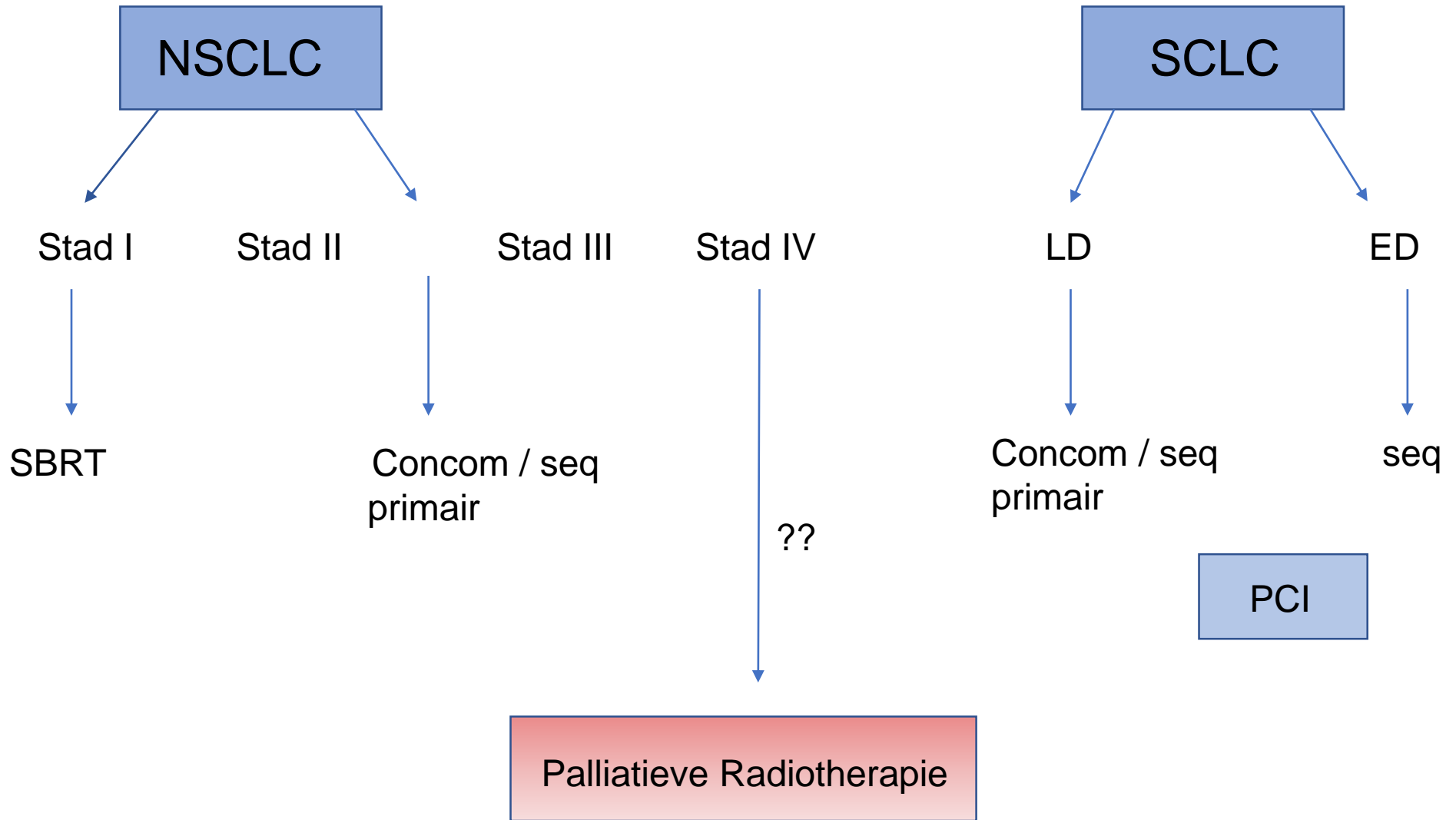


Radiotherapie bij longtumoren

M. van Eijkeren



NSCLC

SBRT

Primaire Radiotherapie

Postoperatieve Radiotherapie

Concomitante / Sequentiele Radiotherapie

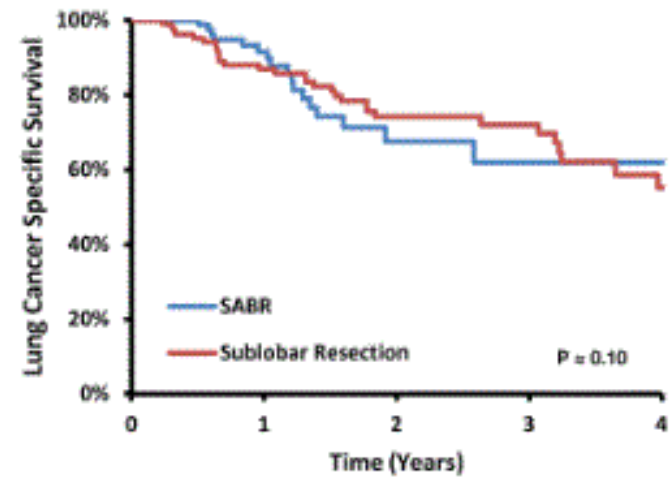
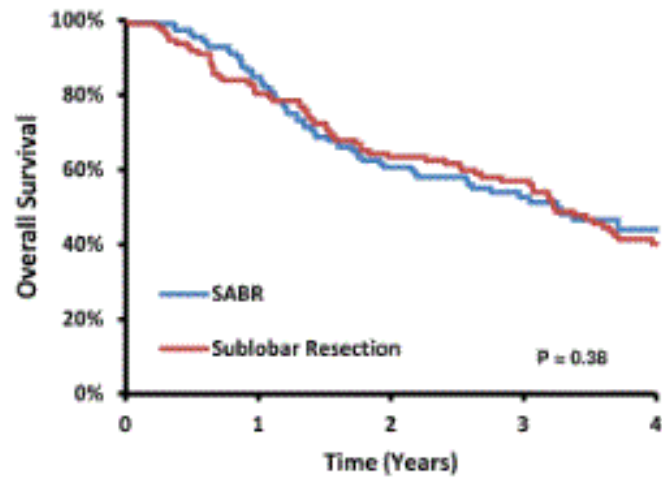
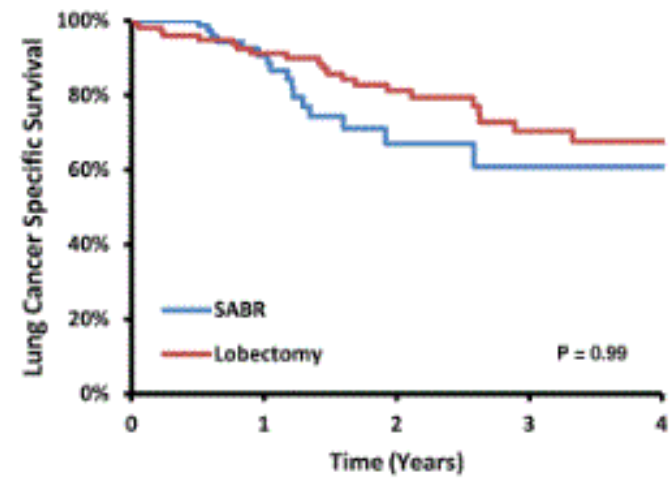
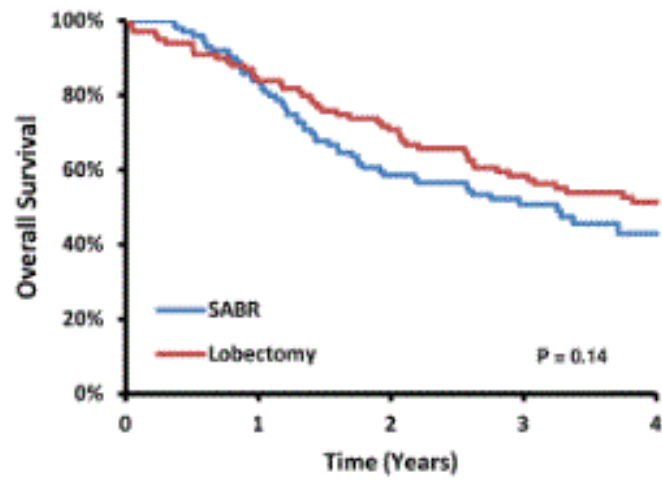
NSCLC - SBRT

SBRT (Stereotactic Body Radiotherapy)

SABR (Stereotactic Ablative Radiotherapy)

= EBRT voor een extracraniële target

- zeer nauwkeurig
- hoge dosis per fractie
- 3 tot 8 fracties (3 * 20 Gy, 4 * 15 Gy, 5 * 12 Gy, 8 * 7,5 Gy)



SABR vs conventionele radiotherapie

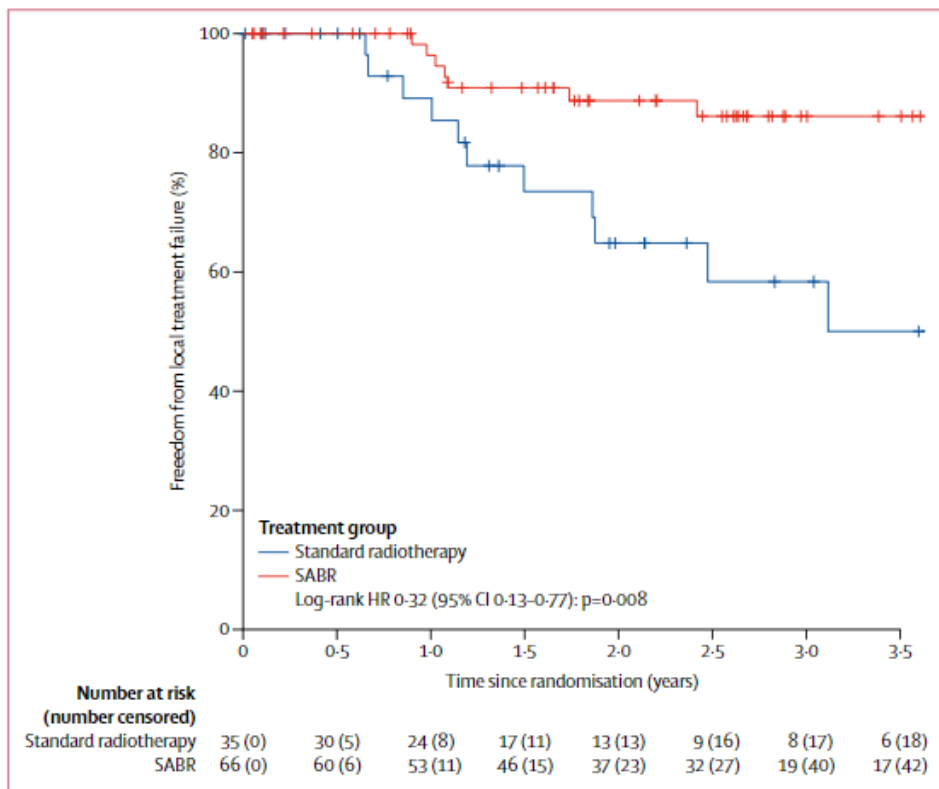


Figure 2: Freedom from local treatment failure

Tick marks represent censored patients (patients were censored for regional failure and distant metastasis, as well as for withdrawal, death, and loss to follow-up). SABR=stereotactic ablative body radiotherapy.

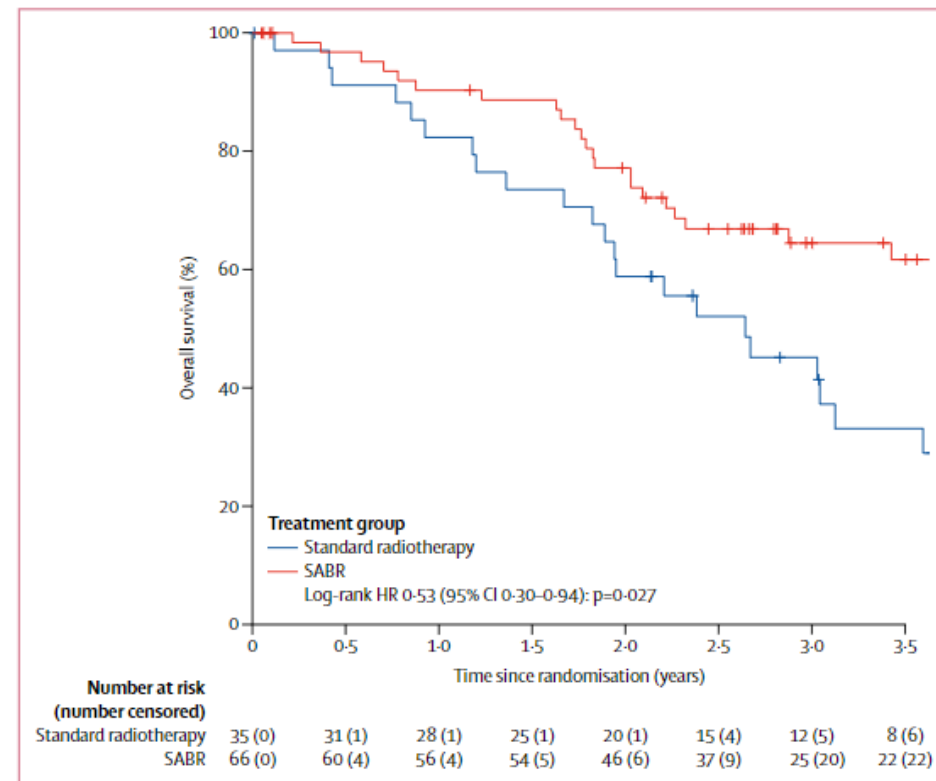


Figure 3: Overall survival

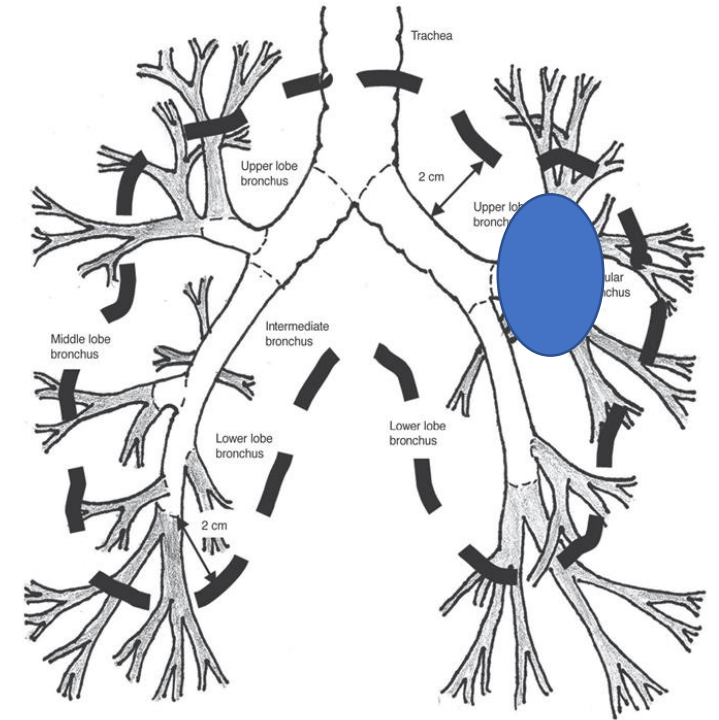
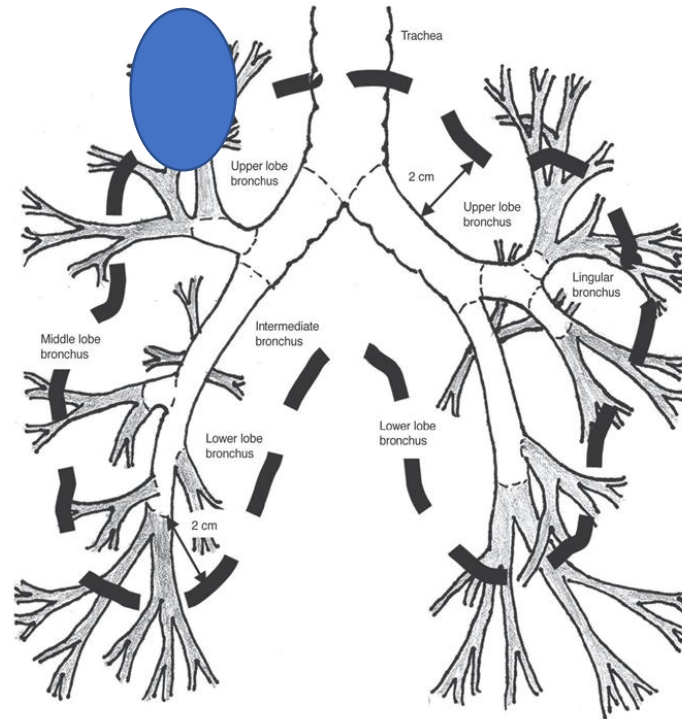
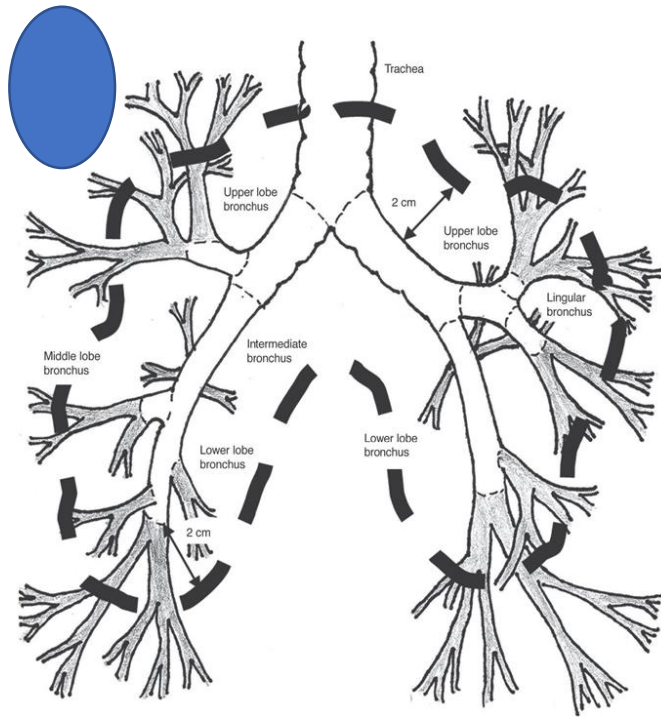
Tick marks represent censored patients (patient withdrawal and loss to follow-up were the only censoring events). SABR=stereotactic ablative body radiotherapy.

T1-2 N0

Perifeer

Centraal

Ultracentraal



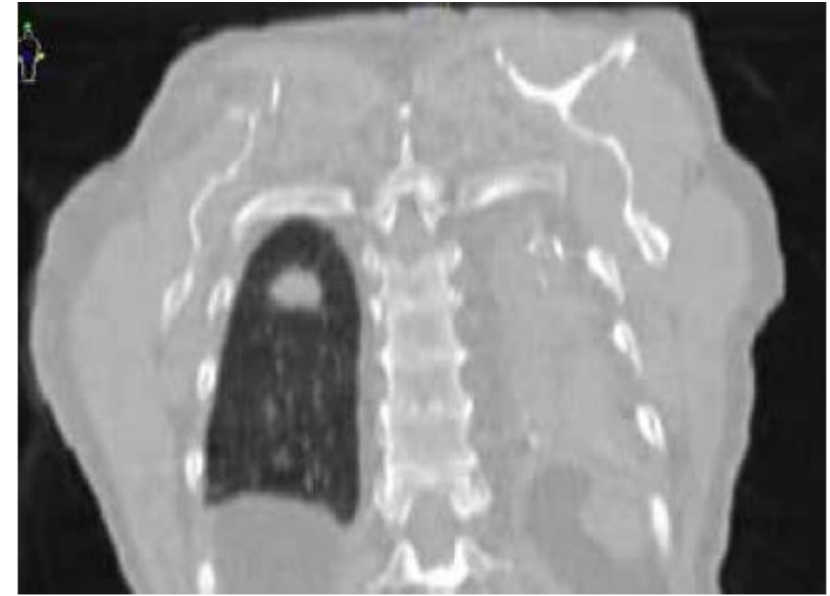
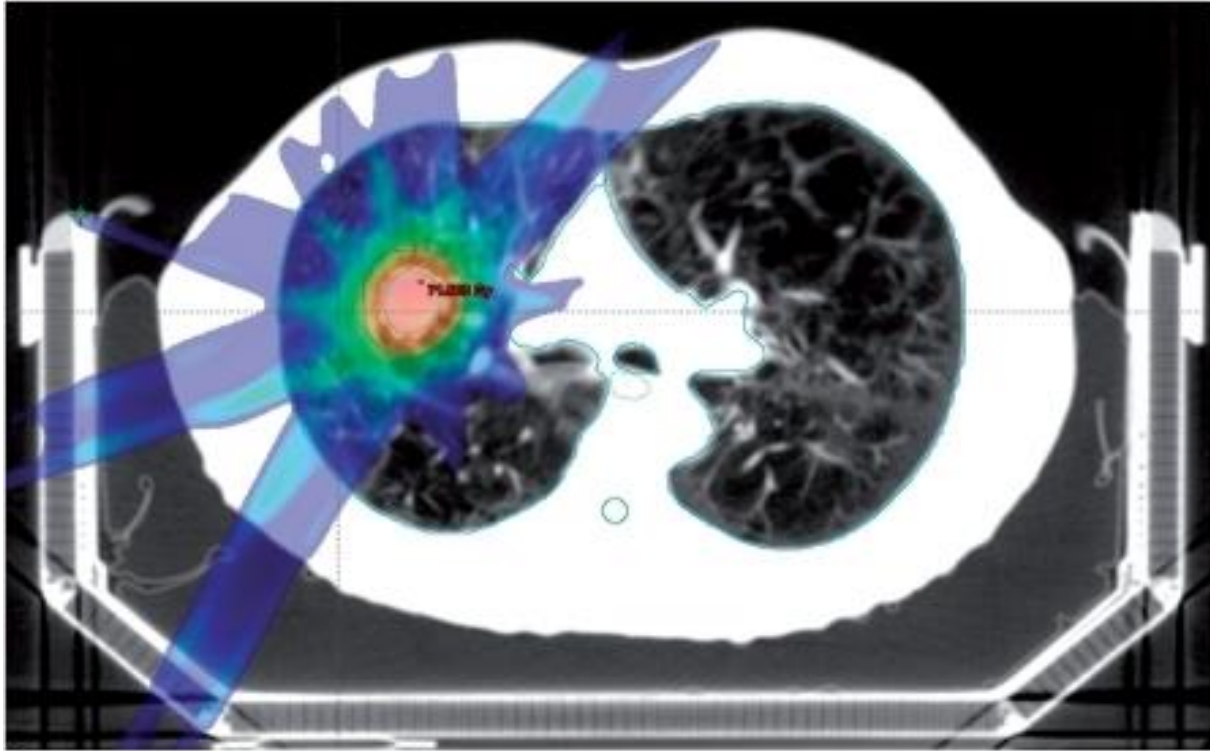
Indicaties SBRT - SABR

Patiënten met **perifeer** gelegen
vroegtijdig NSCLC

- **niet fit genoeg** voor chirurgie
- welke ingreep weigeren.

Centraal gelegen: ?? – afhankelijk omliggende structuren

Ultracentraal: !! Toxiciteit – eerder hypofractionatie



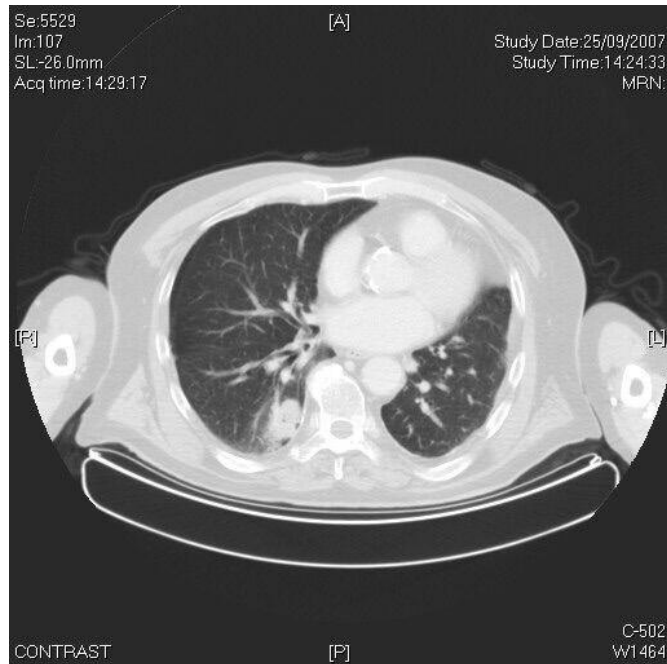
Bijwerkingen SBRT

>>> Radiatiepneumonitis

gerelateerd aan voorafbestaande ILD / longfibrose

LFT voor behandeling = minder impact op bijwerkingen.

Thoraxwand : pijn in 2 %; ribfracturen 3%



2007

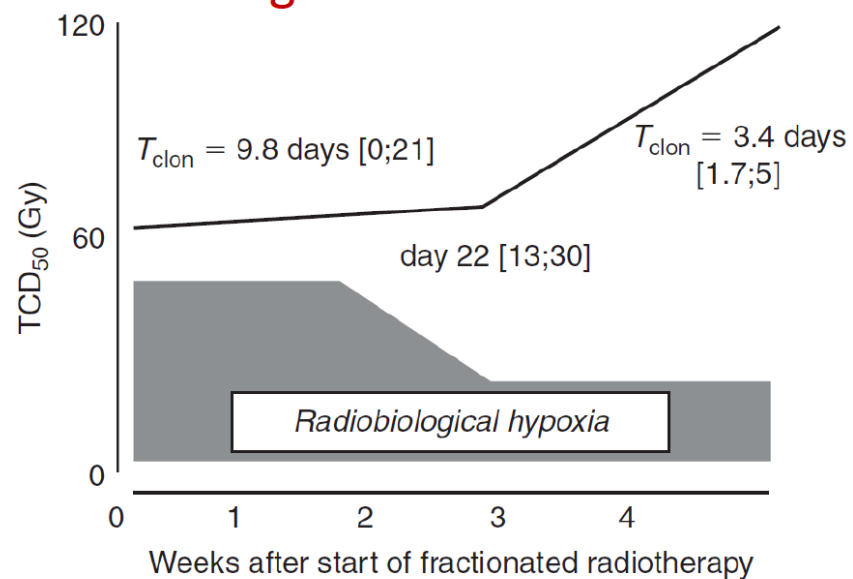


2009

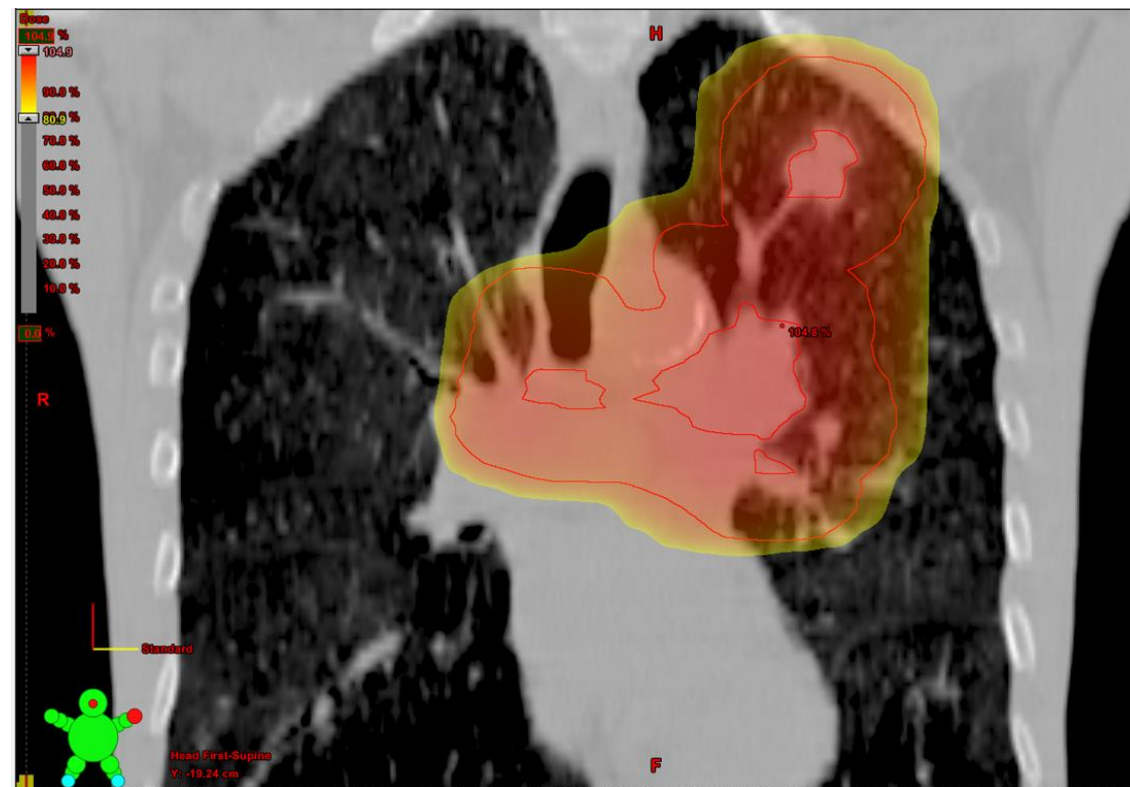
NSCLC – Primaire Radiotherapie

- 24 * 2,75 Gy

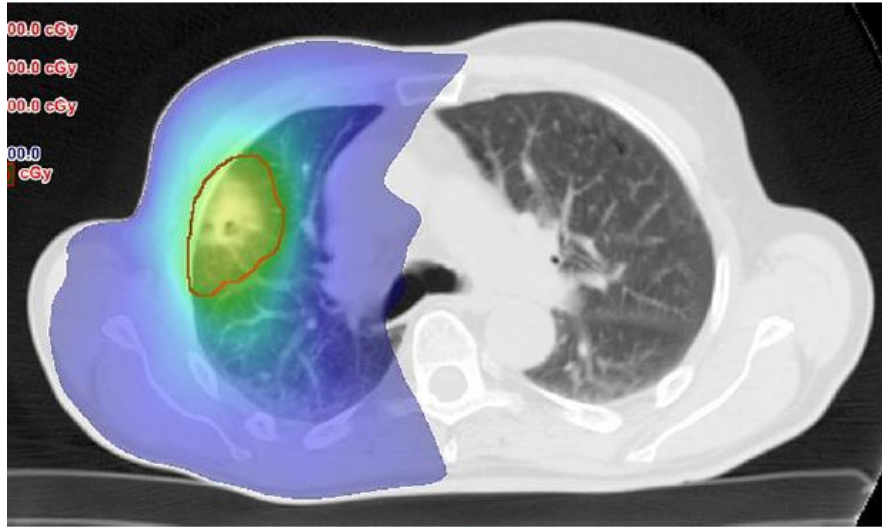
Biphasic course of clonogen **repopulation** during fractionated RT



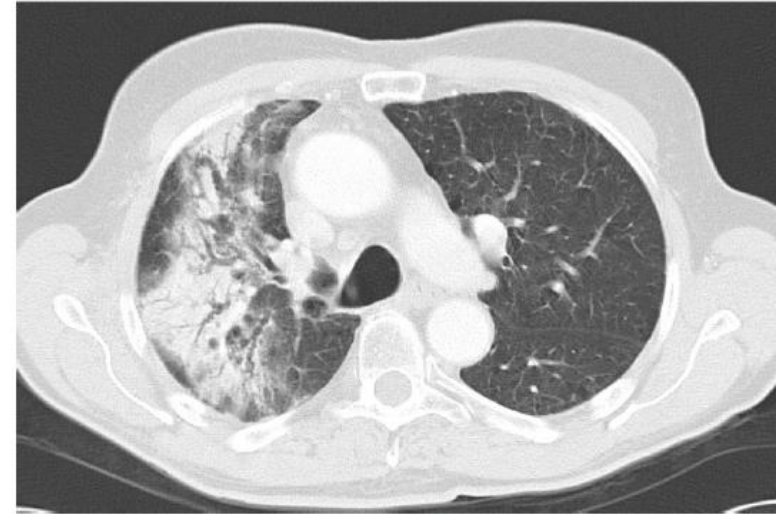
Petersen *et al.* IJROBP (2001) 51: 483–93.



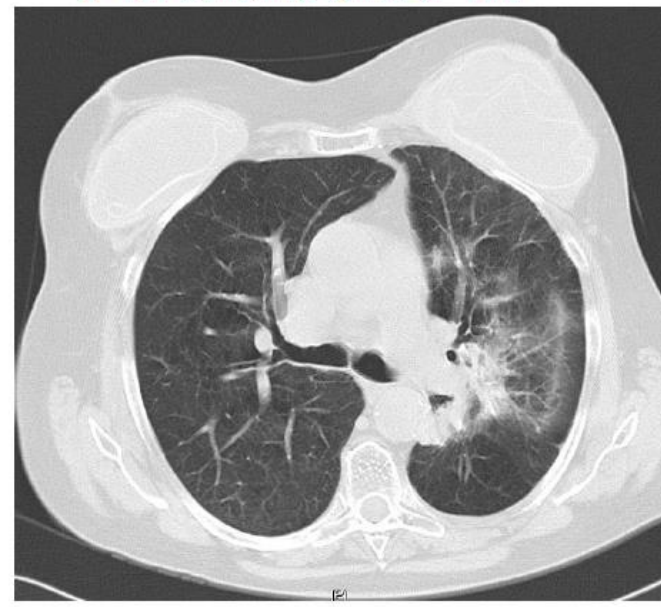
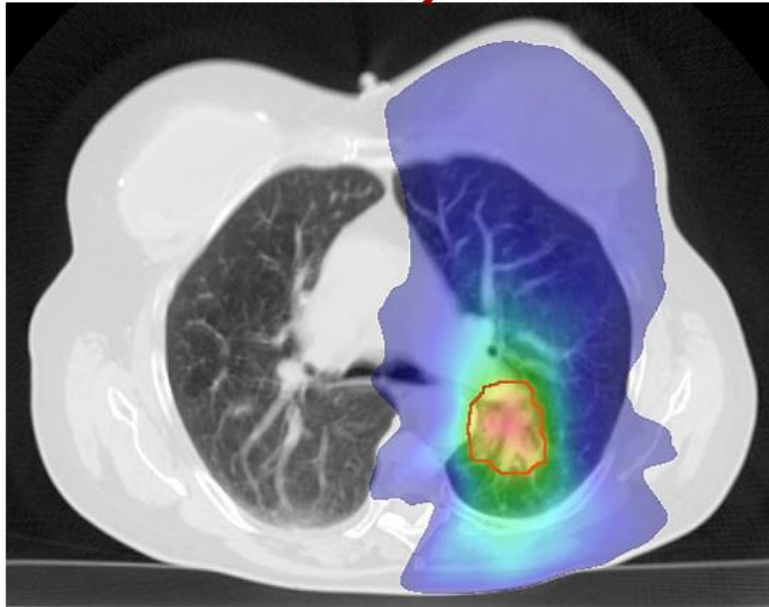
Pneumonitis



60 Gy



3 Months after RT



NSCLC – PORT (POstop RadioTherapy)

Adjuvant chemotherapy

28 * 2 Gy

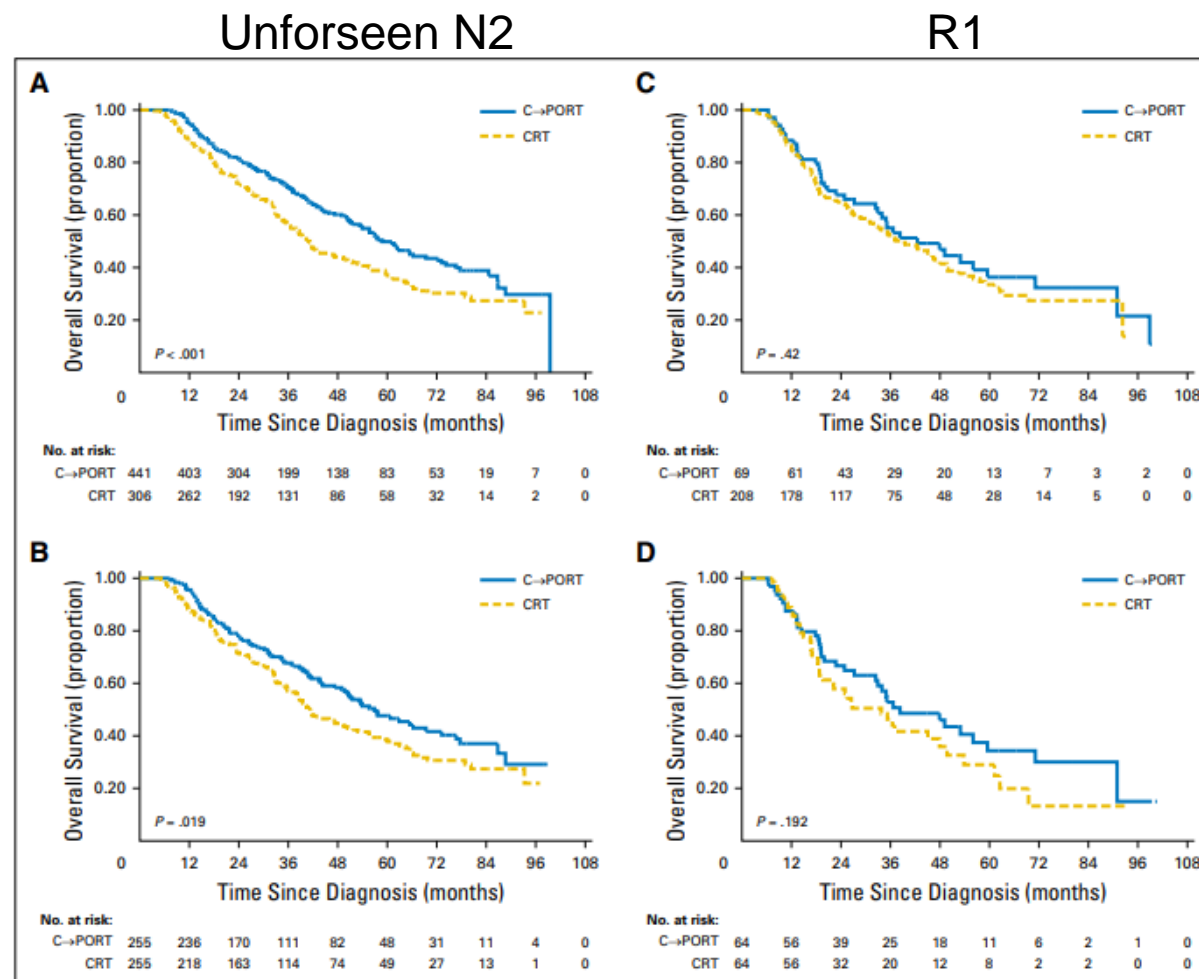
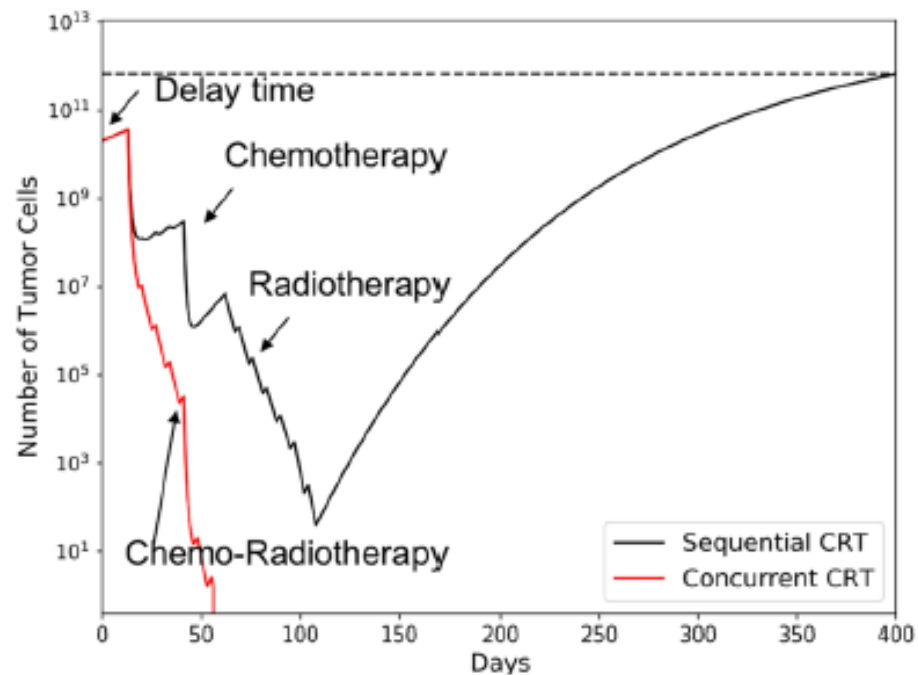
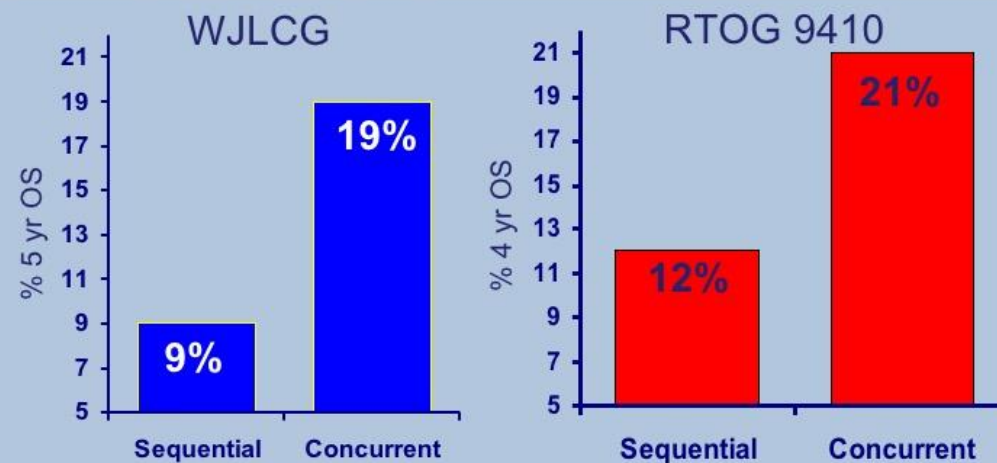


Fig 4. Kaplan-Meier curves for overall survival. Cohort one, R0 pN2 group, (A) before and (B) after propensity score matching. Cohort two, positive margins (R1-2) group, (C) before and (D) after PS matching. C->PORT, chemotherapy followed by postoperative radiotherapy; CRT, chemoradiotherapy.

NSCLC – combinatie met chemotherapie

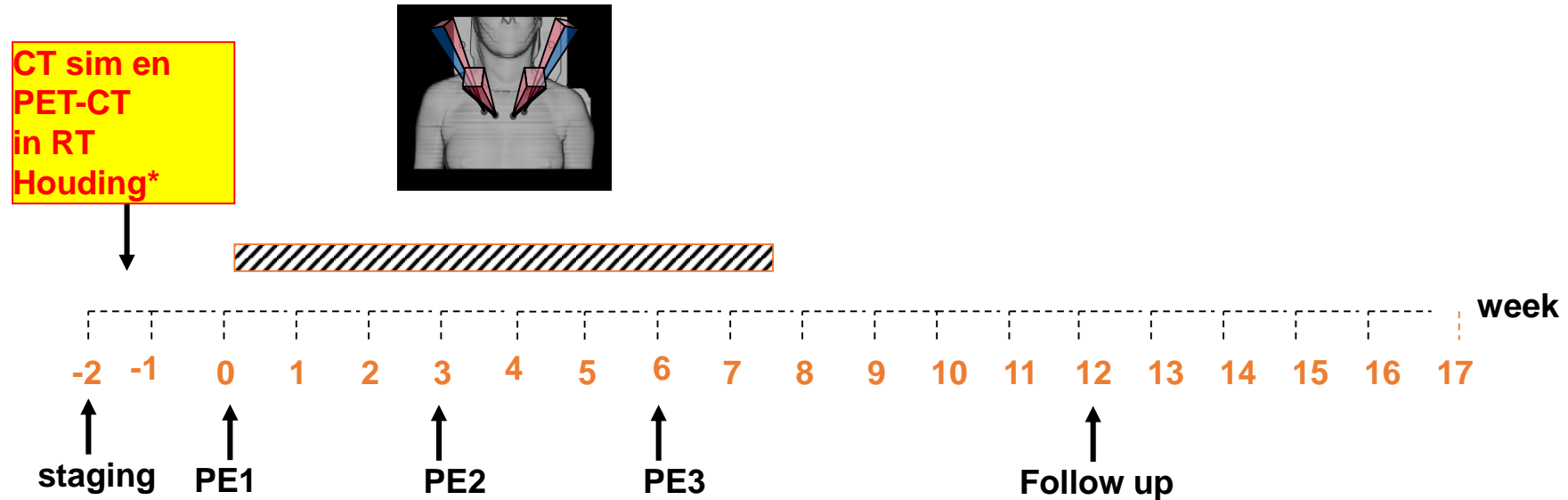


Long Term Survival Comparison Between Sequential and Concurrent Chemoradiation Therapy



*Is Concurrent Chemoradiation now Standard of Care?
Yes: for good performance status & pulmonary function; low comorbidities*

Concomitante chemo-radiotherapie bij stadium III NSCLC

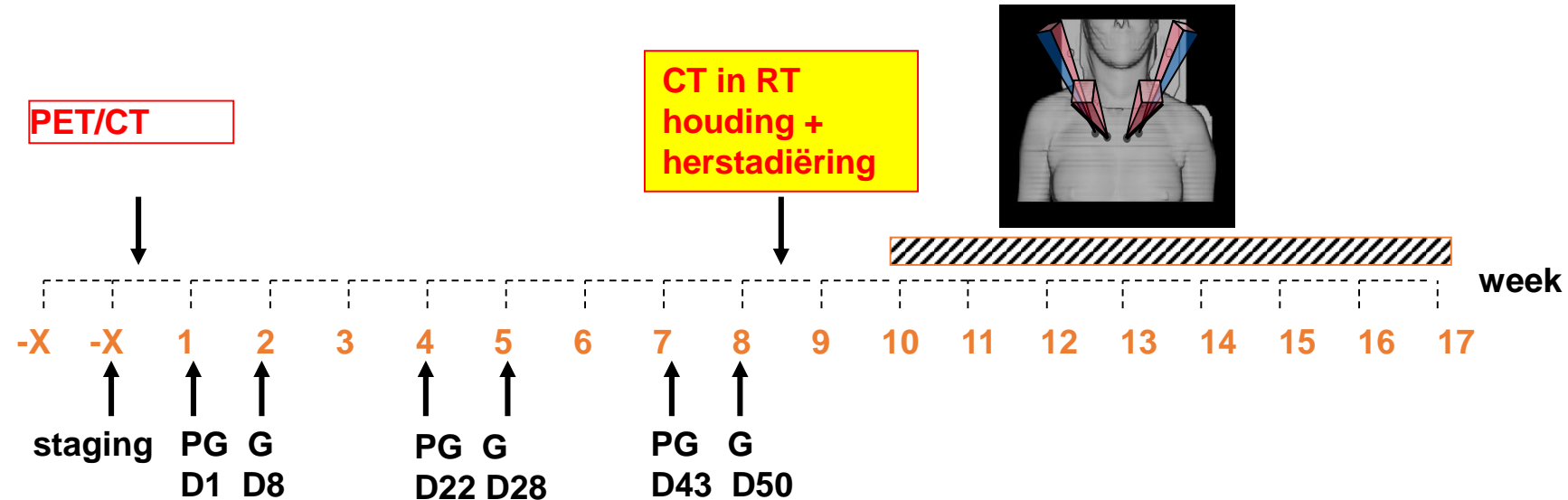


Chemotherapie: Cisplatine (P) 80 mg/m², d1, 22, 43; Etoposide (E) 100 mg/m², D 1-3, 22-24 en 43-45.

Radiotherapie: 70 Gy in 35 fracties, 2 Gy per fractie, 1 fractie per dag, 5x/ week start dag 1 van kuur 1

* CT sim en PET-CT worden typisch niet op zelfde dag uitgevoerd

Sequentiële chemoradiotherapie bij stadium III NSCLC



Chemotherapie: cisplatine (P) 80 mg/m², d1, 22, 43; gemcitabine (G) 1250 mg/m², d1,8, 22, 29, 43, 50

Radiotherapie: 66 Gy, 24 fracties van 2,75 Gy, 1x/dag; 5 fracties/ week; start week 10 tot 17

Restaging: PET-CT na 2 cycli: bij PD: stop chemo en TRT voor lokale controle (13 x 3 Gy)

Durvalumab after Chemoradiotherapy in Stage III Non–Small-Cell Lung Cancer

S.J. Antonia, A. Villegas, D. Daniel, D. Vicente, S. Murakami, R. Hui, T. Yokoi, A. Chiappori, K.H. Lee, M. de Wit, B.C. Cho, M. Bourhaba, X. Quantin, T. Tokito, T. Mekhail, D. Planchard, Y.-C. Kim, C.S. Karapetis, S. Hiret, G. Ostoros, K. Kubota, J.E. Gray, L. Paz-Ares, J. de Castro Carpeño, C. Wadsworth, G. Melillo, H. Jiang, Y. Huang, P.A. Dennis, and M. Özgüroğlu, for the PACIFIC Investigators*

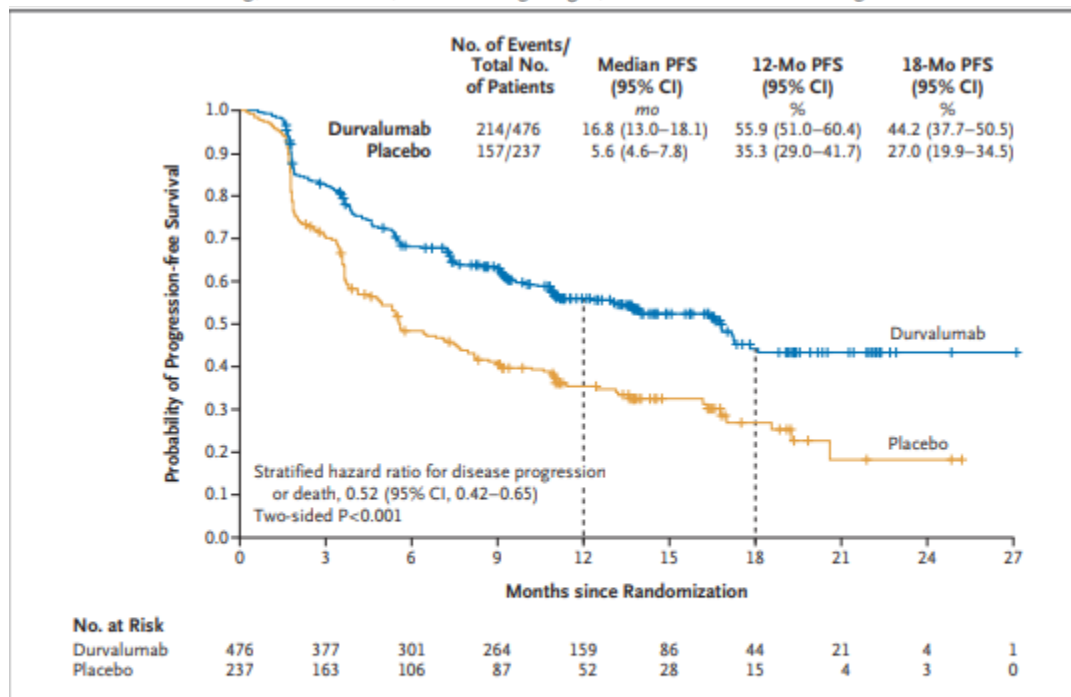


Figure 1. Progression-free Survival in the Intention-to-Treat Population.

Shown are Kaplan–Meier curves for progression-free survival (PFS), defined according to the Response Evaluation Criteria in Solid Tumors, version 1.1, and assessed by means of blinded independent central review. Tick marks indicate censored observations, and vertical lines indicate the times of landmark PFS analyses. The intention-to-treat population included all patients who underwent randomization.

NSCLC – Stad IV

Lokale ablatieve radiotherapie ?

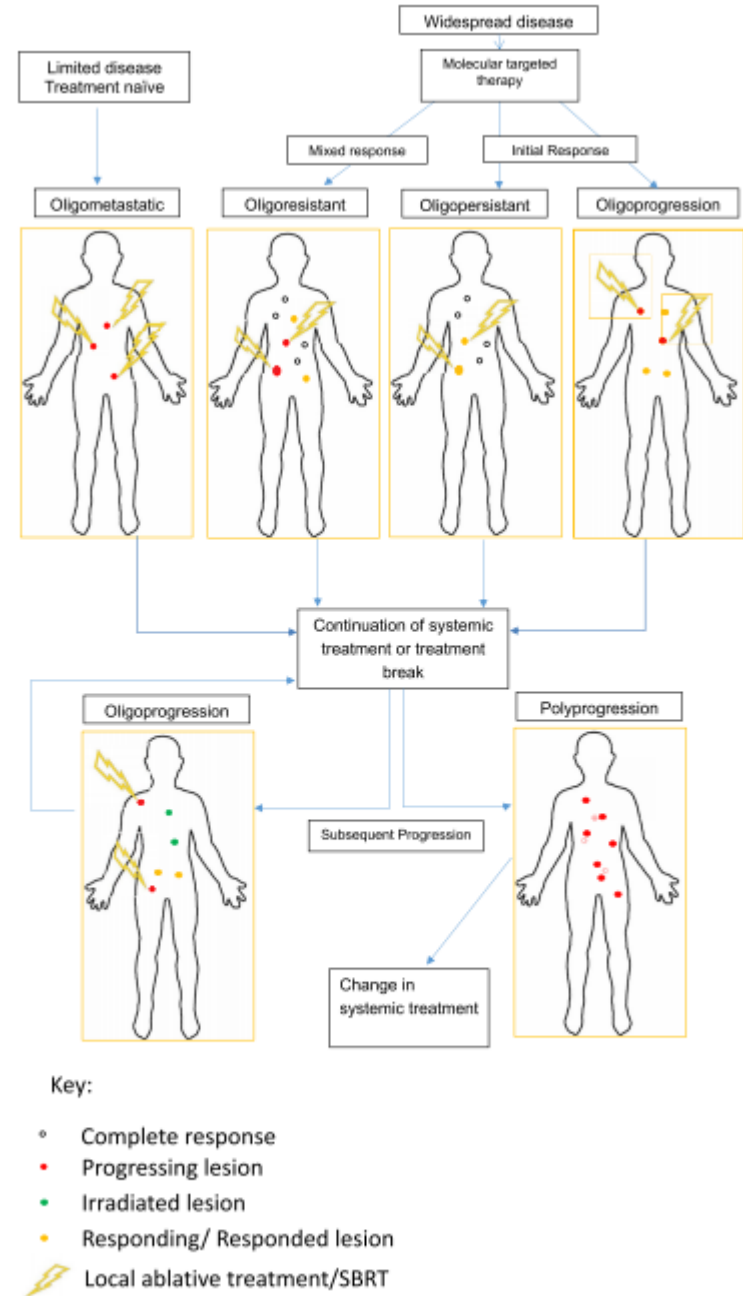


Fig 1. Schematic of nomenclature in the metastatic state.

SCLC

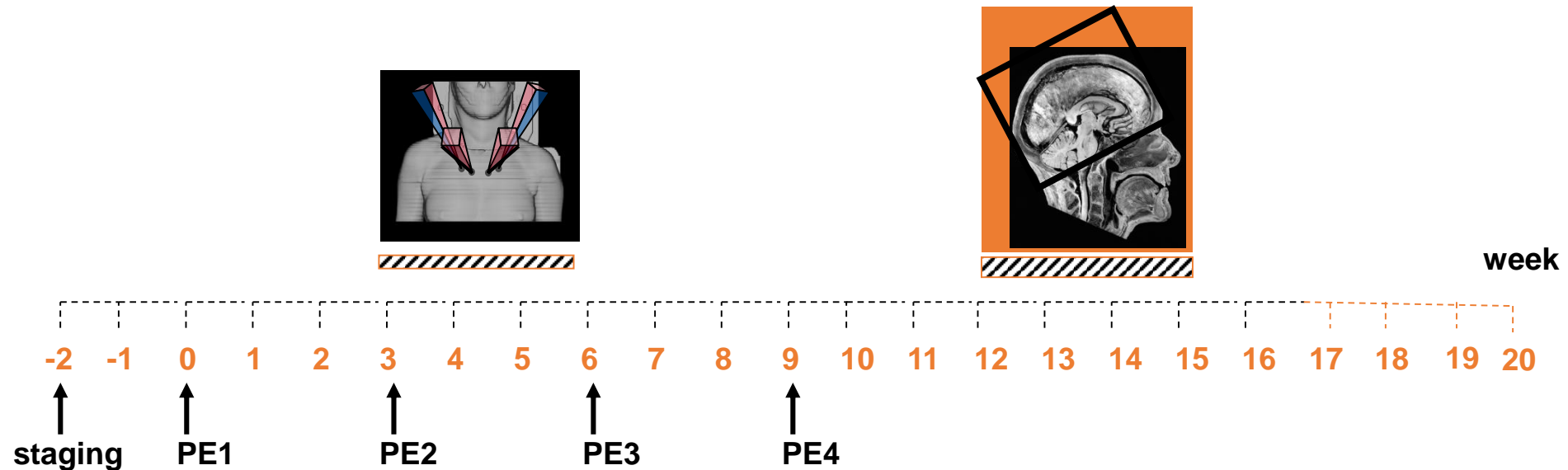
Limited

Concomitant / sequentieel

Extensive

Preventieve hersenbestraling

SCLC – Limited Disease



Chemotherapie: Cisplatine 80 mg/m², D 1, 23, 43, 64 i.v.

Etoposide 100 mg/m², D 1-3, 23-25, 43-45, 64-66 i.v.

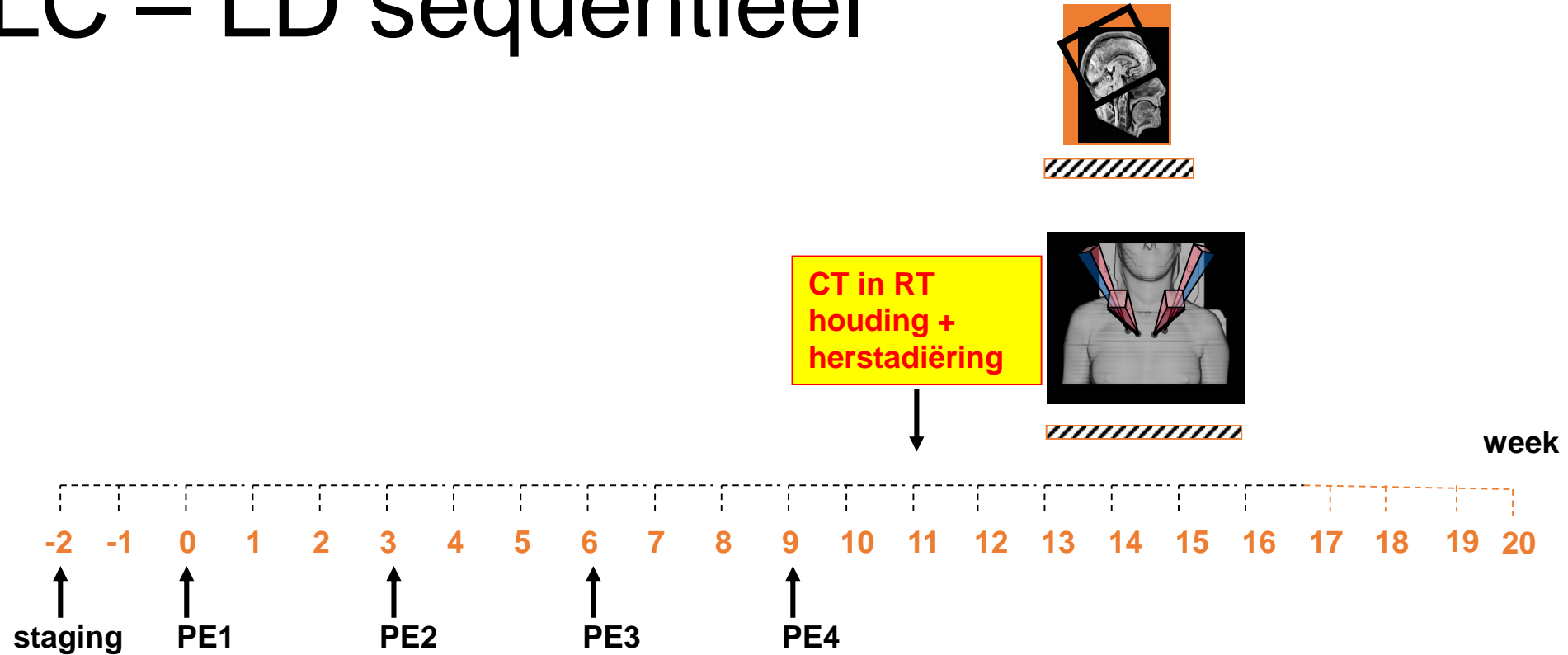
Radiotherapie: 45 Gy in 30 fracties, 1.5 Gy per fractie, 2 fracties per dag met minimaal interval van 6 uur, 5x/ week start dag 1 van kuur 2, einde dag 22

PCI: 3-4 weken na dag 1 van laatste chemotherapie

Evaluatie: anamnese, LO, WHO PS, labo wekelijks week 1-12, nadien 6 wekelijks

Respons: X-thorax voor elke kuur; Ct-scan thorax na week 16

SCLC – LD sequentieel



Chemotherapie: Cisplatine 80 mg/m², D 1, 23, 43, 64 i.v.

Etoposide 100 mg/m², D 1-3, 23-25, 43-45, 64-66 i.v.

Radiotherapie: 40 Gy in 15 fracties, 2.67 Gy per fractie, 5x/ week

PCI: 10 * 2.5 Gy

Evaluatie: anamnese, LO, WHO PS, labo wekelijks week 1-12, nadien 6 wekelijks

Respons: X-thorax voor elke kuur; Ct-scan thorax na week 16

SCLC – Extensive Disease

* 4-6 cycli platinum-etoposide

* Patiënten met respons en goede PS krijgen PCI tot een dosis 20 Gy in 5 fracties van 4 Gy
Thoracale radiotherapie tot een dosis van 30 Gy in 10 dagelijkse fracties van 3 Gy (conform CREST studie)

1-yr OS:
33% (TRT) vs. 28% (no TRT)
HR 0.84, $p=0.066$

2-yr OS:
13% (TRT) vs. 3% (no TRT)
 $p=0.004$

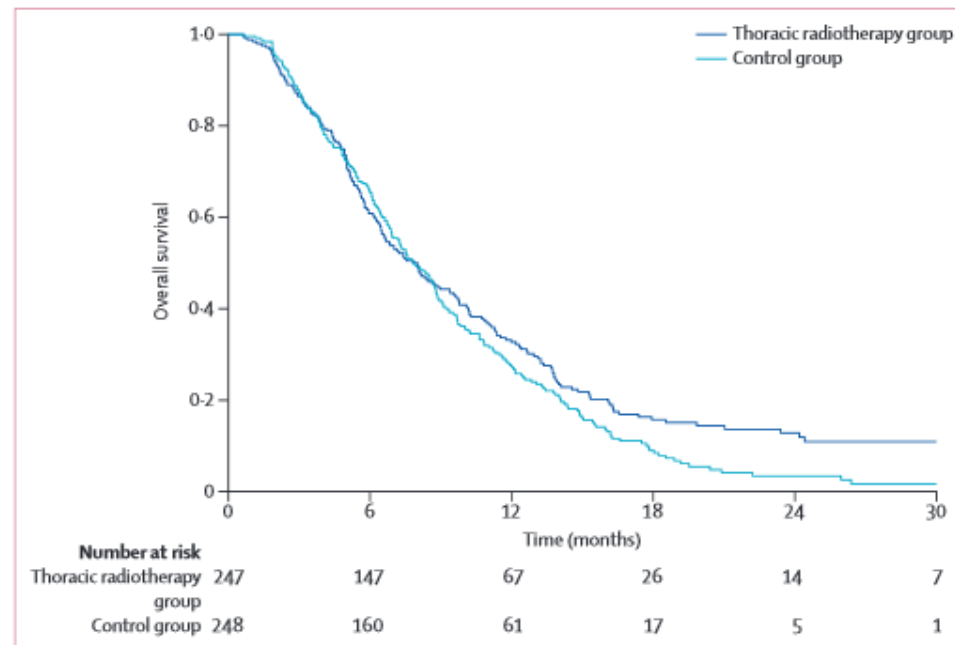
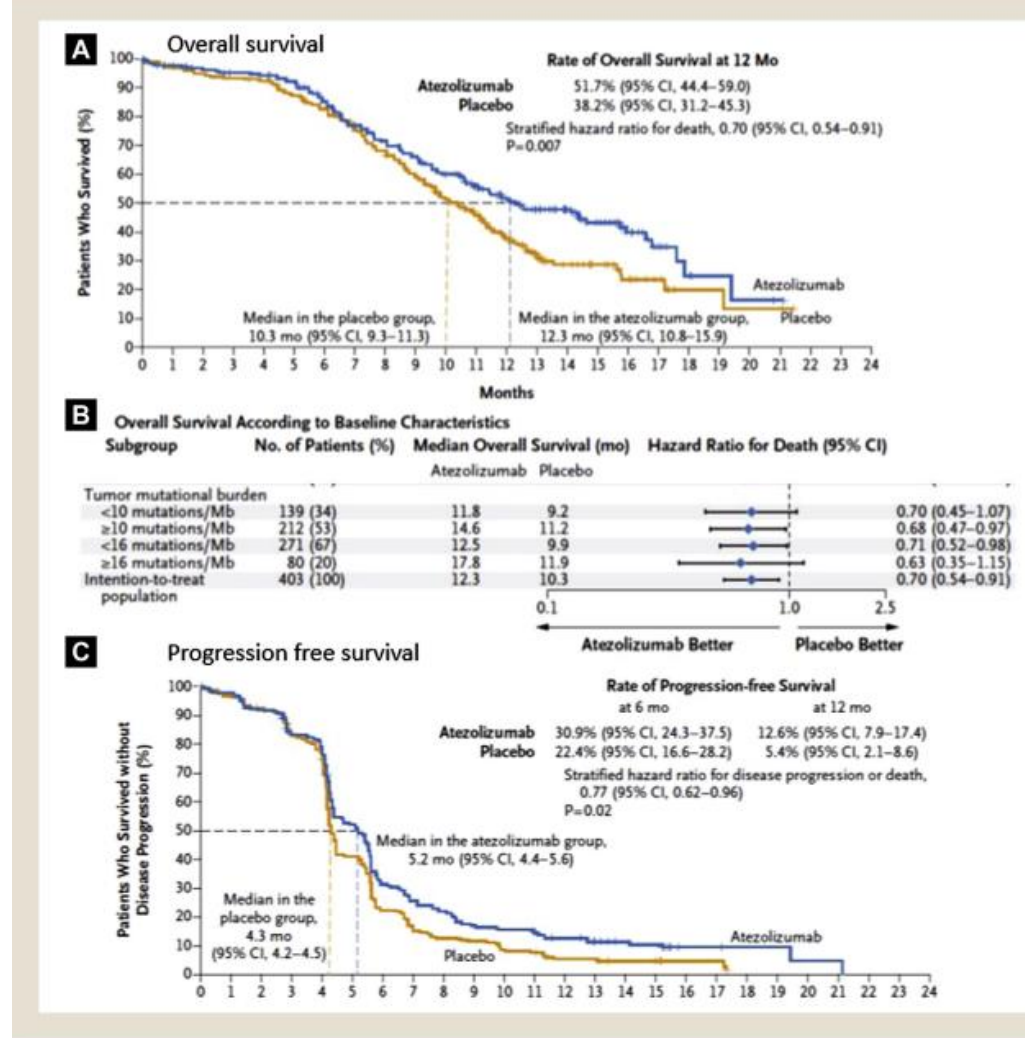


Figure 2: Kaplan-Meier curves for overall survival

SCLC – ED Impower 133

Figure 1 Summary of IMpower-133 Results; Adapted From Horn et al. A, Overall Survival Curves. B, Excerpt From a Forest Plot Showing that Different Cutoffs for Blood-Based Tumor Mutational Burden Testing Did Not Influence the Relative Overall Survival Benefit of Atezolizumab + Carboplatin + Etoposide When Compared With Carboplatin + Etoposide. C, Progression-free Survival Curves



Abbreviations: CI = confidence interval; mo = months; no = number.

SCLC – PCI (Preventive Cranial Irradiation)

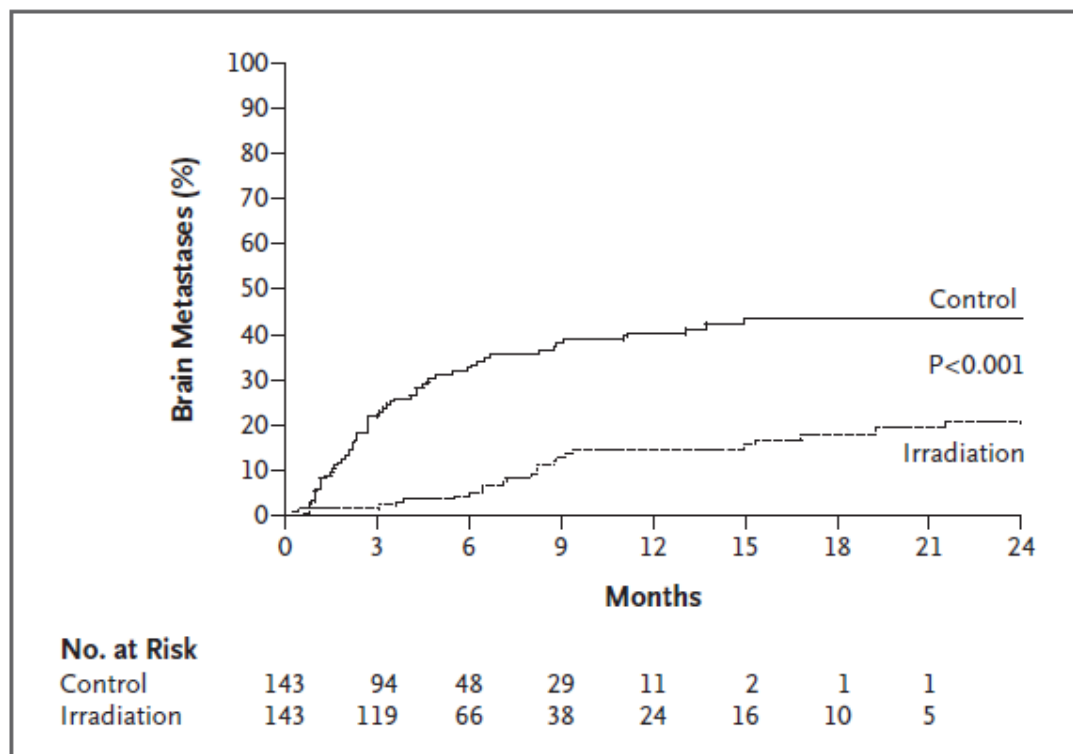


Figure 1. Cumulative Incidence of Symptomatic Brain Metastases.

The difference in the cumulative incidence of brain metastases between the irradiation group and the control group was significant ($P < 0.001$, by Gray's method).

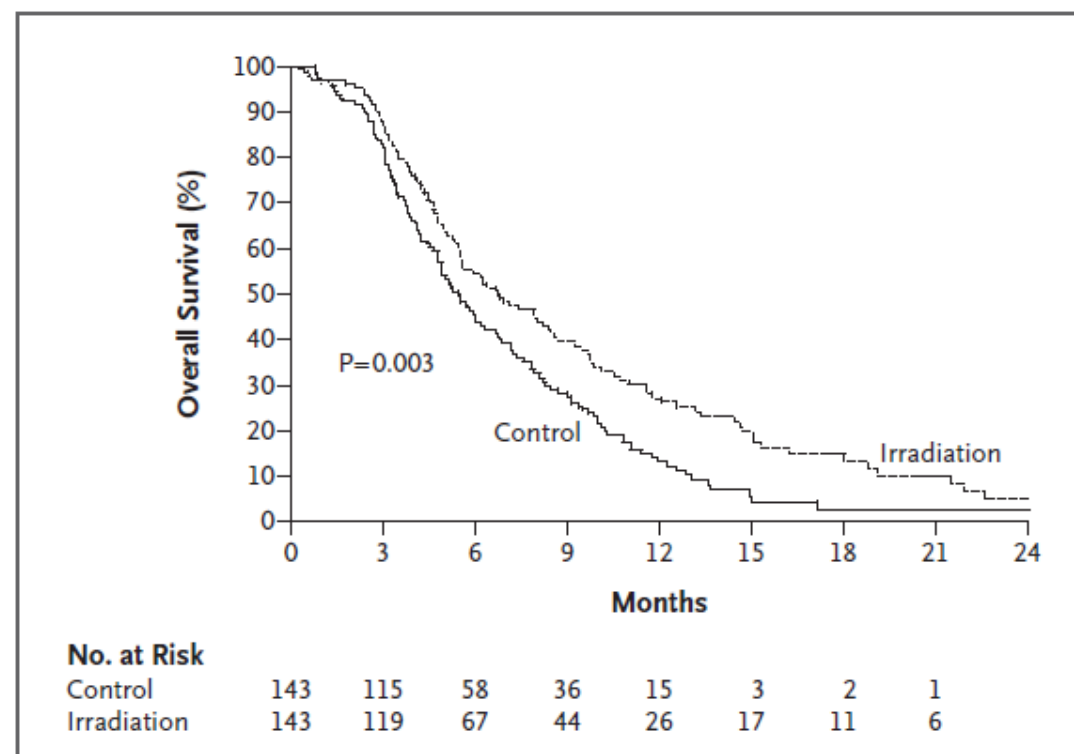
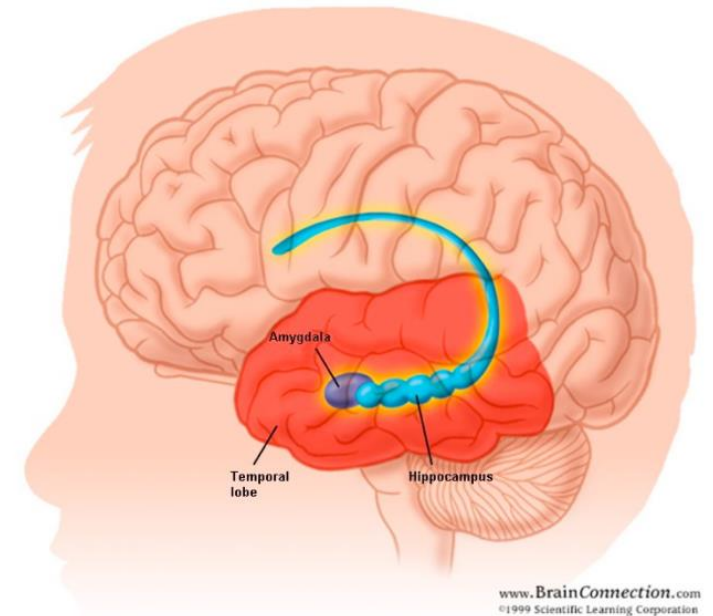


Figure 3. Overall Survival.

Patients in the irradiation group had a longer median overall survival (6.7 months) than did those in the control group (5.4 months) ($P = 0.003$; hazard ratio, 0.68; 95% CI, 0.52 to 0.88).

Hippocampus

- Bevat neurogene stamcellen
- Belangrijk voor geheugenfuncties
- Gevoelig voor effecten van bestraling



Playing Super Mario 64 increases hippocampal grey matter in older adults

Greg L. West^{1,2*}, Benjamin Rich Zendel^{2,3,4*}, Kyoko Konishi⁵, Jessica Benady-Chorney⁵, Veronique D. Bohbot⁵, Isabelle Peretz^{1,2}, Sylvie Belleville³

"3D video games engage the hippocampus into creating a cognitive map, or a mental representation, of the virtual environment that the brain is exploring"

Navigation-related structural change in the hippocampi of taxi drivers

Eleanor A. Maguire^{*†}, David G. Gadian[‡], Ingrid S. Johnsrude[†], Catriona D. Good[†], John Ashburner[†], Richard S. J. Frackowiak[†], and Christopher D. Frith[†]

MIND

Cache Cab: Taxi Drivers' Brains Grow to Navigate London's Streets

Memorizing 25,000 city streets balloons the hippocampus, but cabbies may pay a hidden fare in cognitive skills

By Ferris Jabr on December 8, 2011

SCLC – PCI cognitieve stoornissen

Hippocampal Avoidance PCI

