Testicular Cancer

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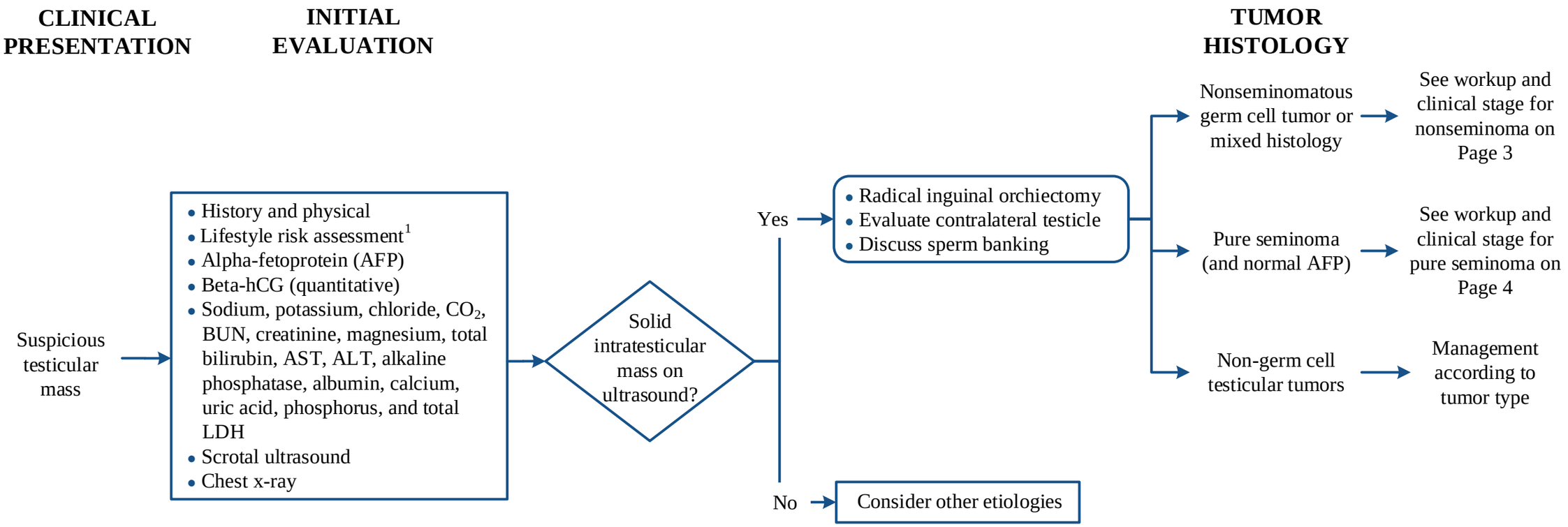
Note: Consider Clinical Trials as treatment options for eligible patients.



[1]See Physical Activity, Nutrition, and Tobacco Cessation algorithms; ongoing reassessment of lifestyle risks should be a part of routine clinical practice

Testicular Cancer

Nonseminomatous Germ Cell Tumor (NSGCT): workup and clinical stage

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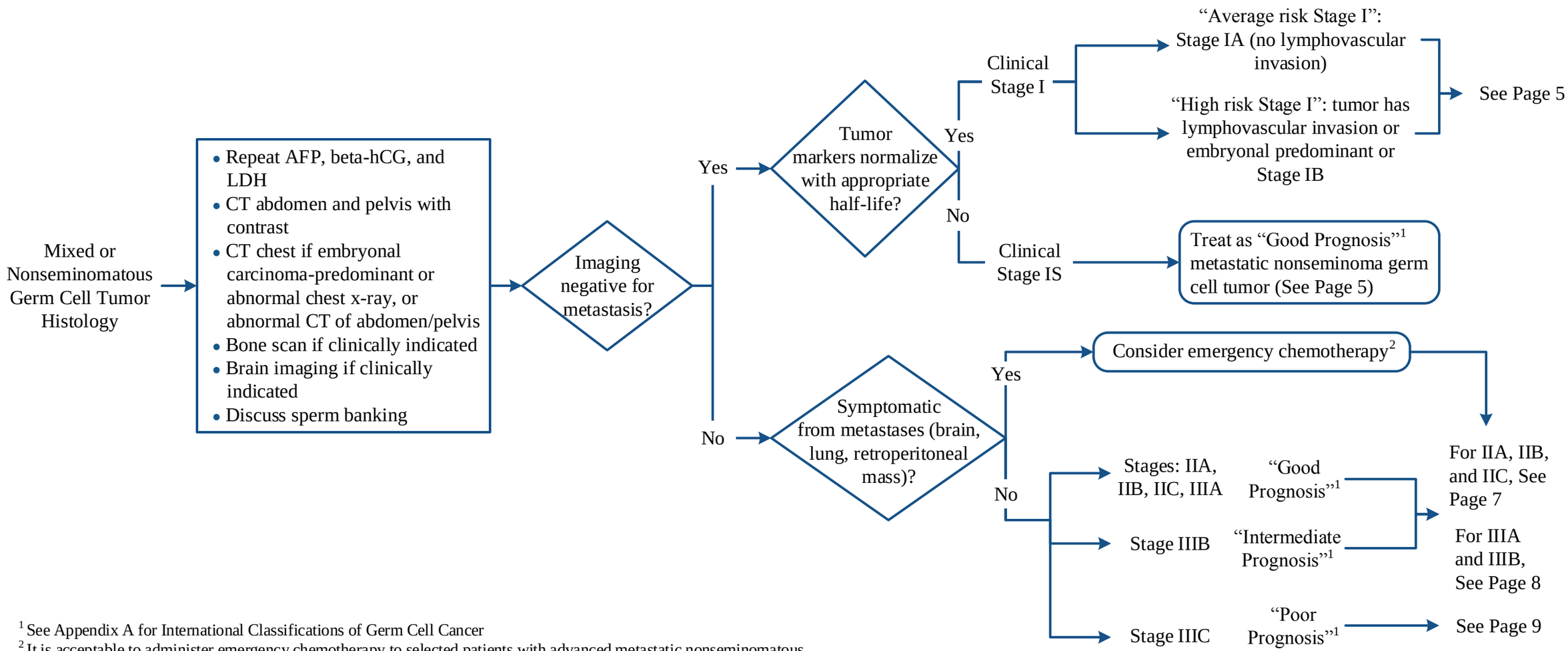
HISTOLOGY

FURTHER WORK-UP



[1] See Appendix A for International Classifications of Germ Cell Cancer

[2] It is acceptable to administer emergency chemotherapy to selected patients with advanced metastatic nonseminomatous germ cell tumor on the basis of clinical presentation before orchiectomy, and without a tissue diagnosis.

Testicular Cancer

Pure Seminoma: workup and clinical stage

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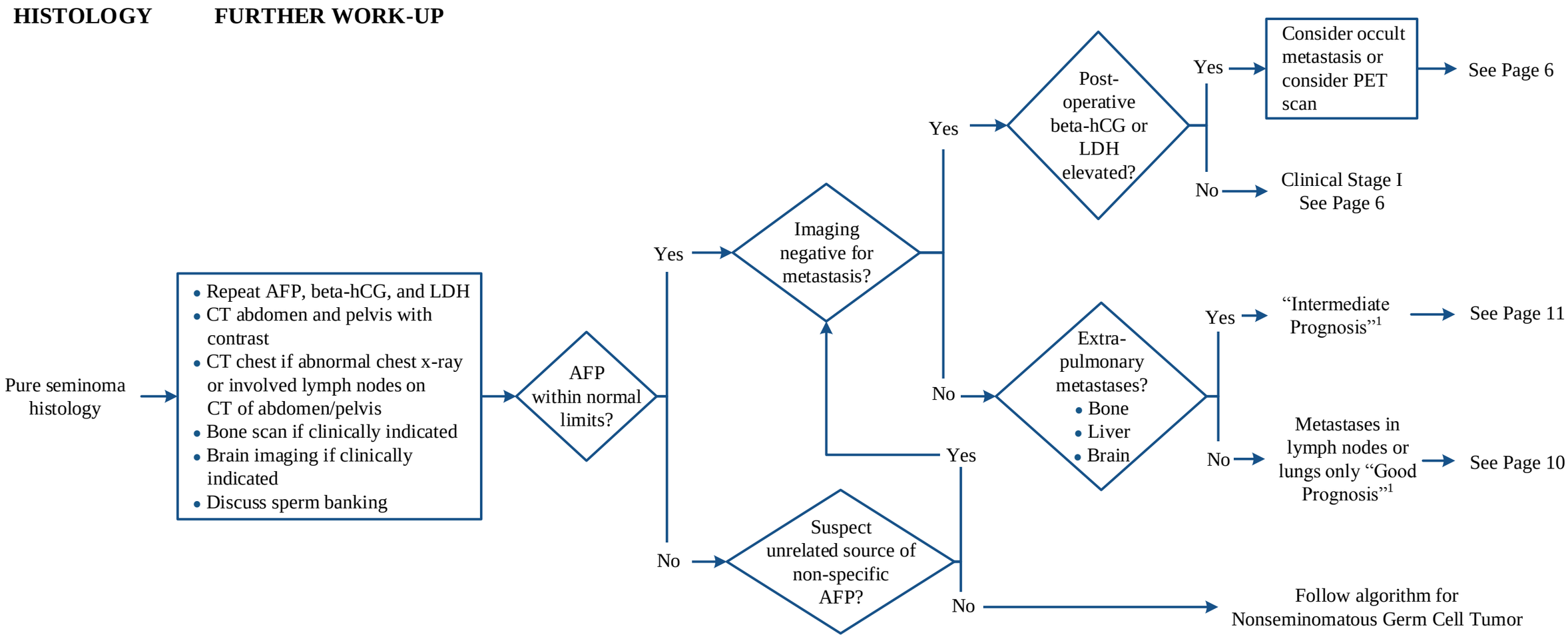

[1] See Appendix A for International Classifications of Germ Cell Cancer

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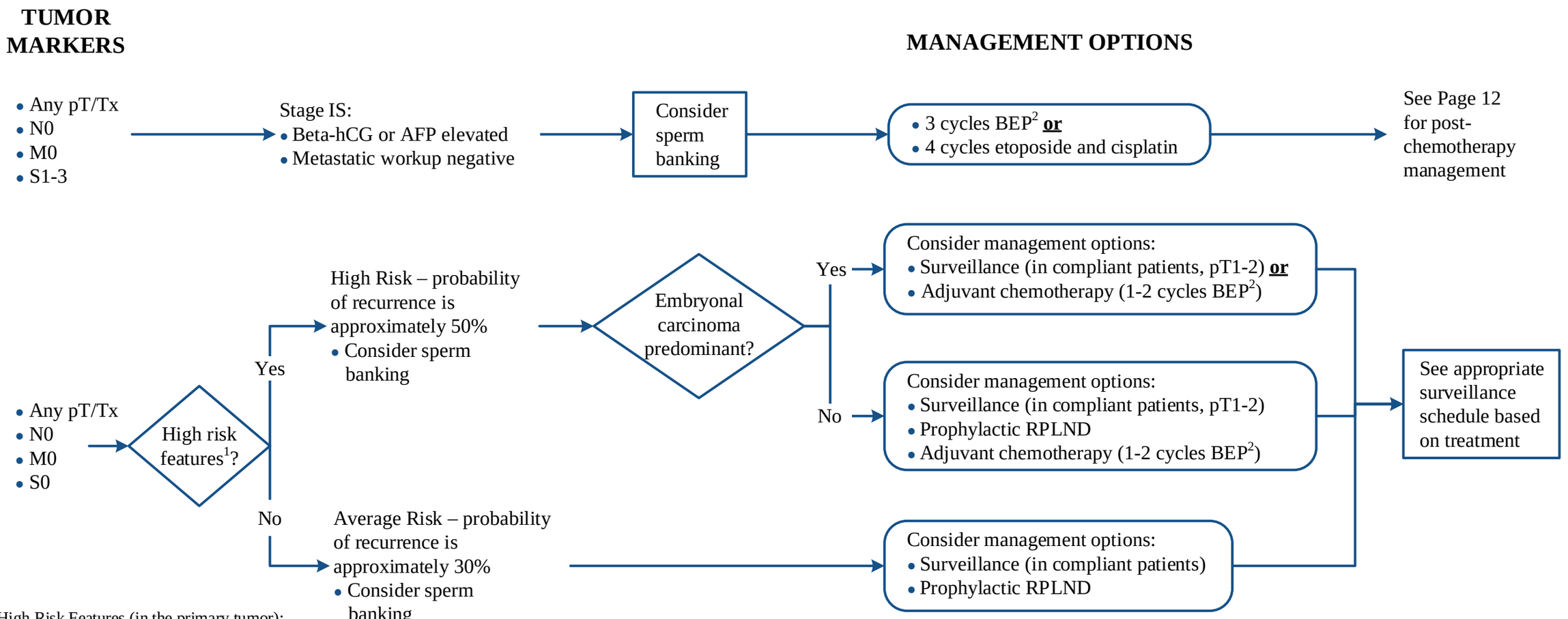

[1] High Risk Features (in the primary tumor):
a. Lymphovascular invasion
b. Invasion of tunica vaginalis
c. Invasion of spermatic cord or scrotum (pT3-4)
d. Embryonal carcinoma predominant

[2] Medical oncologist should discuss options with patient based on clinical data

BEP = bleomycin, etoposide, and cisplatin

RPLND = retroperitoneal lymph node dissection

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TUMOR MARKERS

MANAGEMENT OPTIONS

- Any pT/Tx
- N0
- M0
- S1-3

→ Stage IS:
- Beta-hCG or AFP elevated
- Metastatic workup negative

→ Consider sperm banking

→ Any of the following?
- Horseshoe or pelvic kidney
- Inflammatory bowel disease
- Prior radiotherapy

Yes → Consider management options: Surveillance **or** single-dose carboplatin AUC = 7 **or** AUC = 7 x 2 cycles for all others → See appropriate surveillance schedule based on treatment

No → Most patients with clinical stage IA pure seminoma can be offered three options:
- Surveillance in compliant patients who are committed to long term follow-up **or**
- Radiotherapy to para-aortic **with or without** ipsilateral iliac lymph nodes **or**
- Adjuvant carboplatin single dose, AUC =7 **or** AUC = 7 x 2 cycles

→ See appropriate surveillance schedule based on treatment

- Any pT/Tx
- N0
- M0
- S0

→ Primary tumor greater than 4 cm or pT3-4 ?

Yes → Consider sperm banking → Most patients with clinical stage IA pure seminoma can be offered three options:

No → Most patients with clinical stage IA pure seminoma can be offered three options:

Testicular Cancer

Stage IIA, IIB, IIC Nonseminoma: post-orchiectomy management

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TNM STAGE

- Any pT/Tx
- N1-3
- M0
- S0-1

PRETREATMENT WORKUP

- Baseline pulmonary function testing
- Consider baseline audiometry testing
- Consider sperm banking

- Total LDH less than 1.5 times upper limit of normal **and**
- Beta-hCG less than 5,000 mIU/mL **and**
- AFP less than 1,000 ng/mL?

Yes → Good Prognosis

No → Intermediate Prognosis / Poor Prognosis

TREATMENT

- Stage IIA, IIB **and**
- N0 (markers not elevated) **and**
- Teratoma component in primary tumor **and**
- Not embryonal carcinoma predominant tumor?

Yes → Surgical option: retroperitoneal lymph node dissection

- Stage IIB → Etoposide and cisplatin (EP) for 2 cycles
- Stage IIA → Surveillance

See Page 12 for post-chemotherapy management

No →

- Bleomycin, etoposide, and cisplatin (BEP) for 3 cycles **or**
- Etoposide and cisplatin for 4 cycles

Intermediate Prognosis →

- Total LDH 1.5-10 times upper limit of normal **or**
- Beta-hCG 5,000-50,000 mIU/mL **or**
- AFP 1,000-10,000 ng/mL

Poor Prognosis →

- Total LDH greater than 10 times upper limit of normal **or**
- Beta-hCG greater than 50,000 mIU/mL **or**
- AFP greater than 10,000 ng/mL

See Page 8 for treatment of Stage III

Department of Clinical Effectiveness V6
Approved by the Executive Committee of the Medical Staff 10/31/2017

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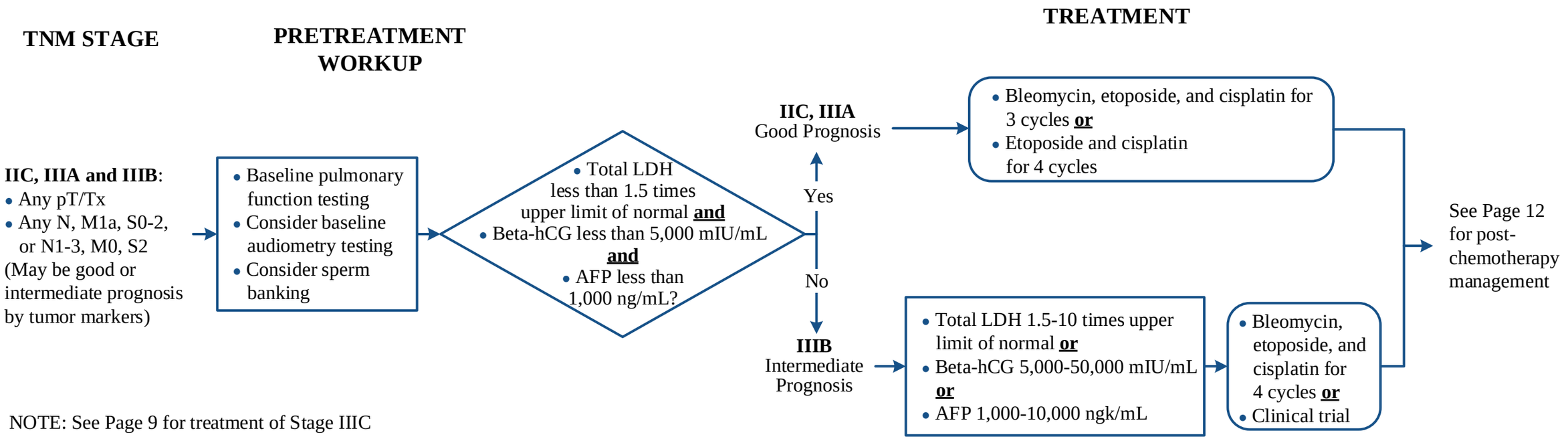

NOTE: See Page 9 for treatment of Stage IIIC

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TNM STAGE

IIIC, Poor Prognosis:

- Any pT/Tx, Any N, M1b[1], Any S
- Total LDH greater than 10 times upper limit of normal or
- Beta-hCG greater than 50,000 mIU/mL or
- AFP greater than 10,000 ng/mL

To avoid delay in the start of chemotherapy, the diagnosis can be made on clinical grounds. Orchiectomy can be deferred.

Respiratory distress or symptomatic brain metastases?

TREATMENT

Yes

Patient with respiratory distress

- Vincristine and cisplatin
- Etoposide and cisplatin (limit to 3 days in unstable patient)

Patient with symptomatic brain metastases

Primary chemotherapy with **or** without surgery if clinically indicated

No

- Baseline pulmonary function testing
- Consider baseline audiometry testing
- Consider sperm banking

- Clinical trial preferred **or**
- Bleomycin, etoposide, cisplatin for 4 cycles

Tumor markers normalized or plateau[2]?

Yes → See Page 12 for post-chemotherapy management

No → Additional chemotherapy

After first cycle, continue for a minimum of 4 cycles:

First line

- Clinical trial (preferred) **or**
- Bleomycin, etoposide, and cisplatin **or**
- Etoposide, ifosfamide, and cisplatin **or**

Second line

- Paclitaxel, ifosfamide, and cisplatin (TIP) **or**
- High dose chemotherapy regimens **or**
- Stem Cell Transplant **or**
- Clinical trial (preferred)

(Monitor pulmonary function tests for patients receiving bleomycin)

[1] M1b - Distant metastases other than to non-regional lymph nodes and lungs

[2] Plateau: The observed rate of decline in tumor markers should be compared to the expected serum half-lives of 5-7 days (AFP) and 2-3 days (beta-hCG). It is common to see a slower rate of decline after the second cycle of chemotherapy. A continued rate of decline that is much less than the expected half life and does not normalize should be interpreted as a plateau. The decision to stop chemotherapy should be based on clinical judgement, taking into consideration the clinical status of the patient, which of the markers are elevated, extent of elevation, and after ruling out potential sources of spurious elevation.

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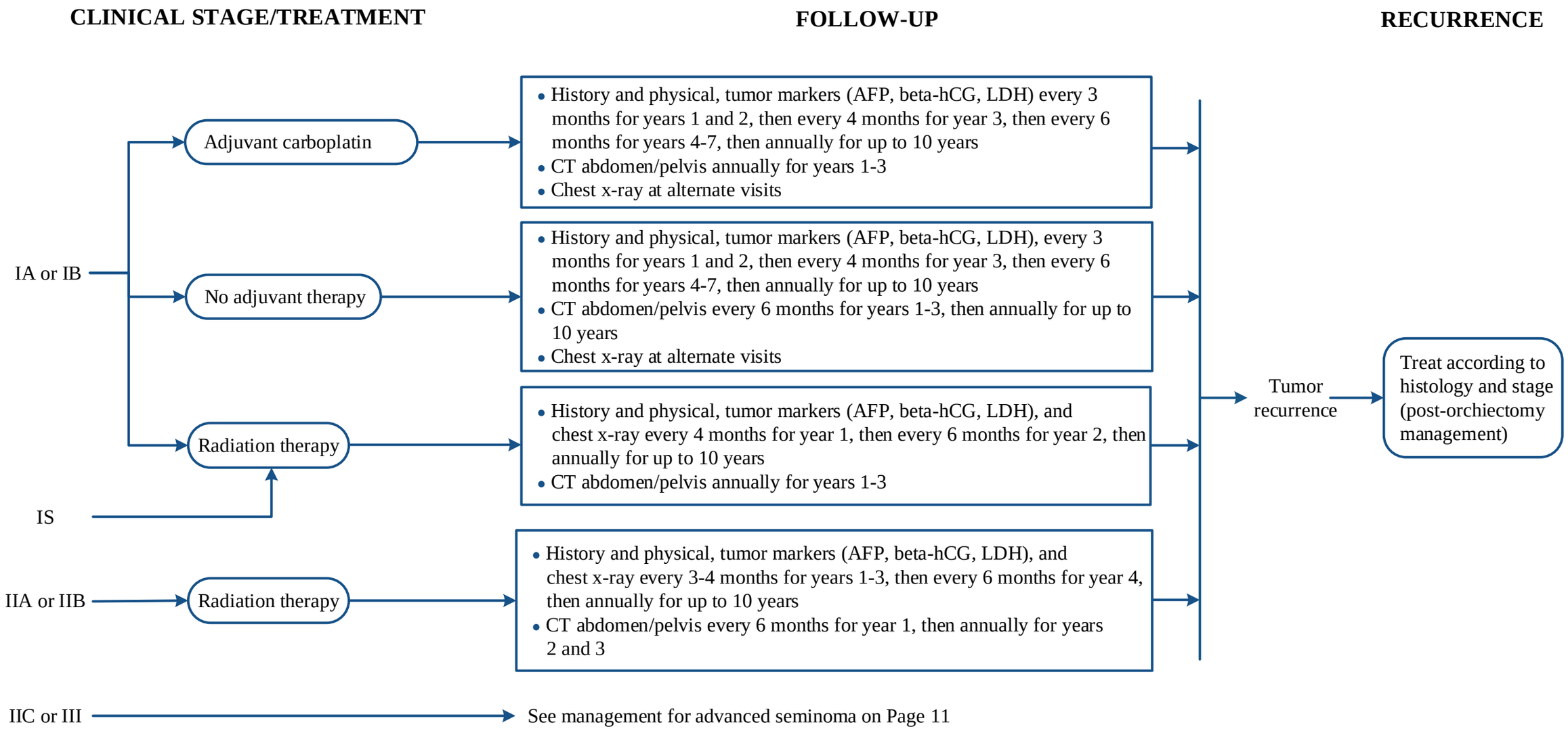

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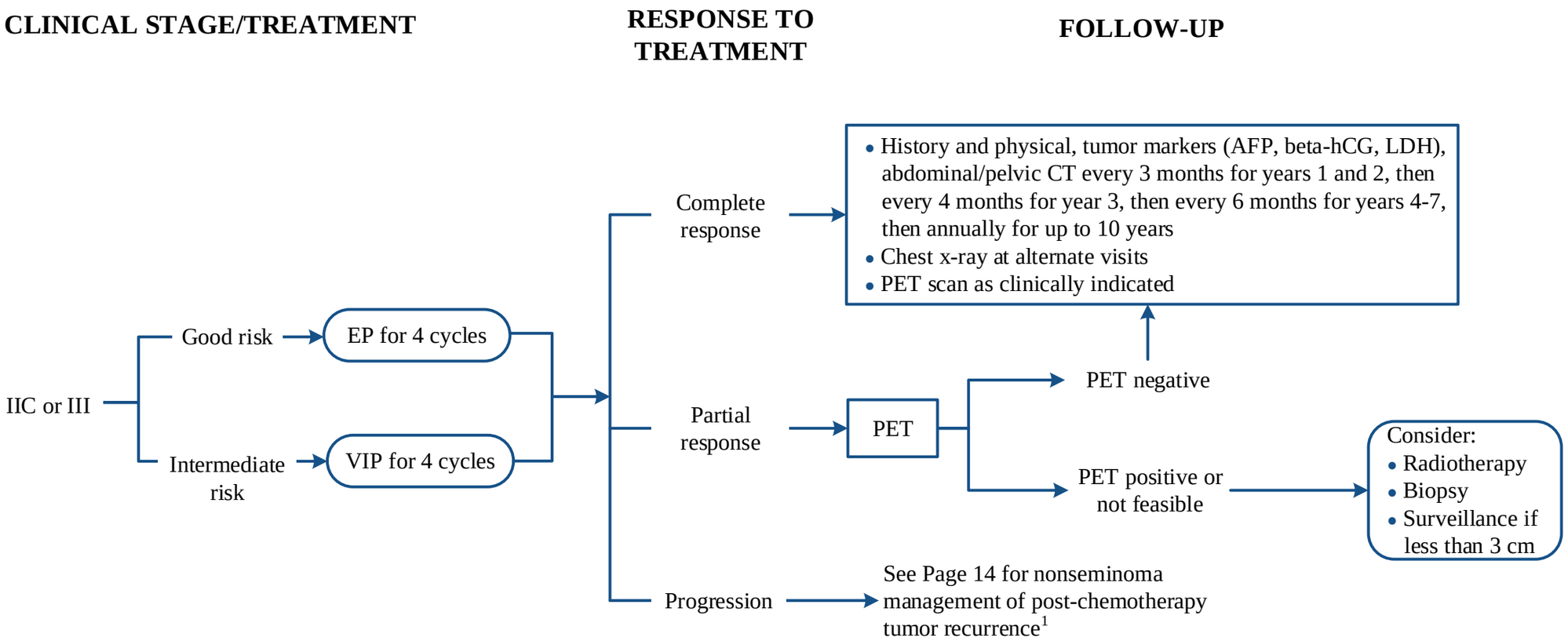

EP = etoposide and cisplatin
VIP = etoposide, ifosfamide, and cisplatin
[1]Seminoma that is refractory to chemotherapy is rare and should be managed as nonseminoma

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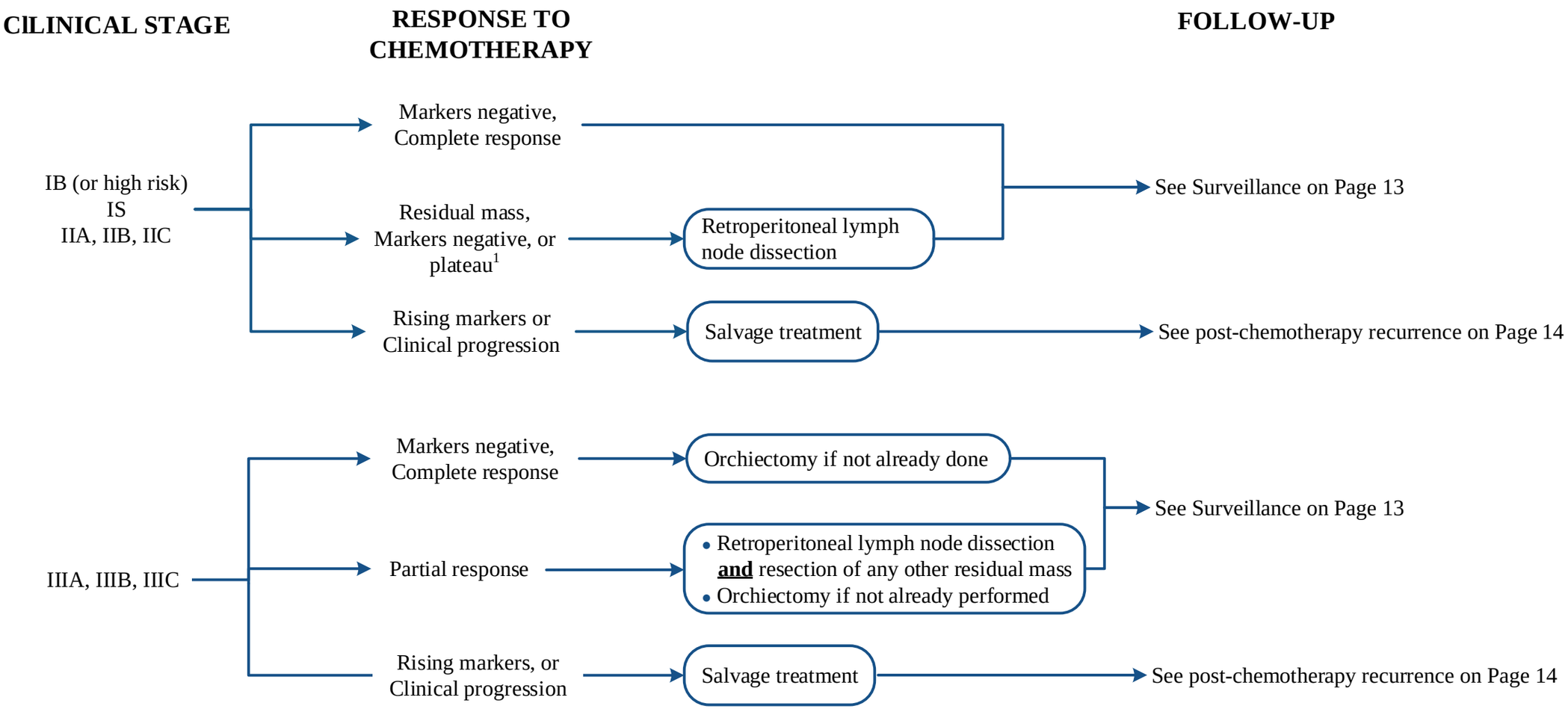

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Table 1: IA, IB NONSEMINOMA SURVEILLANCE

Year	Visits, Markers, and Chest X-ray	Abdominal/Pelvic CT
1	Every 1-2 months	Every 4 months
2	Every 2-3 months	Every 6 months
3	Every 3 months	Every 6 months
4	Every 4 months	Every 8 months
5	Every 6 months	Annually
6 and above	Annually	Annually

Table 2: NONSEMINOMA FOLLOW-UP after Complete Response to Chemotherapy and/or Retroperitoneal Lymph Node Dissection (RPLND)

Year	Visits, Markers, and Chest X-ray	Abdominal/Pelvic CT[1]
1	Every 2-3 months	Every 6 months
2	Every 2-3 months	Every 6-12 months
3	Every 4 months	Annually
4	Every 6 months	Annually
5	Every 6-12 months	Annually
6 and above	Annually	Every 12-24 months

[1] CT scans for patients treated with chemotherapy. Baseline CT scan for patients status post RPLND

Testicular Cancer

Nonseminoma: Post-chemotherapy tumor recurrence

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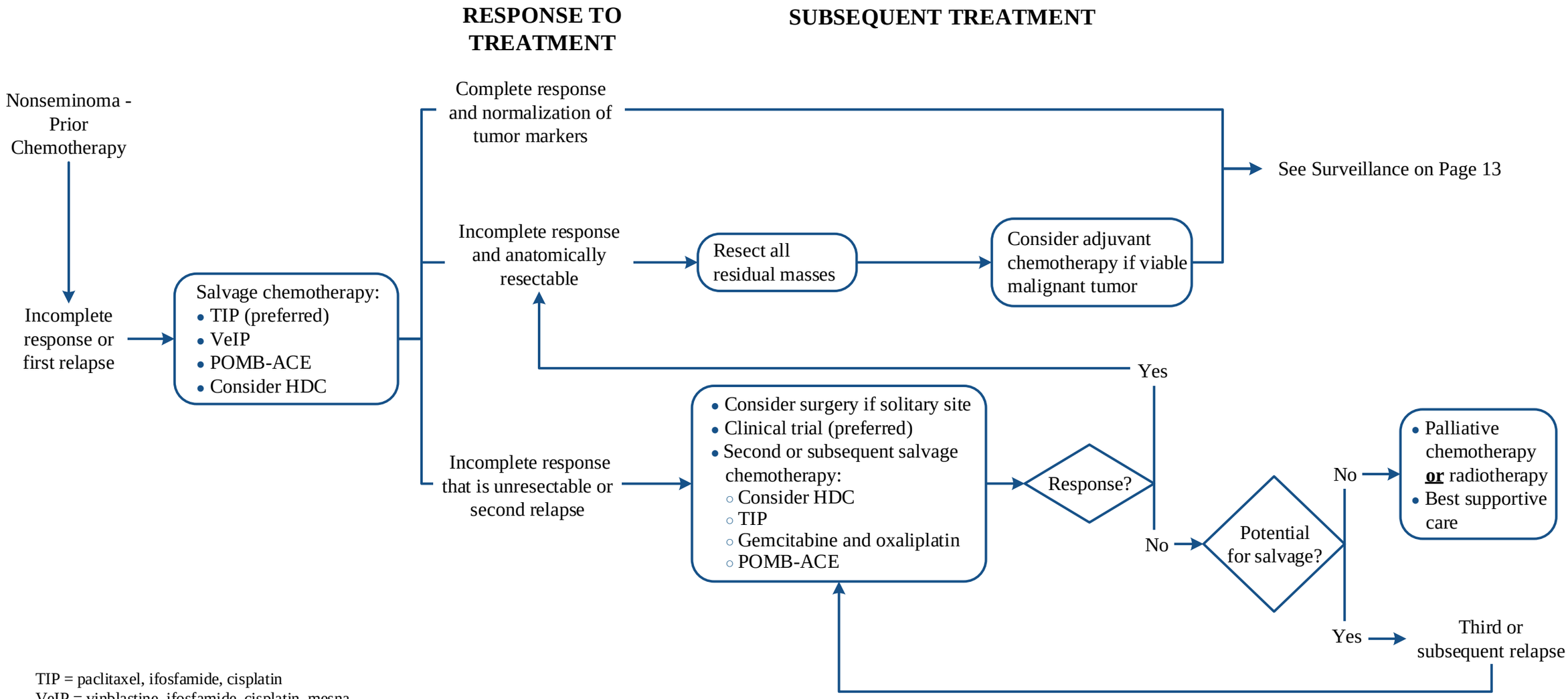

TIP = paclitaxel, ifosfamide, cisplatin
VeIP = vinblastine, ifosfamide, cisplatin, mesna
POMB-ACE = cisplatin, vincristine, methotrexate and bleomycin alternaing with actinomycin-D, cyclophosphamide, and etoposide
HDC = high-dose chemotherapy and autologous stem cell transplant

APPENDIX A: International Classifications for Germ Cell Cancers[1]

		NONSEMINOMA	SEMINOMA
GOOD PROGNOSIS	**FEATURES**	Testes/retroperitoneal primary **and** No non-pulmonary visceral metastases **and**	Any primary site **and** No non-pulmonary visceral metastases **and**
	All Good Markers: • **AFP**	less than 1,000 ng/mL **and**	Normal
	• **Beta-hCG**	less than 5,000 iu/L (1,000 ng/mL) **and**	Any value
	• **LDH**	less than 1.5 times upper limit of normal	Any value
INTERMEDIATE PROGNOSIS	**FEATURES**	Testes/retroperitoneal primary **and** No non-pulmonary visceral metastases **and**	Any primary site **and** Non-pulmonary visceral metastases **and**
	Markers any of: • **AFP**	greater than or equal to 1,000 and less than or equal to 10,000 ng/mL **or**	Normal
	• **Beta-hCG**	greater than or equal to 5,000 iu/L and less than 50,000 iu/L **or**	Any value
	• **LDH**	greater than or equal to 1.5 times normal and less than 10 times normal	Any value
POOR PROGNOSIS	**FEATURES**	Mediastinal primary **or** Non-pulmonary metastases	No patients classified as poor prognosis
	Markers any of: • **AFP**	greater than 10,000 ng/mL **or**	
	• **Beta-hCG**	greater than or equal to 50,000 iu/L (10,000 ng/mL) **or**	
	• **LDH**	greater than 10 times normal	

[1] From the International Germ Cell Consensus Classification from the International Germ Cell Cancer Collaborative Group

SUGGESTED READINGS

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DEVELOPMENT CREDITS

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