Requirements and standards facilitating quality improvement for reporting systems in gastrointestinal endoscopy: European Society of Gastrointestinal Endoscopy (ESGE) Position Statement

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Bibliography
DOI http://dx.doi.org/10.1055/s-0042-100186
Published online: 3.2.2016
Endoscopy 2016; 48: 291–294
© Georg Thieme Verlag KG
Stuttgart · New York
ISSN 0013-726X

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Introduction
The endoscopy report is central to any endoscopy practice and facilitates the exchange of information about findings, therapy, clinical recommendations, adverse events, and performance in relation to endoscopy procedures. Similar to medical records in general, endoscopy reports have traditionally used free-text or unstructured-text phrases, occasionally accompanied by photo-documentation. Free-text phrases, however, prevent meaningful data extraction and are therefore a barrier to quality assurance in GI endoscopy. In recent years much effort has been put into the creation of a comprehensive terminology and coding system for GI endoscopy [1]. The system,

Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tr>
<td>ESGE</td>
<td>European Society of Gastrointestinal Endoscopy</td>
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<tr>
<td>ICD</td>
<td>International Classification of Diseases</td>
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<td>GI</td>
<td>gastrointestinal</td>
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<td>MST</td>
<td>Minimal Standard Terminology</td>
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<td>SNOMED CT</td>
<td>Systematized Nomenclature of Medicine – Clinical Terms</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
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Recommendations

1. Endoscopy reporting systems must be electronic.
2. Endoscopy reporting systems should be integrated into hospitals’ patient record systems.
3. Endoscopy reporting systems should include patient identifiers to facilitate data linkage to other data sources.
4. Endoscopy reporting systems shall restrict the use of free-text entry to a minimum, and be based mainly on structured data entry.
5. Separate entry of data for quality or research purposes is discouraged. Automatic data transfer for quality and research purposes must be facilitated.
6. Double entry of data by the endoscopist or associate personnel is discouraged. Available data from outside sources (administrative or medical) must be made available automatically.
7. Endoscopy reporting systems shall facilitate the inclusion of information on histopathology of detected lesions, patient satisfaction, adverse events, and surveillance recommendations.
8. Endoscopy reporting systems must facilitate easy data retrieval at any time in a universally compatible format.
9. Endoscopy reporting systems must include data fields for key performance indicators as defined by quality improvement committees.
10. Endoscopy reporting systems must facilitate changes in indicators and data entry fields as required by professional organizations.
Endoscopy reporting systems must be electronic.

Modern endoscopy reporting systems should be digital to permit continuous data monitoring. Electronic reporting, and storage of text and images allows continuous monitoring for quality purposes at endoscopist, unit, regional, and national level. Furthermore, electronic reporting facilitates continuous access for all involved in the clinical management of individual patients, e.g. for multidisciplinary teams, and for audit of complications and adverse events. It also enables the comparison of digital images from repeated procedures.

Finally, comprehensive endoscopy reporting systems, when coupled with disinfection machines, allow adequate tracking and tracing of equipment for the early detection of potential flaws in disinfection and reprocessing. For all of these reasons, digital reporting has been shown to be cost-efficient [6] and is a prerequisite for universal quality reporting.

Integrated or stand-alone reporting

Endoscopy reporting systems should be integrated into hospitals’ patient record systems.

Endoscopy reporting systems should include patient identifiers to facilitate data linkage to other data sources.
Many endoscopy practices, either in hospitals or stand-alone, have institutional electronic patient record systems. Endoscopy reporting systems should ideally be integrated into these systems to facilitate their usefulness to other medical professionals and to allow data exchange between the endoscopy and patient record systems within the hospital and between connected hospitals. Often, however, the manufacturers of institutional patient record systems do not have an endoscopy reporting module in their portfolio. Providers of endoscopy reporting systems should ensure that their system communicates seamlessly with the main patient record systems of the hospital or institution. The main priority is to improve the quality of endoscopy reporting without affecting the collection of the administrative and patient data needed to monitor the performance and quality of the endoscopy services.

Structured and standardized data entry

Endoscopy reporting systems shall restrict the use of free-text entry to a minimum, and be based mainly on structured data entry.

Free-text reporting is strongly discouraged because it leads to incomplete data and low quality reporting of endoscopies [7–10]. Endoscopy reporting systems need to use structured terminology whenever possible (in concordance with validated, standardized terminology), and limit the use of free-text data entry. Free text should be restricted to individualized clinical recommendations at the end of the endoscopy report, addressing all relevant clinical questions. Other free-text fields are usually not required. The software of the endoscopy reporting systems needs therefore to produce readable endoscopy reports for readers who are not specialists in endoscopy. A good report takes time to put together. Thus, clinics need to provide time to allow for the training of personnel to learn the application of electronic reporting systems.

Variables

Separate entry of data for quality or research purposes is discouraged. Automatic data transfer for quality and research purposes must be facilitated.

Endoscopy reporting systems must include data fields for key performance indicators as defined by the ESGE Quality Improvement Committee.

A number of standards have been established for the required contents of endoscopy reports [3,11]. These have usually been developed by clinical endoscopy interest groups, quality improvement groups, or researchers. It is our viewpoint that there is no inherent conflict between these three and endoscopy reporting systems need to facilitate a minimum number of variables derived from all these three domains. Indeed, many of the required variables will relate to more than one of the domains. Rather than defining variables as clinical, quality, or research, a minimal standard variable list should be defined for each procedure and should be included in endoscopy reporting systems. Endoscopy reporting systems also need to be able to allow extension of variables, as desired by local users on a case-by-case basis and over time as the specialty of endoscopy advances. The minimal variable list should be uniform across all systems to facilitate data exchange and the monitoring of clinical services, quality improvement, and research across endoscopists, units, and countries. We strongly encourage manufacturers to adhere to these standards.

Within the next 2 years, the ESGE Quality Improvement Committee will provide minimal variable lists for each type of endoscopy procedure within the framework of the subcommittees for upper GI endoscopy, lower GI endoscopy, pancreatobiliary, and small-bowel endoscopy, respectively.

Data entry

Double entry of data by the endoscopist or associate personnel is discouraged. Available data from outside sources (administrative or medical) must be made available automatically.

Endoscopy reporting systems shall facilitate the inclusion of information on histopathology of detected lesions, patient satisfaction, adverse events, and surveillance recommendations.

Double entry of data, as currently occurs for quality improvement or research, is the principal barrier to obtaining quality-assured reporting in daily practice. It therefore impedes continuous quality improvement and the acquisition of important research data, and can be a potential source of mistakes. Future endoscopy reporting systems need to be structured in such a way as to enable reliable data entry and easy extraction of performance reports for quality improvement and research. Double data entry should not be needed in the current era and is strongly discouraged.

Data such as histopathology results, patient comfort, patient satisfaction, and post-procedure adverse events should become an integral part of future endoscopy reporting systems. This can be achieved by automatic linkage between the endoscopy reporting system and other databases using unique patient identifiers. Endoscopy systems should have an integrated quality assurance module. For example, a tracking system is necessary to monitor histopathology results to ensure that each resected lesion is clearly described (size, location, completeness of resection, container number), entered into the system, and signed off by the responsible endoscopist. Quality control can be achieved by regular automated cross-checks with warnings generated when performance falls outside accepted parameters. Terminology and quality standards from other specialties, such as histopathology, need to be adapted through consensus between the different specialties.

Data output

Endoscopy reporting systems must facilitate easy data retrieval at any time in a universally compatible format.

Endoscopy reporting systems must have the functionality to allow automated data extraction to provide predefined reports of clinical performance, quality indicators (which will be provided by the ESGE committees), and research data. Ideally, systems
should allow local teams to develop their own customized data output reports. Patient and procedure characteristics such as patient age and sex, indication for the procedure, preparation, and previous surgery are important to interpret variations in performance between individual endoscopists. Therefore, endoscopy reporting systems need to be able to provide different thresholds of acceptable performance based on case mix and other confounding patient and procedure characteristics. For each patient, all variables registered need to be available for data analysis to monitor quality for research purposes. All data need to be easily transferable to spreadsheet and standard statistical software packages.

Continuous updating

Endoscopy reporting systems must facilitate changes in indicators and data entry fields as required by professional organizations.

The development of more widespread and effective quality assurance along with new evidence are likely to generate new quality variables. Therefore endoscopy reporting systems should be structured to enable changes, particularly the incorporation of new variables, to be made without requiring major rewrites of the software.

The quality of quality control

Comprehensive quality measurements require manual data collection or linkages between several data systems (depending on safety regulation barriers). For quality improvement to itself be of high quality requires that all these interacting databases be of high quality. A recent study based on administrative databases showed that of 45 reported interval colon cancers, 21 were found to be administrative errors after careful checks were made of the patient records [12].

The issue of quality control of quality control systems is a challenge that will be particularly important when quality drives reimbursement (pay for performance). Medical societies themselves have to establish rules on how to deal with these issues before they are installed by other bodies. The committee aims to contribute to this issue in its future work.

Competing interests: Michael Bretthauer receives funds from Thieme Verlag for editorial work for Endoscopy, Evelien Dekker’s department receives research support and equipment loans from Olympus Europe (for the last 10 years). Raf Bisschops has received: speaker’s fees from Covidien (2009–2014) and Fujifilm (2013); a speaker’s fee and hands-on training sponsorship from Olympus Europe (2013–2014); a speaker’s fee and research support from Pentax Europe; and an editorial fee from Thieme Verlag as co-editor of Endoscopy. Cristiano Spada has received training support from Given Imaging (2013 and 2014). Roland Valori is a director of Quality Solutions for Healthcare, a company providing consultancy for improving quality and training in healthcare. Colin Rees’s department receives research funding from Olympus Medical, ARC Medical, Aquiland Endoscopy, Almirall, and Cook (from 2010 to the present). Matthew D. Rutter’s department receives research funding from Olympus for a colitis surveillance trial (2014 to present). Lars Aabakken, Dirk Domagk, Rolf Hultcrantz, Rodrigo Jover, Michal F. Kaminski, Ernst J. Kuipers, Thomas Rösch and Stepan Suchanek have no competing interests.

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Acknowledgement

ESGE and UEG have identified the quality of endoscopy as a major priority. UEG co-funded the ESGE quality improvement initiative and provided additional project governance.

References