stenosis
C0940347	Non traversed duodenal stenosis
C0940348	Deformity of duodenal lumen
C0940349	Appearance of duodenal deformity
C0940350	Extrinsic appearance of duodenal deformity
C0940351	Post-ulcer appearance of duodenal deformity
C0940352	Evidence of previous duodenal surgery
C0940353	Specification of previous duodenal surgery
C0941171	Suture material visible in the duodenal lumen
C0940354	Presence of suture material visible in the duodenal lumen
C0940355	Absence of suture material visible in the duodenal lumen
C0940356	Duodenal content
C0940357	Blood in the duodenal lumen
C0941172	Kind of blood in the duodenal lumen
C0941263	Red blood in the duodenal lumen
C0940358	Clot in the duodenal lumen
C0940359	Hematin in the duodenal lumen
C0941244	Duodenal parasites

C0433663	Duodenal foreign body
C0940360	Duodenal stent
C0940361	Type of duodenal stent
C0940362	Specification of duodenal stent
C0940363	Duodenal mucosa lesion
C0941117	Erythematous duodenal mucosa
C0940364	Extent of erythematous duodenal mucosa
C0940365	Localized erythematous duodenal mucosa
C0940366	Patchy erythematous duodenal mucosa
C0940367	Diffuse erythematous duodenal mucosa
C0941118	Bleeding of erythematous duodenal mucosa
C0940368	Presence of bleeding of erythematous duodenal mucosa
C0940369	Absence of bleeding of erythematous duodenal mucosa
C0940370	Stigmata of bleeding of erythematous duodenal mucosa
C0940371	Presence of stigmata of bleeding of erythematous duodenal mucosa
C0941119	Absence of stigmata of bleeding of erythematous duodenal mucosa
C0940372	Congested duodenal mucosa
C0940373	Extent of congested duodenal mucosa
C0940374	Localized congested duodenal mucosa
C0940375	Patchy congested duodenal mucosa
C0940376	Diffuse congested duodenal mucosa
C0940377	Bleeding of congested duodenal mucosa
C0940378	Presence of bleeding of congested duodenal mucosa
C0940379	Absence of bleeding of congested duodenal mucosa
C0940380	Stigmata of bleeding of congested duodenal mucosa
C0940381	Presence of stigmata of bleeding of congested duodenal mucosa
C0940382	Absence of stigmata of bleeding of congested duodenal mucosa
C0940383	Granular duodenal mucosa
C0940384	Extent of granular duodenal mucosa
C0940385	Localized granular duodenal mucosa
C0940386	Patchy granular duodenal mucosa
C0940387	Diffuse granular duodenal mucosa
C0940388	Friable duodenal mucosa
C0940389	Extent of duodenal mucosa
C0940390	Localized friable duodenal mucosa
C0940391	Patchy friable duodenal mucosa
C0940392	Diffuse friable duodenal mucosa
C0940393	Bleeding of friable duodenal mucosa
C0941264	Spontaneous bleeding of friable duodenal mucosa
C0940394	Contact bleeding of friable duodenal mucosa
C0940395	No bleeding of friable duodenal mucosa
C0940396	Nodular duodenal mucosa
C0940397	Extent of nodular duodenal mucosa
C0940398	Localized nodular duodenal mucosa
C0940399	Diffuse nodular duodenal mucosa
C0940400	Atrophic duodenal mucosa
C0940401	Extent of atrophic duodenal mucosa

C0940402	Localized atrophic duodenal mucosa
C0940403	Patchy atrophic duodenal mucosa
C0940404	Diffuse atrophic duodenal mucosa
C0940405	Hemorrhagic duodenal mucosa
C0940406	Extent of hemorrhagic duodenal mucosa
C0940407	Localized hemorrhagic duodenal mucosa
C0941173	Patchy hemorrhagic duodenal mucosa
C0940408	Diffuse hemorrhagic duodenal mucosa
C0940409	Bleeding of hemorrhagic duodenal mucosa
C0940410	Presence of bleeding of hemorrhagic duodenal mucosa
C0940411	Non bleeding hemorrhagic duodenal mucosa
C0940412	Stigmata of bleeding of hemorrhagic duodenal mucosa
C0941174	Presence of stigmata of bleeding of hemorrhagic duodenal mucosa
C0940413	Absence of stigmata of bleeding of hemorrhagic duodenal mucosa
C0940414	Duodenal flat lesion
C0940415	Duodenal spot
C0940416	Number of duodenal spots
C0940417	Single duodenal spot
C0941175	Few duodenal spots
C0940418	Multiple duodenal spots
C0940419	Extent of duodenal spot
C0940420	Localized duodenal spot
C0941176	Patchy duodenal spot
C0940421	Diffuse duodenal spot
C0940422	Bleeding of duodenal spot
C0940423	Presence of bleeding of duodenal spot
C0940424	Absence of bleeding of duodenal spot
C0941177	Subepithelial bleeding of duodenal spot
C0940425	Hematin stained duodenal spot
C0940426	Duodenal angioectasia
C0940427	Number of duodenal angioectasia
C0941265	Single duodenal angioectasia
C0941178	Few duodenal angioectasia
C0940428	Multiple duodenal angioectasia
C0940429	Extent of duodenal angioectasia
C0940430	Localized duodenal angioectasia
C0940431	Patchy duodenal angioectasia
C0941179	Diffused duodenal angioectasia
C0940432	Bleeding of duodenal angioectasia
C0940433	Presence of bleeding of duodenal angioectasia
C0940434	Absence of bleeding of duodenal angioectasia
C0940435	Stigmata of bleeding of duodenal angioectasia
C0940436	Presence of stigmata of bleeding of duodenal angioectasia
C0940437	Absence of stigmata of bleeding of duodenal angioectasia
C0940438	Duodenal protruding lesion
C0347266	Duodenal polyp
C0940439	Number of duodenal polyps

C0940440	Single duodenal polyp
C0940441	Few duodenal polyps
C0940442	Multiple duodenal polyps
C0941266	Size of duodenal polyp
C0940443	Small (< 5 mm) duodenal polyp
C0940444	Medium (5-20 mm) duodenal polyp
C0940445	Large (> 20 mm) duodenal polyp
C0940446	Pedicle of duodenal polyp
C0940447	Sessile duodenal polyp
C0940448	Pedunculated duodenal polyp
C0940449	Bleeding of duodenal polyp
C0940450	Presence of bleeding of duodenal polyp
C0940451	Absence of bleeding of duodenal polyp
C0013291	Duodenal tumor
C0940452	Size of duodenal tumor
C0940453	Small duodenal tumor
C0940454	Medium duodenal tumor
C0940455	Large size duodenal tumor
C0940456	Diameter in mm of duodenal tumor
C0940457	Type of duodenal tumor
C0940458	Submucosal duodenal tumor
C0940459	Fungating duodenal tumor
C0940460	Ulcerated duodenal tumor
C0940461	Infiltrative duodenal tumor
C0940462	Frond-like duodenal tumor
C0947627	Bleeding of duodenal tumor
C0940463	Spurting bleeding of duodenal tumor
C0940464	Oozing bleeding of duodenal tumor
C0941120	Non bleeding duodenal tumor
C0940465	Stigmata of bleeding of duodenal tumor
C0940466	Presence of stigmata of bleeding of duodenal tumor
C0940467	Absence of stigmata of bleeding of duodenal tumor
C0940468	Duodenal excavated lesion
C0341244	Duodenal erosion
C0941267	Number of duodenal erosions
C0940469	Single duodenal erosion
C0940470	Few duodenal erosions
C0341247	Multiple duodenal erosions
C0940471	Extent of duodenal erosions
C0940472	Localized duodenal erosions
C0940473	Segmental duodenal erosions
C0940474	Diffuse duodenal erosions
C0941180	Bleeding of duodenal erosion
C0940475	Presence of bleeding of duodenal erosion
C0940476	Absence of bleeding of duodenal erosion
C0940477	Stigmata of bleeding of duodenal erosion
C0940478	Presence of stigmata of bleeding of duodenal erosions

C0941181	Absence of stigmata of bleeding of duodenal erosions
C0013295	Duodenal ulcer
C0940479	Number of duodenal ulcers
C0940480	Size of duodenal ulcer
C0940481	Largest diameter in mm of duodenal ulcer
C0940482	Shape of duodenal ulcer
C0941182	Superficial duodenal ulcer
C0940483	Cratered duodenal ulcer
C0940484	Linear duodenal ulcer
C0940485	Bleeding of duodenal ulcer
C0941183	Spurting bleeding of duodenal ulcer
C0940486	Oozing bleeding of duodenal ulcer
C0940487	Non bleeding duodenal ulcer
C0940488	Stigmata of bleeding of duodenal ulcer
C0940489	Visible vessel on duodenal ulcer
C0940490	Clot on duodenal ulcer
C0940491	Pigmented material on duodenal ulcer
C0940492	No stigmata of bleeding of duodenal ulcer
C0341255	Duodenal scar
C0940493	Number of duodenal scars
C0940494	Single duodenal scar
C0940495	Multiple duodenal scars
C0341266	Duodenal diverticulum
C0940496	Opening of duodenal diverticulum
C0940497	Large opening of duodenal diverticulum
C0940498	Small opening of duodenal diverticulum
C0267358	Duodenal fistula
C0940499	Colonic finding
C0940500	Normal colon
C0940501	Colonic lumen lesion
C0940502	Dilated colonic lumen
C0267466	Colonic stenosis
C0940503	Appearance of colonic stenosis
C0940504	Extrinsic colonic stenosis
C0940505	Benign intrinsic colonic stenosis
C0940506	Malignant intrinsic colonic stenosis
C0940507	Length of colonic stenosis in cm
C0940508	Traversability of colonic stenosis
C0940509	Traversed colonic stenosis
C0940510	Evidence of previous colonic surgery
C0940511	Type of previous colonic surgery
C0192958	Colo-colonic anastomosis
C0740369	Ileo-colonic anastomosis
C0400330	Colo-anal anastomosis
C0192755	Ileo-anal anastomosis
C0546255	Colostomy
C0940512	Suture material visible in the colonic lumen

C0940513	Specification of suture material visible in the colonic lumen
C0227363	Colonic contents
C0940514	Blood in the colonic lumen
C0941184	Kind of blood in the colonic lumen
C0940515	Red blood in the colonic lumen
C0940516	Clot in the colonic lumen
C0940517	Hematin in the colonic lumen
C0564434	Colonic foreign body
C0941185	Colonic parasites
C0940518	Exudate in the colonic lumen
C0940519	Stool in the colonic lumen
C0940520	Colonic stent
C0940521	Type of colonic stent
C0941186	Specification of type of colonic stent
C0941268	Colonic mucosa lesion
C0940522	Vascular pattern of colonic mucosa
C0940523	Appearance of vascular pattern of colonic mucosa
C0940524	Normal vascular pattern of colonic mucosa
C0941187	Increased vascular pattern of colonic mucosa
C0940525	Decreased vascular pattern of colonic mucosa
C0940526	Extent of vascular pattern of colonic mucosa
C0940527	Localized vascular pattern of colonic mucosa
C0940528	Segmental vascular pattern of colonic mucosa
C0940529	Diffuse vascular pattern of colonic mucosa
C0941121	Erythematous colonic mucosa
C0940530	Extent of erythematous colonic mucosa
C0940531	Localized erythematous colonic mucosa
C0940532	Segmental erythematous colonic mucosa
C0941122	Diffuse erythematous colonic mucosa
C0940533	Congested colonic mucosa
C0940534	Extent of congested colonic mucosa
C0940535	Localized congested colonic mucosa
C0940536	Segmental congested colonic mucosa
C0941123	Diffuse congested colonic mucosa
C0940537	Granular colonic mucosa
C0940538	Extent of granular colonic mucosa
C0940539	Localized granular colonic mucosa
C0940540	Segmental granular colonic mucosa
C0940541	Diffuse granular colonic mucosa
C0940542	Friable colonic mucosa
C0940543	Extent of friable colonic mucosa
C0940544	Localized friable colonic mucosa
C0940545	Segmental friable colonic mucosa
C0940546	Diffuse friable colonic mucosa
C0940547	Bleeding of friable colonic mucosa
C0940548	Spontaneous bleeding of friable colonic mucosa
C0940549	Contact bleeding of bleeding friable colonic mucosa

C0940550	Non bleeding friable colonic mucosa
C0940551	Ulcerated colonic mucosa
C0940552	Continuity of ulcerated colonic mucosa
C0940553	Discontinuous ulcerated colonic mucosa
C0940554	Continuous ulcerated colonic mucosa
C0940555	Bleeding of ulcerated colonic mucosa
C0941269	Bleeding ulcerated colonic mucosa
C0940556	Non bleeding ulcerated colonic mucosa
C0940557	Stigmata of bleeding of ulcerated colonic mucosa
C0940558	Presence of stigmata of bleeding of ulcerated colonic mucosa
C0940559	Absence of stigmata of bleeding of ulcerated colonic mucosa
C0940560	Colonic petechiae
C0940561	Number of colonic petechiae
C0940562	Few colonic petechiae
C0940563	Multiple colonic petechiae
C0940564	Colonic pseudomembranes
C0940565	Extent of colonic pseudomembranes
C0940566	Localized colonic pseudomembranes
C0940567	Segmental colonic pseudomembranes
C0940568	Diffuse colonic pseudomembranes
C0221391	Colonic melanosis
C0940569	Extent of colonic melanosis
C0940570	Localized colonic melanosis
C0940571	Segmental colonic melanosis
C0940572	Diffuse colonic melanosis
C0941188	Colonic flat lesion
C0940573	Colonic angioectasia
C0940574	Number of colonic angioectasias
C0940575	Single colonic angioectasia
C0940576	Few colonic angioectasias
C0941189	Multiple colonic angioectasias
C0940577	Size of colonic angioectasia
C0940578	Small colonic angioectasia
C0940579	Medium colonic angioectasia
C0941190	Large colonic angioectasia
C0940580	Extent of colonic angioectasias
C0940581	Localized colonic angioectasias
C0940582	Patchy colonic angioectasias
C0940583	Diffuse colonic angioectasias
C0941191	Bleeding of colonic angioectasias
C0940584	Presence of bleeding of colonic angioectasia
C0941270	Absence of bleeding of colonic angioectasia
C0940585	Stigmata of bleeding of colonic angioectasia
C0940586	Presence of stigmata of bleeding of colonic angioectasia
C0941192	Absence of stigmata of bleeding of colonic angioectasia
C0940587	Colonic protruding lesion
C0009376	Colonic polyp

C0940588	Number of colonic polyps
C0940589	Specification of number of colonic polyps
C0940590	Many colonic polyps
C0742615	Multiple colonic polyps
C0940591	Extent of colonic polyps
C0940592	Localized colonic polyps
C0940593	Segmental colonic polyps
C0940594	Diffuse colonic polyps
C0941193	Size of colonic polyp
C0940595	Size of colonic polyp in mm
C0940596	Pedicle of colonic polyp
C0940597	Sessile colonic polyp
C0940598	Pedunculated colonic polyp
C0940599	Bleeding of colonic polyp
C0940600	Bleeding colonic polyp
C0940601	Non bleeding colonic polyp
C0940602	Stigmata of bleeding of colonic polyp
C0941271	Colonic pseudopolyps
C0940603	Extent of colonic pseudopolyps
C0940604	Localized colonic pseudopolyps
C0940605	Segmental colonic pseudopolyps
C0940606	Diffuse colonic pseudopolyps
C0940607	Colonic lipoma
C0940608	Size of colonic lipoma
C0940609	Small colonic lipoma
C0940610	Medium colonic lipoma
C0940611	Large colonic lipoma
C0940612	Diameter of colonic lipoma
C0940613	Diameter of colonic lipoma in mm
C0009375	Colonic tumor
C0940614	Size of colonic tumor
C0940615	Small colonic tumor
C0940616	Medium colonic tumor
C0940617	Large colonic tumor
C0940618	Diameter of colonic tumor in mm
C0940619	Length of colonic tumor
C0940620	Length of colonic tumor in cm
C0940621	Type of colonic tumor
C0940622	Submucosal colonic tumor
C0940623	Fungating colonic tumor
C0940624	Ulcerated colonic tumor
C0940625	Infiltrative colonic tumor
C0940626	Frond-like colonic tumor
C0940627	Obstructing colonic tumor
C0940628	Partial obstructing colonic tumor
C0941124	Complete obstructing colonic tumor
C0940629	Circumferentiality of colonic tumor

C0940630	Circumferential colonic tumor
C0941125	Non circumferential colonic tumor
C0940631	Bleeding of colonic tumor
C0940632	Spurting bleeding colonic tumor
C0940633	Oozing bleeding colonic tumor
C0940634	Non bleeding colonic tumor
C0941126	Stigmata of bleeding of colonic tumor
C0940635	Presence of stigmata of bleeding of colonic tumor
C0940636	Absence of stigmata of bleeding of colonic tumor
C0267574	Hypertrophy of anal papillae
C0019112	Hemorrhoids
C0265031	Bleeding of hemorrhoids
C0265031	Bleeding hemorrhoids
C0940637	Non bleeding hemorrhoids
C0940638	Colonic suture granuloma
C0940639	Number of colonic suture granulomas
C0941195	Single colonic suture granuloma
C0940640	Few colonic suture granulomas
C0940641	Multiple colonic suture granulomas
C0281779	Anal Condylomata
C0940642	Excavated colonic lesion
C0941196	Colonic erosion
C0940643	Number of colonic erosions
C0940644	Single colonic erosion
C0940645	Few colonic erosions
C0941197	Multiple colonic erosions
C0940646	Extent of colonic erosion
C0940647	Localized colonic erosion
C0940648	Segmental colonic erosions
C0940649	Diffuse colonic erosions
C0941198	Bleeding of colonic erosion
C0940650	Bleeding colonic erosion
C0940651	Non bleeding colonic erosion
C0940652	Stigmata of bleeding of colonic erosion
C0940653	Presence of stigmata of bleeding of colonic erosion
C0940654	Absence of stigmata of bleeding of colonic erosion
C0940655	Colonic aphtha
C0940656	Number of colonic aphthae
C0940657	Single colonic aphtha
C0940658	Few colonic aphthae
C0940659	Multiple colonic aphthae
C0940660	Extent of colonic aphthae
C0940661	Localized colonic aphthae
C0940662	Segmental colonic aphthae
C0940663	Diffuse colonic aphthae
C0940664	Bleeding of colonic aphtha
C0940665	Bleeding colonic aphtha

C0940666	Non bleeding colonic aphtha
C0940667	Stigmata of bleeding of colonic aphtha
C0940668	Presence of stigmata of bleeding of colonic aphtha
C0940669	Absence of stigmata of bleeding of colonic aphtha
C0267491	Colonic ulcer
C0940670	Number of colonic ulcers
C0941067	Single colonic ulcer
C0940671	Few colonic ulcers
C0940672	Multiple colonic ulcers
C0940673	Size of colonic ulcer
C0940674	Largest diameter of colonic ulcer in mm
C0948374	Bleeding of colonic ulcer
C0940676	Spurting bleeding colonic ulcer
C0940677	Oozing bleeding colonic ulcer
C0940678	Non bleeding colonic ulcer
C0941272	Stigmata of bleeding of colonic ulcer
C0940679	Presence of stigmata of bleeding of colonic ulcer
C0940680	Absence of stigmata of bleeding of colonic ulcer
C0940681	Colonic scar
C0940682	Number of colonic scars
C0940683	Single colonic scar
C0940684	Multiple colonic scars
C0012811	Colonic diverticulum
C0940685	Number of colonic diverticula
C0941199	Single colonic diverticulum
C0940686	Few colonic diverticula
C0940687	Multiple colonic diverticula
C0940688	Opening of colonic diverticulum
C0940689	Small opening of colonic diverticulum
C0941200	Large opening of colonic diverticulum
C0341365	Colonic fistula
C0016167	Anal fissure
C0940690	Papilla major finding
C0940691	Normal papilla major
C0941201	Abnormal output or content of the papilla major
C0940692	Blood in the papilla major
C0940693	Pus in the papilla major
C0940694	Sludge in the papilla major
C0940695	Impacted stone in the papilla major
C0940696	Foreign body in the papilla major
C0941202	Parasites in the papilla major
C0940697	Stent in the papilla major
C0940698	Drain in the papilla major
C0940699	Abnormal appearance of the papilla major
C0940700	Stenosis of the papilla major
C0941203	Appearance of stenosis of the papilla major
C0940701	Benign appearance of stenosis of the papilla major

C0940702	Malignant appearance of stenosis of the papilla major
C0940703	Bulging papilla major
C0940704	Congested papilla major
C0941204	Lacerated papilla major
C0940705	Tumor of the papilla major
C0940706	Type of tumor of the papilla major
C0941127	Frond-like tumor of the papilla major
C0940707	Fungating tumor of the papilla major
C0941128	Infiltrative tumor of the papilla major
C0940708	Evidence of previous endoscopic intervention of the papilla major
C0940709	Type of previous endoscopic intervention of the papilla major
C0940710	Biliary sphincterotomy of the papilla major
C0947631	Pancreatic sphincterotomy, endoscopic
C0940711	Biliary and pancreatic sphincterotomy
C0940712	Precut of the papilla major
C0940713	Papilla minor finding
C0940714	Normal papilla minor
C0940715	Abnormal output or content of the papilla minor
C0940716	Blood in the papilla minor
C0940717	Pus in the papilla minor
C0940718	Stent in the papilla minor
C0940719	Drain in the papilla minor
C0940720	Abnormal appearance of the papilla minor
C0941273	Congested papilla minor
C0940721	Lacerated papilla minor
C0940722	Tumor of the papilla minor
C0940723	Type of tumor of the papilla minor
C0940724	Frond-like tumor of the papilla minor
C0940725	Fungating tumor of the papilla minor
C0940726	Infiltrative tumor of the papilla minor
C0940727	Evidence of previous endoscopic intervention on the papilla minor
C0940728	Type of previous endoscopic intervention on the papilla minor
C0400792	Sphincterotomy of the papilla minor
C0940729	Precut of the papilla minor
C0940730	Pancreatic finding
C0940731	Normal pancreas
C0940732	Pancreatic abnormality
C0266270	Pancreas divisum
C0940733	Extent of pancreas divisum
C0940734	Complete pancreas divisum
C0940735	Incomplete pancreas divisum
C0940736	Pancreatic irregularity
C0940737	Extent of pancreatic irregularity
C0940738	Localized pancreatic irregularity
C0941205	Segmental pancreatic irregularity
C0940739	Diffuse pancreatic irregularity
C0940740	Pancreatic dilatation

C0940741	Extent of pancreatic dilatation
C0940742	Localized pancreatic dilatation
C0941206	Segmental pancreatic dilatation
C0940743	Diffuse pancreatic dilatation
C0940744	Rarefaction of pancreatic branches
C0940745	Extent of rarefaction of pancreatic branches
C0940746	Localized rarefaction of pancreatic branches
C0941129	Segmental rarefaction of pancreatic branches
C0941130	Diffuse rarefaction of pancreatic branches
C0940747	Pancreatic duct stenosis
C0940748	Length of pancreatic stenosis
C0940749	Length of pancreatic stenosis in mm
C0940750	Pancreatic obstruction
C0941207	Appearance of pancreatic obstruction
C0940751	Stone appearance of pancreatic obstruction
C0940752	Tumor appearance of pancreatic obstruction
C0940753	Completeness of pancreatic obstruction
C0940754	Partial pancreatic obstruction
C0941208	Complete pancreatic obstruction
C0440736	Pancreatic stone
C0940755	Number of pancreatic stones
C0940756	Single pancreatic stone
C0940757	Multiple pancreatic stones
C0941209	Pancreatic cavity
C0940758	Number of pancreatic cavities
C0940759	Single pancreatic cavity
C0940760	Multiple pancreatic cavities
C0941210	Diameter of pancreatic cavity
C0940761	Diameter of pancreatic cavity in mm
C0940762	Pancreatic chain of lakes
C0940763	Pancreatic extravasation
C0030290	Pancreatic fistula
C0940764	Evidence of previous pancreatic surgery
C0183516	Pancreatic stent
C0940765	Biliary system finding
C0940766	Normal biliary system
C0940767	Abnormalities of the biliary system
C0585572	Cystic duct junction
C0940768	Location from papilla of cystic duct junction
C0940769	Cystic duct junction located lower than 2 cm from papilla
C0940770	Cystic duct junction located greater than 2 cm from papilla
C0940771	Irregularity of the biliary system
C0940772	Extent of irregularity of the biliary system
C0940773	Localized irregularity of the biliary system
C0940774	Segmental irregularity of the biliary system
C0940775	Diffuse irregularity of the biliary system
C0585008	Dilation of the biliary system

C0940776	Extent of dilation of the biliary system
C0940777	Prestenotic dilation of the biliary system
C0941274	Localized dilation of the biliary system
C0940778	Segmental dilation of the biliary system
C0940779	Diffuse dilation of the biliary system
C0940780	Rarefaction of branches of the biliary system
C0940781	Extent of rarefaction of branches of the biliary system
C0940782	Localized rarefaction of branches of the biliary system
C0940783	Segmental rarefaction of branches of the biliary system
C0940784	Diffuse rarefaction of branches of the biliary system
C0597984	Biliary system stenosis
C0940785	Length of biliary system stenosis
C0940786	Length of biliary system stenosis in mm
C0940787	Number of biliary system stenoses
C0940788	Single biliary system stenosis
C0940789	Multiple biliary system stenoses
C0940790	Extent of biliary system stenoses
C0940791	Localized biliary system stenoses
C0940792	Segmental biliary system stenoses
C0940793	Diffuse biliary system stenoses
C0941131	Extrinsic impression of biliary system stenosis
C0940794	Size of extrinsic impression of biliary system stenosis
C0940795	Long extrinsic impression of biliary system stenosis
C0940796	Short extrinsic impression of biliary system stenosis
C0400979	Biliary system obstruction
C0941211	Appearance of biliary system obstruction
C0940797	Stone appearance of biliary system obstruction
C0940798	Tumor appearance of biliary system obstruction
C0940799	Completeness of biliary system obstruction
C0940800	Partial biliary system obstruction
C0940801	Complete biliary system obstruction
C0242216	Biliary system stone
C0940802	Number of biliary system stones
C0940803	Specification of number of biliary system stones
C0940804	Multiple biliary system stones
C0941212	Size of biliary system stone
C0940805	Size of biliary system stone in mm
C0940806	Filling defect (other than stone) of the biliary system
C0940807	Appearance of filling defect (other than stone) of the biliary system
C0941275	Air bubbles in the biliary system
C0941213	Sludge in the biliary system
C0940808	Parasite in the biliary system
C0940809	T-tube in the biliary system
C0940810	Stent in the biliary system
C0940811	Specification of stent of the biliary system
C0941214	Biliary system extravasation
C0940812	Biliary system cavity

C0941276	Number of biliary system cavities
C0940813	Single biliary system cavity
C0940814	Multiple biliary system cavities
C0940815	Diameter of biliary system cavity
C0940816	Diameter of biliary system cavity in mm
C0005417	Biliary system fistula
C0940817	Specification of biliary system fistula
C0940818	Evidence of previous surgery of the biliary system
C0940819	Evidence of cholecystectomy
C0940820	Evidence of choledocho-duodenostomy
C0940821	Evidence of choledocho-enterostomy
C0940822	Evidence of cholecystoentero-stomy
C0940823	Evidence of liver transplantation
C0940824	Additional procedure
C0430022	Diagnostic procedure
C0005558	Biopsy
C0492861	Biopsy device
C0180936	Biopsy forceps
C0947626	Biopsy snare
C0492861	Other biopsy device
C0449327	Biopsy method
C0940825	Biopsy method, cold
C0441493	Biopsy method, hot
C0940826	Biopsy purpose
C0344441	Histology (as purpose of biopsy)
C0085672	Microbiology (as purpose of biopsy)
C0940827	Helicobacter Pylori test (as purpose of biopsy)
C0940828	Biopsied lesion
C0849088	Cytology
C0940829	Lesion sampled for cytology
C0940830	Chromoscopy
C0941277	Type of chromoscopy
C0940831	Dye spreading
C0487602	Staining
C0940832	Chromoscopy dye
C0941215	Fluid aspiration
C0016356	Fluoroscopy
C0940833	Fluoroscopy type
C0940834	Cholangioscopy
C0941216	Type of cholangioscopy
C0376444	Endosonography
C0940835	Type of endosonography
C0940836	Functional measurement
C0940837	Type of functional measurement
C0087111	Therapeutic procedure
C0184937	Foreign body removal
C0940838	Type of foreign body removal

C0521210	Polypectomy
C0941217	Polypectomy device
C0940839	Polypectomy forceps
C0940840	Polypectomy snare
C0940841	Polypectomy method
C0941218	Cold polypectomy
C0940842	Hot polypectomy
C0940843	Polypectomy result
C0940844	Complete polypectomy
C0940845	Incomplete polypectomy
C0941219	Retrieval of polyp
C0940846	Polyp retrieved
C0940847	Polyp not retrieved
C0085263	Sphincterotomy (procedure)
C0941220	Precut sphincterotomy
C0940848	Sphincterotomy result
C0940849	Successful sphincterotomy
C0940850	Unsuccessful sphincterotomy
C0883371	Stone extraction
C0941221	Stone extraction result
C0941278	Complete stone extraction
C0940851	Incomplete stone extraction
C0940852	Not successful stone extraction
C0023878	Lithotripsy
C0940853	Type of lithotripsy
C0940854	Lithotripsy result
C0940855	Successful lithotripsy
C0940856	Unsuccessful lithotripsy
C0010705	Cystostomy
C0940857	Type of cystostomy
C0940858	Transgastric cystostomy
C0940859	Transduodenal cystostomy
C0940860	Guide-wire placement
C0940861	Type of guide-wire placement
C0940862	Guide-wire placement result
C0940863	Successful guide-wire placement
C0940864	Unsuccessful guide-wire placement
C0940865	Tube/drain placement
C0940866	Type of tube/drain placement
C0940867	Nasobiliary tube/drain placement
C0940868	Nasocystic tube/drain placement
C0941279	Nasoenteric tube/drain placement
C0940869	Nasopancreatic tube/drain placement
C0522776	Placement of stent
C0940870	Tube/drain placement, result
C0940871	Successful tube/drain placement
C0940872	Unsuccessful tube/drain placement

C0176751	Percutaneous gastrostomy (procedure)
C0176751	PEG (procedure)
C0940873	Type of percutaneous gastrostomy
C0940874	Type of removal of percutaneous gastrostomy
C0940875	External removal of percutaneous gastrostomy
C0940876	Internal removal of percutaneous gastrostomy
C0940877	PEG result
C0940877	Percutaneous gastrostomy result
C0940878	PEG successful
C0940878	Successful percutaneous gastrostomy
C0940879	PEG unsuccessful
C0940879	Unsuccessful percutaneous gastrostomy
C0393293	Dilation
C0940880	Type of dilation
C0941222	Guided bougie
C0940881	Non-guided bougie
C0004704	Balloon
C0940882	Dilation size
C0941223	Dilation result
C0940883	Successful dilation
C0940884	Unsuccessful dilation
C0940885	Dilated lesion
C1533685	Injection
C0940886	Injected material
C0941280	Injection volume
C0940887	Injection purpose
C0941224	Injection purpose, hemostasis
C0940888	Injection purpose, eradication of varices
C0940889	Injection purpose, tumor destruction
C0940890	Injection purpose, drug delivery
C0940891	Injection purpose, tattooing
C0941225	Injection result
C0940892	Successful injection
C0940893	Unsuccessful injection
C0023690	Ligation
C0941226	Type of ligation
C0940894	Ligation number
C0940895	Ligation result
C0940896	Successful ligation
C0940897	Unsuccessful ligation
C0525024	Prosthesis
C0449517	Type of prosthesis
C0940898	Prosthesis length
C0940899	Prosthesis diameter
C0941227	Prosthesis result
C0940900	Successful prosthesis
C0940901	Unsuccessful prosthesis

C0940902	Mucosal resection
C0941228	Type of mucosal resection
C0940903	Lesion resected
C0940904	Mucosal resection result
C0940905	Successful mucosal resection
C0940906	Unsuccessful mucosal resection
C0454527	Thermal therapy
C0940908	Type of thermal therapy
C0441509	Coagulation
C0042324	Vaporization
C0940909	Thermal therapy device
C0940910	Monopolar electrical device
C0940911	Bipolar electrical device
C0023089	Laser
C0392247	Argon beam
C0940912	Thermal therapy purpose
C0941281	Thermal therapy for hemostasis
C0940913	Thermal therapy for tissue destruction
C0940914	Thermal therapy for tumor destruction
C0940915	Thermal therapy result
C0940916	Successful thermal therapy
C0940917	Unsuccessful thermal therapy
C0031740	Photodynamic therapy
C0940918	Type of photodynamic therapy
C0940919	Photodynamic therapy purpose
C0940920	Photodynamic therapy result
C0940921	Successful photodynamic therapy
C0940922	Unsuccessful photodynamic therapy
C0940923	Intraluminal radiation
C0940924	Type of intraluminal radiation
C0940925	Intraluminal radiation purpose
C0940926	Intraluminal radiation result
C0940927	Successful intraluminal radiation
C0940928	Unsuccessful intraluminal radiation
C0009566	Complication
C0940929	Complication, cardio-respiratory
C0940930	Complication, perforation
C0940931	Complication, hemorrhage
C0940932	Complication, pancreatitis
C0940933	Complication, infection
C0009566	Other complication
C0940934	Reason for upper gastrointestinal endoscopy
C0941229	Symptom as reason for upper g.i. examination
C0947625	Abdominal distress/pain as reason for upper g.i. examination
C0011168	Dysphagia
C0018926	Hematemesis
C0025222	Melena

C0018834	Heartburn
C0027498	Nausea/vomiting
C0941282	Weight loss as reason for upper g.i. examination
C0940935	Anemia as reason for upper g.i. examination
C0940936	Diarrhea as reason for upper g.i. examination
C0941230	Disease as reason for upper g.i. examination
C0027651	Tumor
C0017168	Gastro-esophageal reflux disease
C0041582	Ulcer
C0017152	Gastritis
C0947637	Stenosis
C0017181	Gastrointestinal bleeding
C0042345	Varices
C0940937	Precancerous lesions
C0016542	Foreign body
C0941231	Metastasis of unknown origin as reason for upper g.i. examination
C0940938	Assessment as reason for upper g.i. examination
C0940939	Preoperative assessment as reason for upper g.i. examination
C0940940	Post-operative assessment as reason for upper g.i. examination
C0940941	Screening as reason for upper g.i. examination
C0994631	Familial history of neoplasm as reason for upper g.i. examination
C0940942	Abnormal imaging procedure as reason for upper g.i. examination
C0941232	Diagnostic sampling as reason for upper g.i. examination
C0940943	Other reason for upper g.i. examination
C0940944	Reason type for disease as reason for upper g.i. examination
C0940945	Suspected disease as reason for upper g.i. examination
C0940946	Established disease as reason for upper g.i. examination
C0940947	Exclusion of disease as reason for upper g.i. examination
C0940948	Follow-up of disease as reason for upper g.i. examination
C0940949	For therapy of disease as reason for upper g.i. examination
C0940950	Reason for lower gastrointestinal endoscopy
C0940951	Symptom as reason for lower g.i. examination
C0018932	Hematochezia
C0940952	Melena of unknown origin
C0940953	Diarrhea as reason for lower g.i. examination
C0947624	Abdominal distress/pain as reason for lower g.i. examination
C0278008	Modification of bowel habits
C0940954	Anemia as reason for lower g.i. examination
C0940955	Weight loss as reason for lower g.i. examination
C0940956	Other symptom as reason for lower g.i. examination
C0940957	Disease as reason for lower g.i. examination
C0032584	Polyps
C0009402	Colo-rectal cancer
C0235328	Colonic obstruction
C0012817	Diverticula
C0021390	Inflammatory bowel diseases
C0010346	Crohn's disease

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C0009324	Ulcerative colitis as reason for lower g.i. examination
C0042961	Volvulus
C0940958	Angioectasia
C0162529	Ischemic colitis as reason for lower g.i. examination
C1257843	Pseudomembranous colitis
C0940959	Metastasis of unknown origin as reason for lower g.i. examination
C0940960	Other disease as reason for lower g.i. examination
C0940961	Assessment as reason for lower g.i. examination
C0940962	Preoperative assessment as reason for lower g.i. examination
C0940963	Post-operative assessment as reason for lower g.i. examination
C0266813	Occult blood loss
C0940964	Screening as reason for lower g.i. examination
C0994633	Familial history of neoplasm as reason for lower g.i. examination
C0940965	Abnormal imaging procedure as reason for lower g.i. examination
C0940966	Diagnostic sampling as reason for lower g.i. examination
C0940967	Other reason for lower g.i. examination
C0940968	Reason type for disease as reason for lower g.i. examination
C0941233	Suspected disease as reason for lower g.i. examination
C0940969	Established disease as reason for lower g.i. examination
C0940970	Exclusion of disease as reason for lower g.i. examination
C0940971	Follow-up of disease as reason for lower g.i. examination
C0940972	For therapy of disease as reason for lower g.i. examination
C0940973	Reason for ERCP
C0941234	Symptom as reason for ERCP
C0022346	Jaundice
C0940974	Abdominal pain of suspected biliary or pancreatic origin
C0940975	Biological abnormalities as reason for ERCP
C0023901	Liver function tests
C0941235	Pancreatic tests
C0941283	Abnormal imaging procedure as reason for ERCP
C0940976	Disease as reason for ERCP
C0267869	Bile ducts stone
C0242216	Gallbladder stone
C0001339	Acute pancreatitis
C0940977	Chronic pancreatitis as reason for ERCP
C0940978	Periampullary tumor
C0941236	Pancreatic/biliary tumor
C0008311	Cholangitis
C0940979	Biliary or pancreatic cysts
C0940980	Complication of previous biliary surgery
C0940981	Complication of previous biliary non-surgical intervention
C0941094	Stent occlusion as reason for ERCP
C0940982	Assessment as reason for ERCP
C0940983	Preoperative assessment as reason for ERCP
C0940984	Post-operative assessment as reason for ERCP
C0940985	Diagnostic sampling as reason for ERCP
C0940986	Therapy as reason for ERCP

C0085263	Sphincterotomy as reason for ERCP
C0883371	Stone removal
C0176924	Biliary ducts stenting
C0940987	Pancreatic ducts stenting
C0400730	Biliary ducts stent removal
C0940988	Pancreatic stent removal
C0940989	Biliary ducts stent change
C0940990	Pancreatic stent change
C0842860	Biliary dilatation
C0940740	Pancreatic dilatation (reason)
C0400745	Biliary drainage
C0940991	Pancreatic drainage, endoscopic
C0852753	Cyst drainage
C0740166	Hemostasis
C0940992	Other reason for ERCP
C0940995	Established disease as reason for ERCP
C0940996	Exclusion of disease as reason for ERCP
C0941284	Follow-up of disease as reason for ERCP
C0940997	For therapy of disease as reason for ERCP
C0940998	Diagnosis for esophagus
C0940999	Main diagnosis for the esophagus
C0577015	Normal esophagus (diagnosis)
C0014869	Reflux esophagitis
C0014867	Esophageal varices (diagnosis)
C0341130	Esophageal benign stricture
C0546837	Esophageal malignant tumor
C0004763	Barrett's esophagus (diagnosis)
C0151970	Esophageal ulcer (diagnosis)
C0941000	Other diagnosis for the esophagus
C1321756	Achalasia
C0153942	Esophageal benign tumor
C0014854	Esophageal diverticulum (diagnosis)
C0014856	Esophageal fistula (diagnosis)
C0940046	Esophageal foreign body (diagnosis)
C0019291	Hiatus hernia (diagnosis)
C0024633	Mallory-Weiss tear (diagnosis)
C0239295	Monilial esophagitis
C0341105	Non reflux esophagitis
C0281838	Esophageal polyp
C0941001	Post-operative appearance of the esophagus
C0941002	Post-sclerotherapy appearance of the esophagus
C0940148	Esophageal scar (diagnosis)
C0267081	Schatzki ring (diagnosis)
C0941104	Esophageal submucosal tumor
C0941003	Other as other diagnosis for the esophagus
C0941004	Reason type for main diagnosis for the esophagus
C0941237	Suspected main diagnosis for the esophagus

C0941005	Established main diagnosis for the esophagus
C0941006	Exclusion of main diagnosis for the esophagus
C0941007	Follow-up of main diagnosis for the esophagus
C0941008	For therapy of main diagnosis for the esophagus
C0941009	Diagnosis for stomach
C0941238	Main diagnosis for the stomach
C0577026	Normal stomach (diagnosis)
C0038354	Gastropathy
C0267112	Erosive gastropathy
C0941010	Erythematous (hyperemic) gastropathy
C0017155	Hypertrophic gastropathy
C0941011	Hemorrhagic gastropathy
C0597736	Gastric mucosal atrophy
C0941012	Suspicion of gastritis
C0580174	Portal hypertensive gastropathy
C0038358	Gastric ulcer (diagnosis)
C0341164	Bleeding gastric ulcer (diagnosis)
C0941013	Type of bleeding of gastric ulcer
C0941014	Type IA: spurting arterial bleeding of gastric ulcer
C0941015	Type IB: oozing arterial bleeding of gastric ulcer
C0941016	Type IIA: visible vessel of gastric ulcer
C0941017	Type IIB: black base/clot of gastric ulcer
C0941018	Type III: no bleeding of gastric ulcer
C0024799	Stomal ulcer
C0024623	Malignant gastric tumor
C0699791	Gastric carcinoma
C0994630	Gastric polyp (diagnosis)
C0941019	Other diagnosis for the stomach
C0940246	Gastric angioectasia (diagnosis)
C0153943	Gastric benign tumor
C0941020	Gastric bleeding of unknown origin
C0341217	Dieulafoy lesion (diagnosis)
C0038355	Gastric diverticulum (diagnosis)
C0349530	Early gastric cancer
C0941021	Extrinsic compression of the stomach
C0017128	Gastric fistula
C0161019	Gastric foreign body (diagnosis)
C0585136	Gastric retention
C0079488	Helicobacter Pylori (diagnosis)
C0941022	Papulous gastropathy
C0941023	Parasites in the stomach
C0941024	Post-operative appearance of the stomach
C0941262	Gastric scar (diagnosis)
C0941025	Gastric submucosal tumor
C0017145	Gastric varices (diagnosis)
C0941026	Other as other diagnosis for the stomach
C0941027	Reason type for main diagnosis for the stomach

C0941028	Suspected main diagnosis for the stomach
C0941029	Established main diagnosis for the stomach
C0941239	Exclusion of main diagnosis for the stomach
C0941030	Follow-up of main diagnosis for the stomach
C0941031	For therapy of main diagnosis for the stomach
C0941032	Diagnosis for duodenum
C0941033	Main diagnosis for the duodenum
C0940339	Normal duodenum (diagnosis)
C0941240	Duodenopathy
C1455765	Erosive duodenopathy
C0941034	Erythematous (hyperemic) duodenopathy
C0941035	Congestive duodenopathy
C0941241	Hemorrhagic duodenopathy
C0013295	Duodenal ulcer (diagnosis)
C0151966	Bleeding duodenal ulcer
C0941036	Type of bleeding of duodenal ulcer
C0941037	Type IA: spurting arterial bleeding of duodenal ulcer
C0941242	Type IB: oozing arterial bleeding of duodenal ulcer
C0941038	Type IIA: visible vessel of duodenal ulcer
C0941286	Type IIB: black base/clot of duodenal ulcer
C0941039	Type III: no bleeding of duodenal ulcer
C0941040	Ulcerogenic deformed duodenum
C0941243	Other diagnosis for the duodenum
C0940426	Duodenal angioectasia (diagnosis)
C0496869	Benign duodenal tumor
C0941041	Duodenal bleeding of unknown origin
C0341253	Brunner's gland hyperplasia
C0007570	Celiac disease
C0941042	Duodenal Crohn's disease
C0341266	Duodenal diverticulum (diagnosis)
C0267358	Duodenal fistula (diagnosis)
C0153426	Duodenal malignant tumor
C0941244	Duodenal parasite
C0347266	Duodenal polyp (diagnosis)
C0941043	Duodenal post-operative appearance
C0341255	Duodenal scar (diagnosis)
C0940458	Duodenal submucosal tumor
C0941044	Other as other diagnosis for the duodenum
C0941045	Reason type for main diagnosis for the duodenum
C0941046	Suspected main diagnosis for the duodenum
C0941047	Established main diagnosis for the duodenum
C0941048	Exclusion of main diagnosis for the duodenum
C0941049	Follow-up of main diagnosis for the duodenum
C0941050	For therapy of main diagnosis for the duodenum
C0941051	Diagnosis for colon
C0941052	Main diagnosis for the colon
C0940500	Normal colon (diagnosis)

C0009376	Colonic polyp(s) (diagnosis)
C0007102	Malignant colonic tumor
C0941053	Primary malignant colonic tumor
C0941054	Recurrent malignant colonic tumor
C0941055	Post-operative malignant colonic tumor
C0941056	Anastomotic malignant colonic tumor
C0009324	Ulcerative colitis as main diagnosis for the colon
C0941057	Ulcerative colitis, quiescent
C0941058	Ulcerative colitis, active moderate
C0941059	Ulcerative colitis, active severe
C0156147	Colonic Crohn's disease
C0941060	Colonic Crohn's disease, quiescent
C0941061	Colonic Crohn's disease, active moderate
C0941287	Colonic Crohn's disease, active severe
C0941062	Unspecified colitis
C0012819	Colonic diverticulosis
C0012814	Colonic diverticulitis
C0941063	Radiation(al) colitis/proctitis
C0019112	Hemorrhoids (diagnosis)
C0941064	Other diagnosis for the colon
C0940573	Colonic angioectasia (diagnosis)
C0941065	Colonic bleeding of unknown origin
C0302180	Condylomata
C0564434	Colonic foreign body (diagnosis)
C0341365	Colonic fistula (diagnosis)
C0020877	Ileitis
C0162529	Ischemic colitis as other diagnosis for the colon
C0519037	Colonic lymphoma
C0221391	Melanosis
C0941185	Colonic parasites (diagnosis)
C0032580	Polyposis coli
C0032266	Pneumatosis coli
C0941245	Post-operative appearance of the colon
C0941066	Post-operative stricture of the colon
C0033246	Proctitis
C1257843	Pseudomembranous colitis
C0941067	Solitary ulcer of the colon
C0940607	Colonic lipoma (diagnosis)
C0941246	Other as other diagnosis for the colon
C0941068	Reason type for main diagnosis for the colon
C0941069	Suspected main diagnosis for the colon
C0941070	Established main diagnosis for the colon
C0941071	Exclusion of main diagnosis for the colon
C0941247	Follow-up of main diagnosis for the colon
C0941072	For therapy of main diagnosis for the colon
C0941073	Diagnosis for pancreas
C0941074	Main diagnosis for the pancreas

C0941075	Failed pancreatogram
C0941248	Normal pancreatogram
C0149521	Chronic pancreatitis as main diagnosis for the pancreas
C0030297	Pancreatic tumor
C0030283	Pancreatic cyst
C0700377	Papillary stenosis as diagnosis for pancreas
C0345916	Tumor of ampulla of Vater
C0941076	Other diagnosis for the pancreas
C0941077	Abnormal biliary-pancreatic junction as other diagnosis for the pancreas
C0149955	Annular pancreas
C0266270	Pancreas divisum (diagnosis)
C0941249	Pancreatic duct fistula
C0947660	Pancreatic stone disease
C0941078	Parasites in the pancreas
C0941079	Other as other diagnosis for the pancreas
C0941080	Reason type for main diagnosis for the pancreas
C0941081	Suspected main diagnosis for the pancreas
C0941082	Established main diagnosis for the pancreas
C0941083	Exclusion of main diagnosis for the pancreas
C0941084	Follow-up of main diagnosis for the pancreas
C0941085	For therapy of main diagnosis for the pancreas
C0941086	Diagnosis for biliary tract
C0941087	Main diagnosis for the biliary tract
C0941088	Failed cholangiogram
C0853521	Normal cholangiogram
C0941089	Normal post-cholecystectomy cholangiogram
C0941090	Normal post-sphincterotomy cholangiogram
C0008350	Cholelithiasis
C0701818	Choledocholithiasis
C0947622	Cholecystolithiasis
C0267875	Hepatic lithiasis
C0941091	Cystic duct lithiasis
C0941092	Cystic stump lithiasis
C0267878	Mirizzi syndrome
C0005426	Biliary tumor
C0009442	Main bile duct tumor
C0206702	Klatzkin tumor
C0016978	Gallbladder tumor
C0941093	Papillary stenosis as diagnosis for the biliary tract
C0345916	Ampullary tumor
C0941094	Stent occlusion as main diagnosis for the biliary tract
C0941095	Other diagnosis for the biliary tract
C0941096	Abnormal biliary-pancreatic junction as other diagnosis for the biliary tract
C0005417	Bile duct fistula
C0008370	Bile duct occlusion
C0400997	Bile leak
C0597984	Biliary stricture

C0162510	Caroli's disease
C0008340	Choledochal cyst
C1257797	Choledochocele
C0023890	Cirrhosis
C0018994	Hemobilia
C0700377	Papillary stenosis
C0941250	Parasites in the biliary tract
C0008313	Sclerosing cholangitis
C0524784	Sump syndrome
C0267924	Suppurative cholangitis
C0016978	Tumor of the gallbladder
C0941251	Other as other diagnosis for the biliary tract
C0941098	Reason type for main diagnosis for the biliary tract
C0941099	Suspected main diagnosis for the biliary tract
C0941100	Established main diagnosis for the biliary tract
C0941101	Exclusion of main diagnosis for the biliary tract
C0941102	Follow-up of main diagnosis for the biliary tract
C0941252	For therapy of main diagnosis for the biliary tract
C0079278	Gastrointestinal tract examination
C0940011	Reason for gastrointestinal endoscopy
C0941132	Organ finding
C0940993	Reason type for disease as reason for ERCP
C0940994	Suspected disease as reason for ERCP

Adapted from: National Library of Medicine. UMLS Knowledge Sources 2006AB. May 2006.