Minimal Standard Terminology in Digestive Endoscopy

Structured Language and Reporting

Louis Y. Korman, M.D.
Metropolitan Gastroenterology Group and Department of Veterans Affairs Medical Center
Washington, DC
US Editor MST v2.0

Presented August 1998
Patient ID: 72316
Patient Name: Seymour Demonstration
Exam Date: 3/23/98 12:37 pm

Procedure: Endoscopy
Indications: Established stenosis, For therapy of stenosis
Providers: John Demo, MD
Medications: Dizac 20.0 mg IV, Meperidine 200.0 mg IV, Benzocaine spray
Complications: No Complications

Procedure: After obtaining informed consent, the scope was passed under direct vision. Throughout the procedure, the patient's blood pressure, pulse, and oxygen saturations were monitored continuously. The endoscope was introduced through the mouth and advanced to the antrum. Examination of the upper GI tract revealed the following:

Findings:

A less than one cm benign-appearing, intrinsic stenosis was found thirty-seven cm from incisors. This was traversed. This was successfully dilated with a 13 mm, 14 mm and 15 mm Savary dilator.

2) Normal stomach.
3) Normal duodenum.

Recommendation: 1) Await pathology results. 2) Repeat the EGD for retreatment pm.
Each word can be a data element.

<table>
<thead>
<tr>
<th>Procedure</th>
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Examination of the upper GI tract revealed the following:

A less than one cm benign-appearing, intrinsic stenosis was found thirty-seven cm from incisors. This was traversed. This was successfully dilated with a 13 mm, 14 mm and 15 mm Savary dilator.

Impression:
1) Benign-appearing esophageal stricture. Dilated.
2) Normal stomach.
3) Normal duodenum.

Recommendation:
1) Await pathology results. 2) Repeat the EGD for retreatment pm.
Language

- All medical activity arises from the ability to observe and communicate in intelligible language

- **Naming**: abstraction of a physical entity or concept
  - Balloon Catheter
  - Cancer

- **Semantics**: word meanings

- **Ontology**: representation and (re-)organization of medical terminologies
<table>
<thead>
<tr>
<th>UNSTRUCTURED</th>
<th>CODED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural, friendly, established, current, never obsolete</td>
<td>Concise, precise, consistent, analyzable, manipulable</td>
</tr>
<tr>
<td>Ambiguous, imprecise, unpredictable</td>
<td>Rigid, tedious, high maintenance</td>
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Minimal Standard Terminology (MST©)

- A restricted list of terms intended as a component of any software designed to generate endoscopic reports.
- It allows the description of endoscopic findings in an organized and systematic way.
REPORT STANDARDS

• ENDOSCOPIC REPORT
  – TEXT
  – IMAGES

• DATA EXCHANGE AND INTEROPERABILITY
  – DEFINES THE MEANS OF DATA INTERCHANGE BETWEEN INFORMATION SYSTEMS AND THE ABILITY TO “USE” THAT DATA
REPORT STRUCTURE

• In order for information to be exchanged, each system must "understand" the data being sent.

• The degree of "understanding" varies from simple display to using the information to create a database.

• For example, a system may be able to display a report on the screen but not recognize the components of the report as being unique data elements.

• Systems that want to create a common database must understand and identify components of the report.
REPORT MODEL

PATIENT → VISIT → STUDY

RESULT

THERAPY ← DIAGNOSIS
REPORT MODEL

STUDY

- STUDY TIME
- STUDY TYPE (CPT)
- INSTRUMENT
- ENDOSCOPIST
- MEDICATION
- ASA STATUS
- INDICATION
- EXTENT OF EXAMINATION
- LIMITATION OF EXAMINATION
- COMPLICATION
REPORT MODEL

RESULT (FINDING)

- TERM
- ATTRIBUTE
- ATTRIBUTE VALUE
- SITE
- INTERVENTION
Malignant Appearing Stenosis of the Antrum of the Stomach

- **Class**: Lumen
- **Term**: Stenosis
- **Attribute**: Appearance
- **Value**: Malignant Intrinsic
- **Site**: Stomach Antrum
- **Intervention**: Biopsy Cold
ORGANISATION OF MST

 TERMS

 Stenosis

 ATTRIBUTES

 Attributes: list of descriptors attached to the term and providing additional detail to it

 Appearance

 Length (cm)

 Traversed?

 SITES

 cm from incisors

 Extrinsic

 Benign

 Intrinsic

 Malignant

 Strictured

 Narrowed

 Stenosed

 Compressed

 Spasm
Coding Systems: Definition and Characteristics

• Means of organizing, classifying biological concepts
• Establish uniformity in naming and numbering these concepts
• Create relationships between concepts
Coding Systems

- **ICD Codes** (International Classification of Diseases) **Source**: WHO
- **UMLS** (Unified Medical Language System) **Source**: National Library Medicine
- **SNOMED** (Systematized Nomenclature of Human Medicine) **Source**: CAP
Concept Relationships between Coding Systems

MST Concept < (less specific) = (equivalent) > (more specific) ICD Concept
VARICES

= 456.1 VARICES NOS
< 456.0 VARICES WITH BLEEDING
< 456.2# VARICES WITH DISEASES ELSEWHERE
< .#0 WITH BLEEDING
< .#1 WITHOUT BLEEDING

< 571.5 CIRRHOSIS (NON-ALCOHOLIC) [456.21]
< 571.6 BILIARY CIRRHOSIS [456.21]
Mapping MST Diagnosis

BARRETTS ESOPHAGUS | < 530.2 BARRETTS SYNDROME (CHRONIC PEPTIC ULCER OF THE ESOPHAGUS)
Mapping MST

MST CONCEPT

MASS (TUMOR)

UMLS®

ICD Codes

SNOMED®
Mapping MST Diagnosis

VARICES

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MST: importance of integration with other vocabulary systems

• Assures that concepts defined by gastrointestinal endoscopists are recognized

• Improves the quality of care by creating and controlling the language of gastrointestinal endoscopy

• Permits the vocabulary of gastrointestinal endoscopy to be widely distributed via accepted vocabulary standards.
CONCLUSION

- Standardization of the report by creating a common structure and standardization of the report language will permit the creation of large endoscopic databases.

- These databases can be used for clinical practice and research and will improve the quality of patient care.
RECOMMENDATION

1. Establish mechanism for maintenance and dissemination of the Standard: Use the Web to gather suggestions and opinions from the global community of endoscopists, e.g. Professional Societies.

2. Place the Standard in the public domain with few restrictions to its use, e.g. Creative Commons.

3. Define a mechanism for users to determine whether purchased systems use the Standard in their databases, e.g. Conformance.

4. Develop educational material that emphasizes the need for precise and effective reporting of endoscopic findings and recommendations.

5. Cooperate with equipment manufacturers and software developers to produce standards that serve the practical needs of endoscopists.