Effect of using templates on the information included in histopathology reports on specimens of uterine cervix taken by loop excision of the transformation zone

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Abstract

***Aim*—To determine the change in information relayed from histopathologists to clinicians by using templates for reporting specimens of uterine cervix sampled by loop excision of the transformation zone (LETZ).**

***Methods*—Minimum datasets for the information required from LETZ specimens received from the colposcopy clinic, Royal Infirmary, Edinburgh, were incorporated into templates on the clinical service computer (Pinnacle) of the pathology department, University of Edinburgh. Pathologists completed hard copy versions, which were transcribed into the computer templates for report generation. The effect of the changes on the quality of the pathology reports was studied. The number of cases in which each item in the dataset received comment in template generated reports was compared with that in traditional prose reports compiled before the use of the templates and in prose reports issued after the introduction of the templates. Questionnaire studies were undertaken of clinicians' and pathologists' opinions of the template reports.**

***Results*—In the template reports nearly all items received comment in almost 100% of cases. In the prose reports issued both before and after the templates were in use, most items were mentioned in a significantly lower proportion of cases. Clinicians thought the template reports were clearer and the information could be more readily assimilated than from the prose versions.**

***Conclusions*—The use of template reports in these types of specimen allowed more consistent and detailed information transfer. The change appeared to result from the use of the templates rather than from increased awareness of the items to be reported.**

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Keywords: pathology reporting; template; cervix; loop excision of the transformation zone

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Refinement of patient management increases the clinical need for high quality pathological data on excised tissue specimens.[1] Traditionally, histopathologists write reports in prose, but do not always include all the information required.[2 3] They ought to supply it in whatever format the recipient finds easiest to assimilate.

Recently, minimal datasets for certain specimen types, such as colorectal carcinoma and breast, have been agreed upon, and the Royal College of Pathologists has published proformas for completion in suitable cases.[4 5] In recent studies, the introduction of templates for mastectomies[6] and colorectal carcinomas[7] had more effect on the comprehensiveness of reports than other changes, such as issuing guidelines.

The department of pathology, University of Edinburgh, receives annually over 2000 specimens removed for cervical intraepithelial neoplasia (CIN) by loop excision of the transformation zone (LETZ). The reports are rather repetitive, although pathologists do not always mention the requisite features. We therefore introduced a template for reporting these specimens. This study was undertaken to evaluate the template by comparing items of information in histopathology reports before and after introduction of the templates; asking recipient clinicians their opinions on the style of the reports and the ease with which they could assimilate the information from them; and asking pathologists for their opinions.

Methods

The features requiring mention in LETZ reports are:

- Transformation zone: specified as the types of epithelia;
- Presence and grade of CIN or other neoplastic change;
- (CIN3) expansile growth pattern, necrosis or keratinisation indicate an increased tendency for invasion[8];
- Number of transections involved by CIN: semiquantitative indication of extent of disease;
- Location of neoplastic changes: on the surface or in crypts;
- Excision margins, both endocervical and ectocervical;
- Glandular epithelium status: cervical glandular intraepithelial neoplasia (CGIN)[9];
- Inflammation;
- Summary line: a separate underlined statement at the end of the report;
- Smear correlation: to indicate disparity between the histology and the last smear report.

Surface epithelium: squamous, columnar
Endocervical crypts: present

CIN: Grade
Extent: out of tissue pieces
Location: surface, crypts
Excision margins: endocervical: not involved by CIN
ectocervical: not involved by CIN

Koilocytosis: present absent
Glandular epithelium: normal
Inflammation: chronic

Comments:

SUMMARY: CIN_____, with CIN_at endocervical and ectocervical resection margin.

SMEAR CORRELATION: Difference in grade between histology and last smear report:
0 – no discrepancy
1 – no significant discrepancy
2 – significant discrepancy
3 – significant discrepancy

Figure 1 Template on clinical services computer.

A template report was constructed on the main clinical service computer of the pathology department, Edinburgh University (fig 1). Secretaries could amend this template in individual cases. Hard copy proformas, adapted from the computer versions, were pinned to the request forms accompanying the microscope slides (fig 2). These include a separate column on the right hand side with advice on completing the adjacent items. Pathologists compiling a report amended a proforma to suit the case. If the LETZ was sent in two or more separate parts the pathologist either completed multiple proformas or reported the parts together on one proforma.

When the templates had been in use for some time, a study was undertaken to compare the items mentioned in the template reports with those in the previously used prose reports. Consecutive reports compiled before (three months) and after (five months) the introduction of the templates were reviewed. The points mentioned in each report were compared with the checklist of points in the minimum dataset and a note was made on whether each had been specifically mentioned. In most cases this was irrespective of whether the feature referred to was present or absent, but the number of cases in which koilocytosis was present or absent was recorded. If the cervix was in more than one piece, the part with the most severe changes was chosen. The results were entered on a spreadsheet (Microsoft Excel 5.0).

In the period of study after introduction of the templates, some cases were still reported in prose. These were examined to determine whether any changes in reporting style were attributable to use of the templates or merely to pathologists' increased awareness of points to be mentioned. The cases were divided into three groups according to how the report had been compiled: those in which a template was used ("template reports"), prose reports made before the templates were introduced ("pre-template prose reports"), and prose reports made after the templates were introduced ("post-template prose reports"). The microscope slides were not reviewed, as the study concerned the reporting style and content, not the accuracy of the reports. The numbers of cases in which a given feature was mentioned in each of these three categories were imported into a statistical package (Sigma Stat version 2, Jandel Scientific) and the differences between pairs in the three reporting groups were analysed for significance by the χ^2 squared test.

An opinion questionnaire was sent to those clinical staff who sent LETZ specimens to the pathology department regularly and their replies were collated. Pathologists' opinions were also gathered in a short questionnaire. The proportion of cases in which templates were used one year after their introduction was calculated.

Results

The 349 reports examined comprised 115 before the introduction of the templates and 234 after, of which 198 (85%) were reported in template form and 36 (15%) in prose. The results on these three groups are shown (table 1), together with the p values resulting from the χ^2 tests on the pairs of values in columns 1 and 2, 2 and 3, and 1 and 3, respectively.

EVALUATION OF THE TEMPLATE

The types of epithelium present were specifically stated in 98% of the template reports, but in only 6% of the pre-template prose reports, although in a further 39% the presence of the transformation zone was mentioned. All reports mentioned the presence or absence of CIN or more advanced lesions. Few prose reports commented on features predictive of early invasion, namely expansile growth pattern, central keratinisation, or necrosis. The number of transections involved by neoplasia was stated in 99.5% of the template reports, but in only 72% of the pre-template prose reports. In the 198 template reports, the endocervical and ectocervical excision margins were separately mentioned in 98% and 97% cases, respectively. In the pre-template prose reports they were mentioned together in 52 cases (45%), the endocervical but not the ectocervical margin in 31 cases (27%), and the ectocervical but not the endocervical margin in four cases (3.5%).

Human papillomavirus (HPV) changes, such as koilocytosis, were often not mentioned in the prose reports. Moreover, the templates mentioned a much higher rate of positive cases. None of the prose reports mentioned the absence of viral changes, suggesting that these were only mentioned when present.

DIFFERENCES BETWEEN PRE- AND POST-TEMPLATE REPORTS

The differences between the figures for each item between the prose reports, both pre- and post-template, are highly significant ($p < 0.001$, except the summary line, $p = 0.007$), except for expansile growth pattern ($p = 0.081$). The differences between the pre- and post-template prose reports are not significant, except the ectocervical margin ($p = 0.006$) and gland epithelium status ($p = 0.009$).

CLINICIANS' OPINIONS

The questionnaires sent to clinicians that regularly sent LETZ specimens were returned completed by all 11 (table 2). Nine thought the reports easier to read, more clearly laid out, easier to check for negative findings, and the information easier to assimilate than from the prose reports. The layout and content of the template reports were highly acceptable. Comments included "excellent idea: leads to a much more focused report," "great improvement on previous prose reports," "easier to extract for audit purposes," and "a very helpful development." The main criticism was that the recipients themselves would take a little time to get used to the different format.

PATHOLOGISTS' OPINIONS

The pathologists' questionnaire showed that seven always used the templates, while four said they sometimes did not, for example in special cases, such as those with multiple parts. A year after introduction of the templates, of 112 consecutive reports, 103 (92%) were in template form and only nine were not.

Discussion

The results show that most items in the dataset received comment much more consistently in the template reports than in the traditional prose reports.

After introduction of the templates, the 36 prose reports showed no difference from the

LETZ TEMPLATE **UB_____/99**

Annotate on the lines and encircle or delete features. You can insert any other comments you like *at any point.*

FOR TYPING (Codename **MICX**)

MICRO

Surface epithelium: squamous, columnar
Endocervical crypts: present

CIN: Grade _____/ uncertain / No evidence of CIN

Expansile pattern, necrosis, central keratinisation

Extent: _____ out of _____ tissue pieces

Location surface, crypts

Excision margins: endocervical: involved by CIN _____/ not involved by CIN / not assessable

ectocervical: involved by CIN _____/ not involved by CIN / not assessable

Koilocytosis: present / absent

Glandular epithelium: normal / reactive / CGIN, low / high grade

Inflammation: acute, chronic

Comments:

SUMMARY: CIN_____, with CIN____at endocervical and ectocervical resection margin

SMEAR CORRELATION: *Difference in grade between histology and last smear report:*
0 – no discrepancy
1 – no significant discrepancy
2 – significant discrepancy
3 – significant discrepancy
Not determinable
Not applicable

[SNOMED Code: T/ Cervix M/ CIN _____ M/ _____]

*Pathologists:*_____

NOT FOR TYPING
(Guide for pathologist)

Delete types not present
State if crypts present or absent

State if epithelium thin: may be difficult to grade

Apply only to CIN3: otherwise delete

If microinvasive, describe: no. of blocks, depth, width, single/ multiple foci, lymph/ bv invasion

If more than one grade of CIN present, it may help to state "up to grade ____ "

Mention if deep crypts near margin are involved

If CGIN, mention no. of pieces of tissue involved

Mention only if present:
Condylomatous features
Microglandular hyperplasia
Tuboendometrial metaplasia

State if biopsy is poor

Amend as required

Report parts either together as 1 & 2 or separately using additional template forms. If apex, state if involved by CIN or not

Compare last smear report and state difference in grade. Borderline counts as 1 grade. If more than one part, put smear review after last part. If significant discrepancy, review smear slides and append a comment to the smear correlation.

Figure 2 Hard copy proforma.

Table 1 Numbers of cases with comments on specific items in LETZ reports

Items mentioned	No of reports studied: Prose, pre-template n	%	With template n	%	Prose, post-template n	%	p Values, columns† 1 v 2	2 v 3	1 v 3
All	115	100	198	100	36	100			
Tissue present in biopsy									
Epithelium present	7	6	195	98	5	14	<0.001	<0.001	0.441
Transformation zone	45	39	0	0	8	22			
Neoplasia									
CIN presence	115	100	198	100	36	100			
CIN grade	115	100	198	100	36	100			
Growth, expansile	5	4	30	15	1	2.8	0.006	0.081	0.946
CGIN or invasive carcinoma	5	4	3	1.5	3	8.3			
Number of transections involved	83	72	197	99.5	29	81	<0.001	<0.001	0.433
Location of CIN (surface, crypts)	75	65	196	99	23	64	<0.001	<0.001	0.957
Excision									
Excision margin, endocervical	58	50	194	98	23	64	<0.001	<0.001	0.222
Excision margin, ectocervical	25	22	193	97	17	47	<0.001	<0.001	0.006
Both excision margins	52	45	2	1	11	31			
HPV status									
HPV changes	40	35	194	98	15	42	<0.001	<0.001	0.582
HPV changes positive	40	35	161	81	15	42	<0.001	<0.001	0.582
HPV changes negative	0	0	32	16	0	0			
Others									
Glandular epithelium status	29	25	196	99	18	50	<0.001	<0.001	0.009
Inflammation	12	10	185	93	7	19	<0.001	<0.001	0.257
Summary line	101	88	198	100	27	75	<0.001	0.007	0.109
Smear correlation	6	5.2	188	95	3	8.3	<0.001	<0.001	0.775

†The last three columns list the p values of the figures in columns 1 *v* 2, 2 *v* 3, and 1 *v* 3.
CIN, cervical intraepithelial neoplasia; CGIN, cervical glandular intraepithelial neoplasia; HPV, human papillomavirus; LETZ, loop excision of transformation zone.

Table 2 Cervical LRTZ, template reports: clinicians' questionnaire results

	No of respondents who agreed with the following statements regarding the template reports by comparison with the previous traditional prose reports: Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Template report easier to read	5	4	1	1	0
Template report more clearly laid out	5	4	1	1	0
Information easier to assimilate in the template report	4	5	1	1	0
Easier to check template report for negative findings	6	3	2	0	0

LETZ, loop excision of transformation zone.

pre-template reports in the rate most items were mentioned, suggesting that pathologists' increased awareness of items to be mentioned had not led to increased informational content. This support the suggestion[6 7] that the factor that produced the maximum increase in the informational content of the reports was the use of templates.

Before the introduction of the templates there was no departmental policy on commenting on the correlation between the results of histology and the previous cervical smear. The templates force pathologists to mention this, with advantages for biopsy–smear correlation.

Given the much higher frequency with which koilocytosis was reported in the templates ($p < 0.001$), however, it appears that even the presence of such changes was often omitted from the prose reports.

Some pathologists do not always use the templates, if the specimen is in multiple parts or if the case is unusual. The templates can, however, easily be adapted in individual cases so that, for example, all grades of CIN can be reported separately if required. After one year the percentage of cases reported by template had increased from 85% to 92%. It is debatable whether other items should be included. Certain features occur only in a minority of cases and are easier to add than to keep deleting in those cases from which they are absent. In this category are immature squamous metaplasia, microglandular hyperplasia, and atypical reserve cell hyperplasia.

Attention has been drawn to the increasing informational content of histopathology reports.[10] If, however, this is adequately discussed and agreed by clinical colleagues, it seems justified. The results of the clinician survey indicate a high degree of consumer satisfaction.

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