

A comparative analysis of the upper gastrointestinal endoscopic reporting systems within the Durban Metropolitan complex

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Background: The minimal standard terminology (MST) was developed by the World Endoscopy Organization (WEO) to standardise endoscopic reporting. This study compared current reporting within the Durban Metropolitan complex with the MST.

Methods: This observational retrospective study included 130 upper gastrointestinal endoscopy reports from five different hospitals. The data were compared to the current reporting standard in the MST. The Noorbhai Maharaj (NM) score was used to assess and grade the quality of reporting.

Results: Each of the five hospitals has different endoscopic reporting systems. One hundred and thirty patients were included in the study, of which 60 were female. The indications for upper endoscopy were stated in 77 reports (59%). The commonest indications were epigastric pain (23%), dyspepsia (10%) and heartburn (10%). Sedation information per hospital was mostly seen at Inkosi Albert Luthuli Central Hospital (IALCH) (83%), followed by Prince Mshiyeni Memorial Hospital (PMMH) (67%), Addington (ADH) (13%), King Edward VIII Hospital (KEH) (13%), and RK Khan Hospital (RKKH) (0%). Consultant endoscopies per hospital were RKKH (91%), IALCH (86%), PMMH (78%), ADH (73%) and KEH (40%). All 130 reports were graded as NM Grade C. Scores of less than 20 points were seen in 106 reports (82%) and reflected across the different hospitals as follows: RKKH (100%), ADH (97%), KEH (93%), PMMH (56%) and IALCH (55%).

Conclusion: There is no uniform structured endoscopic reporting system within the Durban Metropolitan Hospital complex. The current reporting methods do not meet the MST. The introduction of a structured standard endoscopic reporting system could improve the quality of reporting.

Keywords: upper gastrointestinal endoscopic reporting systems, comparative analysis

Background

There is currently no universal/uniform reporting system for upper gastrointestinal endoscopic procedures that is shared between the different hospitals in Durban, South Africa. Each of the five hospitals in the Durban Metropolitan complex performs upper gastrointestinal endoscopy for various indications based on symptoms or disease processes, and the system of reporting may vary from handwritten reports to simplistic, computerised data collection (word processor) type reporting. Previous authors have suggested standardised endoscopic reporting, which could be used by individual hospitals.¹⁻⁴ This would serve as a guideline for accurate and uniform reporting which would allow for in-hospital and inter-hospital data analysis.

The minimal standard terminology (MST) is an internationally accepted guideline suggested by the World Endoscopy Organization (WEO). It details the type of indications, therapeutic procedures and diagnoses that may be observed during an endoscopic procedure and guides the endoscopist on accurate reporting of the procedure.⁵ The MST forms the basis for standardised endoscopic reporting by utilising uniform structures and terminology and limiting subjective, free-text phrases. This type of system

affords substantial benefits to medical practice, such as data collection and auditing for quality assurance programmes and formation of databases for clinical research.⁴ Utilisation of a standardised system also offers the opportunity for registrars and specialists to become more knowledgeable on endoscopic reporting. This knowledge is furthermore of use when preparing for the Colleges of Medicine of South Africa (CMSA) fellowship and subspecialist exams.^{6,7} Overall, the impact of utilising such a system leads to improved patient care and outcomes.

A previous single-centre study by Maharaj et al. found that endoscopy reports were incomplete at King Edward VIII hospital as the MST guidelines were not routinely utilised.⁸ We have now expanded this study to include the five major hospitals in the Durban Metropolitan complex to assess whether current reporting systems meet the MST guidelines.

Methods

Study setting

This retrospective, descriptive study was conducted at the five major hospitals in Durban, namely King Edward VIII (KEH), Inkosi Albert Luthuli Central (IALCH), RK Khan (RKKH), Prince Mshiyeni Memorial (PMMH)

Table I: Summary of 130 upper gastrointestinal endoscopy reports from five major hospitals in Durban

	KEH	ADH	RKKH	PMMH	IALCH
Number of reports	30	30	23	18	29
Report type	H	H	H	H	E
System	Proforma	Proforma	Proforma	Proforma	Free text
NM score	Grade C	Grade C	Grade C	Grade C	Grade C
NM score < 20 (%)	93	97	100	56	55
Endoscopist experience (%)	40	73	91	78	86
Sedation information stated (%)	13	13	0	67	38
Scope indication stated (%)	3	100	0	94	100
Diagnosis stated (%)	70	43	0	82	34

H – handwritten, E – electronic, NM – Noorbhai Maharaj

and Addington (ADH). It included all patients who had undergone upper gastrointestinal endoscopy during the study period, with no distinction being made between elective and emergency procedures. Endoscopy reports were retrieved at random from each hospital's filing system. The data were de-identified prior to assessment.

Study design

The study period was from 1 January 2017 to 31 December 2019. The variables analysed were extracted from each

hospital's existing upper gastrointestinal reporting proforma. These included patient demographics, indication for endoscopy, use of sedation and specific variables as detailed in Table I. The following MST-based pathology-specific classification systems were evaluated: Los Angeles (LA) classification of erosive oesophagitis,⁹ Baveno consensus classification of varices,¹⁰ Prague classification of Barrett's oesophagus,¹¹ Forrest classification of bleeding ulcers,¹² Paris classification of superficial neoplastic lesions,¹³ and the Japanese Gastric Cancer Association (JGCA) classification

Table II: Management prescribed for 130 patients undergoing upper gastrointestinal endoscopy

	ADH	KEH	IALCH	PMMH	RKKH	Total
Treatment information						
Stated (%)	21	25	25	13	16	85
Not stated (%)	37	16	5	16	26	14
Illegible (%)	0	0	0	100	0	1
Medication prescribed						
Eradication (%)	24	14	14	14	35	44
Proton pump inhibitors (%)	22	47	11	11	8	42
Other medications (%)	25	25	25	25	0	14
Fluconazole (%)	37	37	13	13	0	66
Praziquantel (%)	0	0	100	0	0	17
Maxolon (%)	0	0	0	100	0	17
Management suggested						
Histology to be followed up (%)	16	24	32	12	16	34
Repeat endoscopy to be performed (%)	40	7	40	0	13	21
Colonoscopy suggested (%)	60	0	40	0	0	7
Other management suggested	18	7	50	14	11	38
Refer to other discipline (%)	16	16	50	17	0	21
Continued workup (e.g., for anaemia) (%)	20	0	60	20	0	17
CT scan (%)	0	25	50	0	25	14
Dilation (%)	33	0	33	34	0	10
Ultrasound (%)	50	0	0	0	50	7
Lifestyle modification (%)	0	0	50	0	50	7
Barium swallow (%)	0	0	100	0	0	4
Snaring (%)	100	0	0	0	0	4
Stent (%)	0	0	0	100	0	4
Argon plasma coagulation (%)	0	0	100	0	0	4
Endoscopic ultrasound (%)	0	0	100	0	0	4
Proceed to surgery (%)	0	0	100	0	0	4

of gastric carcinoma.¹⁴ Details of further management were documented as shown in Table II.

We also analysed the legibility of the endoscopy report, level of experience of the endoscopist (specialist versus trainee), procedures performed during the endoscopy and any omitted details. The variables and details extracted from the endoscopy reports were compared to the current reporting standard as listed in the MST, version 3.0.⁵ The Noorbhai Maharaj score (NM score) was used to assess the quality of reporting, based on its conformity to the MST (Table

III).⁸ Each report was graded by the detail of information provided as well as the knowledge of the endoscopist on relevant classification systems.

Patient reports

Thirty endoscopy reports were included from each hospital. The number of reports required was based on the previous study conducted by Maharaj et al.⁸ Each hospital's endoscopy register was accessed, and random hospital numbers were selected. Endoscopy reports were then requested from the

Table III: Noorbhai Maharaj Scoring System (NM Score)

Descriptor	0	1	2
Demographics	<i>[maximum score 8]</i>		
Patient name	Not stated (blank)	Partly stated	Fully stated
Age	Not stated (blank)	Stated	
Gender	Not stated (blank)	Stated	
Indication	Not stated (blank)	Stated (not per MST)	Stated (as per MST)
Sedation	Not stated (blank)	Partly stated	Fully stated
Oesophagus	<i>[maximum score 7]</i>		
Finding 1	Not stated (blank)	Partly stated	Fully stated
Finding 2	Not stated (blank)	Partly stated	Fully stated
Finding 3	Not stated (blank)	Partly stated	Fully stated
Oesophago-gastric junction (in cm)	Not stated (blank)	Stated	
Stomach	<i>[maximum score 9]</i>		
Finding 1	Not stated (blank)	Partly stated	Fully stated
Finding 2	Not stated (blank)	Partly stated	Fully stated
Finding 3	Not stated (blank)	Partly stated	Fully stated
Incisura (in cm)	Not stated (blank)	Stated	
Antrum (in cm)	Not stated (blank)	Stated	
Prepylorus (in cm)	Not stated (blank)	Stated	
Duodenum	<i>[maximum score 7]</i>		
Finding 1	Not stated (blank)	Partly stated	Fully stated
Finding 2	Not stated (blank)	Partly stated	Fully stated
Finding 3	Not stated (blank)	Partly stated	Fully stated
Extent	Not stated (blank)	Stated (D1/D2/D3)	
Other	<i>[maximum score 9]</i>		
Name	Not stated (blank)	Full name stated	
Signature	Not stated (blank)	Full name stated	
Date	Not stated (blank)	Stated	
Biopsy info	Not stated (blank)	Partly stated	Fully stated
Diagnosis	Not stated (blank)	Not MST based	As per MST
Legibility	Illegible	Borderline legibility	Clearly legible
[Total score 40]			

Not stated: Sections that are blank (not recorded).

Partly stated: Simply recorded as present, excludes known classification systems/specifics.

Fully stated: Negative findings stated or if pathology exists the record includes details of known classification systems/specifics.

Biopsy partly stated: Recorded as biopsy taken, no details of site and number of biopsies.

Biopsy fully stated: All details of site and number of biopsies clearly stated.

Diagnosis: 1 if the "diagnosis" is not recognised as per the MST list of diagnoses.

Diagnosis: 2 if the recorded diagnosis is recognised as per the MST list of diagnoses.

Illegible: > 50% of the report cannot be read by 2 observers

Borderline legibility: < 50% of the report cannot be read by 2 observers

Clearly legible: 100% of the report can be read by 2 observers

Grade A: Scores > 36, Grade B 28–36, Grade C < 28

filing system. During the year of 2018, PMMH did not perform any upper gastrointestinal endoscopies due to a lack of equipment, and endoscopy records for the year of 2017 were missing at RKKH. Thus, the final sample size was 130. Data was extracted collected and analysed in Microsoft Excel.

Results

Four of the five hospitals included in this study used hand-written reports based on a “proforma” template with different variables. IALCH utilises a computer-based word processor system, which provides a generic, free-form text-based report. One hundred and thirty patients were included in the study, of which 60 were female, 50 were male, and in 20 gender was not recorded. The mean age of included patients was 53 years (IQR 19–79) and the median age 54 (SD ± 15) years. The indications for upper gastrointestinal endoscopy were stated in 77 reports (59%). These included epigastric pain (23%), dyspepsia (10%), heartburn (10%), dysphagia (5%), anaemia (5%), hematemesis (4%), weight loss (4%), oncology workup (4%) and melena (3%). There were 11 reports where a pre-existing diagnosis was stated, including trachea-oesophageal fistula ($n = 2$), portal gastropathy ($n = 2$) and oesophageal cancer ($n = 1$) (Table IV).

Information regarding the use of pre-procedural sedation was not stated in 89 (68%) reports. Overall, two reports recorded the use of pre-procedural sedation (midazolam). Throat spray local anaesthesia was recorded in 24 (18%) patients. The reports were either typed (22%) or handwritten

(78%). Reports were clearly legible in 117 (90%), borderline legible in 12 (9%), and illegible in one (1%). Most of the upper endoscopies (73%) were performed by consultants: RKKH (91%), IALCH (86%), PMMH (78%), ADH (73%) and KEH (40%).

Endoscopic findings are summarised in Table IV. In patients with a hiatus hernia, the type of hiatus hernia was stated in 12 (46%) and not stated in 14 (54%) cases. Of the 15 reports where oesophagitis was diagnosed, the LA classification was not used in seven (47%). The oesophageal varices grade and Prague classifications for Barrett’s dysplasia were not reported. In patients with gastritis, the site was stated in 34 (56%), the grading in 23 (18%) and biopsies were reported as taken in three (5%) patients. In patients with peptic ulceration, the ulcer site was recorded in 11 (85%) and the Forrest classification in five (38%) patients. The size of the ulcer was not stated in any of the reports. Biopsies were recorded as taken in five (38%) reports. In the five (4%) reports where gastric polyps were noted, the polyp site was stated in four (80%) and biopsies taken in three (60%). In patients with duodenitis, the site of the duodenitis was reported in three (25%). In patients with duodenal ulceration, the site of the ulcer was reported in three (100%), of which two (67%) were biopsied. In patients with a duodenal mass noted, the site of the mass was stated in one (33%) and the mass was biopsied in two (67%).

Of the 130 reports, an overall diagnosis was stated in 60 reports (46%), omitted in 69 reports (53%) while one report was illegible. Of the 60 reports in which a diagnosis was

Table IV: Overall diagnoses recorded in 130 patients undergoing upper gastrointestinal endoscopy

Diagnosis (%)	ADH	KEH	IALCH	PMMH	RKKH	Total
Normal upper endoscopy (%)	43	29	21	0	7	11
Diagnosis omitted (%)	25	13	28	4	30	53
Illegible (%)	0	0	0	100	0	0.1
Oesophagus related (%)						47
Hiatus hernia (%)	17	17	25	33	8	36
Gastro-oesophageal reflux (%)	60	20	0	20	0	15
Oesophagitis (%)	0	67	33	0	0	9
Candidiasis (%)	0	67	0	33	0	9
Varices (%)	0	20	60	20	0	15
Barrett’s (%)	0	100	0	0	0	3
Oesophageal stricture/tumour (%)	0	0	50	50	0	6
Oesophageal diverticulum (%)	0	0	100	0	0	3
Oesophageal ring (%)	0	0	0	100	0	3
Stomach related (%)						47
Gastritis (%)	18	45	9	27	0	67
Peptic ulcer (%)	38	25	13	25	0	24
Polyp (%)	0	50	50	0	0	6
Gastropathy (%)	0	0	100	0	0	3
Duodenum related (%)						4
Duodenitis (%)	0	100	0	0	0	33
Mass (%)	0	100	0	0	0	33
Lymphangiectasia (%)	0	0	100	0	0	33
Other diagnoses (%)						1
Laryngitis (%)	0	0	0	100	0	100

stated, a normal upper endoscopy was recorded in 14 (23%) patients. Further management is summarised in Table II. Proposed management was recorded in 110 (85%) reports, 19 (15%) reports were left blank and 1 was illegible. The NM score was applied to all reports. All 130 reports (100%) were Grade C and scores of less than 20 points were seen in 106 reports (82%).

Discussion

Gastrointestinal endoscopy is an integral part of surgical practice. The accuracy and adequacy of endoscopic reporting and determining a correct diagnosis are crucial for optimal treatment planning. It is important for these reports to contain adequate and relevant information clear to all treating physicians. Endoscopic reports should follow a structured standardised format, including key positive and negative findings that are stated in correct terminology and making use of widely accepted classification systems. To standardise endoscopic reporting, the WEO has suggested a guideline detailing the indications, therapeutic procedures and diagnoses that may be observed during an endoscopic procedure.⁵ This MST includes a standardised reporting structure and suggested terminology. It promotes accurate reporting and is well understood by all colleagues.

A single-centre study by Maharaj et al. demonstrated that the MST is not routinely utilised and that reports were incomplete.⁸ In the current study, all reports were found to be inadequate (Grade C). We have found that the reports lack uniformity with different formats used in each of the five centres. This results in lack of uniformity in reporting between the centres and inconsistency in the variables reported. The major contributing factor to the low scoring is the nature and completeness of data recorded on these reports. MST-specific report variables are also inconsistently used. With many sections of the proforma being left blank, especially the diagnosis and management sections, it was not clear whether there was no abnormality present, or whether the parameter was not assessed at all.

The MST guidelines allow for standardised reporting and uniform data capturing into searchable databases. Such databases are valuable for quality assurance programmes and personal and unit trends may be tracked over time. Indications and volume as well as performance measures can be accurately monitored, including morbidity and mortality. Quality assurance programmes improve overall quality of patient care and limit unnecessary procedures.¹⁵⁻¹⁷

Standardised reporting systems also have educational value in offering a structured approach to endoscopic examinations. Knowledge of the MST is likely to improve detection and improve the quality of the procedure in general. Having a standardised endoscopy reporting system will also facilitate objective assessments, by comparing trainee endoscopist reports to a set of recognised benchmarks to assess completeness and proficiency.^{18,19}

Study limitations

We acknowledge that this is a small retrospective study. The numbers are not evenly distributed across the hospitals because one hospital could not find records for a particular year, and another hospital did not perform any endoscopic procedures for an entire year due to a lack of equipment.

Conclusion

This study clearly demonstrates the shortcomings in upper gastrointestinal endoscopy reporting and the need for a standardised reporting system across all hospitals. The many advantages of electronic MST-based reporting systems will improve the quality of investigations which will result in better patient care. It will facilitate the standardisation of endoscopic teaching and training, as well as serve as a data bank for measuring outcomes and for research.

Conflict of interest


The authors declare no conflict of interest.

Ethical approval

The study was approved by the Biomedical Research Ethics Committee (BE 269/15) of the University of KwaZulu-Natal, Durban, South Africa.

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