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Title: **Gastrointestinal Endoscopic Terminology Coding. Get-C; an Extension of the ICD-10**

Authors: **M.J.M. Groenen[1], W. Hirs[2], H. Becker[3], E.J. Kuipers[1], G.P. Van Berge Henegouwen[4], P. Fockens[5] , R.J.Th. Ouwendijk[6]**

[1]Department of Gastroenterology and Hepatology, Erasmus Medical Center, Rotterdam, The Netherlands
[2]WHO-FIC Collaborating Centre in the Netherlands, RIVM/cVTV, Bilthoven, The Netherlands
[3]Department of Family Practice, Academic Medical Center, Amsterdam, The Netherlands
[4]Department of Gastroenterology, University Medical Center Utrecht, The Netherlands
[5]Department of Gastroenterology, Academic Medical Center, Amsterdam, The Netherlands
[6]Department of Internal Medicine and Gastroenterology, Ikazia hospital, Rotterdam, The Netherlands

Purpose:
Recommendations: -

Abstract:
There is an increasing interest in using computers for recording findings and images with endoscopy. A specific code system for endoscopic terminology has never been widely used. The aim of this study was to develop a comprehensive code system for gastrointestinal endoscopic terminology based on ICD-10.
ICD-10 is not specific enough for the terminology used to describe gastrointestinal endoscopies. Therefore, chapters 1, 2, 9, 11, 18 and 21 are extended, to be able to use every relevant gastrointestinal endoscopic term for the description of a health condition. Subdivisions and gradings of specific gastrointestinal disorders and endoscopic locations are added, as well as indications, medication and complications. A new chapter is developed for terminology not available in ICD-10, such as therapeutic procedures. The extended code system is entitled Gastrointestinal Endoscopic Terminology Coding (GET-C).
A project, the TRANS.IT project, is running to evaluate endoscopic examinations and GET-C in the Netherlands. The program Endobase III® is used and a central database has been build.
Gastrointestinal Endoscopic Terminology Coding (GET-C) is a code system that can be used within every database-program for all specific endoscopic terms.
The extended ICD-10 subcategories are recommended for inclusion in ICD and GET-C is recommended as a candidate for adoption as a related member of the Family of International Classifications.

Introduction

Endoscopic report systems are becoming increasingly available in the current endoscopic practice. The way reports are composed and data is stored differ considerable between the systems. They all use different kinds of databases and it is only possible to evaluate the endoscopic data of the own system. predecessor ICD-10 is used mainly as a mortality coding system and to classify different medical syndromes with no specific therapeutic endoscopic options. However endoscopic findings are classified according to there appearance which include important consequences for therapy and prognosis. This makes it very important to store and code these endoscopic findings.

A working group, the TRANS.IT-working group, was founded comprising two university hospitals, Utrecht, Amsterdam respectively and four general hospitals. In this working group, the Endobase III® system from Olympus software is used. In this system, the endoscopist can individually choose three different ways of report writing. Besides the Minimal Standard Terminology (MST)[1] also Text blocks and Standard Reports are available. A standard report is a complete one if it is based on either one diagnosis or a combination of diagnosis. With text blocks, different parts of text are combined to compose a complete report. With these two report variants, writing a report is accelerated, a practice that is well accepted and widely used in the Netherlands.

One problem is that there is no specific code system for endoscopic terminology and findings that is widely used. Besides that, only about 80 % of the report systems are able to use a code in their database[2]. To get a reliable coding of all the data, the codes have to be automatically linked to a chosen diagnosis and other gathered data.

Different code systems for medical data are used. The International Classification of Diseases 9th version (ICD-9) and the clinical modification (ICD-9CM) are already used and proven value in a specific and defined gastrointestinal endoscopic setting[3]. The new version, International Classification of Diseases 10th revision (ICD-10), is available since 1992 and translated into Dutch in 1997[4].

To be able to compare the different ways of report writing, a comprehensive code-system suitable to code every used term during gastrointestinal endoscopy is needed. The aim of this project is to develop a comprehensive code system for gastrointestinal endoscopic terminology based on a widely accepted code system to be used in any endoscopic information system.

Material and Methods

As basis for the new code system the latest ICD-10th version is chosen. The reason for choosing this code system is that a predecessor is already in use for some gastrointestinal endoscopic databases[3]. Besides that, the new version of ICD is now accepted in a majority of the countries throughout the world (http://www.who.int/whosis/icd10/implemen.htm). Extensions to the ICD-10 were made according to the recommendations of the WHO. In this way it is always possible deleting the extension to come back to the original ICD-10. The Dutch translation of the ICD-10 version is used. Also the draft version of the ICD-10 CM of the NCHS was studied, which is available on the Internet (http://www.cdc.gov/nchs/about/otheract/icd9/abticd10.htm).

The International Classification of Diseases (ICD) is designed to promote international comparability in the collection, processing, classification, and presentation of mortality statistics. The ICD has been revised periodically to incorporate changes in the medical field. The Tenth Revision (ICD-10) differs from the Ninth Revision (ICD-9) in several ways although the overall content is similar: First, ICD-10 has alphanumeric categories rather than numeric categories. Second, some chapters have been rearranged, some titles have changed, and conditions have been regrouped. Third, ICD-10 has almost twice as many categories as ICD-9.

Other specialities like Oncology and Dentists have produced an extended code system based on the ICD-10 for their field of interest (http://www.who.int/whosis/icd10/special.htm). For this reason the World Health Organisation has made up conditions in the way the ICD-10 may be extended to be used, e.g. in a personal field. The first 4 characters may never be changed, but one or more additional characters may be coupled behind the first 4 characters.

All the data of former investigations can be easily retracted and evaluated at any time, by the endoscopist or a doctor in attendance, throughout the hospital.

A working group, the TRANS.IT-project group, was founded as a peer reference group to discuss the standard reports, text blocks and the link to the new code-system. On a regular base the groups gathers to discuss the standard reports and text blocks. Changing the context of a standard report or text block or GET-C can only be done if a majority of the working group members agrees.

Results

A list of different fields that are necessary for evaluation of the endoscopic data is first generated. [Table 2] The data are automatically generated by the program during making of an endoscopic report. All these fields are necessary to generate an anonymous database with endoscopic information for extensive research. In addition, demographic data like gender and age of patients, speciality of referring doctor, etc are recorded.

The problem of design for mortality and discharge statistics is that the structure used is not very detailed. Especially for gastrointestinal endoscopic terms, who not always contain a mortality risk but most of the time descriptive items essential for prognosis and therapy. For example K25.2, (Acute gastric ulcer with both hemorrhage and perforation) in the ICD-10 into K25.21 (Acute gastric ulcer with ***spurting bleeding*** and perforation; Forrest Ia) in the GET-C. [Table 1]

Besides that endoscopy is still developing and new terms and endoscopic techniques are created. For example new classifications that are in use, like Forrest Classification for gastric and duodenal ulcers and the LA-Classification for reflux oesophagitis [8,9].

For some fields, there is no ICD-10 code available, and the item can not be categorized under an existing ICD-10 code. For example proceeding of the investigation and interventions are fields where the ICD-10 and even the ICD-10 CM have no solutions. Because these items are essential for good analysis of endoscopic data, a new chapter with the same structure of the ICD-10 was developed. The items in the new chapter start with the Greek letter μ.

It was chosen to put also the therapeutic interventions in this new chapter because new interventions are invented continuously and the adaptations of code systems like existing code-systems for interventions is not adapted as soon as needed.

In total, approximately 1000 new items are added to the ICD-10. Adaptations are made indifferent chapters of the ICD-10. In Chapter 1, Certain infectious and parasitic diseases (A00-B99), the exact locations in the gastrointestinal tract of some specific infections are added.

In Chapter 2, Neoplasms (C00-D48), besides exact locations in the gastrointestinal tract the endoscopic characteristics of polyps are more detailed described and coded. It is important to register if a polyp is pedunculated, sessile, flat or has a villous endoscopic aspect. Also the number of polyps found in a specific part of the intestine has to be coded, because of important diagnostic and therapeutic options for the patient.

In Chapter 9, Diseases of the circulatory system, (I00-I99), haemorrhoids and varices are described according to a classification. Different grading of level of protruding is used for Haemorrhoids. The endoscopic Paquet's classification for oesophageal varices is coded[10].

Chapter 11, Diseases of the digestive system (K00-K93). In this chapter, most of the adaptations are made. The description of oesophagitis is divided in different origins and severity. Gastric and duodenal ulcers are coded according to the Forrest classification and the specific location in stomach or duodenum. Gastritis and duodenitis are coded to their specific location and the endoscopic suspected cause. Inflammatory bowel diseases are coded to their endoscopic severity and specific extending of the location. Some complications related to gastrointestinal procedures are more detailed coded.

Chapter 18, Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00-R99). In this chapter, symptoms that are an indication for endoscopic investigations are more detailed coded.

Chapter 21, Factors influencing health status and contact with health services (Z00-Z99). In the end of this chapter, post-operative situations important for gastrointestinal endoscopic investigations like gastric and colon operations are extensively coded.
In the new chapter, about 275 new codes are generated. These codes start with the Greek symbol μ. Besides some indications that could not be categorized in the ICD-10, specific codes for detailed locations in the gastrointestinal tract are coded. The third part of this chapter consists of procedures, which are divided, in diagnostic and therapeutic procedures. Diagnostic procedures contain for example the taking of biopsies and samples for culture.
Therapeutic procedures contain different kinds of poliepectomies, endoscopic mucosal resections, the placement of endoprotheses, dilatation of stenosis, etc. Another part of these therapeutic interventions is used for the management of gastrointestinal bleeding like injection-therapy with or without coagulation, band ligations, and clipping.
Preparation and proceeding of the endoscopic examination can also be coded in this chapter.
The extensions of the GET-C are checked by the Dutch translation board of the ICD-10 to preclude any conflicts between the two code systems.

Discussion

Progression of the use and the communication between different computer systems within healthcare increases the need for code systems. Computerized report writing is pre-eminently suitable for building electronic database when a good code system is used. Coding is essential for different reasons. Coding is of importance for hospitals and professionals because most of the financial systems within healthcare are based on different codes. Good coding gives epidemiological information. In addition, statistical analysis of different diagnosis and the collection of rare diagnosis are easier. With international acceptation of a coding it is possible to compare and share information in one field of interest.
Most of these code systems are regional or national. Only some code systems, like the ICD-10, are translated into different languages and in use in different countries.
For endoscopic report writing and endoscopic databases different systems are developed and increasingly in use in more hospitals. The used endoscopic information system in our project to compose the reports and record the different codes is Endobase III® from Olympus. The system runs as a network-version with different workstations as well as a stand-alone unit. In the program, standard reports and text blocks besides the latest translated version of MST are used to compose an endoscopic report.
Because three different ways of report writing are used, individually selectable by the endoscopist, a code system is essential to be able to analyse the data of different endoscopic investigations anonymously.
All standard reports are linked to one or more specific GET-C codes. In addition, the text blocks used within the project are automatically linked to a specific code. By choosing a standard report or text block directly the correct GET-C code is recorded in the database of Endobase. For the MST, the automatic link is more complex to realise, due to the structure of the MST. It is chosen to link the diagnosis with the GET-C code, which is separately selected within the MST by the endoscopist at the end of the report. Automatically linking is essential to ensure a correct and complete selection of codes and to make it workable for an endoscopist.
Within the TRANS.IT project, an anonymously central database of endoscopic investigations is build. In this central database, only coded data instead of free text can be collected for privacy reasons. After 3 year by the use of the same code system a database of about 120.000 investigations will be build by this working group.
With the GET-C all the data that are collected during endoscopic investigations and that are recorded in any endoscopic database can be coded. By using the ICD-10 as base for the new code system and extend the ICD-10 be respecting the structure it is possible to retract the ICD-10 out of the GET-C. Herewith it is possible to link the endoscopic database with other healthcare systems throughout the world.
Because endoscopy is a developing speciality, new techniques will become available and new codes will be written to be able to code these new terms in the future. These codes will be discussed within the TRANS.IT project.
The GET-C is accepted by the Dutch association of Gastroenterologists in the Netherlands.
The GET-C will be available, for use in other systems, after review and acceptance by the WHO. We hope that this code system will be helpful in making endoscopic databases and endoscopic report writing programs more valuable.

Table 1 ICD-10 and GET-C for Gastric Ulcer[1]

ICD-10	Description	GET-C	Description
K25.0	Gastric ulcer, acute with haemorrhage	K25.0	Gastric ulcer, acute with haemorrhage
		K25.01	Gastric ulcer, acute with spurting bleeding (Forrest Ia)
		K25.02	Gastric ulcer, acute with non-spurting active bleeding (Forrest Ib)
K25.1	Gastric ulcer, acute with perforation	K25.1	Gastric ulcer, acute with perforation
K25.2	Gastric ulcer, acute with both haemorrhage and perforation	K25.2	Gastric ulcer, acute with both haemorrhage and perforation
		K25.21	Gastric ulcer, acute with spurting bleeding and perforation (Forrest Ia)
		K25.22	Gastric ulcer, acute with non-spurting active bleeding and perforation (Forrest Ib)
K25.3	Gastric ulcer, acute without haemorrhage or perforation	K25.3	Gastric ulcer, acute without haemorrhage or perforation
		K25.31	Gastric ulcer, acute with visible vessel (Forrest IIa)
		K25.32	Gastric ulcer, acute non-bleeding with overlying clot (Forrest IIb)
		K25.33	Gastric ulcer, acute with hematin-covered basis (Forrest IIc)
		K25.34	Gastric ulcer, acute with clean ulcer ground (Forrest III)
K25.5	Gastric ulcer, chronic or unspecified with perforation	K25.5	Gastric ulcer, chronic or unspecified with perforation
K25.6	Gastric ulcer, chronic or unspecified with both haemorrhage and perforation	K25.6	Gastric ulcer, chronic or unspecified with both haemorrhage and perforation
		K25.61	Gastric ulcer, chronic or unspecified with spurting bleeding and perforation (Forrest Ia)
		K25.62	Gastric ulcer, chronic or unspecified with non-spurting active bleeding and perforation (Forrest Ib)
K25.7	Gastric ulcer, chronic without haemorrhage or perforation	K25.7	Gastric ulcer, chronic without haemorrhage or perforation
		K25.71	Gastric ulcer, chronic with visible vessel (Forrest IIa)
		K25.72	Gastric ulcer, chronic non-bleeding with overlying clot (Forrest IIb)
		K25.73	Gastric ulcer, chronic with hematin-covered basis (Forrest IIc)
		K25.74	Gastric ulcer, chronic with clean ulcer ground (Forrest III)
K25.9	Gastric ulcer, unspecified, without haemorrhage or perforation	K25.9	Gastric ulcer, unspecified, without haemorrhage or perforation
		K25.91	Gastric ulcer, unspecified, with visible vessel (Forrest IIa)
		K25.92	Gastric ulcer, unspecified, non-bleeding with overlying clot (Forrest IIb)
		K25.93	Gastric ulcer, unspecified, with hematin-covered basis (Forrest IIc)
		K25.94	Gastric ulcer, unspecified, with clean ulcer ground (Forrest III)

[1] See also Annex: Table 1 GET-C extended

Table 2 Different fields that need a specific code

Fields in endoscopic information systems that need a specific code
Reason for endoscopy
Medication use
Sedation and medication during the endoscopy
Preparation
Proceeding of the investigation
Endoscopic diagnosis / findings
Therapeutic and Diagnostic Interventions
Histology results
Therapy started
Advice to referring doctor
Complications

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Correspondence:
M.J.M. Groenen
Department of Gastroenterology and Hepatology, Erasmus Medical Center
Dr. Molewaterplein 40, 3015 GD Rotterdam, The Netherlands
Tel +31 10 4639222 Fax +31 10 4634682
E-mail: mgroenen@knmg.nl