

# User's Guide to ESSENTIAL TNM (E TNM)

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## Acknowledgements

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## Introduction

This guide provides general instructions for abstracting information on extent of disease using Essential TNM. Site-specific coding flowcharts have been provided for selected cancers. Additional cancer sites will be added as they become available.

## Principles of Essential TNM

Essential TNM is a complement to TNM, to assign stage at diagnosis. It is for use by cancer registrars when either the traditional (or full) TNM stage group (I, II, III, or IV) or TNM staging components (T, N, and M) have not been explicitly recorded in the patient's record.

Essential TNM follows a logical pathway documenting the furthest extent of disease in each cancer patient using combined clinical and/or operative/pathologic information available through the completion of surgery (if performed).

If T, N, or M have been explicitly recorded by the treating clinician, these should be abstracted by the registrar. However, if one or more of these components are based on clinical evaluation (c TNM), and surgical/pathological information has become available at a later date, the registrar may record the appropriate Essential TNM code, if it differs from that in the record.

In the event of neoadjuvant therapy (i.e. systemic therapy prior to surgery) being given, information used for staging purposes should only include procedures and records prior to the initiation of this therapy.

Essential TNM is composed of three key components that together summarize the extent of cancer in the patient around the time of diagnosis. The components are:

- M: Presence or absence of distant metastasis
- N: Presence or absence of regional lymph node metastasis/involvement
- T: Extent of invasion and/or size of the tumour

Data extraction from medical records is facilitated through the use of flow charts that include relevant questions and figures to help identify the extent of disease in different cancers. These flow charts correspond to the 8th edition of the UICC TNM classification.

## Coding the Components of Essential TNM

The components of Essential TNM follow the full TNM 8<sup>th</sup> edition and are as follows:

### Metastasis (M)

**M+** Presence of distant metastasis, clinically or pathologically

**M-** No mention of distant metastases

- Distant metastasis (M) means that the original tumour (primary) has spread to distant organs or distant (non-regional) lymph nodes.
- M is based on the best available information, whether clinical, findings in surgery, images, or pathological.
- If pathological information is available to inform decisions regarding involvement by cancer, prefer that to clinical appraisal of the same tumour location.
- For coding M, clinical signs and findings are enough to justify metastasis (M+) in the absence of pathological confirmation of metastatic deposits.
- Do not code metastasis known to have developed after the diagnosis was established.
- If no mention of metastases, record as M-.
- If distant metastasis can be established, there is no need to look further in the record for regional node involvement or tumour size/extension.

### Regional Node Metastasis/Involvement (N)

**R+** Presence of regional node metastasis/involvement, clinically or pathologically

**R2** – Regional node metastasis is advanced

**R1** – Regional node metastasis is limited

**R-** No mention of regional node metastases

- Involvement of lymph nodes implies the tumour has spread via the lymphatic system and cancer cells are found in the lymph nodes that drain the specific organ.
- N is based on the most specific data available to confirm the presence or absence of regional node involvement and is generally coded from the pathology report. An “enlarged” or “palpable” node does not constitute involvement based on those words alone.
- N can be coded from the clinical record, typically from imaging or during surgical observation, in the absence of pathologic confirmation.
- The definition of 'regional nodes' is cancer site-specific, as can be seen in the Figures for each cancer.
- Record as R+ in the presence of documented regional node involvement, R- otherwise.
- If more detailed information is available and it is relevant for a given cancer site, R+ can be further classified as R2, representing advance nodal involvement, or R1 representing limited nodal involvement.
- If lymph node involvement (R+) has been established but no further information is available on number of nodes and location, R+ is assumed. In such an event, the case will be allotted to the lower stage category (following Rule 4 of TNM).

## Extent of Invasion and/or Size of Tumour (T)

- A** Extent of invasion and/or tumour size is Advanced
  - A2** - Extent of invasion and/or tumour size is very advanced
  - A1** - Extent of invasion and/or tumour size is advanced
- L** Extent of invasion and/or tumour size is Limited
  - L2** - Extent of invasion and/or tumour size is limited
  - L1** - Extent of invasion and/or tumour size is very limited
- X** Extent of invasion and/or tumour size cannot be assessed

- T is based on the most specific data available to confirm the extent of invasion within/through the involved organ and/or the size of the primary tumour (depending on the cancer site).
- It is generally coded from the pathology report, or, in the absence of pathologic confirmation, the clinical record (endoscopy, x-rays, palpation, etc.).
- The results from pathological examination of surgical specimens takes precedence over imaging, but imaging takes precedence over cytology, or biopsy.
- The definition of extent of invasion is cancer site-specific.
- Use the site-specific figures to help code the extent of invasion to the most specific category possible.

## Absence of specific information on Metastases, Nodes, Tumour size/extent

- Code based on what you know from the record.
- For M and N, if there is no information on their presence, assume absent (M-, R-).
- If regional nodes are mentioned but you can't distinguish between advanced or limited metastasis for regional nodes, code R+.
- In a similar manner, for T, if you can't distinguish degrees of tumour extension (2 versus 1) simply code T as A or L (depending on the cancer site, see flowcharts).
- Refer to the specific sites for assessing advanced or limited status.
- For T, X should be recorded if there is known to be a primary tumour, but there is no description of its size or extent.

## Assigning the Essential TNM Stage Group

Once the Essential TNM component(s) have been coded, the components can be combined into Stage groups ranging from I to IV with increasing severity of disease.

- Stage IV for cancers with distant metastasis.
- Stages III and II for cancers with increasing local and regional node involvement
- Stage I is typically assigned to cancers localised within the organ of origin
- The rules for combining the Essential TNM components into Stage groups (I-IV) are provided on a site-specific basis.

The stage groups were designed to group cancer patients with similar prognosis.

## Guidelines for abstraction of information from medical records

The following guidelines aim to help in abstracting information on stage from medical records.

- Quickly review the entire record for overall organization. Note the range of service dates, and the different facilities involved in the care of the patient.
- Identify definitive reports (operative, pathology, imaging), and note the dates and results on each report.
- Try to rule out metastatic distant disease first.
- As metastasis are more frequent to bones, lungs or brain, it is practical to look in:
  - Imaging reports for any mention of distant metastasis. If metastasis is mentioned, remember to verify whether this was close to the time of diagnosis.
  - Operative reports/notes for any indication of liver metastasis, or tumour deposits indicating distant metastasis.
- Regional lymph nodes: Common expressions that imply spread to regional lymph nodes are lymph node metastasis and involvement of local lymph nodes.
- As illustrated in the flowcharts (Figures 1-8), the names of the regional lymph nodes are specific for each type of tumour and must be checked against the clinical record. If the involved node is not in the regional list, consider it a distant node.

## Entering Essential TNM in databases

For pragmatic reasons, it is acceptable to use the already existing fields for coding the TNM stage group and TNM components if they exist, and enter the codes used for the Essential TNM as described above: M+, M-, R+, R-, R2, R1, A, A2, A1, L, L2, L1. Depending on the extension of the tumour, the number of components to be entered into the database will vary: if there is evidence of distant metastasis it might be only M+.

For databases that do not allow varying code length (1 versus 2 characters), two characters should be used for all codes. In this case, it is recommended to code A, L, and X as AX, LX, and XX. We recommend including a dictionary according to the description in Table 1, so that the user can select the required code from a menu.

Table 1. Recommended codes for T, N, M .

	T		N		M	
	Stage	Code	Stage	Code	Stage	Code
TNM	<i>TX</i>	<i>X</i>	<i>NX</i>	<i>X</i>	<i>MX+</i>	<i>X</i>
	<i>T1</i>	<i>1</i>	<i>N0</i>	<i>0</i>	<i>M0</i>	<i>0</i>
	<i>T1A</i>	<i>1A</i>	<i>N1</i>	<i>1</i>	<i>M1</i>	<i>1</i>
	<i>T1B</i>	<i>1B</i>	<i>N1A</i>	<i>1A</i>		
	<i>T2</i>	<i>2</i>	<i>N1B</i>	<i>1B</i>		
	<i>T2A</i>	<i>2A</i>	<i>N1C</i>	<i>1C</i>		
	<i>T2B</i>	<i>2B</i>	<i>N2</i>	<i>2</i>		
	<i>T2C</i>	<i>2C</i>	<i>N2A</i>	<i>2A</i>		
	<i>T3</i>	<i>3</i>	<i>N2B</i>	<i>2B</i>		
	<i>T3A</i>	<i>3A</i>	<i>N2C</i>	<i>2C</i>		
	<i>T3B</i>	<i>3B</i>	<i>N3</i>	<i>3</i>		
	<i>T4</i>	<i>4</i>	<i>N3A</i>	<i>3A</i>		
	<i>T4A</i>	<i>4A</i>	<i>N3B</i>	<i>3B</i>		
	<i>T4B</i>	<i>4B</i>	<i>N3C</i>	<i>3C</i>		
Essential TNM	<i>L</i>	<i>LX</i>	<i>R-</i>	<i>R-</i>	<i>M-</i>	<i>M-</i>
	<i>L1</i>	<i>L1</i>	<i>R+</i>	<i>R+</i>	<i>M+</i>	<i>M+</i>
	<i>L2</i>	<i>L2</i>	<i>R1</i>	<i>R1</i>		
	<i>A</i>	<i>AX</i>	<i>R2</i>	<i>R2</i>		
	<i>A1</i>	<i>A1</i>				
	<i>A2</i>	<i>A2</i>				

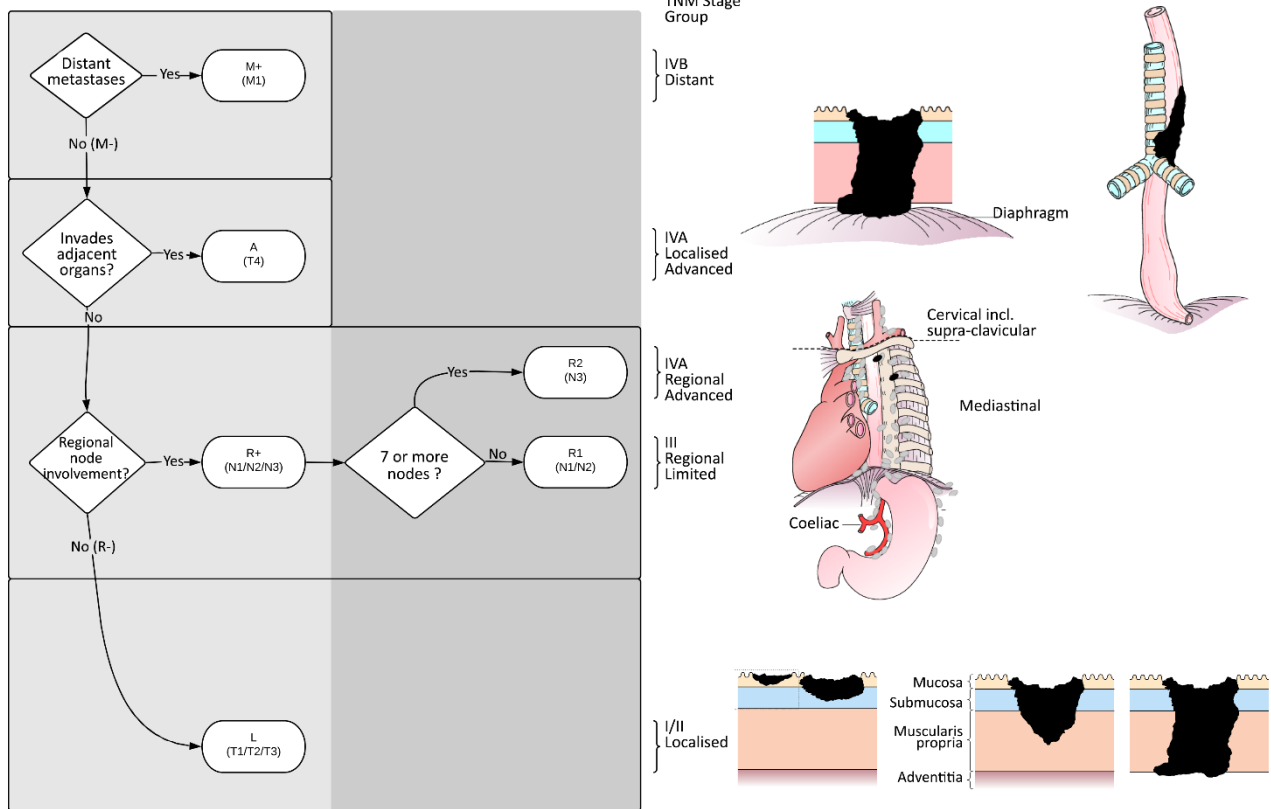
\*MX, not used in TNM-8th, is included in case it is mentioned in a clinical record

# Oesophagus Cancer Essential TNM

## Key points for oesophagus cancer staging

1. The classification is for squamous cell carcinomas and aims to divide cancers into those that are operable (Localised) and those that are not.
2. Metastasis is most common to the liver, lung, distant lymph nodes and bone.
3. Regional lymph nodes are those in the oesophageal drainage area including coeliac axis nodes and paraesophageal nodes in the neck but not the supraclavicular nodes.
4. Look for tumour extension to adjacent organs (pleura, pericardium, azygos vein, diaphragm, peritoneum, aorta, vertebral body, trachea): the tumour is **ADVANCED (T4)**.

## Oesophagus Essential TNM



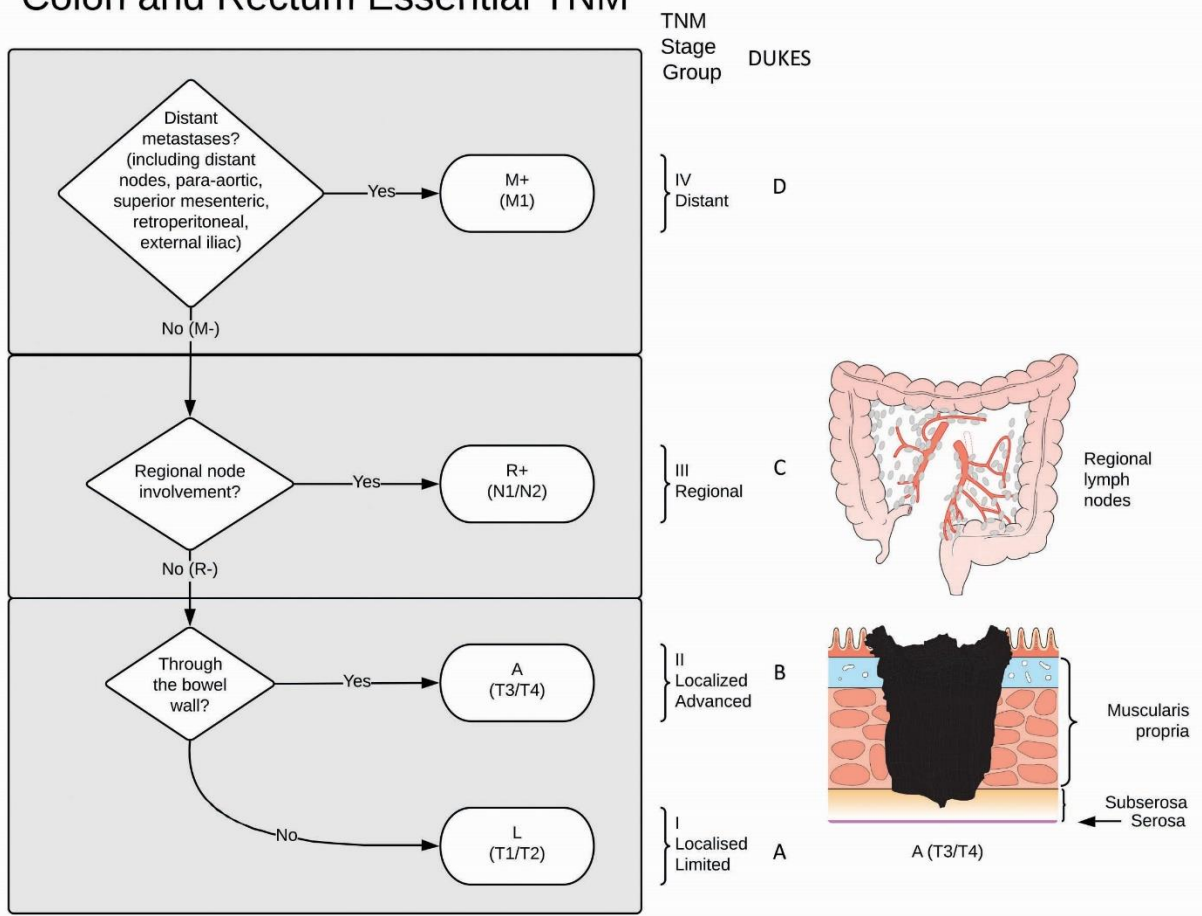


# Colorectal Cancer Essential TNM

## Key points for colorectal cancer staging

1. Metastasis is most common to the liver. This may be clinically documented in operative reports or on imaging.
2. Regional nodes are site-specific for each segment of the colon/rectum and are named accordingly (epicolic, mesenteric, paracolic, ileocolic, rectal; see table below)
3. Tumour deposits (satellites) are cancer nodules separate from the primary tumour, located in the same area as the regional lymph nodes (peri-colic/ peri-rectal tissues). It is assumed that they represent lymph node involvement and are coded R+.
4. Look for extension through the wall of the colon/rectum into the subserosa or beyond, rather than tumour size.

## Colon and Rectum Essential TNM



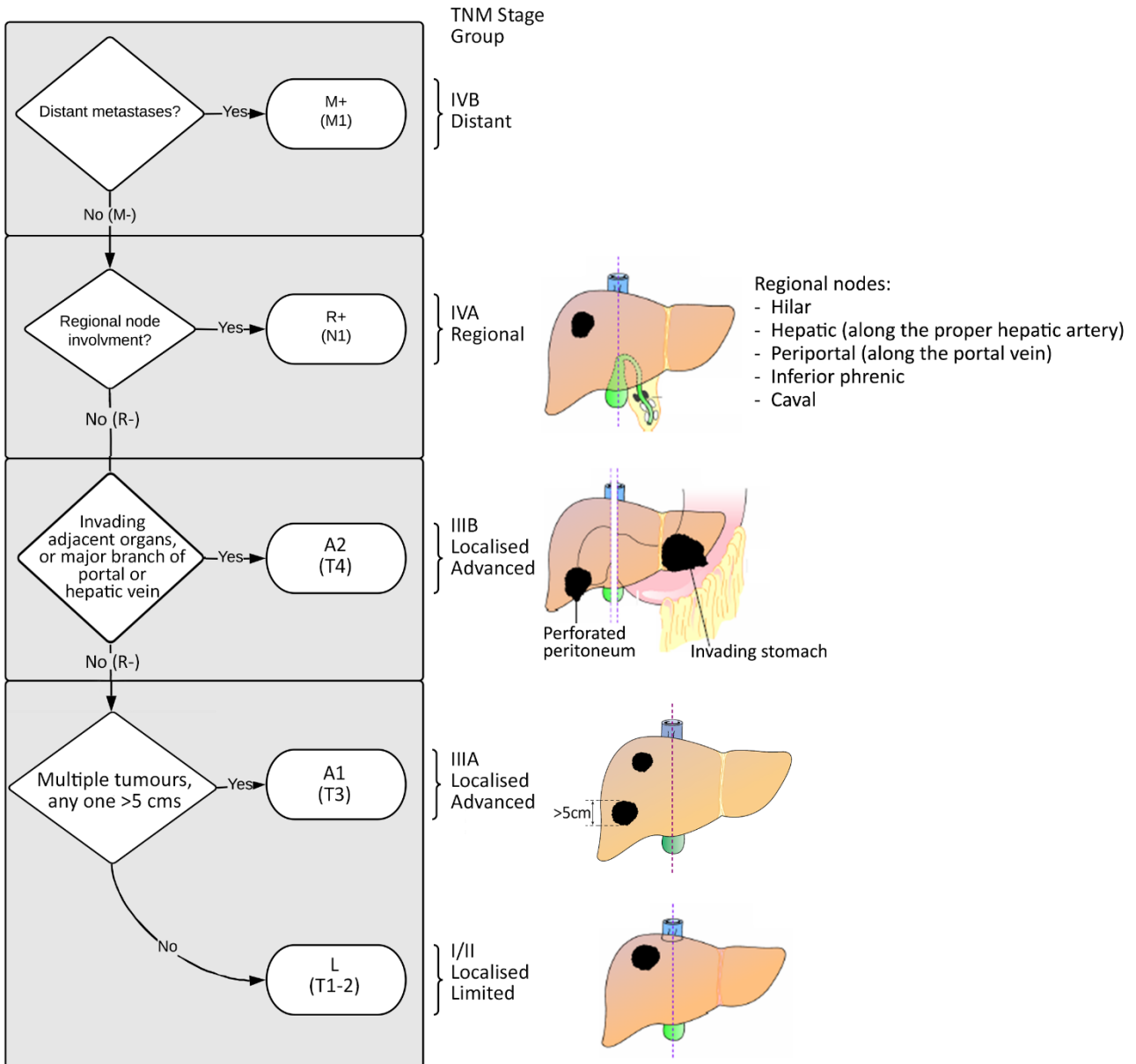
Organ	Segment	Regional lymph nodes
Colon	<b>Cecum</b>	Pericolic, ileocolic, right colic
	<b>Ascending colon and hepatic flexure</b>	Pericolic, ileocolic, right colic, middle colic
	<b>Transverse colon and splenic flexure</b>	Pericolic, middle colic, left colic
	<b>Descending colon</b>	Pericolic, left colic, sigmoid, inferior mesenteric
	<b>Sigmoid and rectosigmoid</b>	Pericolic, sigmoid, inferior mesenteric, superior rectal (hemorrhoidal)
<b>Rectum</b>	<b>Rectum</b>	Mesorectal, superior rectal (hemorrhoidal), inferior mesenteric, internal iliac, inferior rectal

# Liver Cancer Essential TNM

## Key points for liver cancer staging

1. The classification is for hepatocellular carcinomas and aims to divide cancers into those that are operable (Localised/limited) and those that are not.
2. Metastatic disease includes ascites with evidence of malignant spread to peritoneum.
3. Regional lymph nodes are the hilar, hepatic (along the proper hepatic artery), periportal (along the portal vein), inferior phrenic, and caval nodes.
4. Look for tumour extension into a major branch of the portal or hepatic vein, direct invasion of adjacent organs - other than the gallbladder- (including the diaphragm), or perforation of visceral peritoneum: the tumour is ADVANCED (T4).
5. If it involves only liver (or liver and gallbladder), look for number of tumours in the liver; if none is more than 5cm, it is LIMITED, otherwise it is ADVANCED (T3).

## Liver Essential TNM

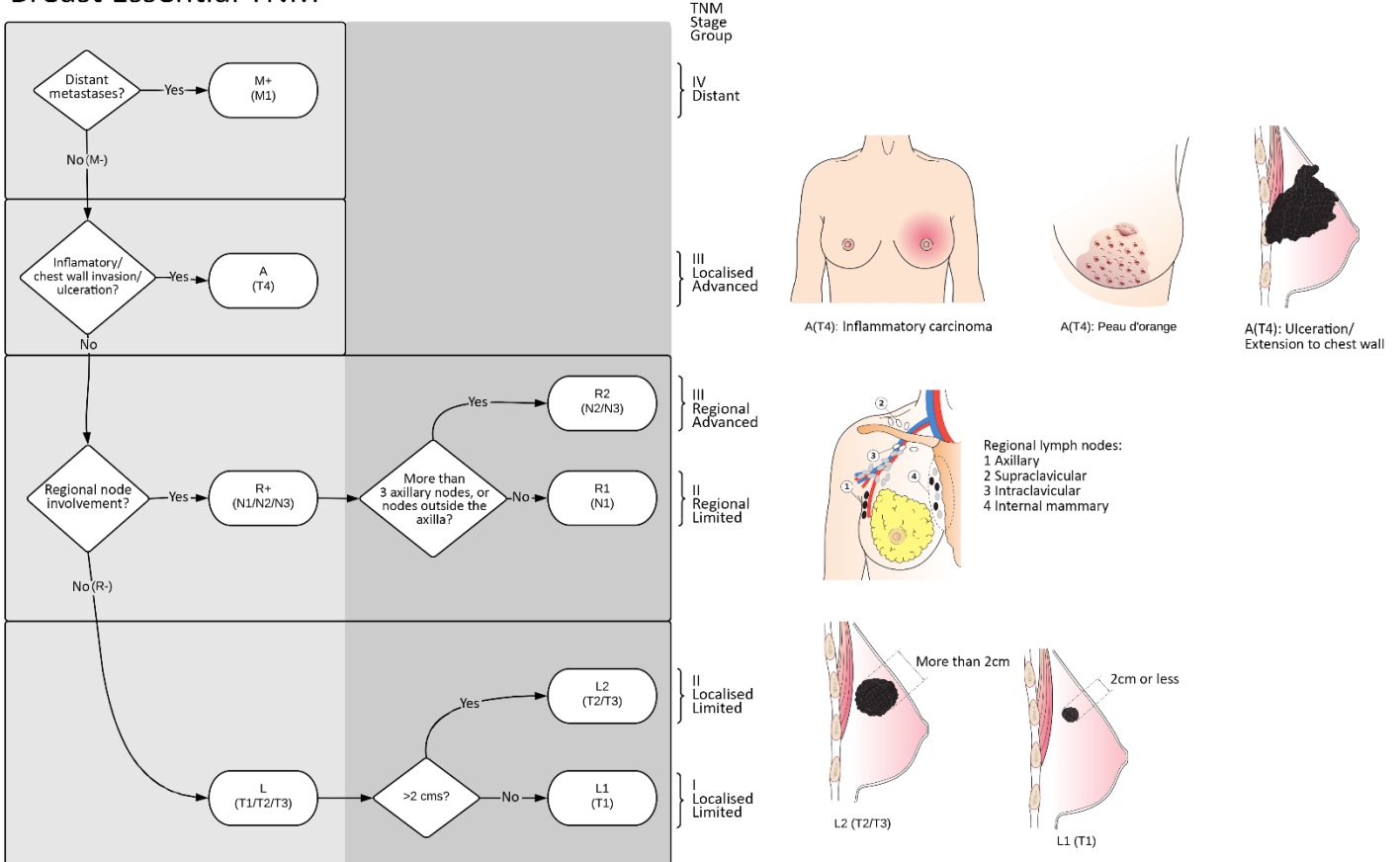


# Breast Cancer Essential TNM

## Key points for breast cancer staging

1. Metastasis is common to the bone, lungs and brain. Look for evidence on imaging.
2. Remember that lymph nodes on the opposite (i.e. contralateral) side, or in the neck, are distant metastases (M+).
3. If M+, Stage IV can be assigned and no need to look for further information.
4. Look for tumour extension to breast skin (epidermis).
5. Regional lymph nodes are axillary (includes intramammary), infraclavicular, internal mammary and supraclavicular on the same side as the tumour (see pictures in the flowchart).
6. If lymph node involvement (R+) has been established but no further information is available on number of nodes and location, assume R+. In such an event, the case will be allotted to the lower stage category (following Rule 4 of TNM) e.g. to Stage II Regional Limited.
7. Size of the tumour is a critical aspect and a tumour 2 cm or less is "very limited" (Stage I).
8. If two malignant tumours are present in the same breast, use the one having the biggest size to stage.

### Breast Essential TNM

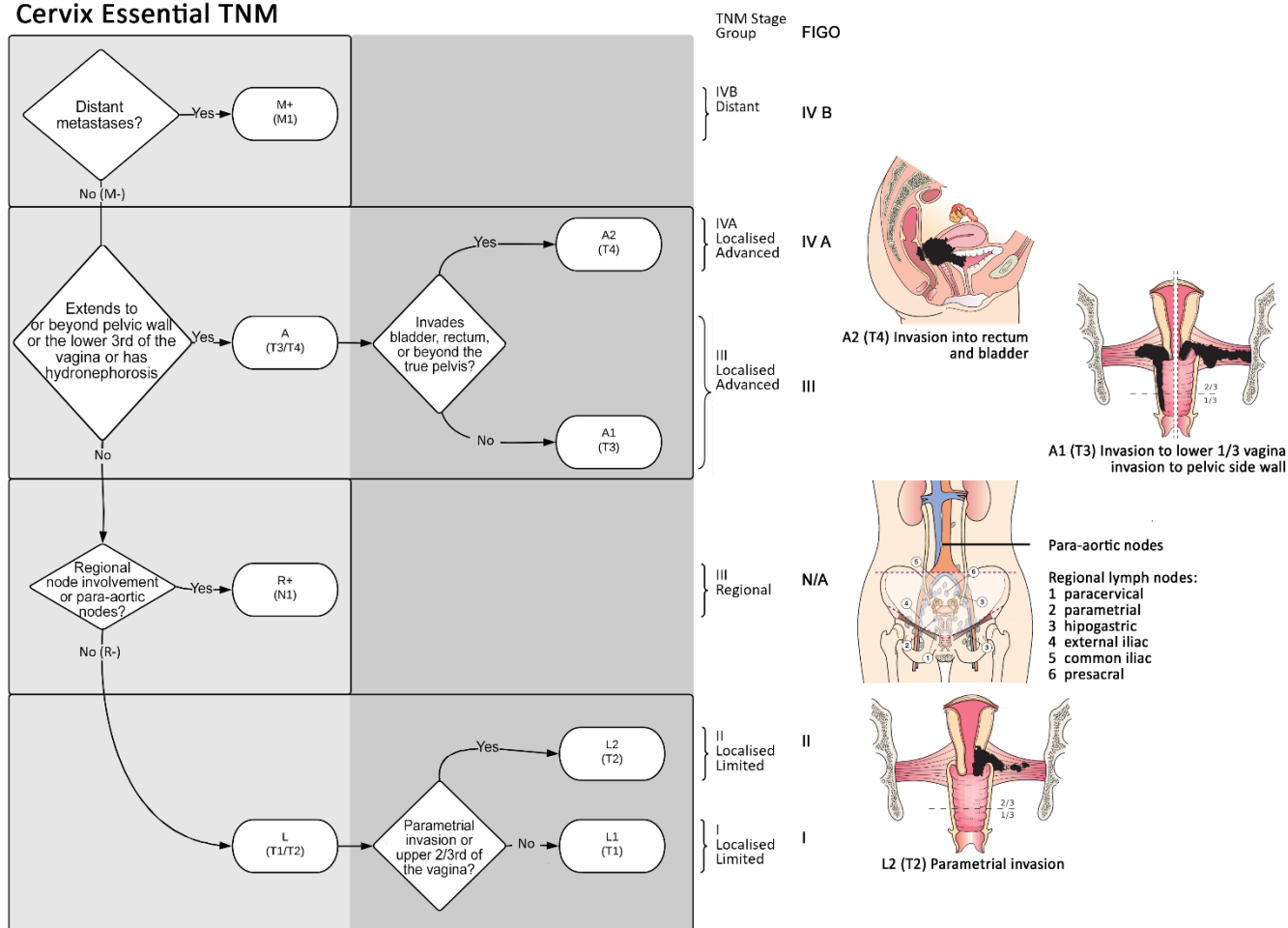


# Cervix Cancer Essential TNM

## Key points for cervical cancer staging

1. Distant metastasis is common to the bone, lungs and brain. Look for evidence on imaging.
2. Invasion of the tumour into bladder, rectum or beyond pelvis is very advanced (A2) and considered Stage IV
3. Regional lymph nodes are those of the pelvis: paracervical, parametrial, hypogastric (internal iliac, obturator), common and external iliac, presacral, and lateral sacral nodes. When looking for information on regional nodes, look also for mention of para-aortic nodes.
4. Look for tumour extension to lower third of vagina, to the wall of the pelvis, or hydronephrosis due to ureter obstruction.
5. Most cervix cancers are staged using FIGO for which the codes for stage (I-IV) are the same as those of TNM.

### Cervix Essential TNM

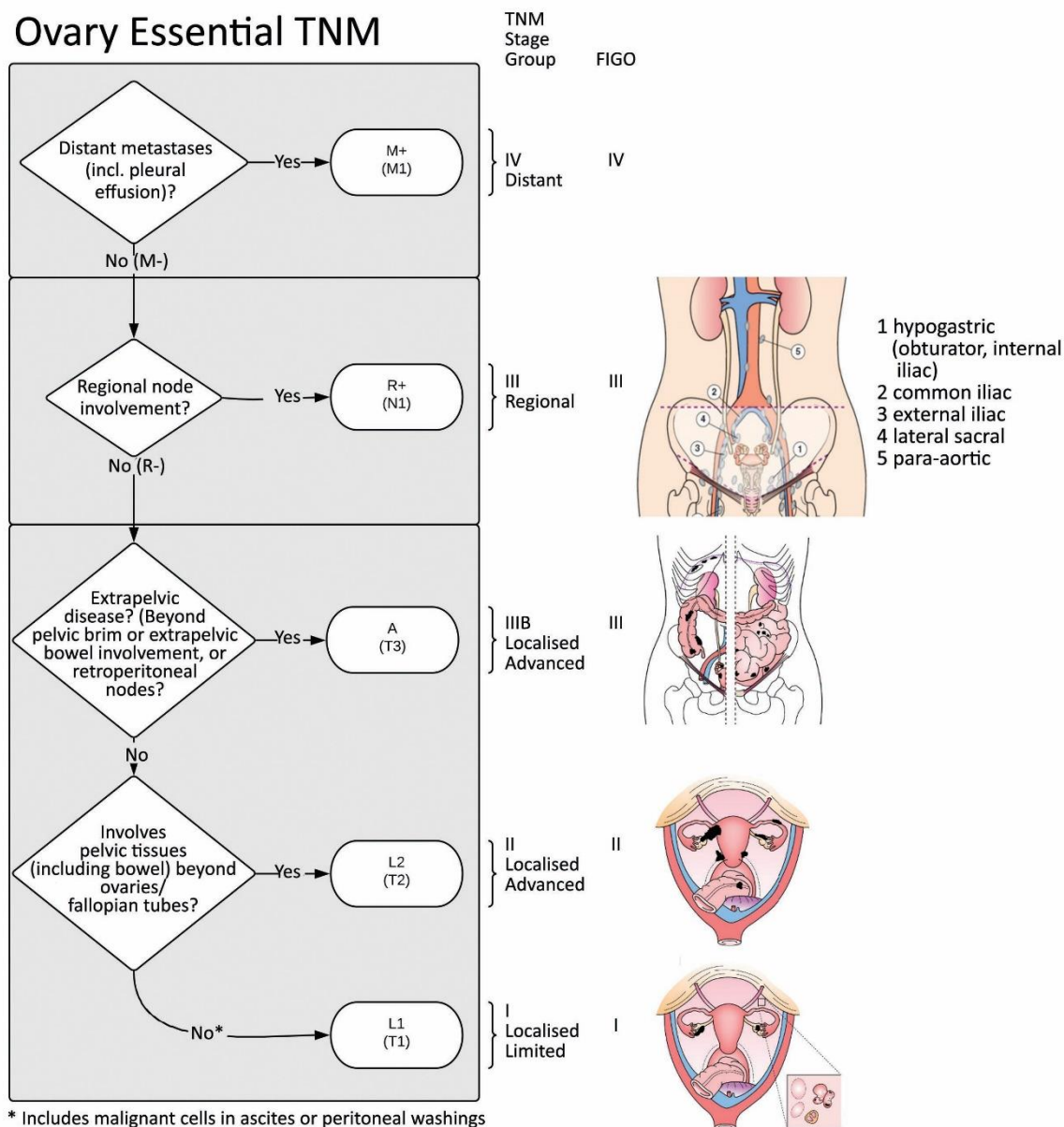


# Ovary Cancer Essential TNM

## Key points for ovary cancer staging

1. The classification applies to malignant ovarian neoplasms of both epithelial and stromal origin including those of borderline malignancy or of low malignant potential. It is also to be used for carcinomas of the fallopian tubes.
2. Metastases in the abdomen must involve the parenchyma (internal part) of organs (especially liver) and not just the outer capsule. Spread to extra abdominal organs and lymph nodes outside the abdominal cavity (including inguinal lymph nodes) is distant metastasis. Spread of tumour to the peritoneum is local spread.
3. Regional lymph nodes are the paracervical, parametrial, hypogastric (internal iliac, obturator), common and external iliac, presacral, lateral sacral nodes and para-aortic nodes.
4. Look for tumour extension beyond the pelvis (including to the peritoneum), or to the retroperitoneal lymph nodes- the tumour is **ADVANCED**. If it is still within the pelvis – even with spread to the bowel and/or peritoneum – it is **LOCALISED**.
5. Most ovarian cancers are staged using FIGO which does not consider regional lymph node involvement, but for which the codes I-IV are otherwise identical.

### Ovary Essential TNM

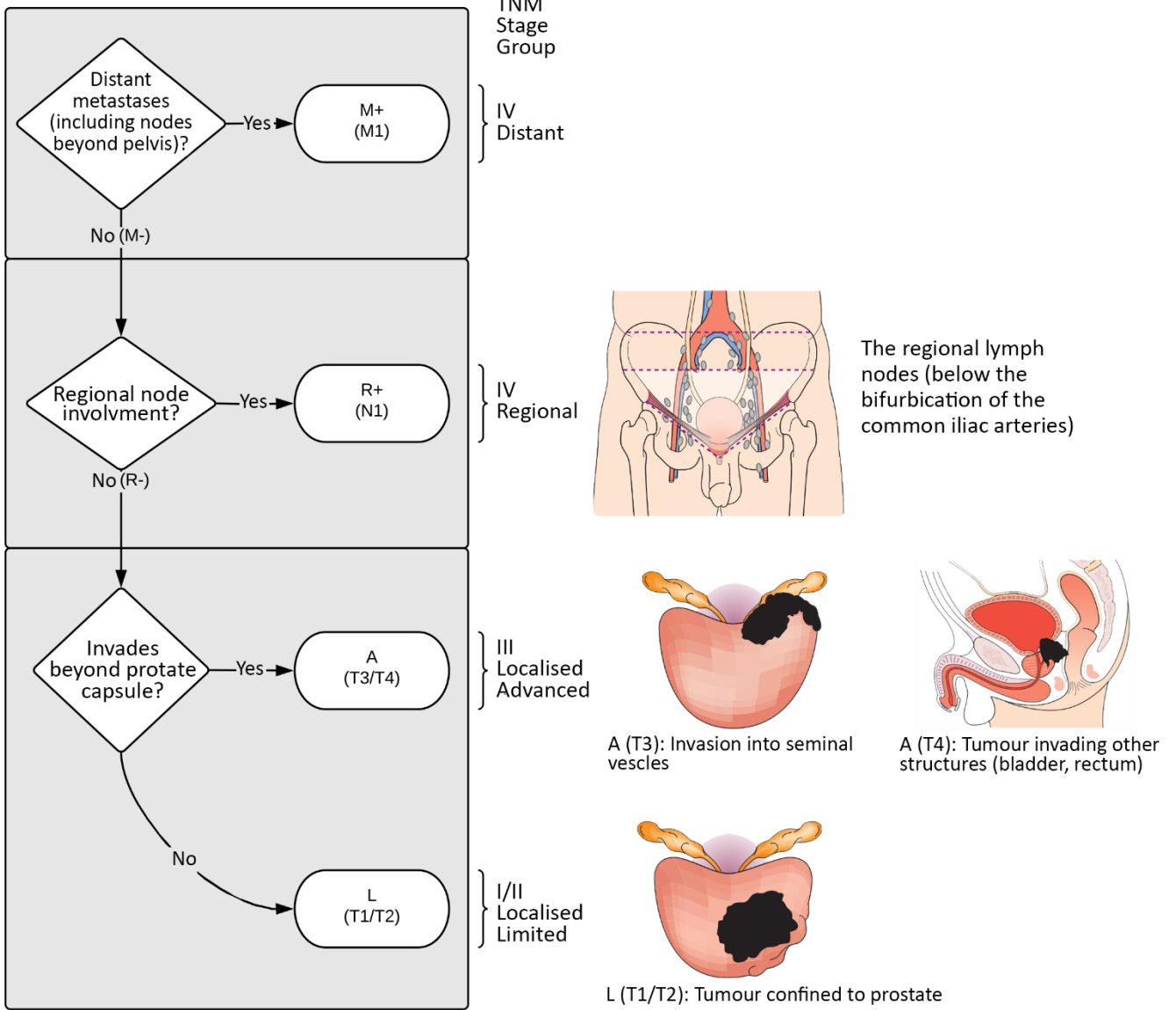


# Prostate Cancer Essential TNM

## Key points for prostate cancer staging

1. Distant metastasis is most common to the bone. Look for evidence of this on imaging.
2. Remember that distant nodes beyond pelvis are M+; they include the following nodes: Aortic (para-aortic, lumbar), common iliac, inguinal (femoral and deep), supraclavicular, cervical, scalene and retroperitoneal.
3. Regional nodes are those of the true pelvis (the pelvic nodes below the bifurcation of common iliac arteries: obturator, periprostatic, perivesical, pelvic, iliac, sacral, hypogastric).
4. Look for tumour extension beyond the prostate capsule; if it is confined to the prostate, the tumour is Localised (L).

## Prostate Essential TNM

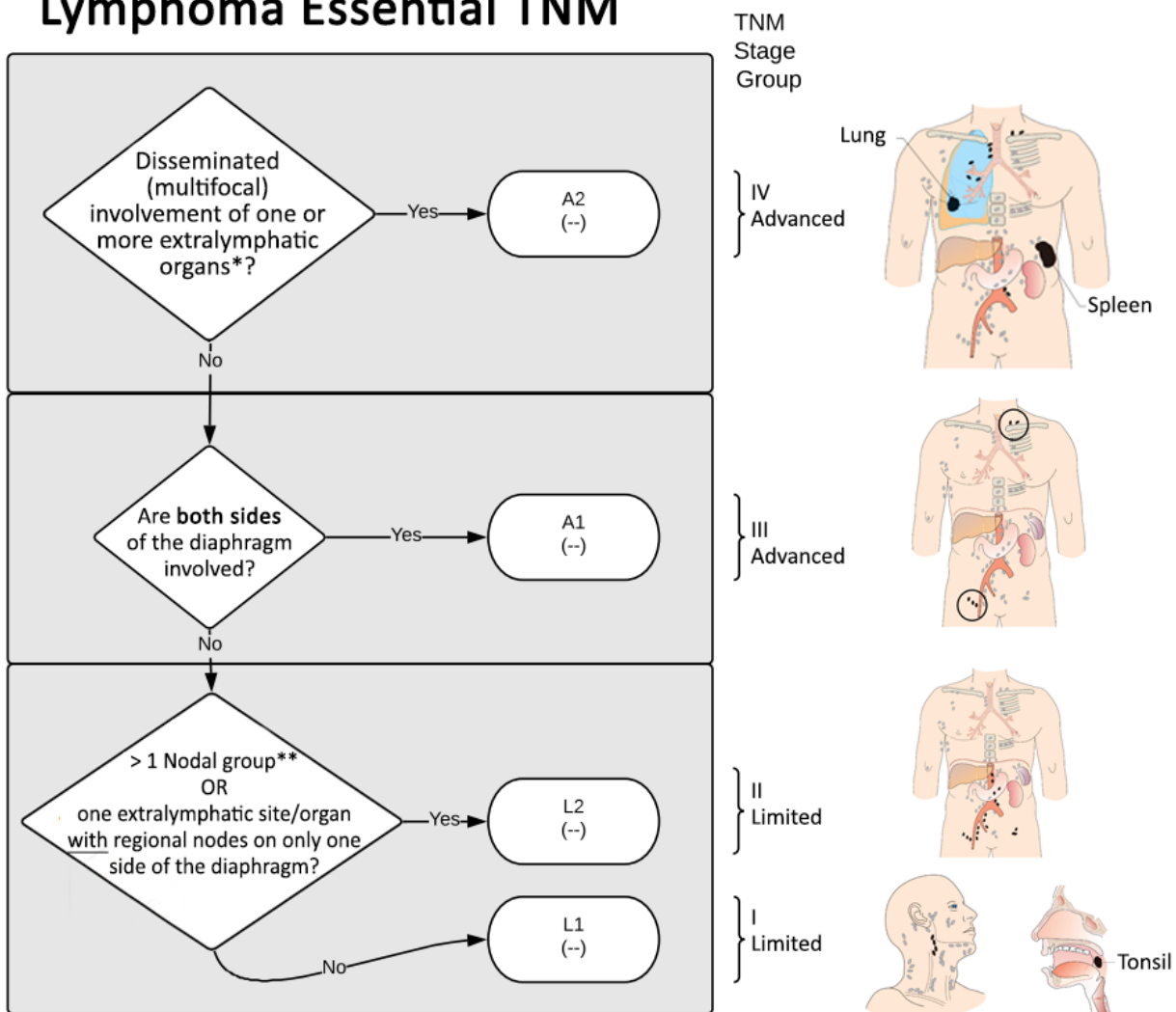


# Lymphoma Essential TNM

## Key points for lymphoma staging

1. The TNM and Essential TNM Classification for lymphomas applies both for Hodgkin and Non-Hodgkin Lymphomas.
2. Remember that lymphomas can have lymphatic and extra lymphatic disease.
  - Lymphatic disease involves lymph nodes as well as other lymphatic structures like the Waldeyer ring (tonsils), the spleen, the appendix, the thymus and Peyer's patches (lymphoid tissue in the small intestine).
3. Staging of lymphomas may include an initial report of a bone marrow biopsy.
4. Look for documentation of disseminated (multifocal) involvement of one or more extralymphatic organs (like bone marrow, brain, liver, lung, gastrointestinal tract). This is Advanced disease (Stage IV).
5. Look for involvement of lymphatic nodes on both sides of the diaphragm, which MAY be accompanied by involvement of the spleen. This is Advanced disease (Stage III).

## Lymphoma Essential TNM



\* Most common extralymphatic organs include: bone marrow, brain, liver, lung and gastrointestinal tract, but any organ can be involved by lymphoma

\*\* Nodal group = Lymphatic structures including lymph node(s), Waldeyer ring, spleen, appendix, thymus and Peyer patches

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