TESTICULAR CANCER
Where the Boys Are

Louanne Currence, RHIT, CTR

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Testicular Cancer Facts

- 1% of all male cancer
  - About 8,000 new cases a year
  - 390 deaths per year
- Most common cancer ages 15-34
- Usually white males, especially Scandinavian
- 1-3% bilateral
- 90% curable – even in late stage

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SEER data

Risk Factors

- Cryptorchidism (C62.0 vs C62.1)
- Congenital abnormalities
  - Testes, penis, or kidneys
  - Inguinal hernia
- History of testicular cancer
- Family history (father, brother)
- Genetics: TGCT1 found

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Incidence Rate by Race (U.S.A.)

RACE/ETHNICITY	RATE
White	6.3 per 100,000 men
Black	1.4 per 100,000 men
Asian/Pacific Island	1.6 per 100,000 men
Amer Indian/Alaskan	3.8 per 100,000 men
Hispanic	3.8 per 100,000 men

NCI's SEER Cancer Statistics Review

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Screening

- Not recommended
  - Good survival rate, even at later stage
  - Not cost-effective
- Testicular Self-Exam
  - After shower
  - Roll both
  - Check epididymis

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Symptoms

- Painless lump or swelling
- Pain or discomfort
- Enlargement, “funny” feeling
- Heaviness in scrotum
- Dull ache in back, groin, or abdomen
- Fluid collection in scrotum
- Enlargement/tenderness breasts

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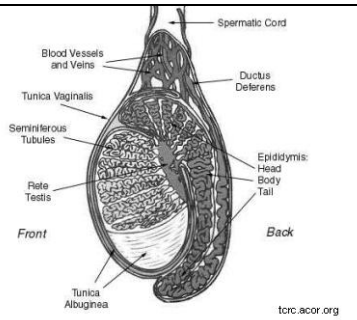

Vocabulary

- Leydig cells – secrete testosterone
- Tunica albuginea – dense capsule around
- Rete testis – network of efferent ducts
- Epididymis – storage vessel for sperm
- Vas (ductus) deferens – carries sperm to urethra

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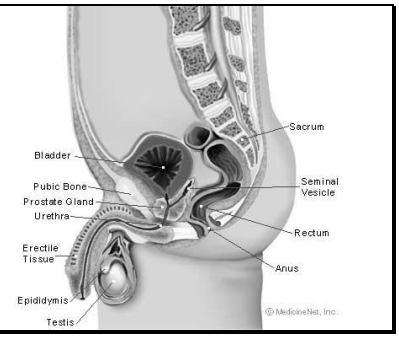
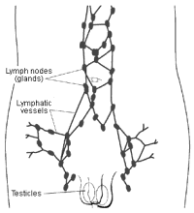


Lymph Nodes



www.cancerbackup.org.uk

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Workup

- Tumor markers
  - LDH, AFP, βHCG
- Ultrasound
- Biopsy
- Chest x-ray and other radiology for staging

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MP/H Rules – Other Sites

- **Rule M1** When it is not possible to determine if there is a **single** tumor **or multiple** tumors, opt for a single tumor and abstract as a single primary.
- **Rule M2** A **single tumor** is always a single primary.
- **Rule M8** Tumors on **both sides** (right and left) of a site listed in Table 1 are multiple primaries. (C62 YES)
- **Rule M10** Tumors diagnosed **more than one (1) year** apart are multiple primaries.

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MP/H Rules – Other Sites

- **Rule M17** Tumors with ICD-O-3 **histology** codes that are **different** at the first (**x**xxx), second (x**x**xx) or third (xx**x**x) number are multiple primaries.
- **Rule M18** Tumors that **do not meet any** of the above **criteria** are a single primary.

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MP/H Histo Rules

- **H1, H8, H18** Code the histology documented by the physician when the **pathology/cytology** report is **not available**.
- **H2, H11, H23** Code the histology when only **one histologic type** is identified.
- **H6, H17** Code the histology with the **numerically higher** ICD-O-3 code.
- In Situ & Invasive: **Rule H7, H28** Code the invasive histology**. Ignore the in situ** terms.

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Rule H5, H16, H30 – Table 2

Column 1: Required Histo	**Column 2: Combined w/Histo**	**Column 3: Combination Term**	**Column 4: Code**
Teratoma	Embryonal carcinoma	Teratocarcinoma	9081
Teratoma & one or more of histologies in Col 2	Seminoma Yolk sac tumor	Mixed germ cell tumor	9085
Choriocarci-noma	Teratoma Seminoma Embryonal	Choriocarcinoma combined w/other germ cell elements	9101

MP/H Histo Rules

- **Rule H9, H19** Code the histology from a metastatic site when there is **no pathology/cytology specimen from the primary site**.
- **Rule H13, H29 Code the** most **specific** histologic **term.** Examples include: Sarcoma, NOS (8800) **and** a more specific sarcoma

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Pathology - Germinal

- CIS
- Seminoma (classic or spermatic)
- Embryonal
- Yolk sac
- Choriocarcinoma
- Teratoma

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Seminoma

- 75% stage I
- Classic – 4-5th decade
  - Mets to LNs
  - Usually negative AFP
- Spermatic – 6th decade
  - Indolent

medstat.med.utah.edu

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Nonseminomatous Germ Cell

- Embryonal
  - 2nd most common
  - Usually 2nd decade
  - AFP and βHCG +
  - CEA neg
  - 30% para-aortic LN, lung or liver at dx
- Yolk Sac (Endodermal Sinus)
  - Frequently children
  - Frequently liver mets
  - AFP+
  - βHCG neg

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Nonseminomatous Germ Cell

- Choriocarcinoma
  - Frequent in Mixed
  - βHCG +
  - AFP neg
  - Poor prognosis
- Teratoma
  - Frequent in Mixed
  - "Benign"
    - Young patients Mature tumors
    - Older patients Immature tumors
  - Surgery only effective tx
  - βHCG, AFP not elevated

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Pathology - Nongerminal

- Sex cord stromal tumor
  - Leydig cell
  - Sertoli cell
  - Granulosa thecal cell
- Gonadoblastoma
- Lymphomas & leukemias
- Rhabdomyosarcoma
- Other rare

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Nongerminal Tumors

Sex Cord Stromal Tumors

- Leydig cell
  - Median age 60 yrs
  - Rarely metastasize
  - Sx: Endocrine abnormalities
- Sertoli cell
  - Any age
  - Only 10% malignant
- Granulosa cell
  - Juvenile - benign
  - Adult - rare

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Nongerminal Tumors

- Gonadoblastomas
  - Mixed germ cell & sex cord tumor
  - Occurs in undescended
  - Bilateral 30%
  - Benign BUT path should be reviewed for malignant germ cell
- Lymphomas & leukemias
  - Late manifestation of disseminated disease
  - Common in children with ALL

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Others

- Rhabdomyosarcoma
  - Most common sarcoma in children
  - Can originate in testicle
- Metastatic – 2.5% men
- Extragonadal Germ Cell Tumors
  - Usually mediastinal, retroperitoneal, or pineal
  - May have CIS in testicle if retroperitoneal

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COLLABORATIVE STAGE

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CS Tumor Size

- Use Standard Table
- Code Laterality (rarely bilateral)

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CS Extension

- No clinical T) categories
- Except Tis and T4, need radical orchi (SSF4) & markers
- 10 Invasive WITHOUT vascular/lymph invasion or NOS
- 15 Invasive WITH vascular/lymph
- 20 Tunica vaginalis, surface implants

Body of testis
Rete testis
Tunica albuginea

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CS Extension

- 40 Epididymis WITHOUT vascular/ lymphatic or NOS
- 45 Epididymis WITH
- 50 Spermatic cord, ipsi OR vas deferens
- 60 Dartos muscle, OR scrotum, ipsilateral
- 70 Extension to scrotum, contra OR ulceration scrotum
- 75 Penis
- 80 Further contig exten
- 95 No evidence

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CS Lymph Nodes

- Needs # Pos LNs and SSF5
- Bilateral OR contra
- 00 None
- 10 Aortic, retroperitoneal, spermatic vein, regional NOS
- 20 Pericaval
- Bilateral OR contra
- 30 Pelvic NOS, external iliac
- 40 Inguinal
  - Deep, superficial
  - Node of Cloquet or Rosenmüller
- **30 or 40 WITH previous scrotal or inguinal surgery**

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CS Mets

- 11 Pelvic, external iliac LN
- 12 Inguinal LN
- **WITHOUT previous scrotal or inguinal surgery**
- 13 Distant LN NOT 11 or 12
- 20 Mets to lung
- 25 Mets to lung AND LNs
- 40 Mets to OTHER sites (w/ or w/o lung or LNs); carcinomatosis
- 45 Distant mets NOS

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Tumor Markers

www.cancerstaging.org/cstage/tumor markers.pdf

AFP – HIGHEST value post orchi

HCG – HIGHEST value post orchi

LDH – HIGEST value PRE treatment

Pre: differentiate types of tumor

Post: Residual vs Recurrence

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SSF1 - AFP

- 000 Not done
- 020 Within normal limits (S0)
- 040 Range 1 (<1,000 ng/ml)
- 050 Range 2 (1,000 – 10,000 ng/ml)
- 060 Range 3 > 10,000
- 080 Ordered, results?
- 999 Unk, no info

- Not produced by pure seminomas or chorio-carcinomas
- Level should return to normal < 35 days after surgery
- If elevated with "pure" seminoma, patient should be treated as if non-seminoma

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SSF2 - hCG

- 000 Not done
- 020 Within normal limits (S0)
- 040 Range 1 (<5,000 ng/ml)
- 050 Range 2 (5,000 – 50,000 ng/ml)
- 060 Range 3 > 50,000
- 080 Ordered, results?
- 999 Unk, no info

- Not detectable in healthy males
- 90% of level every 21 days should be noted during chemo
  - If not, residual? Drug resistance?

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Histo & Tumor Markers

TYPE	FREQ %	AFP %	HCG %
Germ cell	100	50-75	40-60
Seminoma	42	0	9
Non-sem germ	58	65	56
Embryonal	26	70	60
Teratocarcinoma	26	64	57
Teratoma	5	37	25
Choriocarcinoma	1	0	100
Yolk sac	< 1	75	25

www.aafp.org 35

SSF3 - LDH

- 000 Not done
- 020 Within normal limits (S0)
- 040 Range 1 (1.5 x N)
- 050 Range 2 (1.5 – 10 x N)
- 060 Range 3 > 10 x N
- 080 Ordered, results?
- 999 Unk, no info

- Elevated in 50% patients
- Not particular to tumor type
- May not be done
- EXAMPLE: Common range: 105-333 IU/L
  - 1.5 x 333 = 499.5

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SSF4 – Radical Orchi

- 000 – NOT
- 001 – Performed

- This code used to determine if T should be pathologic.

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SSF5 – Size Mets in LN

- CLINICAL
  - 001 ? 2 cm (N1)
  - 002 > 2 but ? 5cm (N2)
  - 003 > 5 cm N3
- PATHOLOGIC
  - 001 ? 2 cm AND no extranodal extens
  - 002 > 2 but ? 5cm OR extranodal extension
  - 003 > 5 cm N3
  - 998 NOS, size, #, or extranodal not stated

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TREATMENT

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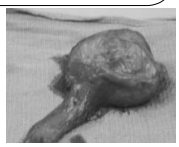
Orchiectomy



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Surgery Codes

- 12 Local destruction NOS (no path)
- 20 Local/partial excision
- 30 Orchi WITHOUT spermatic cord
- 40 Orchi WITH cord or NOS cord
- 80 Orchi NOS

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RLND

Clin Stage	Modified	Nerve-Spare	Full Bilateral
I	Optional	Recom	Not Recom
IIA	Optional	Recom	Not Recom
IIB	Recom	Possible	Possible
IIC	Not Recom	Possible	Recom

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Treatment Considerations

- Implants
  - Silicone (firmer?)
  - Saline (softer, more $)
- Sperm Banking

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Treatment: Seminoma

Stage 1	RT to retroperitoneal and ipsilateral inguinal nodes
Stage 2A	RT to retroperitoneal and inguinal nodes, possibly with mediastinal and supraclavicular nodes
Stage 2B, 2C	Platinum-based combination chemotherapy or RT, as in IIA
Stage 3	Platinum-based combination chemotherapy, possibly with resection of residual mass

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Treatment: NON-Seminoma

Stage 1	RPLND or surveillance
Stage 2A	RPLND, possibly with platinum-based combination chemotherapy
Stage 2B, 2C	Platinum-based combination chemotherapy, followed by resection
Stage 3	Platinum-based combination chemotherapy, possibly with resection of residual mass

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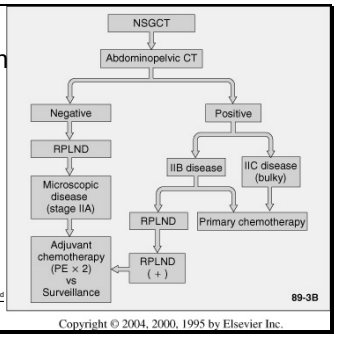
Tx Decision Tree



Clinical Oncology, 3rd Edition, 2004, Elsevier

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… until the fat tenor sings …

- Doctor watches:
  - Markers
  - CT scans
- to decide whether
  - Chemo
  - RT for LN
  - Observe only
- Takes approx. 3 mos

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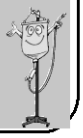
Chemo

- BEP (Bleomycin, Etoposide, Cisplatin)
- VIP (Etoposide, Ifosfamide, Cisplatin)
- VeIP (Vinblastin, Ifosfamide, Cisplatin)
- Especially Stage 2, Stage 3



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Survival

Stage	Seminoma	Non-Seminoma	Overall
Stage I	99%	98%	98%
Stage II	95%	95%	95%
Stage III	90%	76%	78%
All Stages			96%

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Follow-Up

- Most recurrences within first 3 years
- Q 2-3 mos year 1
  - Then q 3-6 mos year 2
  - Then q 6 mos til year 5
- May include PE, lab markers, CXR, CT abd/pel

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Slogans/Campaigns

- Get a Grip!
- Eyes down, check your balls
- Bollocks to cancer
- Protect your nuts (pants)

nuts
ProTesting Male Cancer

- Live Strong

TCRC

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