**Scan quality**

**Scan planes:** optimal in 3 planes / suboptimal - remains diagnostic / suboptimal - impacting certainty / non-diagnostic

**Nodal territory and tumour coverage:** optimal / suboptimal but diagnostic / suboptimal impacting certainty / non-diagnostic

**Artefacts:** none / minor – diagnostic / moderate – suboptimal study / severe – non diagnostic study

**Tumour description:**
Location: Anal canal / Anorectal / Lower rectum / Mid rectum / Upper rectum / Distal sigmoid / Unconfirmed
Length:  [….]mm
Distance from the anal verge: [….]mm
Distance from the anorectal junction: [….]mm
Shape: Annular / Semi-annular / Polypoidal / Flat
Radial location of wall involvement: Between [….] and [….] o’clock / Circumferential
Tumour signal: Typical (solid) / Mucinous
Maximal invasion through muscularis propria for T3 subcategory: [….]mm

Relationship to peritoneal reflection: Entirely below / Crossing / Entirely above / Unsure
Peritoneal involvement (T4a): No  / Yes / n/a

Pelvic organ involvement (T4b): No  / Yes / n/a

Pelvic floor/external sphincter involvement (T4b): No  / Yes / n/a

**Involved Lymph nodes:**  No  / Yes
**Mesorectal nodes** No  / Yes
Number with short axis diameter ≥ 9 mm AND at least 1 morphologic criteria\*: [….]
Number with short axis diameter 5-8 mm AND at least 2 morphologic criteria\*: [….]
Number with short axis diameter < 5 mm AND all 3 morphologic criteria\*: [….]
(*\*Morphologic suspicious criteria: [1] round shape, [2] irregular border, [3] heterogenous signal*)
Node location(s):   Mesorectal / IMA pedicle
If mesorectal N+, radial positions:  [….] o’clock
If mesorectal N+, position of highest node at sacral level: [….]

**Lateral lymph nodes** Obturator or internal iliac nodes short axis diameter 7mm or greater: No  / Yes

Specify number, site(s) and size: [….]

**Total number of predicted involved local lymph nodes**: [….]

**Extranodal tumour deposits present**: Yes/ No

Specify number, site(s) and size: [….]

**Metastatic (M1a) nodes** (Inguinal/External iliac/common iliac): No  / Yes

Specify number, site(s) and size: [….]

**Extramural venous invasion:**    No  / Yes
EMVI radial and/or superior location: at [….] o’clock, at sacral level [….]

**Mesorectal Fascia status:** MRF- (not involved, >1mm) / MRF+ (involved, 1mm or less)
If MRF involved\*\*, by:  Primary tumour / EMVI / Irregular Lymph Node / Tumour deposit / N/A
Minimum distance to the MRF: [….]mm       N/A
Location closest to MRF: Between [….] and [….] o’clock    N/A
If T4b (beyond MRF), which organs/structures are involved: [….] N/A

(*\*\* smooth involved nodes 1mm or less from the MRF do not count as MRF involved*)

**Additional observations and recommendations:** [….]

Key images provided of main tumour features: yes / no

**Summary predicted MRI staging:**
**T stage:**   T1 / T2 / T3a (<1mm) / T3b (1 - <5mm) / T3c (5 – 15mm) / T3d (>15mm) / T4a (peritoneum) / T4b (pelvic organs)/ T4b (pelvic floor/ext sphincter)
**N Stage:**   N0 / N1a(1 node)  / N1b (2-3 nodes) / N1c (tumour deposit) / N2a (4-6 nodes) / N2b (>6nodes) / Nx (Indeterminate)
**EMVI:**    Absent / Present
**MRF status:**  MRF- (>1mm) / MRF+ (1mm or less)

**M status (if available):** M0 / M1a (single organ or distant set of nodes) / M1b (more than one organ and/or distant nodes) / M1c (peritoneum) / Mx (not done)

**Key for abbreviations of content**

[….] text box

N/A not applicable

Drop down menu content

MRF mesorectal fascia

**Explanatory notes**

This revision has been a big team effort and I would like to thank all of you for your support and particularly Heather Harris, Catherine Roberts, Peter Brown and Hannah Lambie.

The main developments from the previous template version1,2 relate to the following areas:

* **Assessment of scan quality**. This now mirrors similar sections in the national CT colonography reporting template and addresses regional issues which have been raised by radiologists around MRI scan quality.
* **Specification of peritoneal invasion** – this has been identified as an area of deficiency in routine reporting.3
* **The ‘rectosigmoid’ has been removed** – consensus guidelines have indicated that tumours should be categorised as either rectal or sigmoid.4 The rectosigmoid has also been removed as an item in the National Bowel Cancer screening programme dataset in light of this.
* **Nodal classification is amended** to include:
	+ a subcategory to specifically describe involved ***lateral lymph nodes*** over 7mm short axis diameter.3 These are frequently missed during routine reporting for staging. Note that morphological factors do not apply to lateral lymph nodes, in distinction to mesorectal nodes.
	+ Please see images and description in the nodal atlas reference link to differentiate internal iliac, obturator and external iliac nodes (open access).5
	+ a separate category is added to comment on ***presence of tumour deposits***.
	+ an item is added to identify non-regional metastatic lymph nodes (Inguinal, External iliac or common iliac). 3
* Terminology change – **mesorectal fascia (MRF) status is now preferred** to circumferential resection margin (which is created at the time of surgery). 3
* Nb. ***Smooth involved nodes 1mm or less from the MRF should no longer count as CRM involved***. 3 Smooth nodes are not predictive of local recurrence, in distinction to irregular nodes where the tumour has breached the node capsule or where a tumour deposit is present.
* **A new item ‘Key images provided of main tumour features’** has been requested by the clinical oncologists in the region to assist with treatment planning and improve accuracy of contouring for patients having radiotherapy.

Please note the following:

* Radiologists may prefer to reorder the items in the template to fit their reporting workflow.
* Others may prefer to describe items by quadrants rather than using the ‘clock face’ (e.g. left anterior, right posterior).

However, it is recommended that any changes are discussed with clinical oncologists and surgeons in the MDT and adopted by all radiologists on a site to ensure uniformity of approach and simplify future audit.

Where possible a template can be created on PACS to allow the template to be added by all rectal cancer MRI reporters. However where this is not possible the template text can be copied into reports from this word document.

**References**

1. Beets-Tan, R.G.H., Lambregts, D.M.J., Maas, M. *et al.* Correction to: Magnetic resonance imaging for clinical management of rectal cancer: Updated recommendations from the 2016 European Society of Gastrointestinal and Abdominal Radiology (ESGAR) consensus meeting. *Eur Radiol* **28**, 2711 (2018). <https://doi.org/10.1007/s00330-017-5204-2>
2. Brown, P.J., Rossington, H., Taylor, J. et al. Standardised reports with a template format are superior to free text reports: the case for rectal cancer reporting in clinical practice. Eur Radiol 29, 5121–5128 (2019). https://doi.org/10.1007/s00330-019-06028-8
3. Lambregts DMJ, Bogveradze N, Blomqvist LK, Fokas E, Garcia-Aguilar J, Glimelius B, Gollub MJ, Konishi T, Marijnen CAM, Nagtegaal ID, Nilsson PJ, Perez RO, Snaebjornsson P, Taylor SA, Tolan DJM, Valentini V, West NP, Wolthuis A, Lahaye MJ, Maas M, Beets GL, Beets-Tan RGH. Current controversies in TNM for the radiological staging of rectal cancer and how to deal with them: results of a global online survey and multidisciplinary expert consensus. Eur Radiol. 2022 Jul;32(7):4991-5003. doi: 10.1007/s00330-022-08591-z. Epub 2022 Mar 7. PMID: 35254485; PMCID: PMC9213337.
4. Bogveradze, N, Lambregts, DMJ, El Khababi, N, Dresen, RC, Maas, M, Kusters, M, Tanis, PJ, Beets-Tan, RGH, MRI rectal study group, Bakers, F & Beets, G 2022, 'The sigmoid take-off as a landmark to distinguish rectal from sigmoid tumours on MRI: Reproducibility, pitfalls and potential impact on treatment stratification', European Journal of Surgical Oncology, vol. 48, no. 1, pp. 237-244. <https://doi.org/10.1016/j.ejso.2021.09.009>
5. Sluckin TC, Couwenberg AM, Lambregts DMJ, Hazen SJA, Horsthuis K, Meijnen P, Beets-Tan RGH, Tanis PJ, Marijnen CAM, Kusters M. Lateral Lymph Nodes in Rectal Cancer: Do we all Think the Same? A Review of Multidisciplinary Obstacles and Treatment Recommendations. Clin Colorectal Cancer. 2022 Jun;21(2):80-88. doi: 10.1016/j.clcc.2022.02.002. Epub 2022 Feb 19. PMID: 35339391.

[Lateral Lymph Nodes in Rectal Cancer: Do we all Think the Same? A Review of Multidisciplinary Obstacles and Treatment Recommendations (clinicalkey.com)](https://www.clinicalkey.com/service/content/pdf/watermarked/1-s2.0-S1533002822000251.pdf?locale=en_US&searchIndex=)

Example final reports using the template:

**Case 1**

**Scan quality**

**Scan planes:** optimal in 3 planes

**Nodal territory and tumour coverage:** optimal

**Artefacts:** none

**Tumour description:**
Location: Lower rectum
Length:  35mm
Distance from the anal verge: 45mm
Distance from the anorectal junction: 12mm
Shape: Semi-annular
Radial location of wall involvement: Between 12 and 6 o’clock
Tumour signal: Typical (solid)

Maximal invasion through muscularis propria for T3 subcategory: 6mm

Relationship to peritoneal reflection: Entirely below
Peritoneal involvement (T4a): No

Pelvic organ involvement (T4b): No

Pelvic floor/external sphincter involvement (T4b): No

**Involved Lymph nodes:**  Yes
**Mesorectal nodes**  Yes
Number with short axis diameter ≥ 9 mm AND at least 1 morphologic criteria\*: [1]
Number with short axis diameter 5-8 mm AND at least 2 morphologic criteria\*: [1]
Node location(s):   Mesorectal
If mesorectal N+, radial positions:  3 and 5 o’clock
If mesorectal N+, position of highest node at sacral level: S4

**Lateral lymph nodes** Obturator or internal iliac nodes short axis diameter 7mm or greater: No

**Total number of predicted involved local lymph nodes**: 2

Extranodal tumour deposits present: No

**Metastatic (M1a) nodes** (Inguinal/External iliac/common iliac): No

**Extramural venous invasion:**    Yes
EMVI radial and/or superior location: at 3 o’clock, at sacral level S5

**Mesorectal Fascia status:** MRF- (not involved, >1mm)
Minimum distance to the MRF: 3mm
Location closest to MRF: Between 4 and 5 o’clock

**Additional observations and recommendations:** The prostate is enlarged. The pelvis is narrow which may make surgery more challenging. CT performed on the same day does not show any metastasis.

Key images provided for main tumour features: yes

**Summary predicted MRI staging:**
**T stage:**   T3c (5 – 15mm)

**N Stage:**   N1b (2-3 nodes)

**EMVI:**    Present
**MRF status:**  MRF- (>1mm)

**M status (if available):** M0

**Case 2**

**Scan quality**

**Scan planes:** suboptimal

**Nodal territory and tumour coverage:** suboptimal but diagnostic

**Artefacts:** minor – diagnostic

**Tumour description:**
Location: Mid rectum / Upper rectum
Length:  60mm
Distance from the anal verge: 80mm
Distance from the anorectal junction: 55mm
Shape: Annular
Radial location of wall involvement: Circumferential
Tumour signal: Mucinous
Maximal invasion through muscularis propria for T3 subcategory: 4mm

Relationship to peritoneal reflection: Crossing
Peritoneal involvement (T4a): Yes

Pelvic organ involvement (T4b): No

Pelvic floor/external sphincter involvement (T4b): No

**Involved Lymph nodes:**  Yes
**Mesorectal nodes**  Yes
Number with short axis diameter ≥ 9 mm AND at least 1 morphologic criteria\*: 0
Number with short axis diameter 5-8 mm AND at least 2 morphologic criteria\*: 5
Number with short axis diameter < 5 mm AND all 3 morphologic criteria\*: 0
Node location(s):   Mesorectal and IMA pedicle
If mesorectal N+, radial positions:  multiple with highest at 6 o’clock
If mesorectal N+, position of highest node at sacral level: S1

**Lateral lymph nodes** Obturator or internal iliac nodes short axis diameter 7mm or greater: No

**Total number of predicted involved local lymph nodes**: 5

Extranodal tumour deposits present: No

**Metastatic (M1a) nodes** (Inguinal/External iliac/common iliac): No

**Extramural venous invasion:**    No

**Mesorectal Fascia status:** MRF+ (involved, 1mm or less)
If MRF involved\*\*, by:  Primary tumour
Minimum distance to the MRF: 0mm
Location closest to MRF: Between 11 and 1 o’clock

**Additional observations and recommendations:** Anteriorly the mucinous tumour involves the mesorectal fascia below the peritoneal reflection. There is no invasion or urogenital structures. There are no metastases on CT staging.

Key images provided for main tumour features: yes

**Summary predicted MRI staging:**
**T stage:**   T4a (peritoneum)
**N Stage:**   N2a (4-6 nodes)
**EMVI:**    Absent
**MRF status:**  MRF+ (1mm or less)

**M status (if available):** M0

**Case 3**

**Scan quality**

**Scan planes:** optimal in 3 planes

**Nodal territory and tumour coverage:** optimal

**Artefacts:** minor – diagnostic

**Tumour description:**
Location: Anorectal
Length:  33m
Distance from the anal verge: 30mm
Distance from the anorectal junction: 0mm
Shape: Annular

Radial location of wall involvement: Circumferential
Tumour signal: Typical (solid)
Maximal invasion through muscularis propria for T3 subcategory: 5mm

Relationship to peritoneal reflection: Entirely below

Peritoneal involvement (T4a): No

Pelvic organ involvement (T4b): No

Pelvic floor/external sphincter involvement (T4b): No

**Involved Lymph nodes:**  Yes
**Mesorectal nodes** No
**Lateral lymph nodes** Obturator or internal iliac nodes short axis diameter 7mm or greater: Yes

Specify number, site(s) and size: There is a 7mm left obturator node abutting the mesorectal fascia at 4 o’clock just superior to the level of the tumour. There is a further 12mm left internal iliac node just inferior to the left superior gluteal artery origin.

**Total number of predicted involved local lymph nodes**: 2

Extranodal tumour deposits present: No

**Metastatic (M1a) nodes** (Inguinal/External iliac/common iliac): No

**Extramural venous invasion:**    Yes
EMVI radial and/or superior location: at 3 o’clock, at sacral level S6

**Mesorectal Fascia status:** MRF+ (involved, 1mm or less)
If MRF involved\*\*, by:  EMVI

Minimum distance to the MRF: 1mm
Location closest to MRF: Between 3 o’clock

**Additional observations and recommendations:** There are involved left lateral pelvic sidewall nodes related to lateral drainage of the mesorectum via middle rectal vessels. These are involved by EMVI which involve the MRF. There are no metastases on baseline CT assessment.

Key images provided for main tumour features: yes

**Summary predicted MRI staging:**
**T stage:**   T3c (5 – 15mm)

**N Stage:**   N1b (2-3 nodes)
**EMVI:**    Present
**MRF status:**  MRF+ (1mm or less)

**M status (if available):** M0