

## ORIGINAL ARTICLE

## Upper gastrointestinal cancer pathology reporting: a regional audit to compare standards with minimum datasets

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**Aims:** Accurate pathological (pTNM) staging of oesophageal and gastric cancer provides important prognostic information. The aim of this study was to compare the standard of pathology reporting of oesophageal and gastric cancer resections from a cancer network with standards set by the Royal College of Pathologists.

**Methods:** All reports for oesophageal and gastric cancer resections from the five hospitals in the cancer network in 2001 were collected. Individual items of information were compared with minimum datasets provided by the Royal College of Pathologists. Items were classified as "complete", "partially complete", or "absent".

**Results:** One hundred and ten reports were audited (54 oesophageal and 56 gastric). Fourteen gastric and 17 oesophagectomy reports were over 75% complete. Clinically important missing data occurred most frequently for the pM component of TNM staging (pMx omitted in 87 reports) and completeness of resection expressed as a bold statement (absent in 50 reports). Twelve reports could not be classified because the specimen contained no residual tumour after neoadjuvant treatment.

**Conclusion:** The use of a standard proforma for reporting upper gastrointestinal cancers based on a minimum dataset provided by the Royal College of Pathologists is recommended, with modifications to allow for specimens with no tumour after neoadjuvant treatment.

The histopathology report provides information that facilitates accurate staging of patients with gastric and oesophageal cancer. The prognosis remains poor for these cancers and an accurate histopathology report is crucial in providing information regarding prognostic factors and possible further treatment. The number and location of involved lymph nodes, involvement of the margins, TNM stage, and response to preoperative neoadjuvant treatment are particularly important. In addition, the histopathology report provides feedback regarding the accuracy of preoperative staging techniques, and can be a useful tool in research and audit, particularly with regard to advances in neoadjuvant treatments.

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The recent development of cancer networks for upper gastrointestinal cancer necessitates a standard approach to pathology reporting. A need for consistent reporting has been highlighted in previous audits. An audit of colorectal reporting in Wales in 1997 found that only 78% of colonic and 47% of rectal reports met their predetermined minimum standards.<sup>1</sup> An audit of oesophageal and gastric cancer found similar inconsistencies, with only 77% of gastric reports and 53% of oesophageal reports meeting minimum standards.<sup>2</sup> Both of these audits concluded that there was a need for proforma reporting. The Royal College of Pathologists has provided minimum datasets for the reporting of all common cancers.<sup>3</sup>

The aim of this audit was to compare the standard of pathology reporting for gastric and oesophageal resection specimens with minimum datasets provided by the Royal College of Pathologists.

## METHODS

Five hospitals within the Avon, Wiltshire, and Somerset cancer network agreed to participate in the audit. All pathology reports for gastric and oesophageal cancer resection specimens for the whole of 2001 were assessed. Reports were identified retrospectively using the SNOMED coding system and copies of all reports were obtained and anonymised. Tumours deemed to be junctional after review of the pathology reports were placed in the oesophageal category. All reports were read by a single data collector (PK) and compared with the minimum datasets provided by the Royal College of Pathologists. The category headings in table 1 were taken from the minimum datasets, and reports were scrutinised for the presence or absence of information under each category. Each category on the pathology report was entered on to a database as "complete", "partially complete", or "absent", depending on how much of the information required by the minimum dataset was present within the report. For categories such as "length of specimen" to obtain a complete score all the associated specific parameters had to be present. For example, in the gastric reports, the length of the specimen had to include the greater and lesser curve lengths, in addition to the length of the oesophagus and duodenum if applicable. The tumour size had to include length, width, and depth to obtain a complete score. With regard to pTNM staging, the minimum dataset makes it a requirement for a number or letter (as appropriate) to be ascribed to each of the three components of the pTNM stage. Where distant metastasis cannot be assessed owing to the nature of the pathological specimen, the pM staging category is taken as being pMx.

To validate the accuracy of data collection, 20 reports were selected at random and analysed in the same way by a consultant surgeon (JMB) and a specialist registrar in pathology (JG). Any interpretative differences were discussed at a meeting with a consultant histopathologist (MM) and the reports re-read by the original data collector, taking account of the points raised in the discussion.

**Table 1** Categories present on the minimum datasets

Categories for gastric reports	Categories for oesophageal reports
Personal details	Personal details
Type of specimen	Gross description
Length of specimen	Tumour type
Tumour site	Differentiation
Macroscopic type	Depth of invasion
Tumour size	Proximal margin details
Distance of tumour from specimen edges	Distal margin details
Histology	Circumferential margin details
Local invasion	Other features
Lymph nodes	Lymph nodes
Margins involved	Complete resection
Other pathology	TNM stage
Complete resection	
TNM stage	

## RESULTS

One hundred and ten reports were collected from five hospitals within the network. There were 54 oesophageal reports from three hospitals and 56 gastric reports from five hospitals. Twelve oesophageal reports were excluded because there was no residual tumour after neoadjuvant treatment.

Table 2 shows the number of gastric reports that were complete, partially complete, or absent with regard to each category taken from the minimum dataset. Information about personal details and lymph node status was complete on all 56 reports, although the National Health Service number was consistently absent. Local invasion (the pT stage), histology (adenocarcinoma and the degree of differentiation), and the site of the tumour were complete in most reports (54, 52, and 50, respectively). Only 22 reports provided an unambiguous statement regarding completeness of excision. In 46 reports, this information was provided in the main text, and from this it could be inferred whether excision was complete or not. Most reports made no mention of the pM component of the TNM staging, resulting in the very poor score for the pTNM category. However, it could be inferred from the totality of information provided in the report that in all cases the pM stage was pMx. With regard to the pT component of the stage, the exact numerical qualifier could be deduced for 96% of cases. The most inadequately completed category was length of specimen.

The results for the oesophageal categories were similar. Table 3 shows the number of completed categories for these reports. No report was deemed to be complete with respect to

the pTNM category because the pM component was missing, as for gastric cancers.

Figure 1 shows the number of reports that were greater than 75% and less than 50% complete for both the gastric and oesophageal resection specimens. Only one oesophageal report and four gastric reports were less than 50% complete. Seventeen oesophageal and 14 gastric reports were more than 75% complete. No report was 100% complete.

## DISCUSSION

The pathology report provides crucial information, and is the main determinant of disease stage after surgery. Although, in general, the standard of reporting for oesophageal and gastric cancer specimens was good, no report for either gastric or oesophageal resection specimens was 100% complete when compared with the minimum datasets provided by the Royal College of Pathologists. Residual disease at surgery, depth of invasion, and lymph node status are the most important independent prognostic factors<sup>4</sup> for oesophageal cancer. The pT stage and lymph node status were consistently reported, but reporting of completeness of resection was less consistent. The minimum dataset has a yes/no tick box for complete resection at all margins, and so an unambiguous statement declaring the completeness of surgical excision within the text was deemed necessary. It could be argued that the pathologist could ascertain this information from descriptions of the margins, but the pathology report has to be easily interpreted by a range of individuals involved in the care of the patient.

The circumferential margin, another independent prognostic variable for oesophageal cancer,<sup>5</sup> was poorly completed, with only about a quarter of reports obtaining a complete score for this parameter. This was partly because of textual ambiguities and partly the result of omission. The omission of a pM stage must largely reflect the information provided to the histopathologist when resected specimens are submitted.

With both gastric and oesophageal reports the categories that were complete least often were those that required several specific parameters. For example, tumour size on the gastric reports required the tumour width, length, and thickness, and gross description on the oesophageal reports required the length of the oesophagus and stomach, the width and length of the tumour, the distances from the margins, and the macroscopic type. The high partially complete score for these categories reflects that it is inconsistency that is responsible for substandard reporting. These results are in keeping with previous audits, which have found

**Table 2** Percentage of reports complete for each category on the gastric reports (n = 56)

Category on minimum dataset	No complete (%)	No partially complete (%)	No absent (%)
Personal details	56 (100)	0 (0)	0 (0)
Total number of lymph nodes	56 (100)	0 (0)	0 (0)
Local invasion (pT)	54 (96)	2 (4)	0 (0)
Histology (adenocarcinoma/degree of differentiation)	52 (93)	4 (7)	0 (0)
Site of tumour	50 (89)	2 (4)	4 (7)
Margins involved	46 (82)	9 (16)	1 (2)
Macroscopic type of tumour	45 (80)	2 (4)	9 (16)
Type of specimen	41 (73)	14 (25)	1 (2)
Other pathology	41 (73)	2 (4)	13 (23)
Complete resection	22 (39)	4 (7)	30 (54)
Size of tumour	21 (37)	33 (59)	2 (4)
Distance of tumour from edges of specimen	17 (30)	18 (32)	21 (38)
TNM staging	11 (20)	26 (46)	19 (34)
Length of specimen	10 (18)	46 (82)	0 (0)

**Table 3** Percentage of reports complete for each category on the oesophageal reports (n = 54)

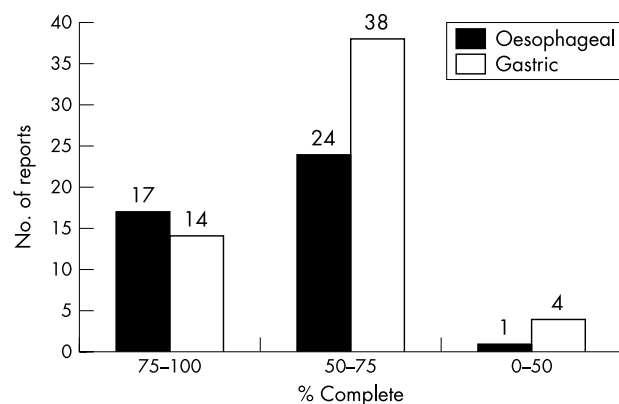
Category on minimum dataset	No complete (%)	No partially complete (%)	No absent (%)
Personal details	54 (100)	0 (0)	0 (0)
Total number of lymph nodes	54 (100)	0 (0)	0 (0)
Depth of invasion	54 (100)	0 (0)	0 (0)
Type of tumour	53 (98)	0 (0)	1 (2)
Degree of differentiation	46 (86)	0 (0)	8 (14)
Proximal margin (clear or involved)	45 (83)	0 (0)	9 (17)
Distal margin (clear or involved)	44 (81)	0 (0)	10 (19)
Complete resection	27 (50)	1 (2)	26 (48)
Other features (Barretts metaplasia/vascular invasion)	26 (48)	23 (43)	5 (9)
Gross description of tumour	21 (38)	33 (62)	0 (0)
Circumferential margin	13 (24)	15 (28)	26 (48)
TNM staging (pTpNpM)	0 (0)	45 (83)	9 (17)

inconsistency with reporting for colorectal cancer<sup>1</sup> and upper gastrointestinal cancer.<sup>2</sup>

The traditional style of free text reporting allows for ambiguities to be left in and for specific points to be missed out. The minimum datasets are presented as sets of statements against which tick boxes, numbers, or short statements should be appended. The format of these documents is such that the data are not readily transferable to most computer pathology systems. In one hospital in our network, a separate proforma on a printed form was produced for each case, but this was not recorded electronically and therefore could not be retrieved for the purpose of our audit. In any case, there is a general reluctance by histopathologists to replace free text reports with proformas because they do not allow for flexibility. We are now introducing proformas for gastric and oesophageal cancers in one hospital in our network in which, for each report item, a statement is appended instead of a box being ticked; it is anticipated that most histopathologists will find this format more user friendly.

“The traditional style of free text reporting allows for ambiguities to be left in and for specific points to be missed out”

There are also several ambiguities within the minimum datasets issued by the Royal College of Pathologists. For example, in the oesophageal cancer dataset the type of junctional tumour (that is, 1, 2, or 3) is not recorded.<sup>3</sup> Serosal



**Figure 1** Number of oesophageal and gastric cancer reports complete for all categories in the dataset.

### Take home messages

- We recommend the use of a standard proforma for reporting upper gastrointestinal cancers based on a minimum dataset provided by the Royal College of Pathologists to improve the quality and consistency of pathology reporting
- Modifications are needed to allow for specimens with no tumour after neoadjuvant treatment

involvement in the Royal College of Pathologists' dataset refers to the gastric portion of the tumour, which may be confusing. Tumour clearance at the deep adventitial margin should be provided in terms of distance to avoid confusion and also because of its potential prognostic relevance.<sup>3</sup> For gastric carcinomas, vascular invasion may be of prognostic relevance, yet this is omitted in the gastric dataset.

Neoadjuvant treatment is increasingly being used before surgery. The final pathological staging in these cases should take this into account and include the prefix y (ypTNM), in addition to an indication of the response to the treatment, such as the Mandard score.<sup>6</sup> Although it is not clear whether downstaging is associated with an improvement in prognosis, this information is important to the clinician when counselling the patient.

Proforma reporting has been shown to improve the quality and consistency of pathology reporting.<sup>7, 8</sup> Minimum datasets provide a framework on which cancer networks should build to provide a comprehensive proforma for the reporting of gastric and oesophageal cancers.

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