

# AJCC Sarcoma Staging:

*Planning for the 9<sup>th</sup> Edition*

**Chandrajit P Raut, MD, MSc**

*TARPSWG Meeting at CTOS*

*November 12, 2025*



**Brigham and Women's Hospital**  
Founding Member, Mass General Brigham

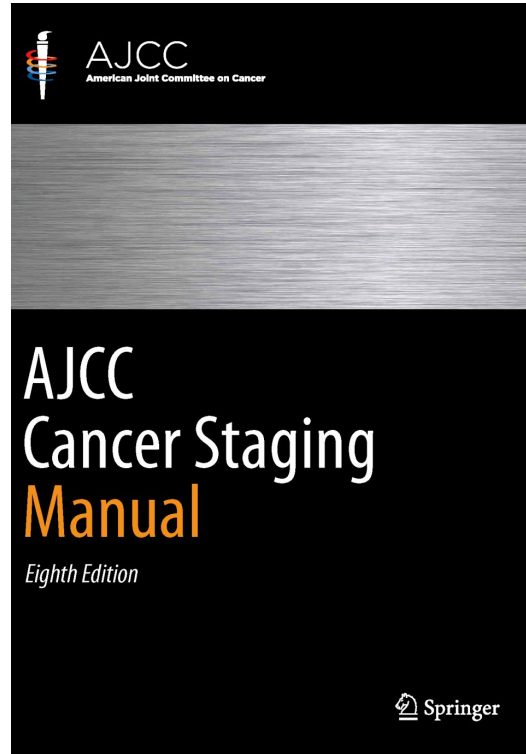


**Dana-Farber**  
Cancer Institute



**HARVARD**  
MEDICAL SCHOOL

# AJCC Staging



# FNCLCC Histologic Grade

Score	Definition
<b>Differentiation</b>	
1	Sarcomas closely resembling normal adult mesenchymal tissue (e.g., low-grade LMS)
2	Sarcomas for which histologic typing is certain (e.g., myxoid/round cell LPS)
3	Embryonal and undifferentiated sarcomas, sarcomas of doubtful type, synovial sarcomas, soft tissue osteosarcoma, Ewing/PNET of soft tissue
<b>Mitotic Count</b>	
1	0-9 mitoses per 10 HPF
2	10-19 mitoses per 10 HPF
3	≥ 20 mitoses per 10 HPF
<b>Necrosis</b>	
0	No necrosis
1	< 50% tumor necrosis
2	≥ 50% tumor necrosis

Grade	Definition
GX	Cannot be assessed
G1	Differentiation + mitotic count + necrosis score 2-3
G2	Differentiation + mitotic count + necrosis score 4-5
G3	Differentiation + mitotic count + necrosis score 6-8

- 1 HPF at 400x magnification = 0.1734 mm<sup>2</sup>
- 10 successive HPF assessed using a 40x objective

# Histology-Specific Differentiation Score

Histologic Type	Score
ALT/WDLPS	1
LPS, myxoid	2
LPS, round cell	3
LPS, pleomorphic	3
DDLPS	3
Fibrosarcoma	2
Myxofibrosarcoma	2
UPS	3
LMS, well-differentiated	1
LMS, conventional	2
LMS, poorly diff/pleomorphic/epithelioid	3
Synovial sarcoma, biphasic/monophasic	3
Synovial sarcoma, poorly differentiated	3
Rhabdomyosarcoma, pleomorphic	3
Chondrosarcoma, mesenchymal	3
Osteosarcoma, extraskeletal	3
Ewing sarcoma/primitive neuroectodermal tumor (PNET)	3
Malignant rhabdoid tumor	3
Undifferentiated sarcoma, not otherwise specified	3

Not applicable for:

- GIST
- MPNST
- Embryonal and alveolar RMS
- Angiosarcoma
- Extraskeletal myxoid chondrosarcoma
- ASPS
- Clear cell sarcoma
- Epithelioid sarcoma

# RPS TNM Staging

*American Joint Committee on Cancer, 8<sup>th</sup> ed*

Category	Definition
<b>Tumor status</b>	
TX	Primary tumor cannot be assessed
T0	No evidence of primary tumor
T1	T ≤ 5 cm
T2	T > 5 cm, ≤ 10 cm
T3	T > 10 cm, ≤ 15 cm
T4	T > 15 cm
<b>Lymph node status</b>	
N0	No regional LN metastases
N1	Regional LN metastases present
<b>Metastasis status</b>	
M0	No distant metastases
M1	Distant metastases present
<b>Grade</b>	
GX	Cannot be assessed
G1	Differentiation + mitotic count + necrosis score 2-3
G2	Differentiation + mitotic count + necrosis score 4-5
G3	Differentiation + mitotic count + necrosis score 6-8

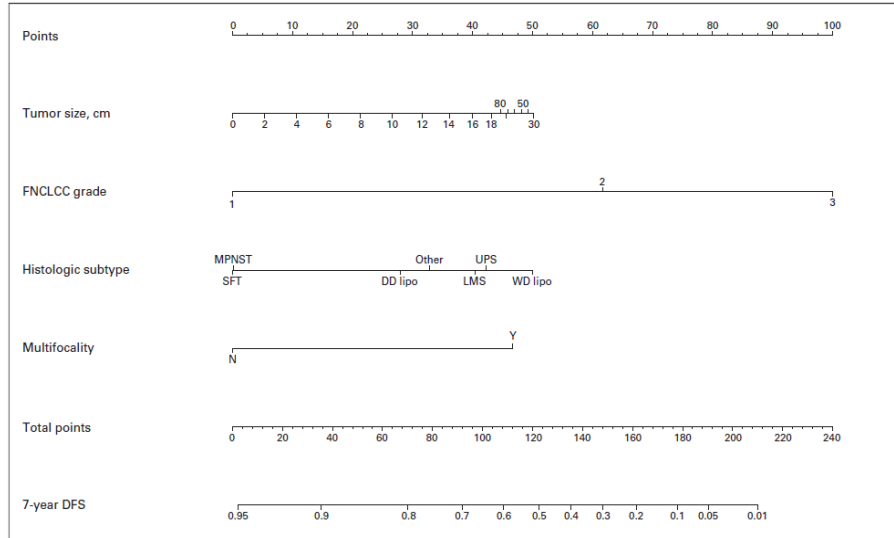
# RPS Stage Grouping

*American Joint Committee on Cancer, 8<sup>th</sup> ed*

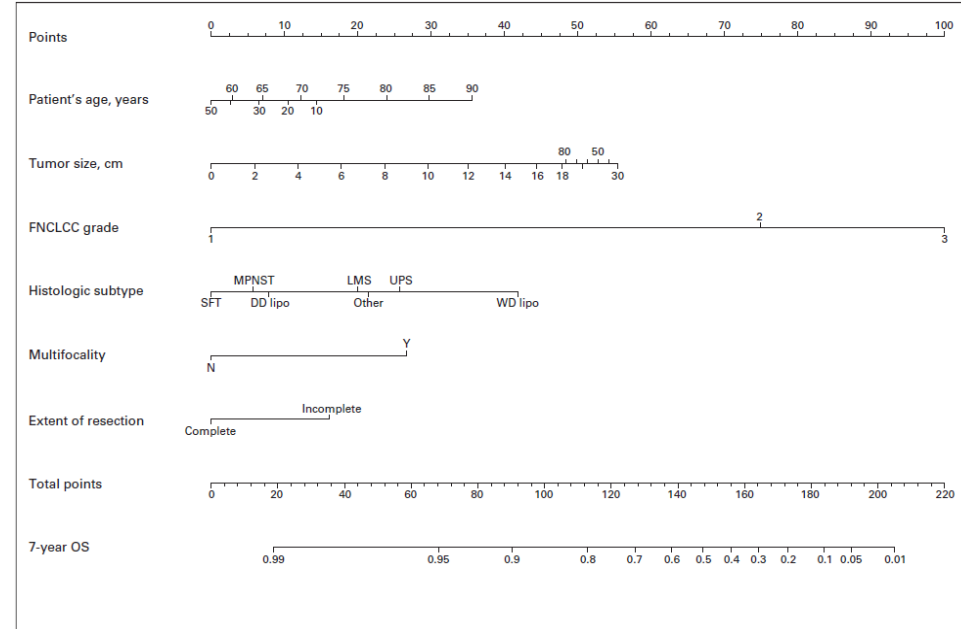
Stage Grouping		Definition		
IA	T1	N0	M0	GX, G1
IB	T2, T3, T4	N0	M0	GX, G1
II	T1	N0	M0	G2, G3
IIIA	T2	N0	M0	G2, G3
IIIB	T3, T4	N0	M0	G2, G3
	Any T	N1	M0	Any G
IV	Any T	Any N	M1	Any G

# Primary RPS Nomogram

## Disease-Free Survival

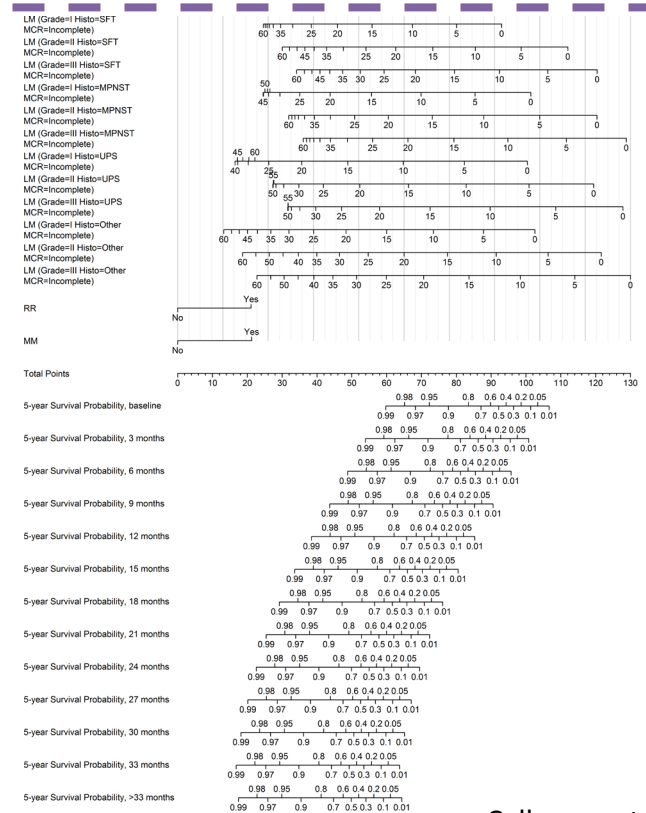
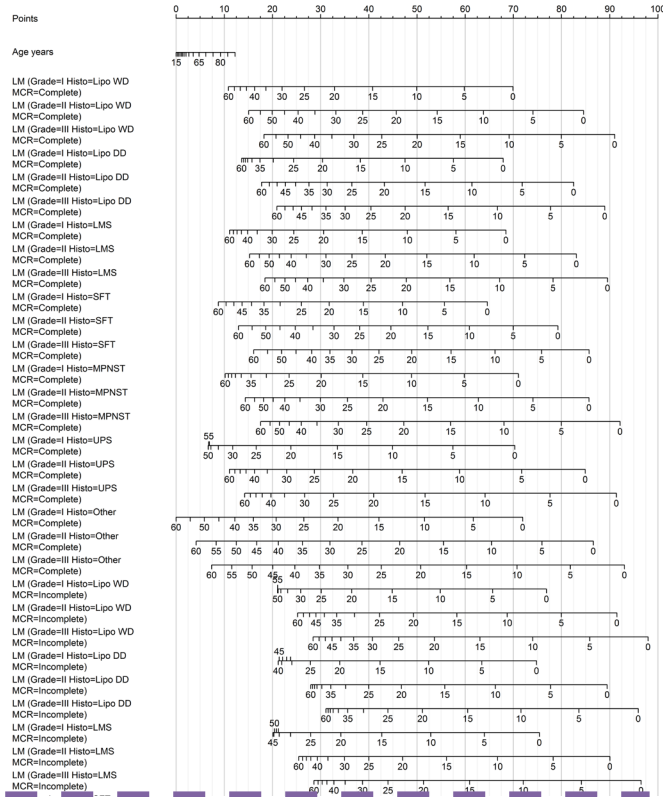


## Overall Survival



*“These are large patient cohorts for this rare disease and robustly confirm the usefulness of this model.”*

# Dynamic Prognostic Nomogram





# ESTS TNM Staging

*American Joint Committee on Cancer, 8<sup>th</sup> ed*

Category	Definition
<b>Tumor status</b>	
TX	Primary tumor cannot be assessed
T0	No evidence of primary tumor
T1	T ≤ 5 cm
T2	T > 5 cm, ≤ 10 cm
T3	T > 10 cm, ≤ 15 cm
T4	T > 15 cm
<b>Lymph node status</b>	
N0	No regional LN metastases
N1	Regional LN metastases present
<b>Metastasis status</b>	
M0	No distant metastases
M1	Distant metastases present
<b>Grade</b>	
GX	Cannot be assessed
G1	Differentiation + mitotic count + necrosis score 2-3
G2	Differentiation + mitotic count + necrosis score 4-5
G3	Differentiation + mitotic count + necrosis score 6-8

# ESTS Stage Grouping

*American Joint Committee on Cancer, 8<sup>th</sup> ed*

Stage Grouping		Definition		
IA	T1	N0	M0	GX, G1
IB	T2, T3, T4	N0	M0	GX, G1
II	T1	N0	M0	G2, G3
IIIA	T2	N0	M0	G2, G3
IIIB	T3, T4	N0	M0	G2, G3
IV	Any T	N1	M0	Any G
	Any T	Any N	M1	Any G

# GIST TNM Staging

*American Joint Committee on Cancer, 8<sup>th</sup> ed*

Category	Definition
<b>Tumor status</b>	
TX	Primary tumor cannot be assessed
T0	No evidence of primary tumor
T1	T ≤ 2 cm
T2	T > 2 cm, ≤ 5 cm
T3	T > 5 cm, ≤ 10 cm
T4	T > 10 cm
<b>Lymph node status</b>	
N0	No regional LN metastases
N1	Regional LN metastases present
<b>Metastasis status</b>	
M0	No distant metastases
M1	Distant metastases present
<b>Mitotic rate</b>	
Low	≤ 5 per 5 mm <sup>2</sup> , or per 50 HPF
High	> 5 per 5 mm <sup>2</sup> , or per 50 HPF

# GIST Stage Grouping

*American Joint Committee on Cancer, 8<sup>th</sup> ed*

## Gastric and Omental

Stage Grouping		Definition		
IA	T1, T2	N0	M0	Low
IB	T3	N0	M0	Low
II	T1, T2	N0	M0	High
	T4	N0	M0	Low
IIIA	T3	N0	M0	High
IIIB	T4	N0	M0	High
IV	Any T	N1	M0	Any mitotic rate
	Any T	Any N	M1	Any mitotic rate

## Small Intestinal, Esophageal, Colorectal, Mesenteric, and Peritoneal

Stage Grouping		Definition		
I	T1, T2	N0	M0	Low
II	T3	N0	M0	Low
IIIA	T1	N0	M0	High
	T4	N0	M0	Low
IIIB	T2, T3, T4	N0	M0	High
IV	Any T	N1	M0	Any mitotic rate
	Any T	Any N	M1	Any mitotic rate

# Head and Neck Sarcoma TNM Staging

*American Joint Committee on Cancer, 8<sup>th</sup> ed*

Category	Definition
<b>Tumor status</b>	
TX	Primary tumor cannot be assessed
T1	T ≤ 2 cm
T2	T > 2 cm, ≤ 4 cm
T3	T > 4 cm, ≤ 15 cm
T4	Tumor with invasion of adjoining structures
T4a	• Tumor with invasion of orbit, skull base/dura, central compartment viscera, facial skeleton, pterygoid muscles
T4b	• Tumor with invasion of brain parenchyma or prevertebral muscle, encasement of carotid artery or involvement of CNS via perineural spread
<b>Lymph node status</b>	
N0	No regional LN metastases or unknown LN status
N1	Regional LN metastases present
<b>Metastasis status</b>	
M0	No distant metastases
M1	Distant metastases present
<b>Grade</b>	
GX	Cannot be assessed
G1	Differentiation + mitotic count + necrosis score 2-3
G2	Differentiation + mitotic count + necrosis score 4-5
G3	Differentiation + mitotic count + necrosis score 6-8

- New classification in AJCC 8<sup>th</sup> edition
- No stage grouping applied
- Not applicable to:
  - **Orbital sarcoma** – separate staging system
  - **Rhabdomyosarcoma**, embryonal and alveolar
  - **Angiosarcoma**, cutaneous
  - **Kaposi sarcoma** – consider AIDS Clinical Trial Group system
  - **DFSP**

# Abdominal and Thoracic Visceral Sarcoma TNM Staging

*American Joint Committee on Cancer, 8<sup>th</sup> ed*

Category	Definition
<b>Tumor status</b>	
TX	Primary tumor cannot be assessed
T1	Organ confined
T2	Tumor extension into tissue beyond organ
T2a	• Invades serosa or visceral peritoneum
T2b	• Extension beyond serosa (mesentery)
T3	Invades another organ
T4	Multifocal involvement
T4a	• 2 sites
T4b	• 3-5 sites
T4c	• > 5 sites
<b>Lymph node status</b>	
N0	No regional LN metastases or unknown LN status
N1	Regional LN metastases present
<b>Metastasis status</b>	
M0	No distant metastases
M1	Distant metastases present
<b>Grade</b>	
GX	Cannot be assessed
G1	Differentiation + mitotic count + necrosis score 2-3
G2	Differentiation + mitotic count + necrosis score 4-5
G3	Differentiation + mitotic count + necrosis score 6-8

- New classification in AJCC 8<sup>th</sup> edition
- No stage grouping recommended
- Not applicable to:
  - **DSRCT**
  - **EHD**
  - **IMT**
  - **PEComa**
  - **SFT** – use RPS staging system
  - **GIST** – separate staging system
  - **LMS, uterine** – use corpus uteri (sarcoma) staging system
  - **LMS, RP** – use RPS staging system

# Histologies with Unique Anatomic Sites

Histologic Type	Score
Clear cell sarcoma	Joint tendons and aponeurosis, small bowel
DSRCT	Peritoneum
Embryonal sarcoma	Liver
Endometrial stromal sarcoma	Uterus
Undifferentiated sarcoma	Uterus
EHE	Liver, lungs, pleura
Epithelioid sarcoma, proximal type	Shoulder girdle, hip musculature
Epithelioid sarcoma, distal	Hands, feet
GIST	GI tract
Phyllodes tumor	Breast

# Clinical Features of Unusal Histologies

Histologic Type	Features
Angiosarcoma	Scalp, radiation-associated breast – multifocal
DSRCT	Peritoneum – multifocal
Embryonal sarcoma	Liver – stage according to visceral sarcoma
Endometrial stromal sarcoma	Uterus – stage according to uterine sarcoma; degree of organ invasion surrogate for tumor size
EHE	Liver, lungs – multifocal Pleura – less comon
Epithelioid sarcoma, proximal type	Shoulder girdle, hip musculature – multifocal, commonly involves LN
Extraskelatal myxoid chondrosarcoma	Indolent course even with lung metastases – stage according to STS
IMT	Lung, mesentery, omentum – multifocal, 90% benign
Kaposi sarcoma	Skin, viscera – multifocal, Mediterranean or HIV
Carcinosarcoma (MMMT)	Uterus – controversy whether to stage as sarcoma or carcinoma
Extraskelatal osteosarcoma	Stage according to STS
Phyllodes tumor	Stage according to ESTS
Rhabdomyosarcoma	Stage according to STS; pediatric staging available for alveolar and embryonal
Undifferentiated uterine sarcoma	Uterus – stage according to uterine sarcoma; degree of organ invasion surrogate for tumor size



# Thank you

[craut@bwh.harvard.edu](mailto:craut@bwh.harvard.edu)

