Management of Testicular Seminomas

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Surgery is always first

- Radical orchiectomy
- The tumour-bearing testis is resected with the spermatic cord at the level of the internal inguinal ring)
- Any scrotal violation for biopsy or open surgery should be avoided
- Tumour marker analysis should be carried out
  - Before
  - After surgery until normalisation
  - Progression
  - Plateau development
- Consider sperm banking (atrophic contralateral testis, planed for RT chemo, history of infertility)

Management of opposite Testis

- 2%–5% contralateral TGCT chances (metachronously or synchronously)
- 3% and 5% of testicular cancer patients have TIN in the contralateral testis
- Highest risk (∼30%) in men with testicular atrophy (volume <12 ml) and age <40 years, and in patients with EGGCT

Management of opposite Testis

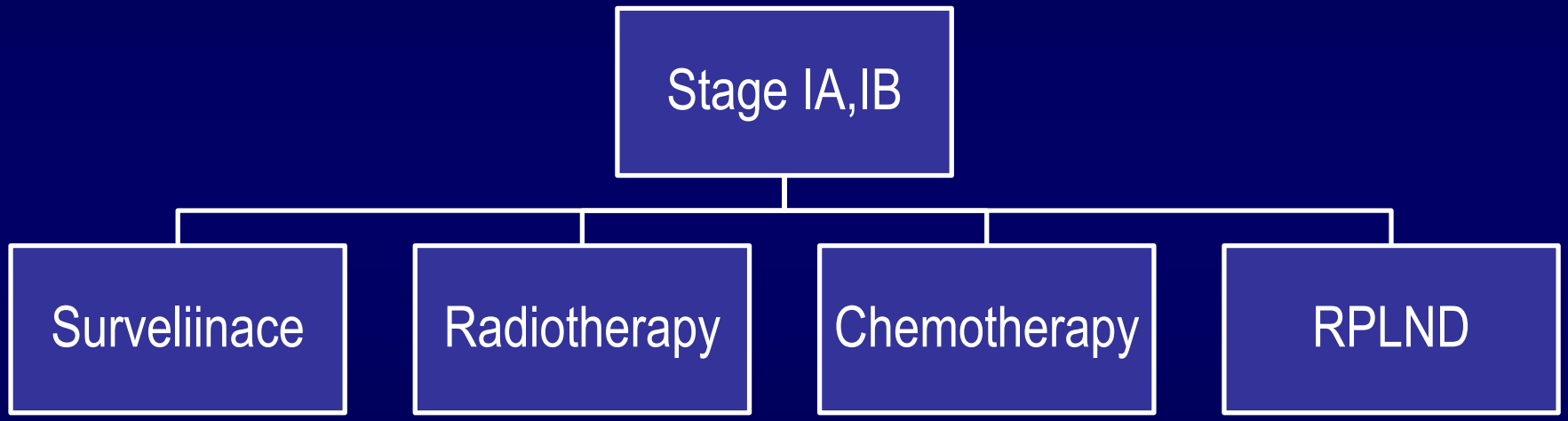
- Routine biopsy of the contralateral testis is not indicated
- If a biopsy is carried out and TIN is diagnosed, however, the condition may be managed by
  - Surveillance
  - 20 Gy /10 # (with potential damage to the contralateral, nonaffected testis by scattered radiation)
  - Orchiectomy depending on fertility issues.
- In patients with metastatic disease treated with three or more cycles of cisplatin-based chemotherapy, TIN in the contralateral non-resected testicle may be eradicated or progression may be slowed down, although the risk of developing an invasive tumour is still substantial

Risk stratification after orchidectomy IGCCCG

Risk Status	Seminoma
Good Risk	Any primary site and No nonpulmonary visceral metastases and Normal AFP Any hCG Any LDH
Intermediate Risk	Any primary site and Nonpulmonary visceral metastases and Normal AFP Any hCG Any LDH
Poor Risk	No patients classified as poor prognosis

International Germ Cell Cancer Collaborative Group (IGCCCG). JCO 1997

Stage IA , IB


Stage IA,IB
Surveliinace
Radiotherapy
Chemotherapy
RPLND

Surveillance

Series	No. Pts	Median FU (mo)	Relapse: No. Pts (%)	CSS (%)
Daugaard	394	60	69 (17.5)	100.0
Germa Lluch	233	33	38 (16)	100.0
Horwich	103	62	17 (16.5)	100.0
Oliver	67	61	16 (24)	97.0
Von der Maase	261	48	49 (18.8)	98.9
Tyldesley	93	33	16 (17.2)	97.8
Leung	484	79	72 (15)	99.8

- Relapse rates 14 - 19%
- The predominant site of relapse - paraaortic lymph nodes (93% in the Danish Testicular Cancer Study Group study and 84% in the PMH series)
- The median time to relapse ranged from 12 to 18 months

RT

Author	Study Years	No. Pts	Relapse (%)	CSS (%)
Bayens	1975–1985	132	4.5	99.0
Coleman	1980–1995	144	4.2	100.0
Fossa	1989–1993	242	3.7	100.0
Hallemeier	1972–2009	199	2	99.0
Hultenschmidt	1978–1992	188	1.0	100.0
Santoni	1970–1999	487	4.3	99.4
Warde	1981–1989	282	5.0	100.0

- Relapse rates 0.5 - 5%
- The most common sites of relapse following adjuvant RT are the mediastinum, lungs, and left supraclavicular fossa
- Frequently occurs within the first 2 to 3 years

Chemotherapy

Author	Study Years	ARM		Relapse (%)	CSS (%)
MRC TE19/EORTC 30982	1996–2001	1 cycle Carboplatin	573	5.3	100
		RT	905	4	100
Klaus-Peter Dieckmann –	2009-2015	1 cycle Carboplatin	66	1.5	100
		2 cycle Carboplatin	362	5	100

- Relapse rates 1.5 - 5%
- Relapsed more frequently in the PA nodes

R T D Oliver et al. JCO 2011
Klaus-Peter Dieckmann et al. J Cancer Res Clin Oncol (2016) 142:1599–1607

Chemo 1 cycle vs 2 cycle

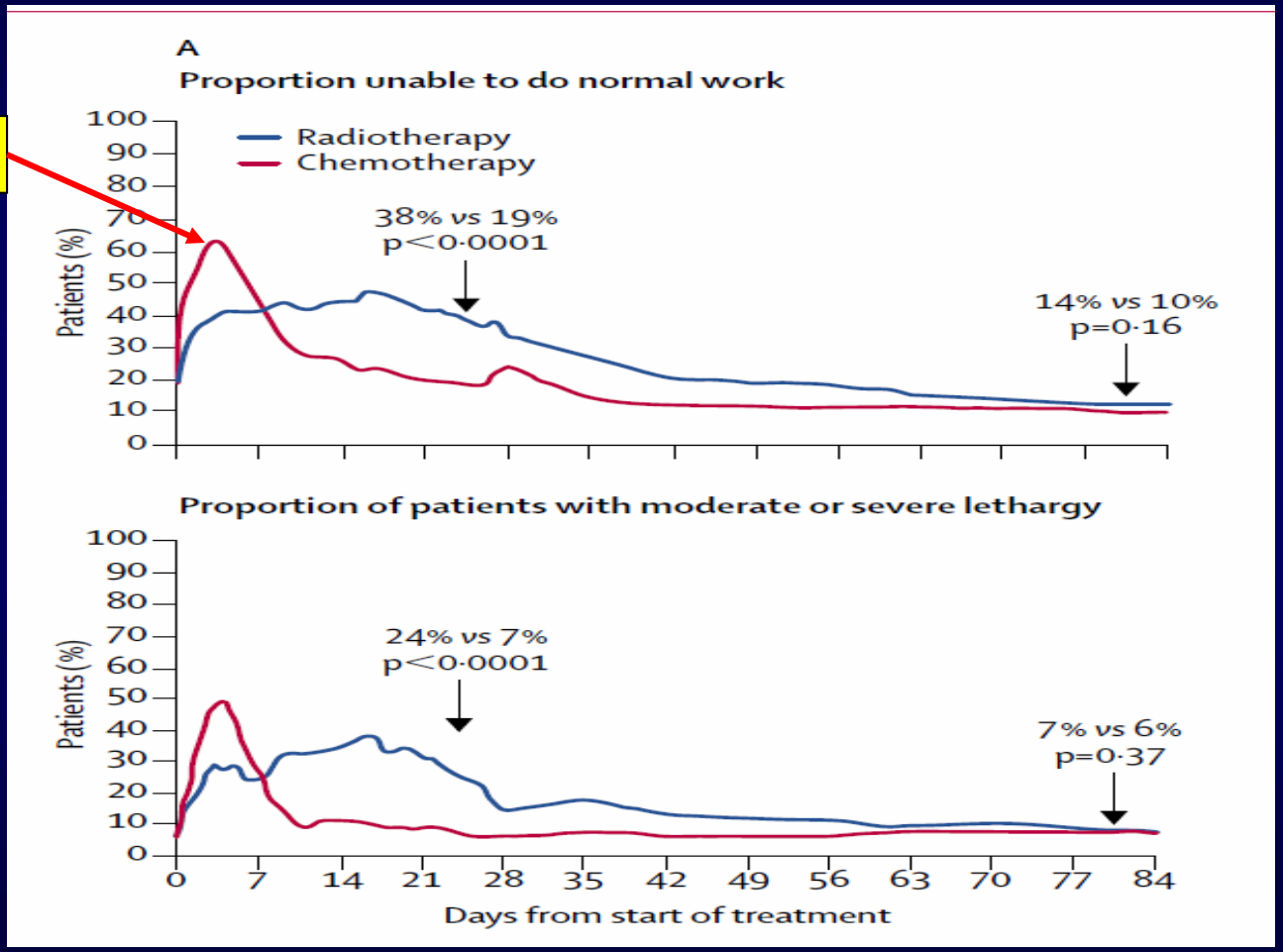
Author	Intervention	No. Pts	Relapse (%)	CSS (%)
Klaus-Peter Dieckmann – 2009-2015	Survelliance	573	8.2	100
	Radiotherapy 20Gy	41	2.4	100
	1 cycle Carboplatin	362	5	100
	2 cycle Carboplatin	66	1.5	100

p = 0.0573

Klaus-Peter Dieckmann et al. J Cancer Res Clin Oncol (2016) 142:1599–1607

RT vs Chemo

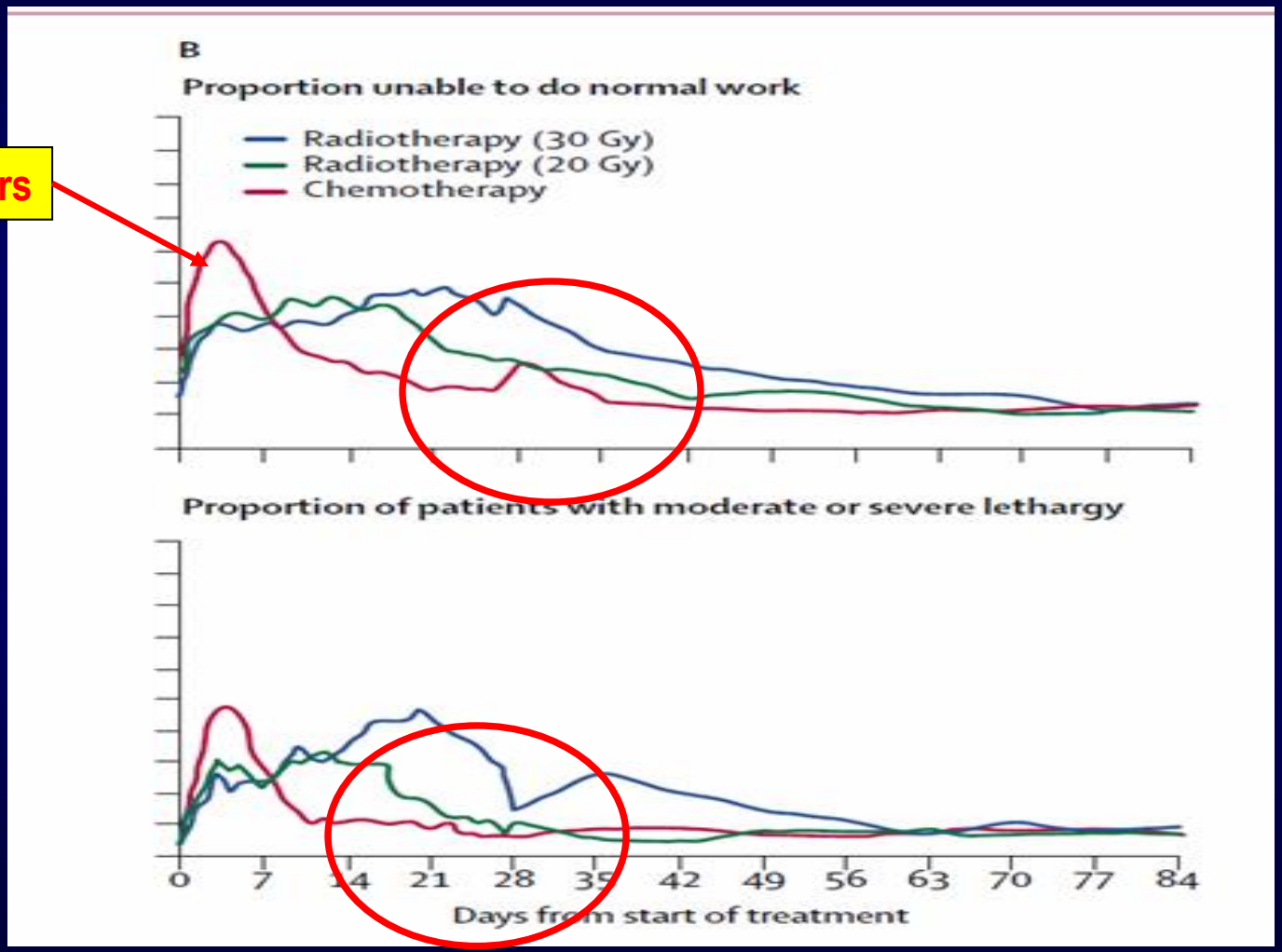
Initial 72 hrs



R T D Oliver et al. Lancet 2005

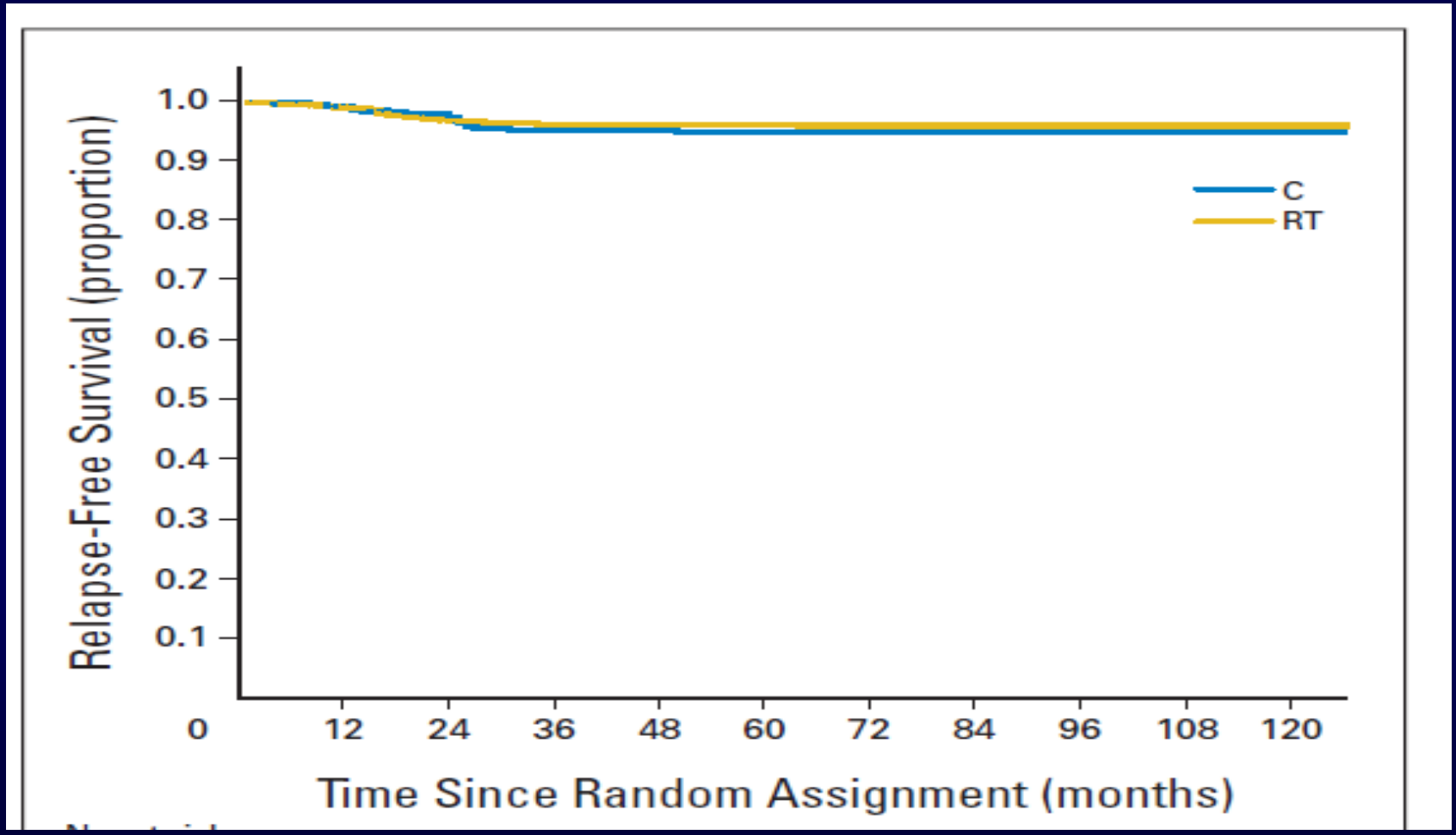
RT vs Chemo

Initial 72 hrs



R T D Oliver et al. Lancet 2005

RT vs Chemo



R T D Oliver et al. JCO 2011

RT vs Chemo

Table 1. Summary of Events

Event	Treatment Arm: Carboplatin (n = 573) No.	%	Treatment Arm: Radiotherapy (n = 904) No.	%
Total relapse	29	5.1	37	4.1
New primary cancers	7	1.2	25	2.8
GCT	2		15	
Other	5		10	
Total deaths	6	1.0	10	1.1
Death as a result of seminoma	0		1	
Death as a result of other cause	6		9	

Abbreviation: GCT, germ cell tumor.

R T D Oliver et al. JCO 2011

Timor Size and Rete Testis Invasion

Author	Intervention	No. Pts	Relapse (%)	5 yr CSS (%)
Padraig Warde et al median follow up 7 yrs	**Survelliance**	**638 From 4 institute**	**82.3**	**99.3**

Table 2. Candidate Prognostic Factors: Univariate Analysis

Variable	No.	5-Year Relapse-Free Rate (% ± SE)	P (likelihood χ^2)
Tumor size			
≤ 4 cm	317	86.6 ± 2.0	.003
> 4 cm	281	75.9 ± 2.6	
Age			
≤ 36 years	344	83.2 ± 2.1	.68
> 36 years	292	81.2 ± 2.3	
Small vessel invasion			
Absent	384	85.6 ± 1.8	.038
Present	191	77.3 ± 3.1	
Histologic features			
Classical	548	83.2 ± 1.6	.056
Anaplastic	50	71.4 ± 6.5	
Rete testis invasion			
Absent	299	86.3 ± 2.0	.003
Present	176	76.7 ± 3.3	

Padraig Warde et al.JCO 2020

Surveillance vs Chemo
(risk factor tumor size and rete testis invasion)

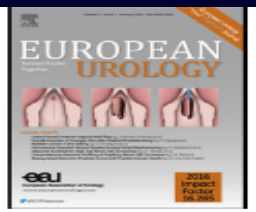
Author	Intervention	No. Pts	Relapse Rate (%)	Relapse (%) Without risk factor	Relapse (%) With one or two risk factor	5 yr CSS (%)
T. Tandstad (SEWNOTECA) 2007-2010	Surveillance	469	7.5	4	15.5 (p<0.001)	100
	One cycle carboplatin	422	6.2	2.2	9.3 (p=0.001)	100

Factor	Univariable analysis				Multivariable analysis[b]		
	N of patients	HR	95% CI		*N* of patients	HR	95% CI
Tumor size							
≤4 cm	696 (63%)	1.0			635	1.0	
>4 cm	414 (37%)	3.1	1.8–5.1	$P < 0.001$	362	2.7	1.6–4.6
Missing	2						
Invasion rete testis							
Absent	726 (65%)	1.0			726	1.0	
Present	273 (25%)	2.2	1.4–3.7	$P = 0.001$	271	1.9	1.2–3.2
Missing	113 (10%)						

T. Tandstad et al, Annals of Oncology 27: 1299–1304, 2016

available at www.sciencedirect.com
journal homepage: www.europeanurology.com

European Association of Urology

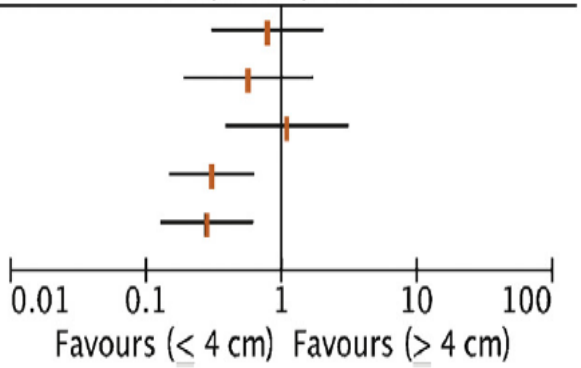


Review – Testis Cancer

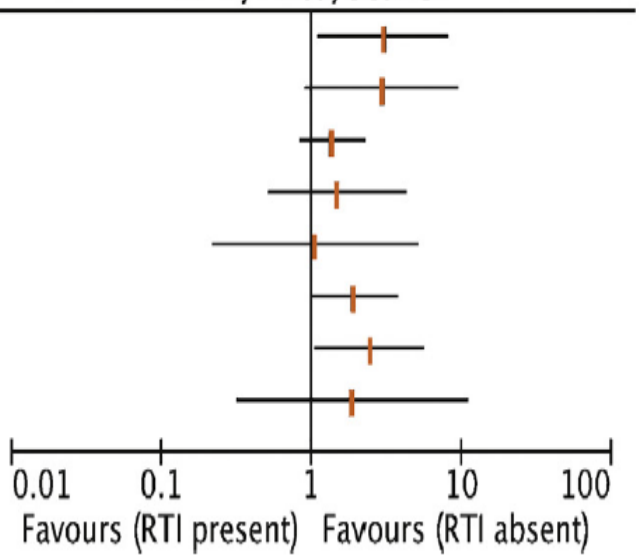
Testicular Tumour Size and Rete Testis Invasion as Prognostic Factors for the Risk of Relapse of Clinical Stage I Seminoma Testis Patients Under Surveillance: a Systematic Review by the Testicular Cancer Guidelines Panel

Joost L. Boormans [a,†,*], *Javier Mayor de Castro* [b,†], *Lorenzo Marconi* [c], *Yuhong Yuan* [d],

Study or subgroup	Experimental Events	Experimental Total	Control Events	Control Total	Odds ratio M-H, Fixed, 95% CI
Aparicio (year 2003)	9	66	11	66	0.79 (0.30, 2.05)
Aparicio (year 2011)	9	109	6	44	0.57 (0.19, 1.71)
Dieckmann (year 2016)	16	187	5	64	1.10 (0.39, 3.15)
Von der Maase (year 1993)	11	113	38	146	0.31 (0.15, 0.63)
Tandstad (year 2016)	17	322	12	73	0.28 (0.13, 0.62)



Study or subgroup	RTI present Events	Total	RTI absent Events	Total	Odds ratio M-H, Fixed, 95% CI
Aparicio (year 2003)	8	27	14	114	3.01 (1.11, 8.16)
Aparicio (year 2011)	5	15	20	138	2.95 (0.91, 9.54)
Chung (year 2014)	31	166	45	315	1.38 (0.83, 2.28)
Dieckmann (year 2016)	5	45	16	207	1.49 (0.52, 4.31)
Howard (year 2014)	3	8	13	36	1.06 (0.22, 5.18)
Von der Maase (year 1993)	23	98	20	146	1.93 (0.99, 3.75)
Tandstad (year 2016)	9	66	20	329	2.44 (1.06, 5.63)
Yoshida (year 2009)	2	7	10	57	1.88 (0.32, 11.11)



Patient summary: Primary testicular tumour size and rete testis invasion are considered to be important prognostic factors for the risk of relapse in patients with clinical stage I seminoma testis. We systematically reviewed all the literature on the prognostic value of these two postulated risk factors. The outcome is that the prognostic power of these factors in the published literature is too low to advocate their routine use in clinical practice and to drive the choice on adjuvant treatment in clinical stage I seminoma testis patients.

Spermatic cord issue

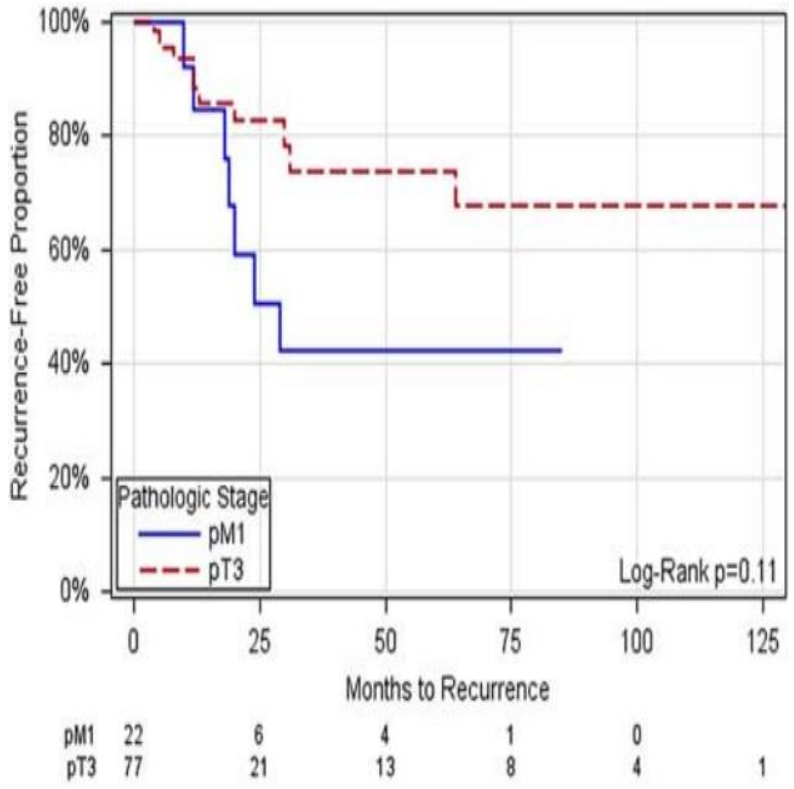


FIGURE 2. Kaplan-Meier curve of time to recurrence by pathologic stage.

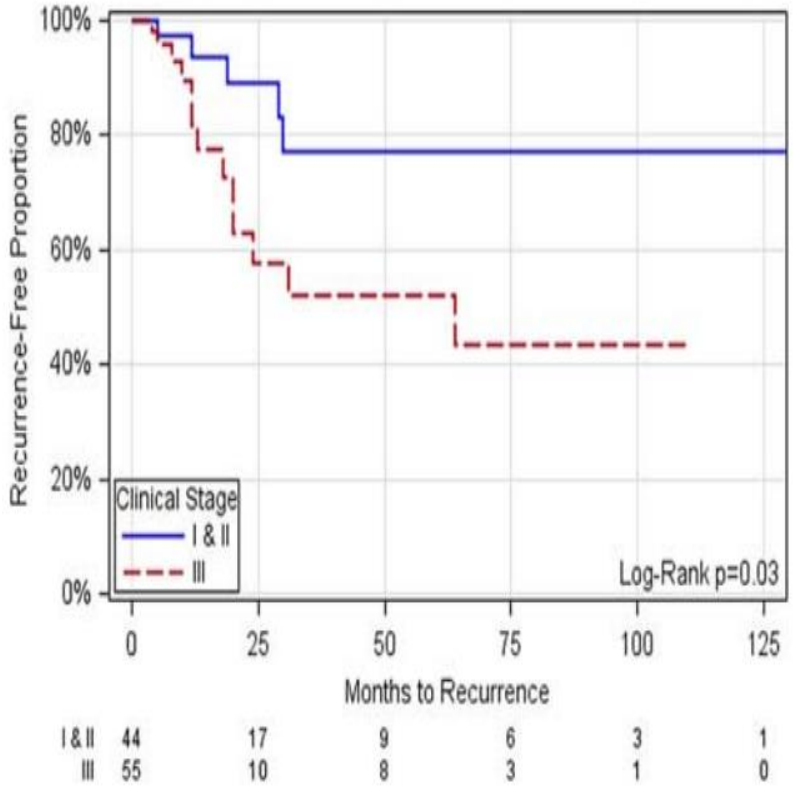


FIGURE 4. Kaplan-Meier curve of time to recurrence by combined CSI and CSII vs. CSIII.

Sanfrancesco et al. Am J Surg Pathol Volume 42, Number 3, March 2018

Spermatic cord issue

- New AJCC - discontinuous spermatic cord involvement as pM1
- NCCN - To be considered as pT3 (high Risk – treat accordingly)
- If surveillance – then recurrence mostly in pelvis so include imaging

TABLE 4. Patients With Known Recurrence of GCT

	Total	Recurrence (n [%])	*P*
Pathologic stage			0.12
pT3	77	12 (15.6)	
pM1	22	7 (31.8)	
CS			0.48
I	7	1 (14.3)	
II	37	5 (13.5)	
III	55	13 (23.6)	

Sanfrancesco et al. Am J Surg Pathol Volume 42, Number 3, March 2018

Surveillance vs RT vs Chemo

	Radiation (n = 329)	Chemotherapy (n = 79)	Observation (n = 94)	*P*
Median age (y)	36	32	38	0.066
T stage (%)	T1: 76.6 T2: 20.4 T3: 2.7 T4: 0.3	T1: 63.3 T2: 31.6 T3: 3.8 T4: 1.3	T1: 76.6 T2: 20.2 T3: 1.1 T4: 1.1 Unknown: 1.1	0.222
Median tumor size (cm)	4.0	4.3	3.8	0.455
LVI present (%)	24.0	38.0	20.2	0.016
Rete testis invasion present (%)	17.6	20.3	17.0	0.834
Epididymis invasion present (%)	4.6	6.3	3.2	0.616
Invasion through tunica albuginea present (%)	4.3	6.3	3.2	0.593
Preoperative hCG elevated (%)	14.3	31.6	20.2	0.001
Preoperative LDH elevated (%)	22.8	29.1	25.5	0.437

- N – 502
- 1990 -2010

Margaret S. Soper et al, Am J Clin Oncol 2014;37:356–359

Surveillance vs RT vs Chemo

TABLE 3. Outcome by Management Strategy

	Radiation	Chemotherapy	Observation
Relapse-free survival (y)			
2	97.6% (95.8, 99.4)	98.3% (94.9, 100)	89.2% (81.4, 95.4)
5	97.2% (95.2, 99.1)	—	89.2% (81.4, 95.4)
Overall survival (y)			
2	99.6% (97.7, 100)	100% (100, 100)	98.8% (96.2, 100)
5	98.0% (95.2, 99.3)	—	98.8% (96.2, 100)
Cause-specific survival (y)			
2	99.6% (98.2, 100)	100% (100, 100)	100% (100, 100)
5	99.3% (98.2, 100)	—	100% (100, 100)

RFS lower in observation group

Overall Survival is similar observation group

Margaret S. Soper et al, Am J Clin Oncol 2014;37:356–359

RPLND

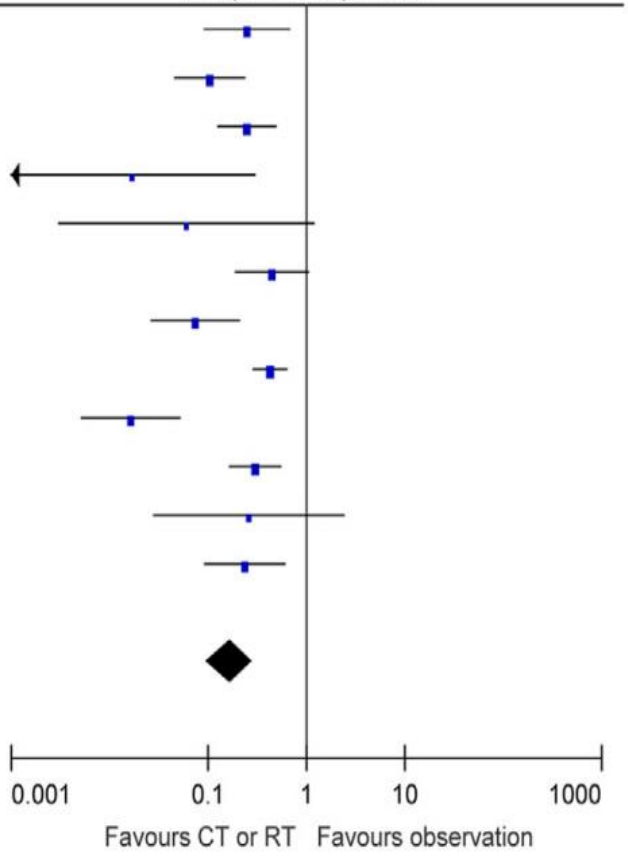
- Only for patients refuse surveillance / RT or Chemo (Inflammatory bowel disease)
- Generally not done nowadays

5 yr RFS
13 trials N=12075

Study or Subgroup	Experimental Events	Experimental Total	Control Events	Control Total	Weight	Odds Ratio M-H, Random, 95% CI	Year
Coleman 1998	6	144	14	94	9.1%	0.25 [0.09, 0.67]	1998
Shahldi 2002	9	276	23	94	10.1%	0.10 [0.05, 0.23]	2002
Aparicio 2014	11	348	46	396	10.9%	0.25 [0.13, 0.49]	2005
Alomari 2006	0	107	9	43	2.8%	0.02 [0.00, 0.30]	2006
Zhang 2009	0	30	4	20	2.6%	0.06 [0.00, 1.19]	2009
Kamba 2010	9	239	15	186	9.9%	0.45 [0.19, 1.04]	2010
Kollmannsberger 2011	4	232	60	313	8.9%	0.07 [0.03, 0.21]	2011
Tandstad 2011	45	680	73	512	12.3%	0.43 [0.29, 0.63]	2011
Pilichowska 2012	10	272	14	20	8.3%	0.02 [0.01, 0.05]	2012
Leung 2013	14	280	72	484	11.4%	0.30 [0.17, 0.54]	2013
Kobayashi 2013	1	56	4	61	4.1%	0.26 [0.03, 2.39]	2013
Soper 2014	9	329	10	94	9.5%	0.24 [0.09, 0.60]	2014
Total (95% CI)		**2993**		**2317**	**100.0%**	**0.17 [0.10, 0.29]**	
Total events	118		344				

Heterogeneity: $Tau^2 = 0.58$; $Chi^2 = 45.27$, df = 11 ($P < 0.00001$); $I^2 = 76\%$

Test for overall effect: $Z = 6.46$ ($P < 0.00001$)



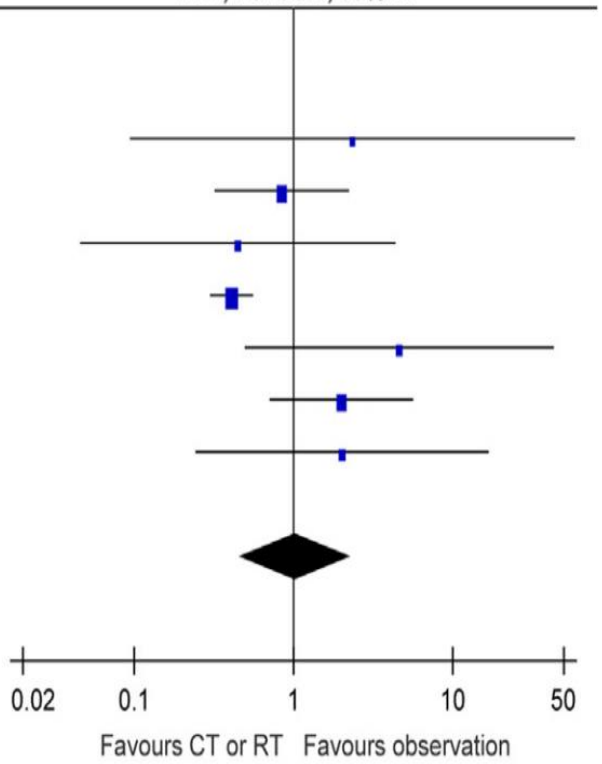
Meta Analysis Fausto Petrelli, et al. Clinical Genitourinary Cancer 2015

5 ys OS
13 trials N=12075

Study or Subgroup	Experimental Events	Experimental Total	Control Events	Control Total	Weight	Odds Ratio M-H, Random, 95% CI	Year
Aparicio 2014	0	348	0	396		Not estimable	2005
Zhang 2009	0	30	0	20		Not estimable	2009
Kamba 2010	1	239	0	186	5.1%	2.35 [0.10, 57.92]	2010
Tandstad 2011	9	680	8	512	20.4%	0.85 [0.32, 2.21]	2011
Kollmannsberger 2011	1	232	3	313	8.6%	0.45 [0.05, 4.33]	2011
Jones 2013	111	5265	75	1499	27.9%	0.41 [0.30, 0.55]	2013
Kobayashi 2013	4	56	1	61	8.9%	4.62 [0.50, 42.60]	2013
Leung 2013	8	280	7	484	19.6%	2.00 [0.72, 5.59]	2013
Soper 2014	7	329	1	94	9.6%	2.02 [0.25, 16.64]	2014
Total (95% CI)		**7459**		**3565**	**100.0%**	**1.03 [0.46, 2.28]**	
Total events	141		95				

Heterogeneity: $Tau^2 = 0.57$; $Chi^2 = 16.50$, df = 6 (P = 0.01); $I^2 = 64\%$

Test for overall effect: Z = 0.07 (P = 0.94)



Meta Analysis Fausto Petrelli, et al. Clinical Genitourinary Cancer 2015

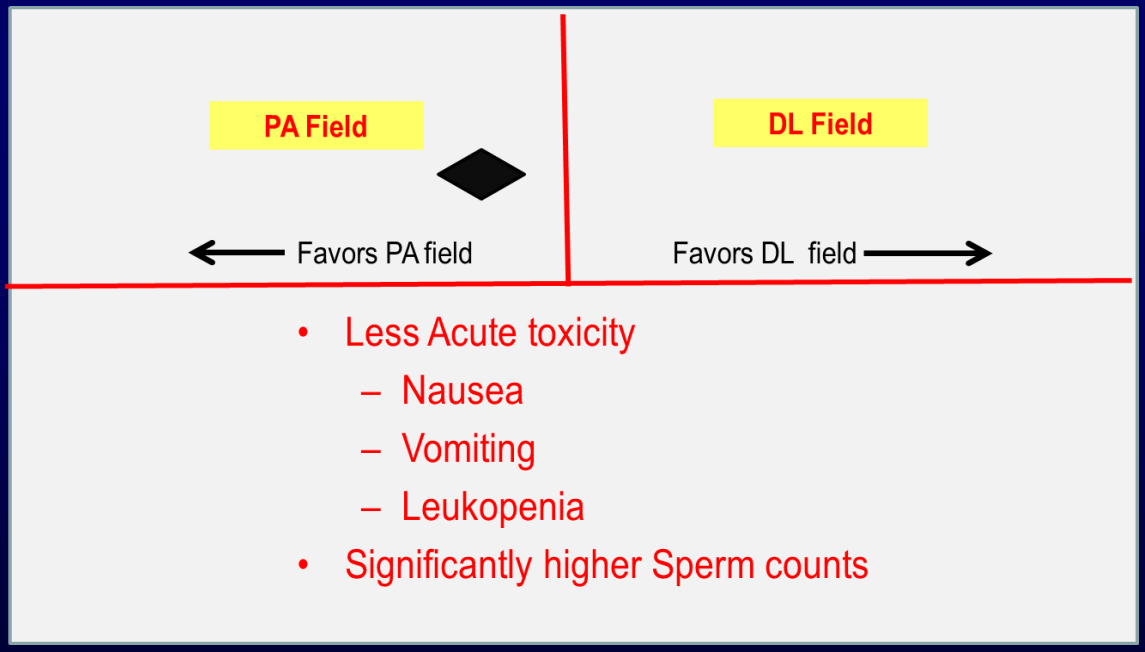
Para aortic (PA – Strip)
or
Dog Leg/Hockey Stick (DL-field)

Author	No. Pts	Relapse Abdomen	Relapse Pelvis
H von der Maase 1985-1988	261	83	2
Torgrim Tandstad 2000-2006	1192	94	

H von der Maase et al. Eur J Cancer 1993
Torgrim Tandstad et al. JCO 2011

Para aortic (PA – Strip) or Dog Leg (DL-field) MRC TE 10

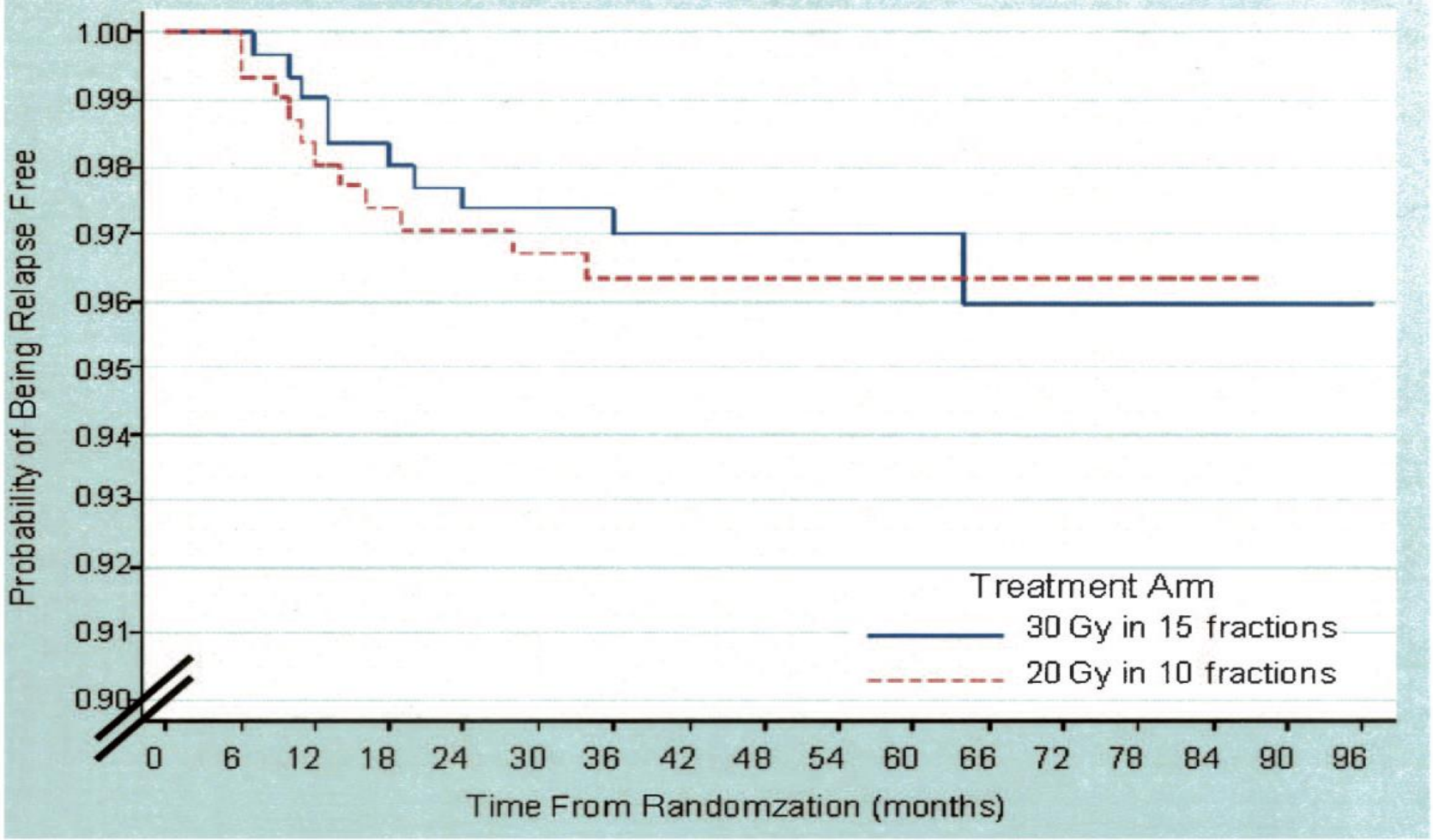
Author	Intervention	No. Pts	3 yr Relapse (%)	3 yr CSS (%)
Fossa et al 1989-1993	PA field	236	4	99.3
	Dl field	242	3.4	100



- Less Acute toxicity
  - Nausea
  - Vomiting
  - Leukopenia
- Significantly higher Sperm counts

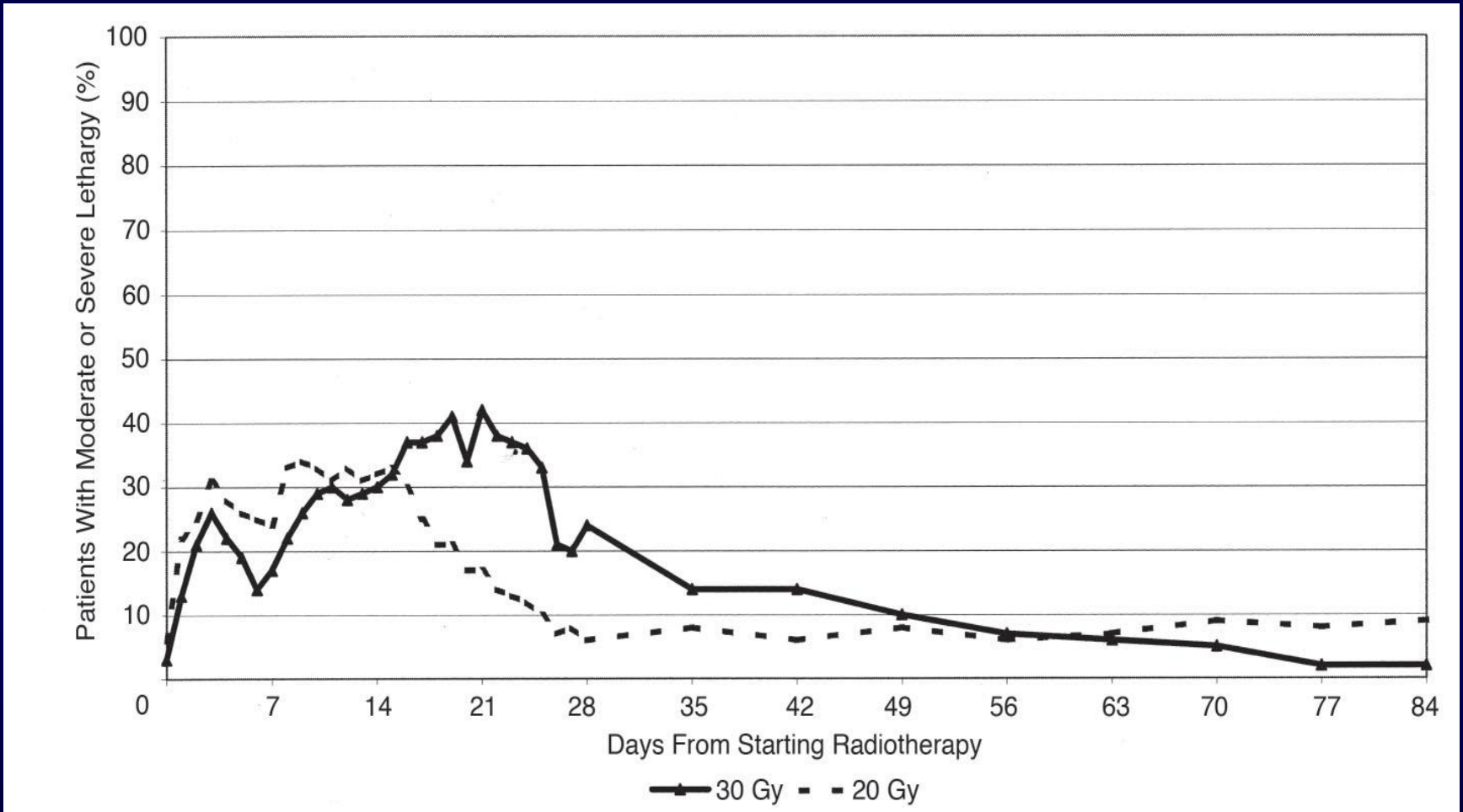
Fossa et al. JCO 1999

30 Gy vs 20 Gy
MRC TE 18



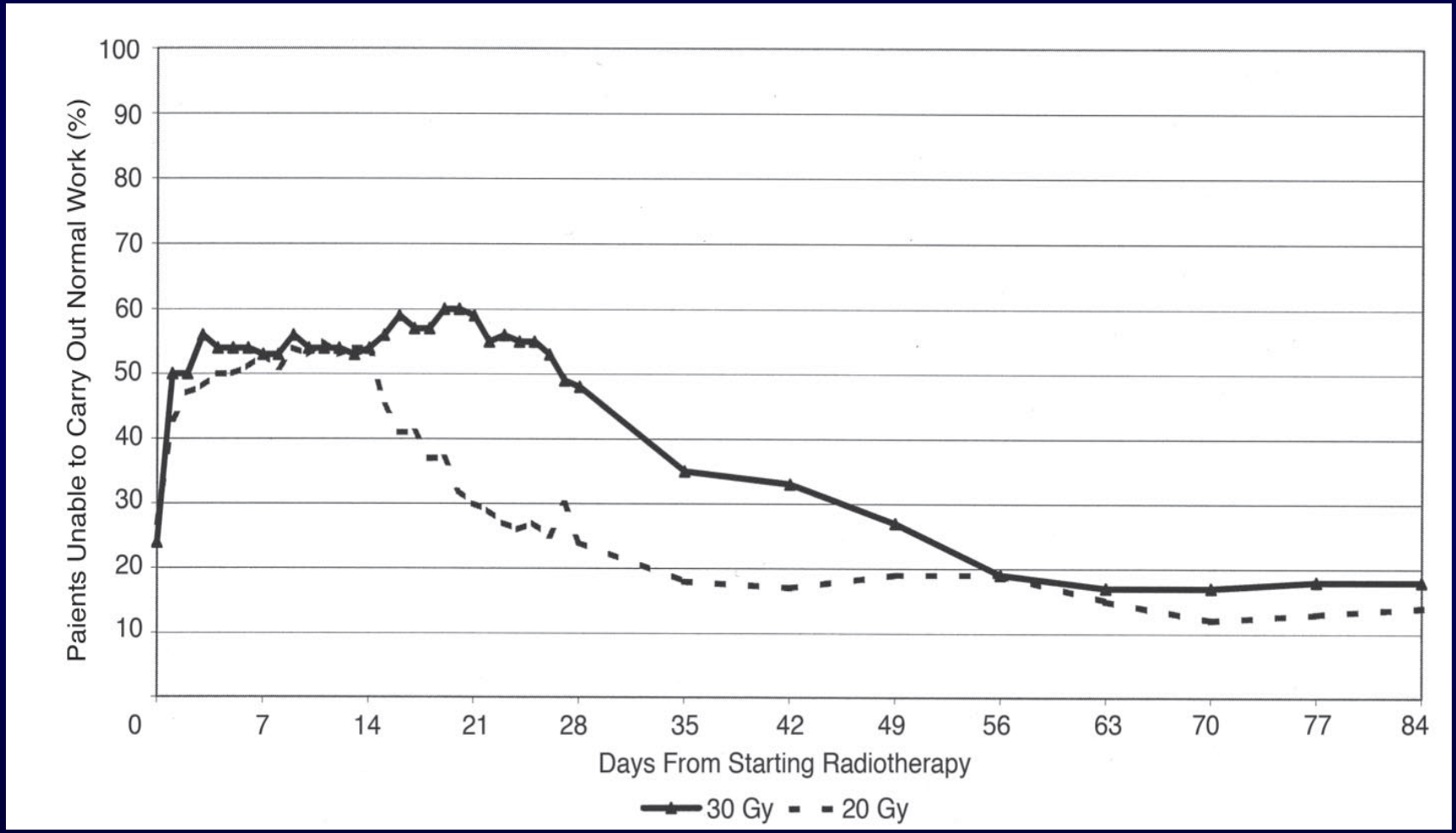
William G. Jones, et al. JCO 2005

Patient diary - Lethargy



William G. Jones, et al. JCO 2005

Patient diary – return to normalcy



William G. Jones, et al. JCO 2005

Treatment trends US NCDB data 1998-2012 N=33094

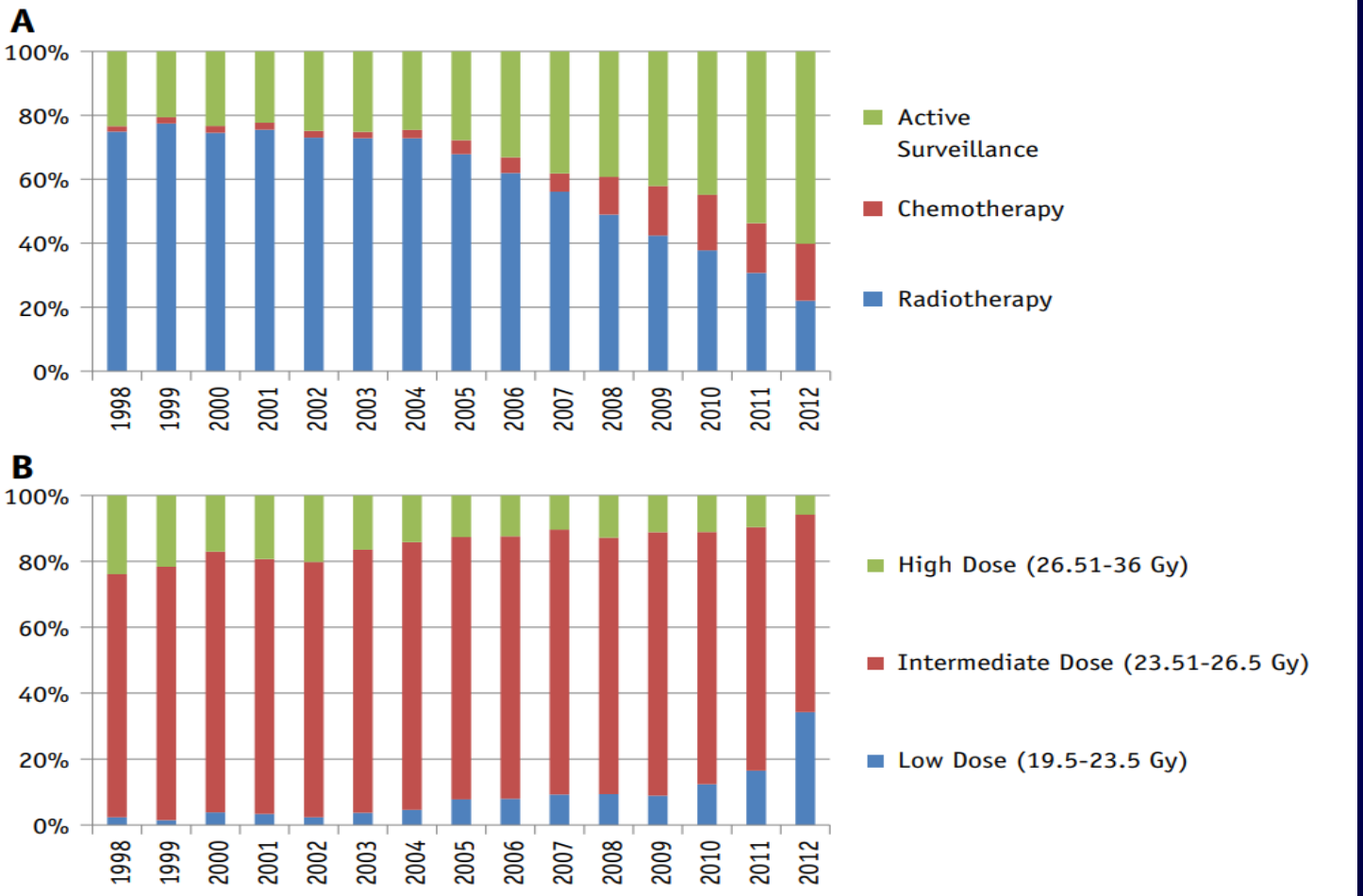


Fig. 1. Trends in treatment selection over time. (A) Treatment modality, and (B) radiation therapy

SM Glaser et al. IJROBP 2016

Stage IS

- Persistent elevation of tumour markers after orchiectomy
- Increased risk of disease outside retroperitoneum
- Systemic therapy is encouraged
- Repeat marker levels / CT scans

Stage 1

- Stage I disease~ 80% of presentation
- Survival of ~99%, independent of the chosen strategy
- Minimising toxicity is the priority
- Surveillance is considered the preferred strategy
- The predictive value of 'risk factors', such as rete testis infiltration and tumour size ≥4 cm, is controversial
  - sometimes used to apply one course of carboplatin (AUC 7) or radiotherapy (20 Gy/10 # to para-aortic target volume) as adjuvant treatment
- Compared with radiotherapy, one course of carboplatin results in similar relapse rates, but less protracted treatment-related lethargy, sick leave and probably treatment-induced malignancies
- Relapse usually located in the retroperitoneal or iliac lymph nodes.
- Rarely, late occurring relapses may contain non-seminoma components

Stage I seminoma – management

- Surveillance/RT/Chemotherapy all are equal options
- Relapse are also ~ 100% curable
- Risk factor Tumour Size >4m or Rete Testis Invasion still not valid points to offer RT or Chemotherapy
- Although Observation has higher relapse rates they are salvaged with equal Overall Survival rates
- RT to PA field only with 20Gy/10# use of LA with conformal technique is advocated
- Carboplatin AUC 7 x 1 Cycle

Stage IIA & IIB

- RT or Chemo (BEP x 3 or EP x 4)
- **No randomised data**

Author	Stage (N)	Intervention		5 yr OS (%)		
		RT	Chemotherapy	RT	Chemotherapy	P value
Glaser et al 1998- 2012 NCDB data	IIA (960)	750	210	99	93	0.027
	IIB (812)	442	370	95.2	92.4	NS

SM Glaser et al, Clin Oncol 2016

Stage IIA & IIB

Author	Stage (N)	Intervention		5 yr OS (%)		
		RT	Chemotherapy	RT	Chemotherapy	P value
Paly et al 1998- 2012 NCDB data	IIA	1159	726	99.4	91.2	< 0.01
	IIB			96.1	92.8	P = 0.08

JJ paly et al, Pract Tadiat Oncol 2016

BEP x 3 vs BEP x 4

Author	Randomisation	2yr PFS(%)	Toxicity
R de Wit et al. EORTC Good Prognosis GCT 1995-1998 Median follow up 2.1 yr	BEP – 3 cycle	90.4	Frequencies of hematologic and nonhematologic toxicities were essentially similar.
	BEP – 4 cycle	89.4 P = 0.0075	

R de Wit et al. JCO 2001

BEP x 3 vs EP x 4

Author	Randomisation	CR rates (%)	Relapse (%)	OS (%)	Acute toxicity
R de Wit et al. EORTC/GTCCG Good Prognosis NSGCT Follow up median 7.3yrs	BEP - 200	95	4	Similar in both groups P = .262	More pulmonary and neurotoxicity , more Raynaud's phenomenon
	EP – 195 (Lower dose of etoposide 360mg/m2)	87 P = 0.0075	4 NS		
S Culine et al. GETUG T93BP) Good Prognosis NSGCT Follow up median 4.4 yrs	BEP – 131	82	7	97	
	EP– 126	75 NS	14 P=0.052	93 P=0.082	

R de Wit et al. JCO 1997
S Culine et al. Ann Oncol 2007

EP x 4

Author	Randomisation	CR rates (%)	Relapse (%)	OS (%)
G. Varuni Kondagunta,et al Good Prognosis NSGCT and seminoma Median follow up 7.7 yrs	Seminoma - 80 non seminoma - 209	98	6	94

G. Varuni Kondagunta,et al. JCO 2005

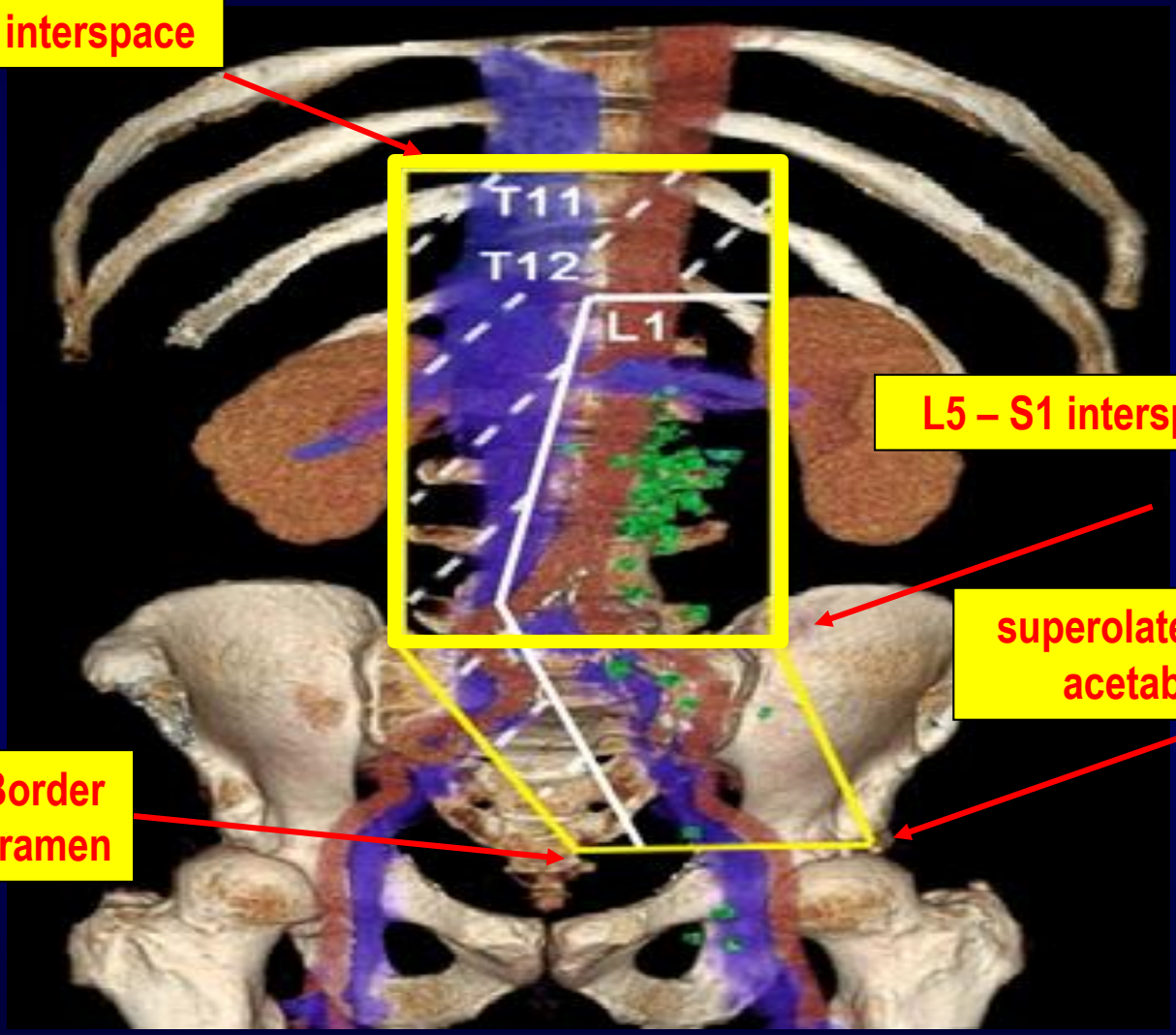
Radiotherapy

- Classical Dog leg
  - History of inguinal herniorrhaphy or orchiopexy prior to inguinal orchiectomy
  - Alteration in lymphatic drainage
  - Include ipsilateral iliac and inguinal nodes
  - Include previous surgical scar

- Modified Dog Leg field – described by caseen

Classen J et al. JCO 2003

PA & Modified Dog Leg



Classen J et al. JCO 2003
Paly et el. Radiotherapy & oncology 20113

RT doses

Stage	Phase 1 Modified Dog Leg Or Dog Leg	Phase II boost to gross node (2 cm margin)	Dose per fraction
IIA	20 Gy	10 Gy	1.8 – 2 Gy/#
IIB	20 Gy	16 Gy	1.8 – 2 Gy/#

Classen J et al. JCO 2003
R B Wilder et al. IJROBP 2011

RT fields

Figure 1:
Stage I RT Field

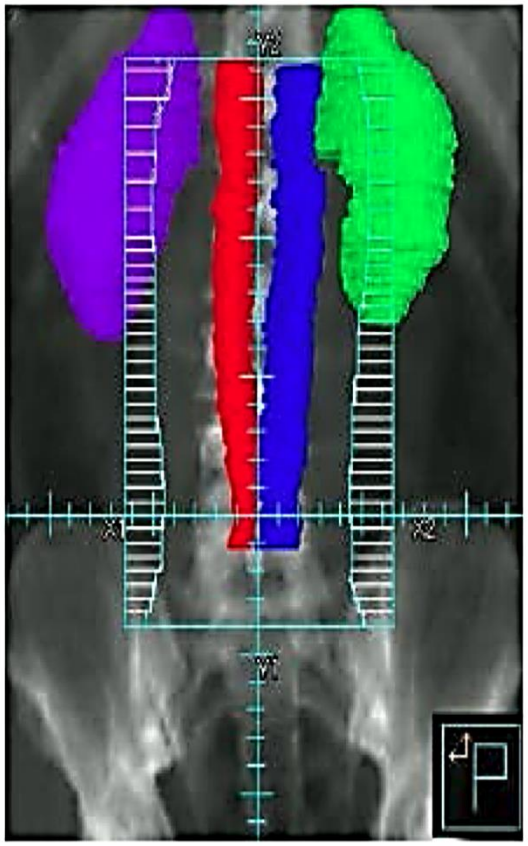


Figure 2:
Stage II RT Large Field

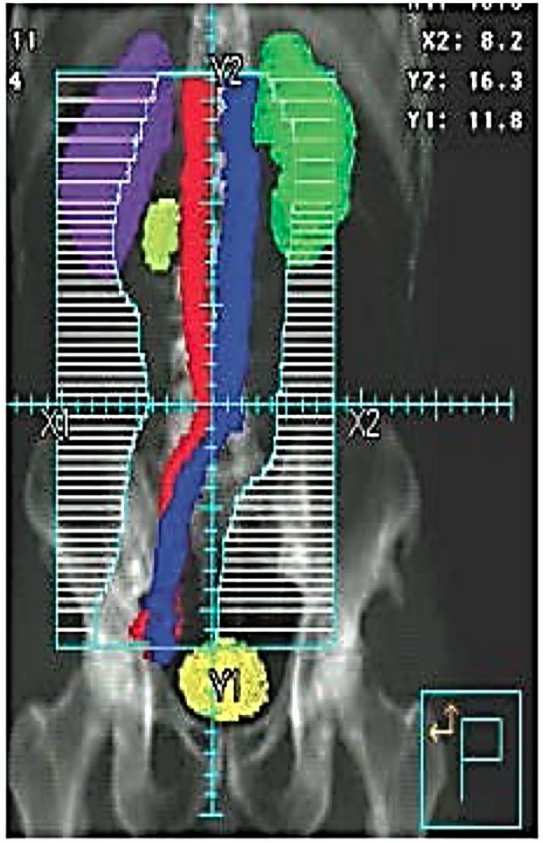
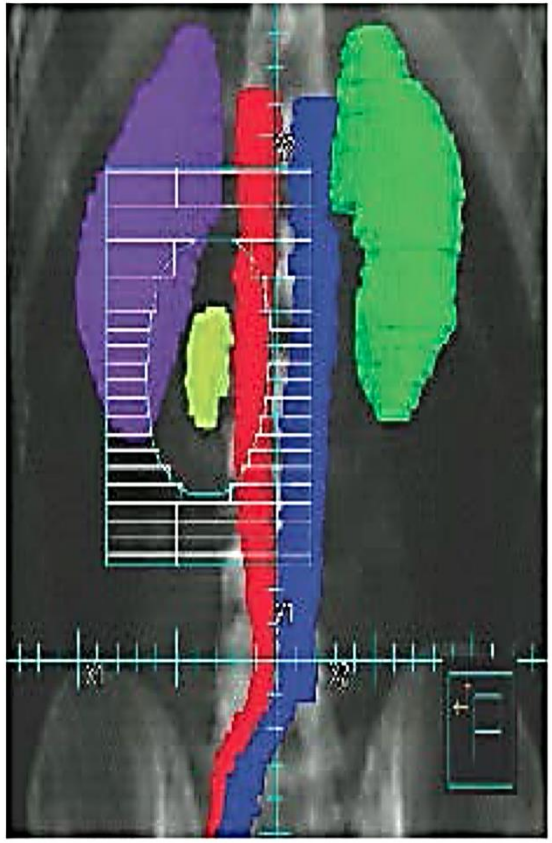


Figure 3:
Stage II Cone-down Field



R B Wilder et al. IJROBP 2011

Stage IIA & IIB

- IIA
  - RT (total dose 30Gy) with modified Dog Leg field
  - Chemo - BEP x 3 Cycle or EP x 4 Cycles
- IIB
  - Chemo is favored BEP x 3 Cycle or EP x 4 Cycles
  - RT for less than 3 cm node RT (total dose 36Gy) with modified Dog Leg field

- **Avoid RT – Horseshoe kidney, Inflammatory Bowel Disease (IBD), history of RT**
- **Classical dog leg if history of inguinal herniorrhaphy or orchiopexy prior to inguinal orchiectomy**
- **Consider Bleomycin free regimen in patients**
  - **with reduced or Borderline GFR**
  - **Age >50 yrs**
  - **Compromised Lung function**

II C & III

- Good Risk
  - BEP x 3 Cycle or EP x 4 Cycles
- Intermediate Risk
  - BEP x 4 Cycles
  - VIP x 4 Cycles

- **Consider Bleomycin free regimen in patients**
  - **with reduced or Borderline GFR**
  - **Age >50 yrs**
  - **Compromised Lung function**

Preferred Regimens
BEP = Bleomycin/etoposide/cisplatin
EP = Etoposide/cisplatin

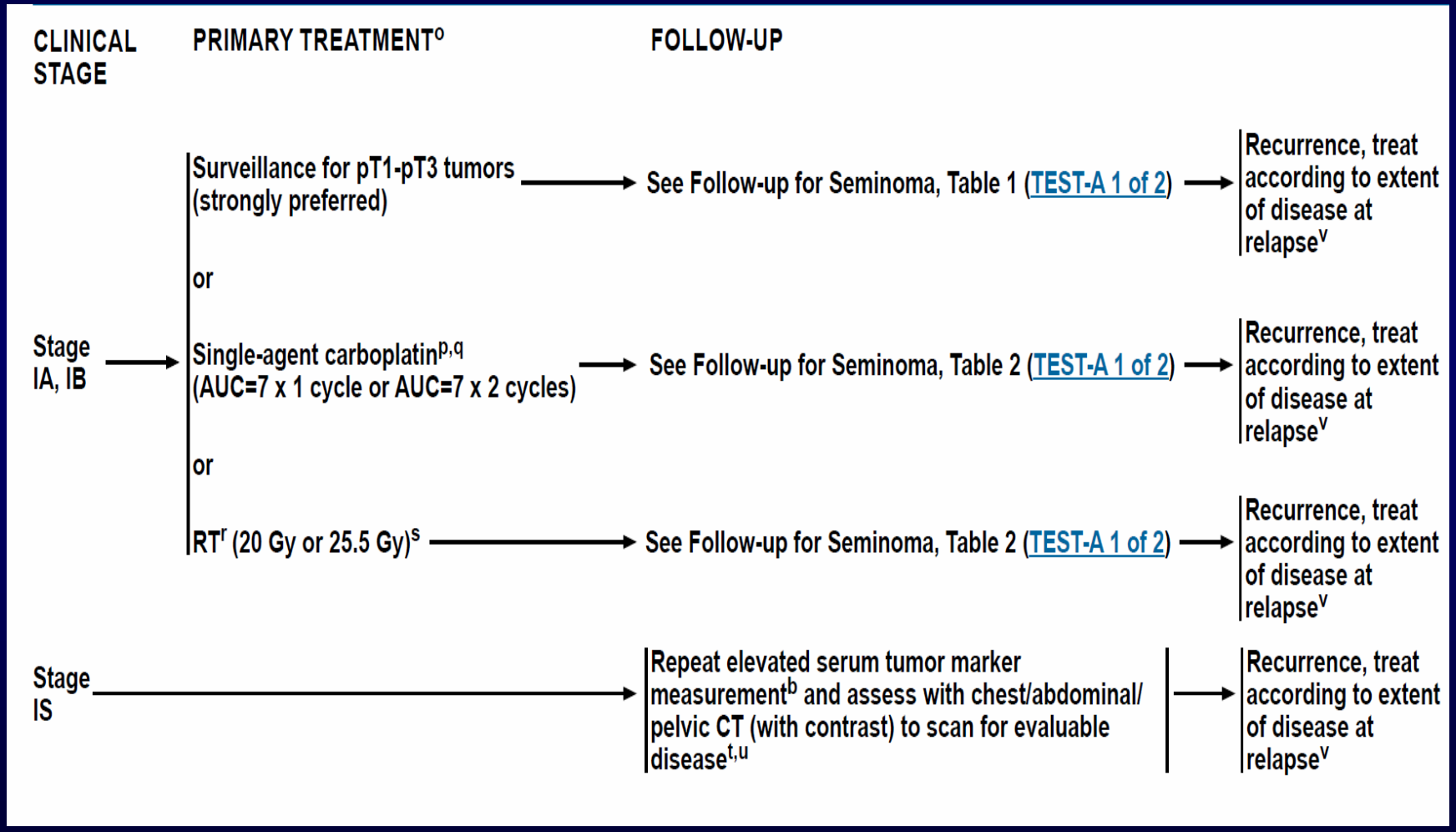
Other Recommended Regimens
VIP = Etoposide/ifosfamide/cisplatin

BEP VS VIP

Author	Randomisation	OS rates (%)	PFS(%)	Complete remission (%)	Toxicity
Hinton S et al. 1987-1992 Follow up median 7.3yrs Update from ECOG/SWOG/CALGB group Intergroup	BEP - 152	67	58		73 haematological
	VIP - 152	69	64		89
R de Wit et al. EORTC group Good Prognosis NSGCT Follow up median 7.7 yrs	BEP – 131	95	83	79	37 neutropenia
	VIP– 126	98	85	74	89
Nichols CR et al 1987-1992 ECOG/SWOG/CALGB group	BEP	71	60	31	
	VIP	74	64	37	

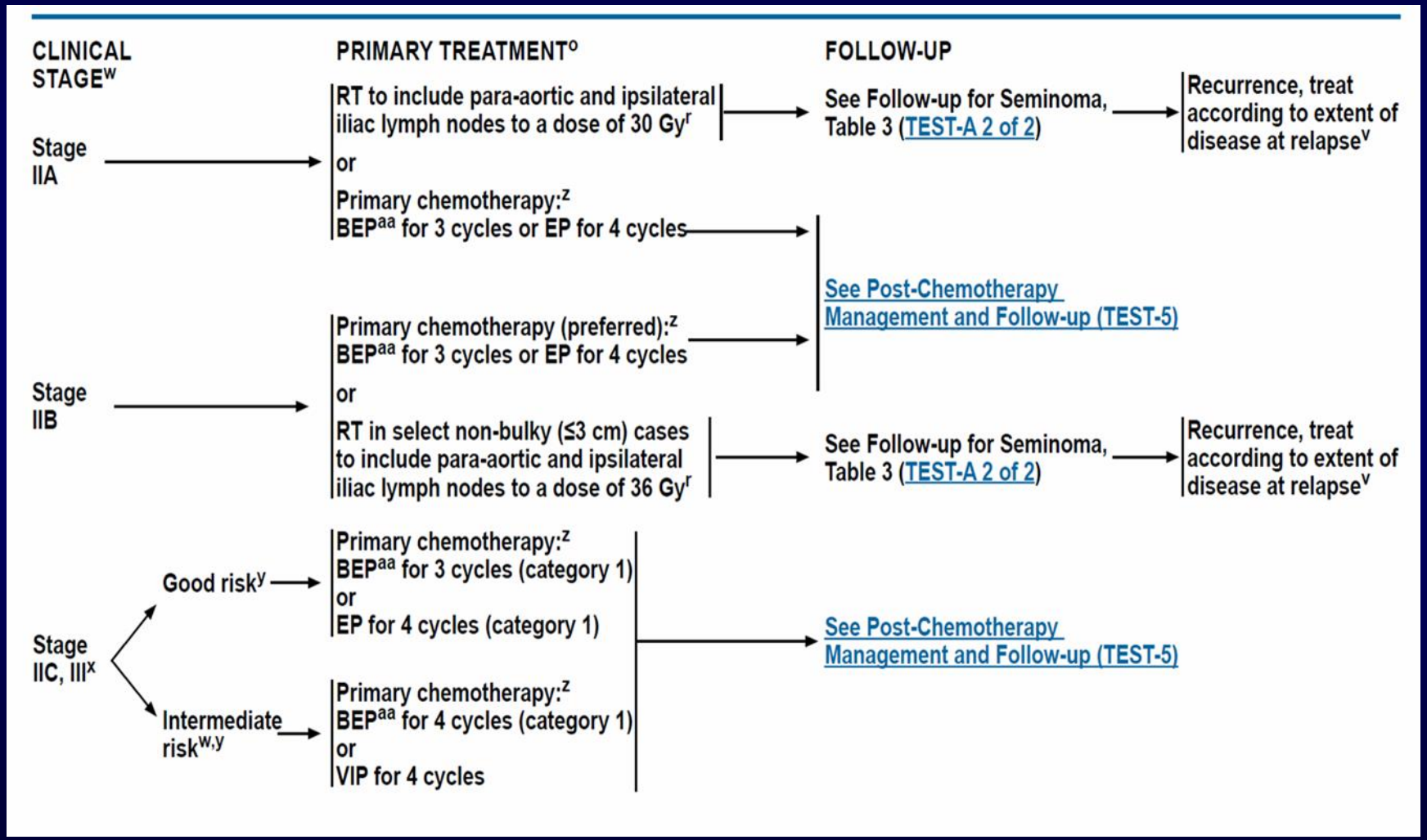
Hinton S et al. Cancer 2003, R de Wit et al. Br J Cancer 1998 (NSGCT Data), Nichols CR et al JCO 1998

Stage I



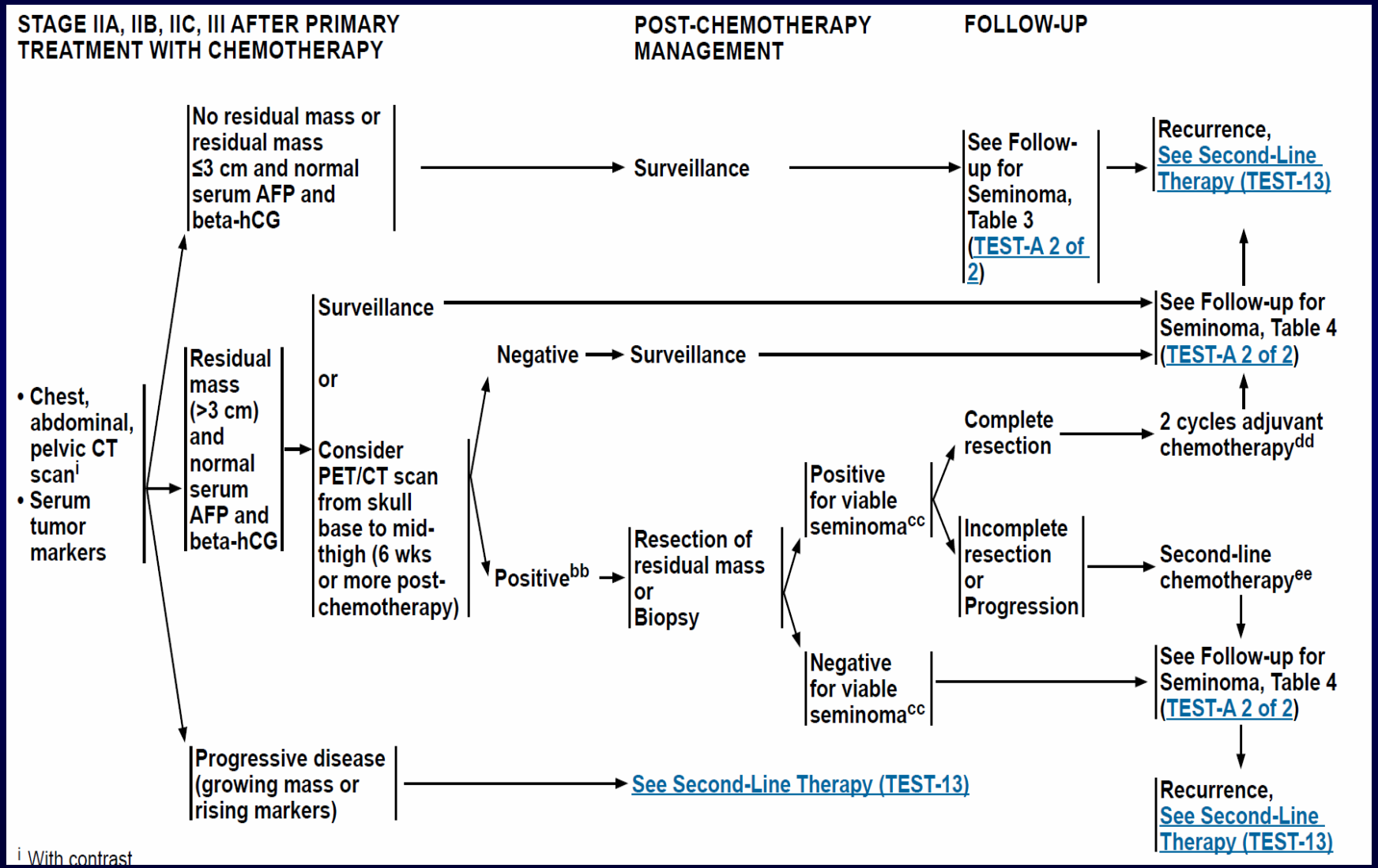
NCCN 2020

Stage II-III



NCCN 2020

After treatment of Chemotherapy



Follow up stage I

Table 1 Clinical Stage I Seminoma: Surveillance After Orchiectomy

	Year (at month intervals)				
	1	2	3	4	5[d]
H&P[a,b]	Every 3–6 mo	Every 6 mo	Every 6–12 mo	Annually	Annually
Abdominal ± Pelvic CT[c,e]	At 3, 6, and 12 mo	Every 6 mo	Every 6–12 mo	Every 12–24 mo	
Chest x-ray	As clinically indicated, consider chest CT with contrast in symptomatic patients.				

If Recurrence, treat according to extent of disease at relapse

Table 2 Clinical Stage I Seminoma: Surveillance After Adjuvant Treatment (Chemotherapy or Radiation)

	Year (at month intervals)				
	1	2	3	4	5[d]
H&P[a,b]	Every 6–12 mo	Every 6–12 mo	Annually	Annually	Annually
Abdominal ± Pelvic CT[c,e]	Annually	Annually	Annually	—	
Chest x-ray	As clinically indicated, consider chest CT with contrast in symptomatic patients.				

If Recurrence, treat according to extent of disease at relapse

Table 3 Clinical Stage IIA and Non-Bulky IIB Seminoma: Surveillance After Radiotherapy or Post-Chemotherapy[f]

	Year (at month intervals)				
	1	2	3	4	5[d]
H&P[a,b]	Every 3 mo	Every 6 mo	Every 6 mo	Every 6 mo	Every 6 mo
Abdominal ± Pelvic CT[e,g]	At 3 mo, then at 6–12 mo	Annually	Annually	As clinically indicated	
Chest x-ray[h]	Every 6 mo	Every 6 mo	—		

If Recurrence, treat according to extent of disease at relapse

Table 4 Bulky Clinical Stage IIB, IIC, and Stage III Seminoma: Surveillance Post-Chemotherapy

	Year (at month intervals)				
	1	2	3	4	5[d]
H&P and markers[b]	Every 2 mo	Every 3 mo	Every 6 mo	Every 6 mo	Annually
Abdominal/ Pelvic CT[e,g,h,i,j,k]	Every 4 mo	Every 6 mo	Annually	Annually	As clinically indicated
Chest x-ray[h]	Every 2 mo[l]	Every 3 mo[l]	Annually	Annually	Annually

If Recurrence, see TEST-13.

RT vs Chemo

THANK YOU