

# Testicular Cancer

# Testicular Cancer

## Clinical Risk Factors

### Medical Conditions

Cryptorchidism  
Spermatocytic/Testicular dysgenesis  
HIV (seminoma)

### Family History

## Genetic Risk Factors

### Isochromosome 12p

Klinefelters

## Presentation

Primary Testicular Mass (90-95%)

Primary Mediastinal Mass

## Work Up

### Ultrasound

### Orchiectomy

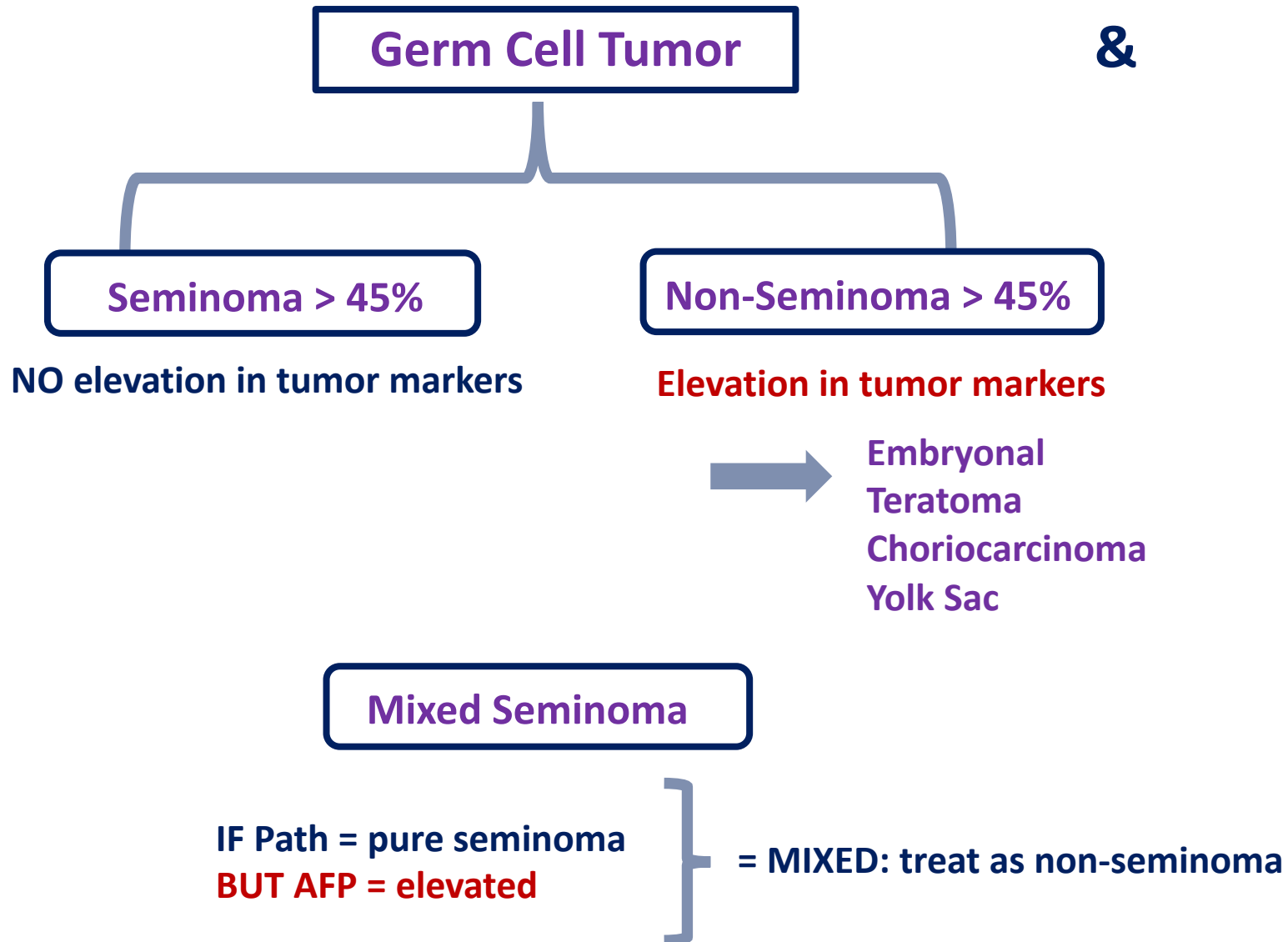
### Tumor Markers

LDH

HCG

AFP

# Testicular Cancer



## Non-Germ Cell Tumor

SEX CORD STROMAL TUMORS:  
Leydig Cell  
Sertoli Cell  
Granulosa Cell



# Testicular Cancer: Staging

Seminoma

NO elevation AFP

Non-Seminoma or Mixed

MAYBE elevation AFP

## Tumor Markers (half lives)

AFP (7-10D)

HCG (2-3D)

LDH (2-3D)

check markers pre and post-op

**1 month post-op markers used for staging**

## STAGING

### T Stage

T1 = intra-testicular

T2 = tunica vaginalis, epididymis, rete testes, LVI

T3 = spermatic cord

T4 = scrotum

### Serum Marker Staging

S0 = normal tumor markers

S1 = AFP < 1K HCG < 5K, LDH < 1.5 ULN

S2 = AFP 1-10K, HCG 5-50K, LDH 1.5-10x ULN

S3 = AFP >10K, HCG > 50K, LDH > 10x ULN

### Stage

Stage IS = S1-3, any T, N0, M0 (tx as Stage II-III)

Stage I = N0, S0

Stage 2 = N+, S0-1

Stage 3 = S2-3

\* No stage 4

# Testicular Cancer: Risk Stratification

NON-SEMINOMA  
MIXED SEMINOMA

YES elevation in tumor markers  
YES Poor Risk Group

**SEMINOMA**

NO elevation in tumor markers  
NO Poor Risk Group

**GOOD RISK**

Can have pulmonary or mediastinal mets

**INTERMEDIATE RISK**

Non-pulmonary visceral mets

**GOOD RISK**

S1 level tumor markers

AFP <1K

HCG <5K

LDH <1.5x ULN

Stage IS (S1-S3, TxN0M0)

**INTERMEDIATE RISK**

S2 level tumor markers

AFP 1-10K

HCG 5-50K

LDH 1.5-10x ULN

**POOR RISK**

S3 level tumor markers

AFP >10K

HCG >50K

LDH >10x ULN

Non-pulmonary visceral mets

Mediastinal mass

## PROGNOSIS

Good Risk

5Y OS = 90%

Intermediate Risk

5Y OS = 80%

Poor Risk

5Y OS = 50%

# Testicular Cancer: Treatment (Stage I-IIA)

IIA = N1 (LN < 2cm)

## SEMINOMA

NO elevation in tumor markers  
NO Poor Risk Group

### Orchiectomy +

**Stage I**  
N0

Observation  
Consider RT  
**OR** Consider chemo

**Stage IIA**  
N+  
IIA = N1 (LN < 2cm)

Adjuvant RT  
**OR** Adjuvant Chemo (Carbo x 1-2C)

**NO RPLND for seminomas!**  
no surgery for seminomas

## NON-SEMINOMA MIXED SEMINOMA

YES elevation in tumor markers  
YES Poor Risk Group

### Orchiectomy +

**Stage I**  
N0

Observation  
Consider RLPND  
**OR** Consider chemo (BEP x 1-2C)

**Stage IIA**  
N+  
IIA = N1 (LN < 2cm)

Adjuvant RPLND  
**OR** Adjuvant Chemo (BEP x1-2C)

**NO RT for non-seminomas!**

# Testicular Cancer: Treatment (Stage IIB-IV)

IIB = N2+ (LN > 2cm) or S1+ any TNM

## SEMINOMA

NO elevation in tumor markers  
NO Poor Risk Group

<b>Good Risk</b> can include pulmonary mets or mediastinal mass	<b>BEP x3</b> <b>EP x4</b>
<b>Intermediate Risk</b> non-pulmonary visceral mets	<b>BEP x4</b> <b>VIP x4</b>

## NON-SEMINOMA MIXED SEMINOMA

YES elevation in tumor markers  
YES Poor Risk Group

<b>Good Risk</b> S1 (AFP <1K, HCG <5K, LDH <1.5 ULN), IS (S1-S3, TxN0M0)	<b>BEP x3</b> <b>EP x4</b>
<b>Intermediate Risk</b> <b>Poor Risk</b> S2, S3, non-pulmonary visceral mets, or mediastinal mass	<b>BEP x4</b> <b>VIP x4</b>

\* If residual disease after chemo → resection

## Chemotherapy Regimens

**BEP:** (B) Bleomycin  
(E) Etoposide  
(P) Cisplatin

**EP:** (E) Etoposide  
(P) Cisplatin

**VIP:** (V) Etoposide  
(I) Ifosfamide + Mesna  
(P) Cisplatin

# Testicular Cancer: Chemotherapy

## Chemotherapy Regimens

**BEP:** (B) Bleomycin  
(E) Etoposide  
(P) Cisplatin

**EP:** (E) Etoposide  
(P) Cisplatin

**VIP:** (V) Etoposide  
(I) Ifosfamide + Mesna  
(P) Cisplatin

**TIP:** (T) Paclitaxel  
(I) Ifosfamide + Mesna  
(P) Cisplatin

\* TIP used for RD or 2<sup>nd</sup> line therapy

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## Notable Side Effects

**Bleomycin** → Pneumonitis (PFTs prior to tx), Rash (flagellate erythema)

**Cisplatin** → Neuropathy, nephropathy, ototoxicity

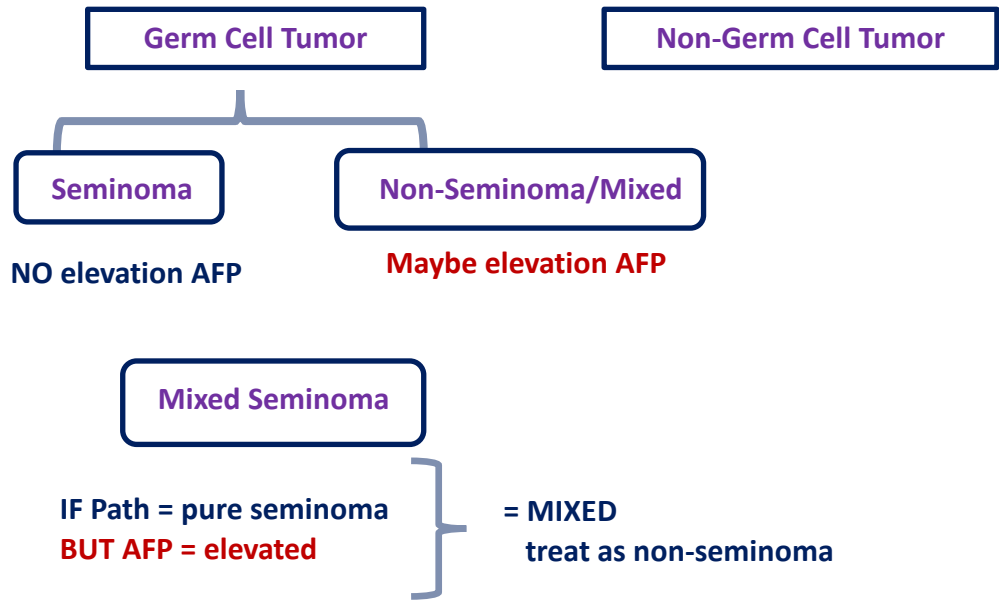
**Ifosfamide** → Hemorrhagic cystitis, CNS toxicity (tx with methylene blue)

**Paclitaxel** → Neuropathy



# Testicular Cancer Reference Handout

# Testicular Cancer Dx



## Tumor Markers (half lives)

AFP (7-10D)  
HCG (2-3D)  
LDH (2-3D)

1 month post-op

## STAGING

Stage IS = S1-3, any T, N0, M0  
Stage I = N0, S0  
Stage 2 = N+, S0-1  
Stage 3 = S2-3

# Testicular Cancer Risk

SEMINOMA	NON-SEMINOMA
<b>GOOD RISK</b>	<b>GOOD RISK</b>
Can have pulmonary mets Can have mediastinal mets	S1 level tumor markers AFP <1K HCG <5K LDH <1.5x ULN Stage IS
<b>INTERMEDIATE RISK</b>	<b>INTERMEDIATE RISK</b>
Non-pulm visceral mets	S2 level tumor markers AFP 1-10K HCG 5-50K LDH 1.5-10x ULN
<b>Prognosis</b>	<b>POOR RISK</b>
<b>Good Risk</b> 5Y OS = 90% <b>Intermediate Risk</b> 5Y OS = 80% <b>Poor Risk</b> 5Y OS = 50%	S3 level tumor markers AFP >10K HCG >50K LDH >10x ULN Non-pulmonary visceral mets Mediastinal mass

## Testicular Cancer Tx Stage I-IIA

**SEMINOMA** NO elevation in tumor markers  
NO Poor Risk Group

### Orchiectomy +

<b>Stage I</b> NO	Observation Consider RT <b>OR</b> Consider chemo
<b>Stage II</b> N+	Adjuvant RT <b>OR</b> Adjuvant Chemo (Carbo x 1-2C)

**NO RPLND for seminomas!**

**NON-SEMINOMA** YES elevation in tumor markers  
**MIXED** YES Poor Risk Group

### Orchiectomy +

<b>Stage I</b> NO	Observation Consider RLPND <b>OR</b> Consider chemo (BEP x 1-2C)
<b>Stage II</b> N+	Adjuvant RPLND <b>OR</b> Adjuvant Chemo (BEP x1-2C)

**NO RT for non-seminomas!**

## Testicular Cancer Tx Stage IIB-IV

### SEMINOMA

NO elevation in tumor markers  
NO Poor Risk Group

<b>Good Risk</b>	BEP x3 EP x4
<b>Intermediate Risk</b>	BEP x4 VIP x4

### NON-SEMINOMA/MIXED SEMINOMA

**YES** elevation in tumor markers  
**YES** Poor Risk Group

<b>Good Risk</b>	BEP x3 EP x4
<b>Intermediate Risk</b> <b>Poor Risk</b>	BEP x4 VIP x4

### Chemo Regimens

**BEP:** (B) Bleomycin  
(E) Etoposide  
(P) Cisplatin

**EP:** (E) Etoposide  
(P) Cisplatin

**VIP:** (V) Etoposide  
(I) Ifosfamide  
(P) Cisplatin

### Chemo Side Effects

**Bleomycin** → Pneumonitis, Rash

**Cisplatin** → Neuropathy, nephropathy, ototoxicity

**Ifosfamide** → Hemorrhagic cystitis, CNS toxicity

**Paclitaxel** → Neuropathy