# Template reports for radiology cancer staging: improving information to guide treatment decisions

**Provided by: Addenbrooke's Hospital, Cambridge University Hospitals NHS Foundation Trust**

**Publication type: Proposed quality and productivity example**

## Sharing good practice: What are 'Proposed Quality and Productivity' case studies?

The NICE Quality and Productivity collection provides users with practical case studies that address the quality and productivity challenge in health and social care. All examples submitted are evaluated by NICE. This evaluation is based on the degree to which the initiative meets the criteria of savings, quality, evidence and implementability.

Proposed quality and productivity examples are predominantly local case studies that meet most of the criteria but are yet to be fully implemented. This may be because they are at an early stage of implementation and further evidence is forthcoming. These proposed examples may still be of interest. Additional information will be requested within a year from the date of publication. A summary of findings is provided below along with comments and recommendations about how this case study may be developed.

**Overview**

This initiative uses templates to record tumour staging information from magnetic resonance (MR) investigations. The information provided by radiologists to clinicians is improved and standardised, allowing management decisions to be better informed and reducing the need for additional clarification. This initiative is primarily about improving quality, although there are some small productivity savings.

**NICE comment**

A small increase in productivity equivalent to £2900 per 100,000 population is expected by ensuring the required staging information is recorded after the first investigation. The resource requirements for this initiative are very low.

Template reports were developed to ensure key diagnostic information is always recorded. Templates were uploaded to radiologists' local systems to ensure availability, and both radiologists and clinicians were briefed on their use.

During the 4-month trial period, the completeness of reports improved significantly. Cancer is a long-term condition and so outcomes data are not yet available, but complete recording of tumour stage means that the likelihood of harm from under-treatment or aggressive over-treatment is reduced. A slight improvement to the patient experience is also expected because patients may avoid unnecessary referrals or inappropriate treatment.

Future work will help to validate the expected benefits, both in terms of productivity and quality.

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## Changes since the previous version

Published Quality and Productivity case studies are reviewed annually. One year after the case study has been published on the NICE Evidence website, the submitter of the case study is contacted to ask if there is further information relevant to the case study, and the case study updated as required. Any changes to this case study are outlined in the table below.

| Case study section | Update |
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| Introduction | No change |
| Savings | No change |
| Quality | Added details of an audit conducted following routine implementation, demonstrating improvements in the recording of tumour staging information. |
| Evidence | The results of an audit 6 months after routine implementation have been added. These demonstrate that the improvements have been sustained. |
| Implementation | Added details of an audit conducted following routine implementation. |

## Details of initiative

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| **Purpose** | To ensure radiology baseline oncology staging investigations contain enough detail to inform management decisions, improving the quality of treatment and reducing delays. |
| **Description (including scope)** | Baseline radiological imaging informs decisions for pre-operative therapy for cancer patients and radical surgery for high-risk patients. This initiative initially targeted MR-based staging investigations of primary tumours of the prostate, rectum, endometrium, cervix and ovary.<br>Cancer staging information is supplied by radiologists to clinicians in the form of reports. An initial review found that existing 'free-form' MR staging reports for rectal, prostate and gynaecological malignancies were variable in the quality of information provided. Missing or unclear information can lead to delays in treatment decisions, or incorrect decisions, reducing quality of care.<br>Although staging information could often be implied from the free text, the relevant staging information was not always explicitly stated. Provision of complete primary tumour, regional lymph node and distant metastasis (known as 'TNM') staging was very low for rectal and prostate cancer. For gynaecological cancers, International Federation of Gynecology and Obstetrics (FIGO) staging was frequently not explicitly stated.<br>In order to improve the staging information provided, template reports were developed in a modular format with section headings and prompts for a valid response to ensure completeness (see appendix 1 for template report fields). The pilot was deliberately limited to baseline investigations to stage proven malignancy and for tumours of the prostrate, rectum, endometrium, cervix and ovary only.<br>Clinical need and plans for a 4-month pilot study were relayed in a PowerPoint presentation to radiology registrars and consultants and discussed with the clinical leads for the relevant oncology multidisciplinary teams (MDTs).<br>Developed templates were uploaded to all radiology users' voice recognition files, with the trigger phrase 'Template MRI [*primary tumour*]'. Templates were also uploaded to the local intranet for when voice recognition was unavailable. Additional explanatory notes were also provided. Please note that voice recognition is not necessary to develop templates and implement this initiative; it was used in this initiative to be compatible with the existing system.<br>The pilot resulted in significant improvements to the completeness of reports for rectal, prostate and gynaecological investigations (see 'Evidence of effectiveness'). |
| **Topic** | Productive care, safe care and right care. |

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| **Other information** | Please see appendix 1 for the information provided in the template reports. |

## Savings anticipated

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| **Amount of savings delivered** | Annual productivity saving of £9000 for a population of 312,000 equivalent to £2900 per 100,000 population. |
| **Type of saving** | No quantifiable cash savings in terms of drugs or equipment for example, but increased productivity for both clinicians and radiologists due to reduced time seeking clarification. Access to important information is also facilitated in a MDT setting. |
| **Any costs required to achieve the savings** | Change can be achieved with minimal resources. Some time is required to agree the use of standardised templates, make them available on local systems and ensure radiologists know how to use them, but this time is equivalent to less than 6 months' savings. |
| **Programme budget** | Cancers and tumours. |
| **Supporting evidence** | Savings based on estimated reduced time seeking clarification or answering queries. |

## Quality outcomes anticipated

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| **Impact on quality of care or population health** | Quality is improved by providing accurate radiology reports in a standardised format. This approach supports safer care. Outcomes data are not yet available, but complete recording of tumour stage means that the likelihood of harm from under- or over-treatment is reduced.<br>The initiative also makes it easier to upload data to the national cancer databases. |
| **Impact on patients, people who use services and/or population safety** | The initiative reduces the risk that patients receive under- or over-treatment including inappropriate surgery, as the consultants making the initial treatment decisions have a clearer picture of the stage of their disease. |
| **Impact on patients, people who use services, carers, public and/or population experience** | There is a slight improvement to the patient experience because patients may avoid unnecessary referrals or treatments if clearer information is provided after the first investigation. |
| **Supporting evidence** | Outcomes data is not yet available. Audits during the trial period and following routine implementation, demonstrated that the |

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| | recording of complete tumour staging information improved significantly and that this was maintained. Please see 'evidence of deliverables from implementation' below for details. |

## Evidence of effectiveness

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| **Evidence base for case study** | This initiative is based on 'Improving communication of diagnostic radiology findings through structured reporting' (Schwartz et al. 2011). This article concluded that structured reports had better content and greater clarity than non-structured reports. The Royal college of Radiologists and the National Cancer Intelligence Network also advocate the use of structured reporting proformas for cancer staging (Brown 2011). |
| **Evidence to date of deliverables from implementation** | During the 4-month trial period, completeness of reports improved significantly in all cases. For rectal cancer, the TNM staging information improved from 10.5% to 88.5% and circumferential margin reporting from 39.5% to 92.3%. For prostate cancer, TNM reporting improved from T 68.8%, N 5.4% and M 5.4% to T 97.8%, N 100% and M 97.8%.<br>For gynaecological malignancies combined, FIGO staging information improved from 73% to 100%.<br><br>Following the trial period, the initiative was incorporated into routine practice. The completeness of reporting was audited again 6 months later. The improvements in the recording of staging information were maintained. For rectal cancer the percentage of reports containing all required TNM staging information were 90% and the reporting of the circumferential margin was 97%. For prostate cancer complete TNM information was provided in 91% of cases and for combined gynaecological malignancies complete FIGO staging information was provided in 100% of cases. |
| **Supporting evidence** | 'Improving communication of diagnostic radiology findings through structured reporting' (Schwartz et al. 2011).<br><br>Internal audit results, unpublished (2014) |

## Details of implementation

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| **Implementation details** | The clinical need and plans for a 4-month pilot study were presented to radiology registrars and consultants and discussed with the clinical leads for the relevant oncology MDTs.<br>The initiative targeted MR-based staging investigations, including 5 primary tumours: prostrate, rectum, endometrium, cervix and ovary. |

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| | Template reports were developed following a modular format with section headings and prompts for a valid response to ensure completeness (see appendix 1). When developing the templates, space on the templates was retained for additional 'free text' comments to prevent the templates being too restrictive.<br>Templates were uploaded to all radiology users' voice recognition files.<br>Templates were also uploaded to the local intranet for when voice recognition was unavailable.<br>Following data analysis and proof of improvement in service, the project was implemented into routine reporting practice, with future options to expand the scope of templates used.<br>Six months after implementation in routine practice, a further audit was conducted that demonstrated the improvements had been maintained. |
| **Time taken to implement** | The initiative can be implemented within 3 months to 1 year. |
| **Ease of implementation** | Affects a whole organisation across a number of teams or departments. |
| **Level of support and commitment** | Likely to achieve good buy-in from key influencers. |
| **Barriers to implementation** | Possible barriers to implementation include a lack of support for the changes and IT and communications system incompatibility. Providing education to colleagues before installation on the potential benefits of template reporting and evidence of improvement following implementation are likely to help overcome barriers to change. |
| **Risks** | None given. |
| **Supporting evidence** | None provided. |

## Further evidence

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| **Dependencies** | The success of the initiative will depend on the quality of the template used and the availability of the template on local systems used by radiologists. |

## Contacts and resources

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| **Contacts and resources** | If you require any further information please email: qualityandproductivity@nice.org.uk and we will forward your enquiry and contact details to the provider of this case study. |

Please quote reference 13/0004r in your email.

Appendix 1 of this document provides details of the template reports

Brown G (2011) Radiology cancer staging. National Cancer Intelligence Network (online, accessed 11/03/2014)

Schwartz LH, Panicek DM, Berk AR et al. (2011) Improving communication of diagnostic radiology findings through structured reporting. Radiology 260 (1): 174–81

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**Appendix 1: Fields provided in the cancer staging radiology template reports**

**MR Cervical Cancer Staging**

Uterus size: cm x cm x cm

Primary tumour: Not seen Endocervical Ectocervical Infiltrative

Size: cm x cm (AP diameter) cm (Cranio-caudal length)

Cervical stromal invasion: No Yes: Left / Right / Bilateral

Extension to lower vagina: Yes No

Hydronephrosis: No Yes: Left / Right / Bilateral

Pelvic side wall invasion: No Yes: Left / Right / Bilateral

Bladder/rectal invasion: Yes No

Distant organ invasion: Yes No

Lymph nodes: None External Iliac Internal iliac Obturator Inguinal Para-Aortic (above / below renal hilum)

Need for CT abdomen: Yes No

Additional findings:

FIGO STAGE: IA IB1 IB2 IIA1 IIA2 IIB IIIA IIIB IVA IVB

**MR Endometrial Cancer Staging**

Uterus size: cm x cm x cm

Primary tumour: Not seen Thickened endometrium Polypoid mass

Endometrial thickness: mm

Depth of myometrial invasion: <50% >50% Not sure

Serosal invasion: Yes No

Extension into the adnexa: Yes No

Cervical stromal invasion: Yes No

Vagina/parametrial invasion: Yes No

Bladder/rectal invasion: Yes No

Distant organ invasion: Yes No

Lymph nodes: None External Iliac Internal iliac Obturator Inguinal Para-Aortic (above / below renal hilum)

Additional findings:

Need for CT abdomen: Yes No

FIGO STAGE: IA IB II IIIA IIIB IIIC IVA IVB

**MR Ovarian Cancer Staging**

Primary ovarian mass: Not visualise, Right, Left, Bilateral, Mucinous

Ovarian size: Right cm x cm, Left cm x cm

Ascites: No Yes: small / moderate / large

Lymph nodes: None External Iliac Internal iliac Obturator Inguinal Para-Aortic (above / below renal hilum)

Liver lesions: No Yes

Omental cake: No Yes

Peritoneal deposits: LUQ, RUQ, Subcapsular Liver, Subcapsular Spleen, Root of mesentery, Lesser sac, Paracolic gutter (left / right / bilateral), Pouch of Douglas, Vaginal vault

Retroperitoneal lymphadenopathy: No Yes

Need for CT abdomen: Yes No

Additional findings:

SUMMARY:

OVERALL FIGO STAGE:

**MR Prostate Cancer Staging:**

Prostate Size: X X X cm.

T1-weighted post-biopsy change :

T2-weighted imaging findings:

Diffusion-weighted imaging findings:

Extra-capsular extension: No Yes: Left / Right / Bilateral

Seminal vesicle invasion: No Yes

Bone lesions: No Yes

Lymph nodes: None External Iliac Internal iliac Obturator Inguinal Para-Aortic

Additional findings:

MRI overall stage: T N M

**MR Rectal Cancer Staging**

PRIMARY TUMOUR: annular, semi-annular, ulcerating, polyoidal, mucinous, not seen

HEIGHT FROM ANAL VERGE: cm

DISTAL EDGE LIES: mm above puborectalis sling, at puborectalis sling, below puborectalis sling

EXTENDS CRANIOCAUDALLY OVER: mm

LIES: above the peritoneal reflection. below the peritoneal reflection. at the peritoneal reflection.

INVADING EDGE OF TUMOUR: from O'clock to O'clock

MUSCULARIS PROPRIA: Confined to Extends through

EXTRAMURAL SPREAD: mm

T STAGE: T1 T2 T3a T3b T3c T3d T4visceral T4peritoneal

FOR LOW RECTAL TUMOURS AT OR BELOW THE PUBORECTALIS SLING:
Submucosal layer/ part thickness of muscularis propria: intersphincteric plane/ mesorectal plane is safe intersphincteric APE or ultra low TME possible, CRM is safe
Full thickness of muscularis propria:intersphincteric plane/mesorectal plane is UNSAFE, Extralevator APE
Into intersphincteric plane: intersphincteric plane/mesorectal plani is UNSAFE for extralevator APE
Into External sphincter: intersphincteric plane/ mesorectal plane is UNSAFE
Beyond External sphincter into ischiorectal tissue: intersphincteric plane/ mesorectal plane is UNSAFE.

LYMPH NODES: None, Only benign reactive, present number mixed signal/ irregular border

EXTRAMURAL VASCULAR INVASION: No evidence, Evidence; small, medium or large

CLOSEST CIRCUMFERENTIAL RESECTION MARGIN: o'clock

THE CLOSEST CRM IS from Direct spread of tumour, Extramural venous invasion ,Tumour deposit

MIMUMUM TUMOUR DISTANCE TO MESORECTAL FASCIA mm. CRM clear. CRM involved.

PERITONEAL DEPOSITS No evidence. Evidence.

PELVIC SIDE WALL LYMPH NODES: None, Benign, Malignant mixed signal/ irreg border

LOCATION: Obturator fossa R L. Extenal iliac nodes R L inferior hyogastric

SUMMARY: MRI OVERALL STAGE: T N M
CRM clear or involved
EMVI positive or negative
NO ADVERSE FEATURES ELIGIBLE FOR PRIMARY SURGERY
OR
POOR PROGNOSIS SAFE
OR
POOR PROGNOSIS UNSAFE MARGINS ELIGIBLE FOR PREOPERATIVE CHEMORADIOTHERAPY