



Neoadjuvant Chemo-IO is best for stage II(N1) NSCLC

Jonathan Spicer, MD PhD FRCSC



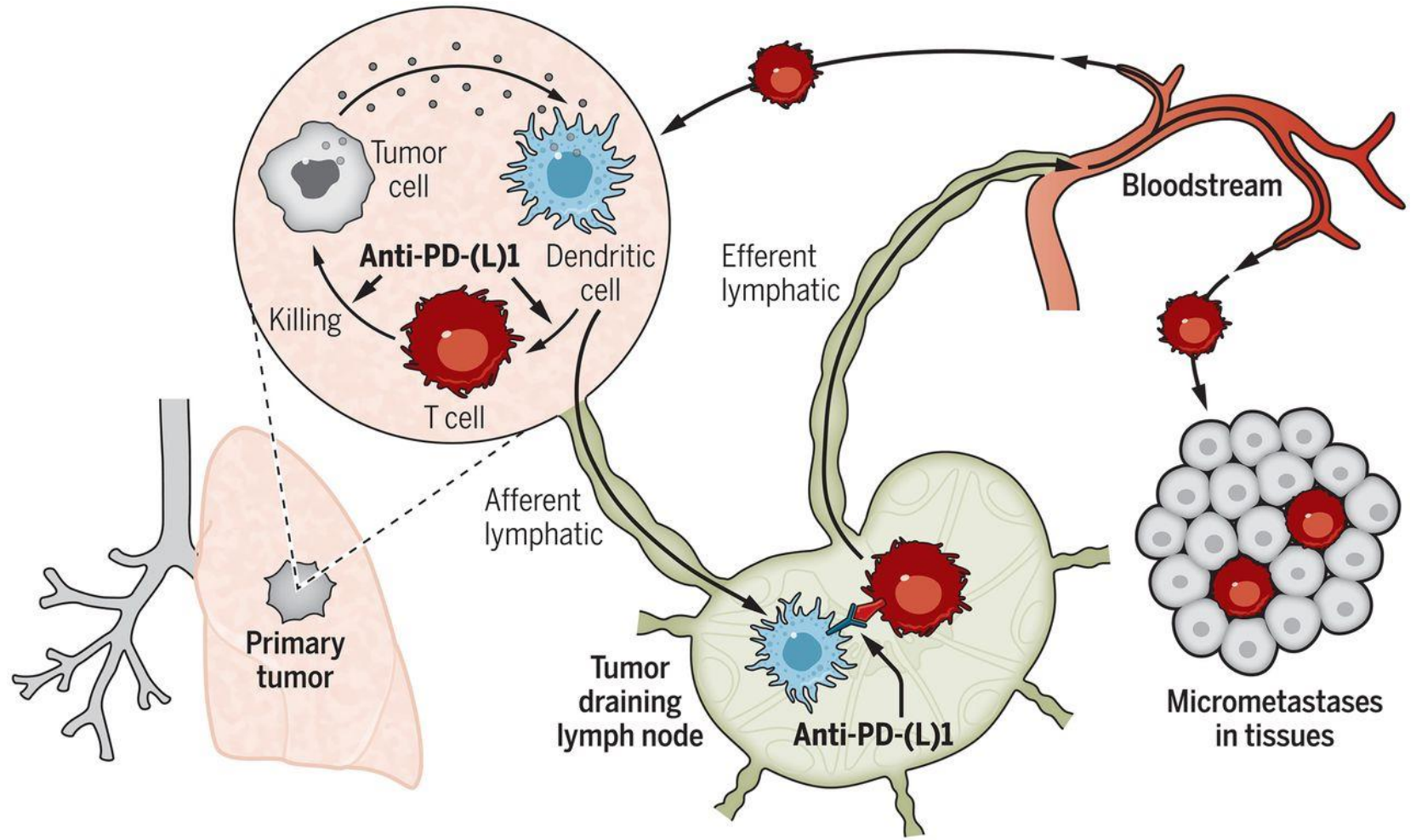
McGill

Department of
Surgery

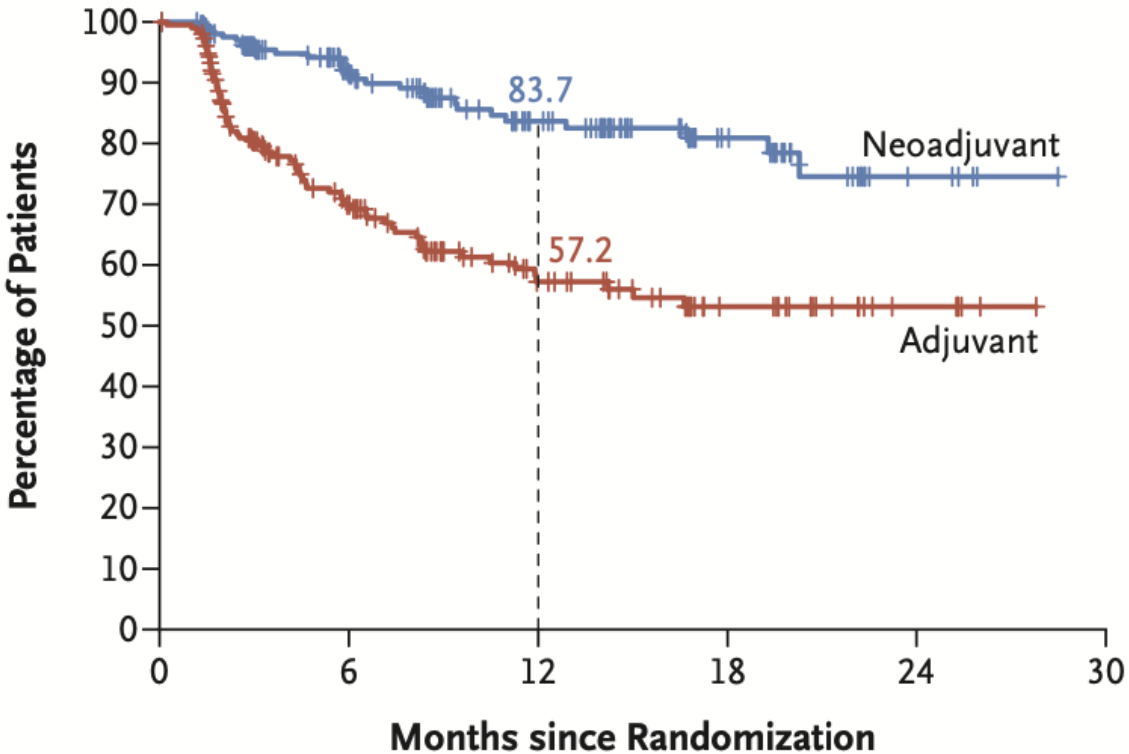
Conflicts of interest

| Commercial Interest | Relationship(s) |
|--|--|
| AstraZeneca, Merck, Roche, BMS, Novartis, Chemocentryx, Amgen, Protalix Biotherapeutics, Xenetic Biosciences, Regeneron, Eisai, Peerview, OncLive, Medscape, Pfizer, Foresight Diagnostics | Consulting, advisory role or honoraria |
| AstraZeneca, BMS, Merck, Roche, CLS Therapeutics, Protalix Biotherapeutics, Pfizer, Regeneron | Grant to institution |
| BMS, Novartis, Roche, Merck, AstraZeneca | Clinical trial leadership role |

This is how immunotherapy works... and Dr. Sacher knows this!



And he knows that this is why this trial was positive



| | No. of Events/ Total No. of Patients |
|------------|--|
| Noadjuvant | 28/212 |
| Adjuvant | 72/211 |

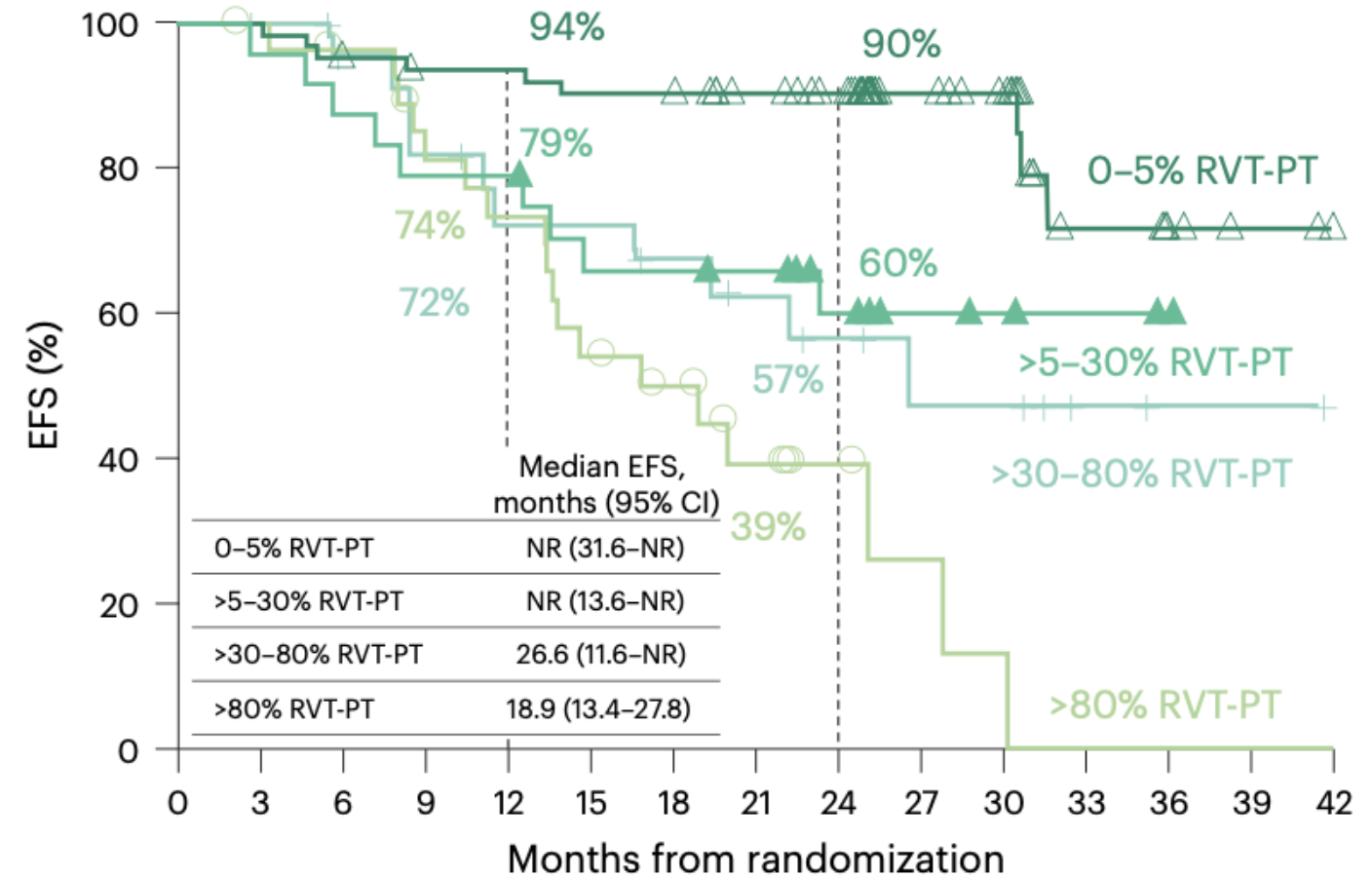
Adjusted difference in restricted mean survival time, 8.00 mo (99.9% CI, 4.94–11.05); P<0.001

Hazard ratio for progression, recurrence, or death, 0.32 (99.9% CI, 0.15–0.66)

No. at Risk (no. censored)

| | | | | | |
|------------|---------|----------|----------|----------|---------|
| Noadjuvant | 212 (0) | 126 (71) | 77 (111) | 34 (152) | 5 (179) |
| Adjuvant | 211 (0) | 100 (57) | 53 (89) | 23 (116) | 6 (133) |

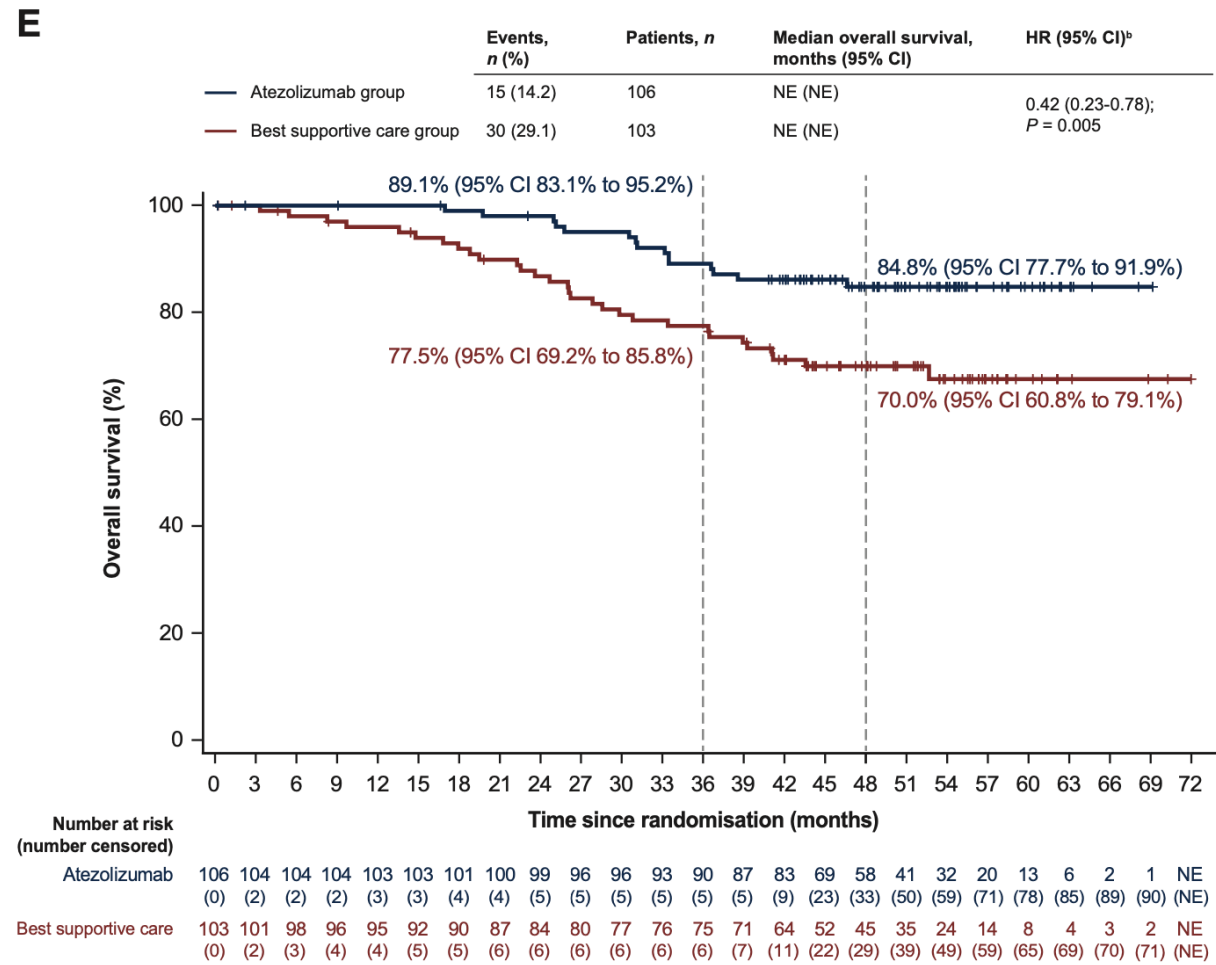
Dr. Sacher may pretend like this response data to the drugs he prescribes isn't important to the future care of his patients



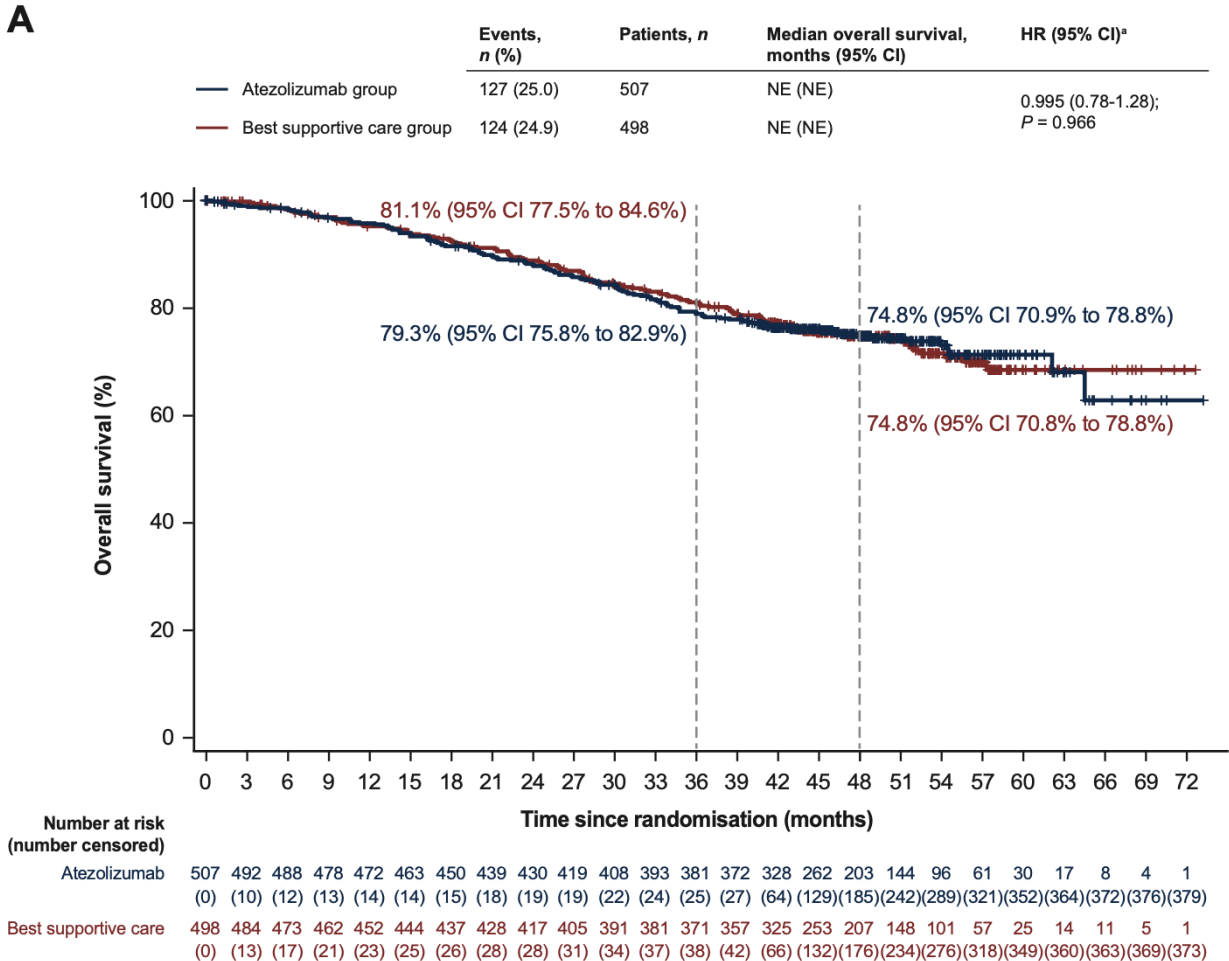
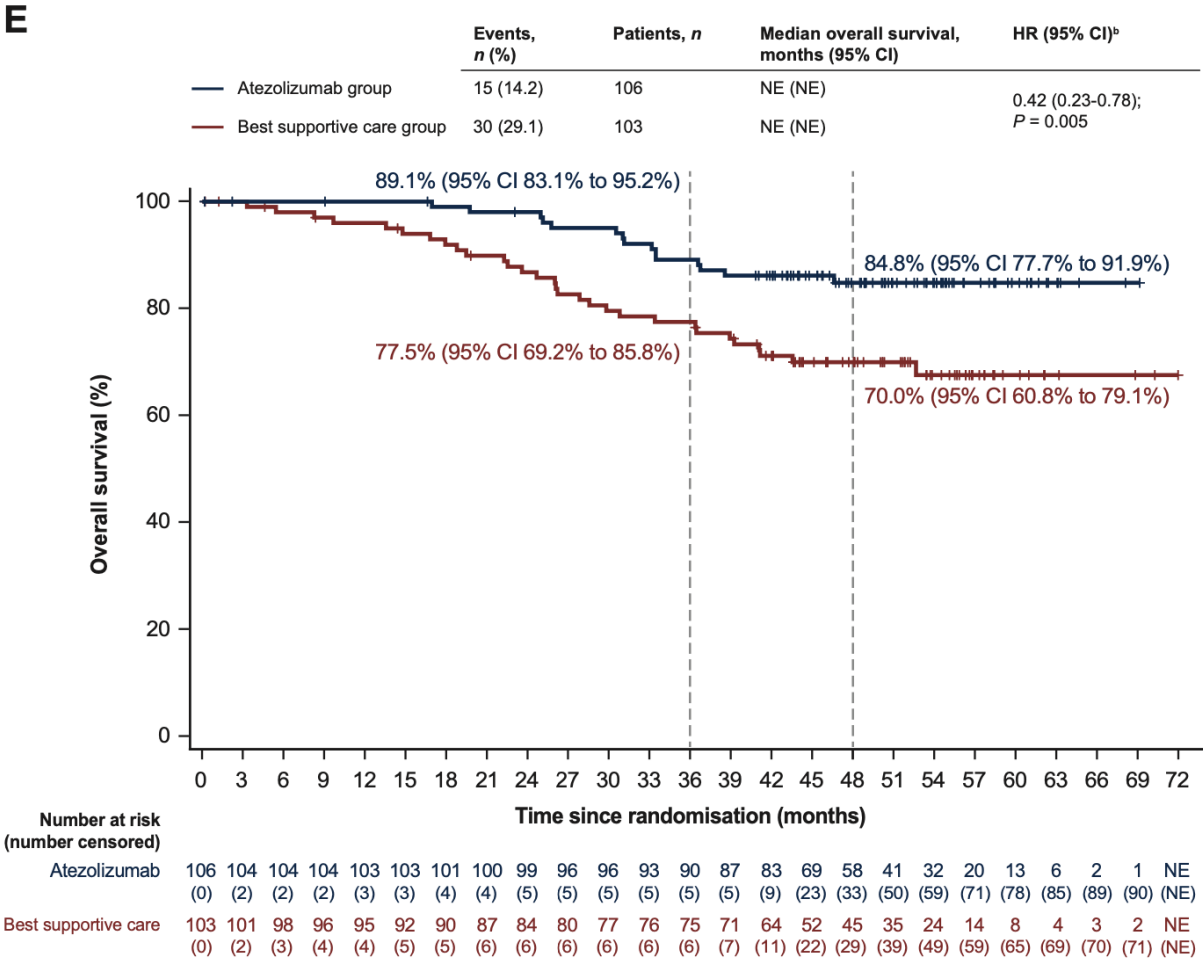
No. at risk

| | | | | | | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|----|----|---|---|---|---|
| 63 | 63 | 59 | 57 | 57 | 55 | 55 | 50 | 46 | 26 | 21 | 9 | 4 | 2 | 0 |
| 24 | 23 | 21 | 19 | 19 | 15 | 15 | 14 | 10 | 5 | 4 | 2 | 1 | 0 | 0 |
| 25 | 24 | 21 | 18 | 15 | 15 | 13 | 11 | 9 | 5 | 5 | 2 | 1 | 1 | 0 |
| 29 | 28 | 26 | 22 | 19 | 14 | 11 | 7 | 4 | 2 | 1 | 0 | 0 | 0 | 0 |

He will quote these data to support his claim (mostly because they are the only ones to quote)



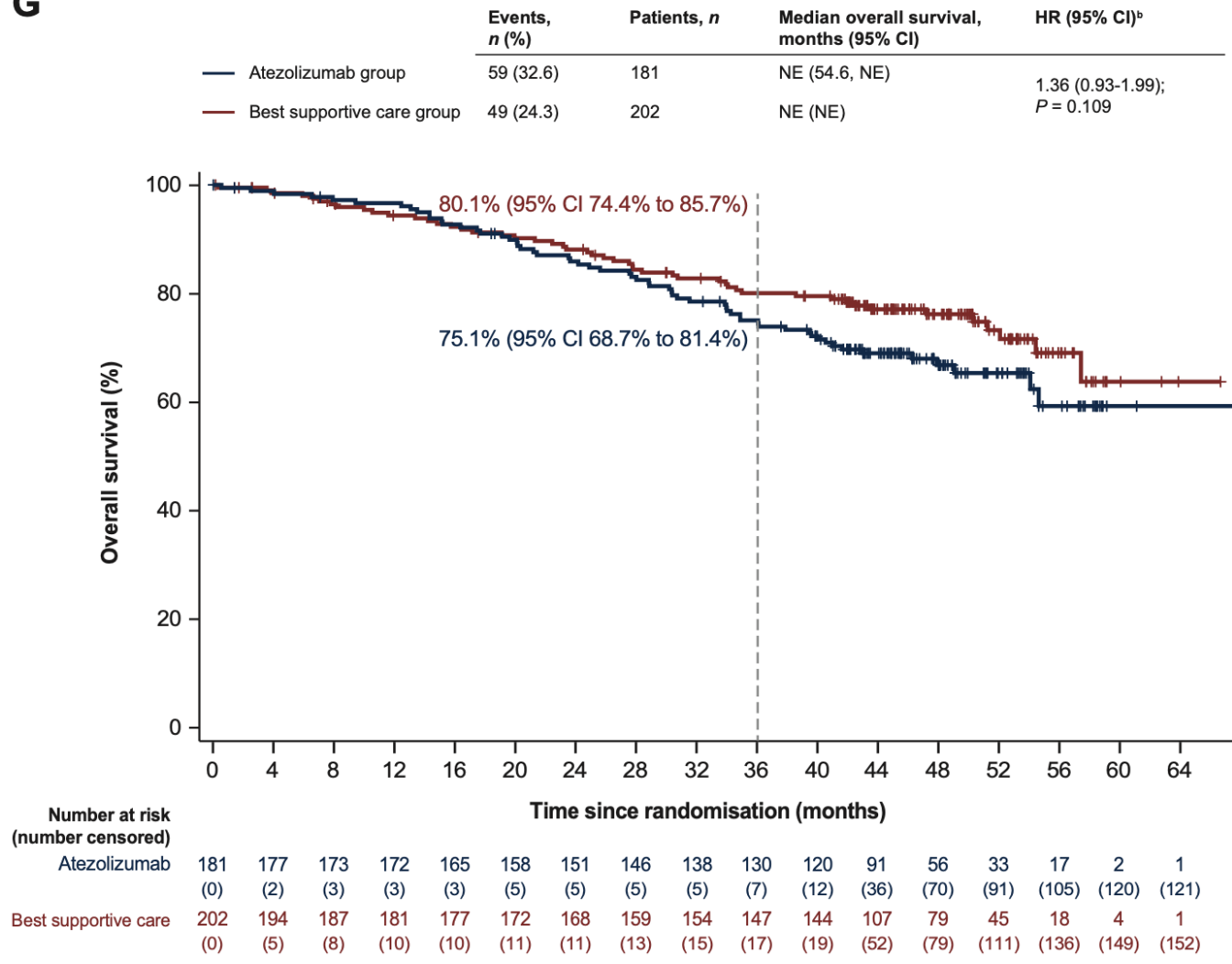
But he almost certainly won't show you these curves for the ITT population!



He will be shy to show you this:

Overall survival in the PDL1<1% population, where there may be harm to adjuvant Atezo

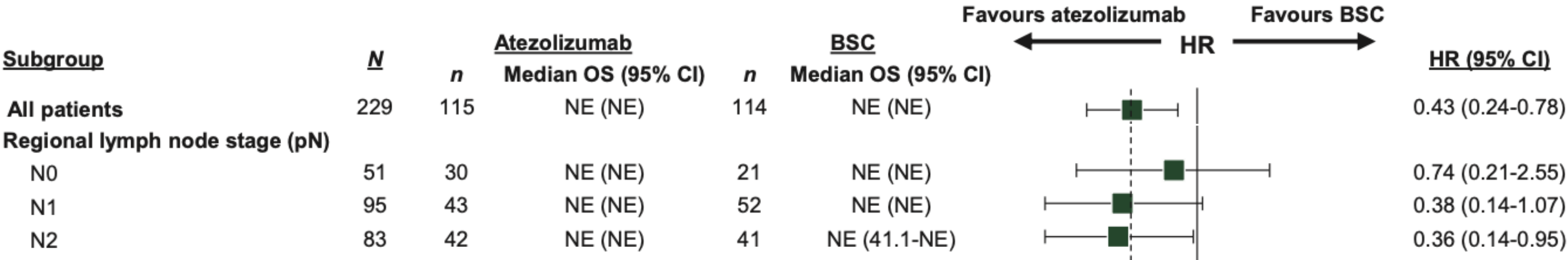
G



Because he will want to show you this:

B

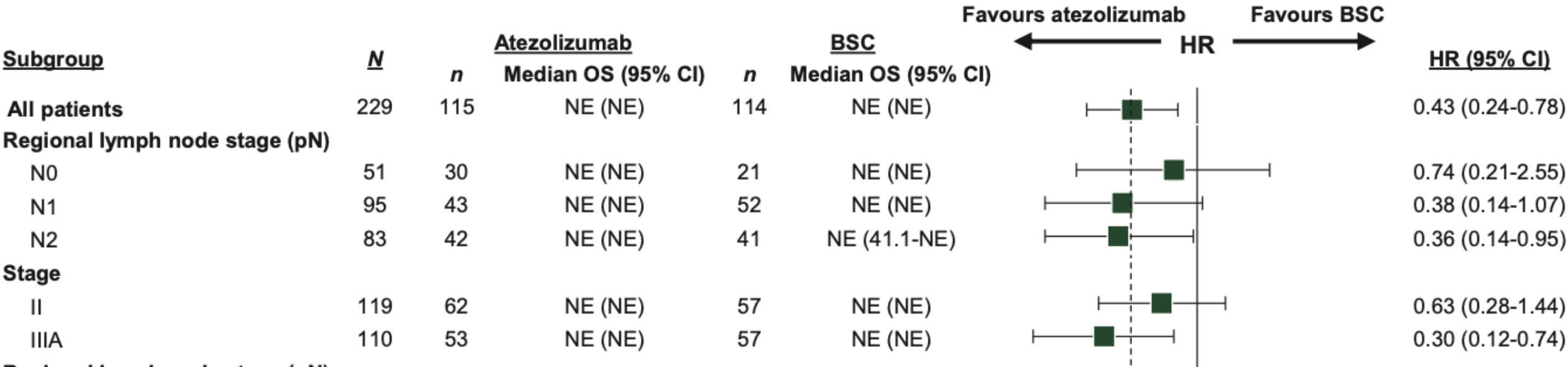
Stage II-III A PD-L1 TC ≥50%



But might forget about this...

B

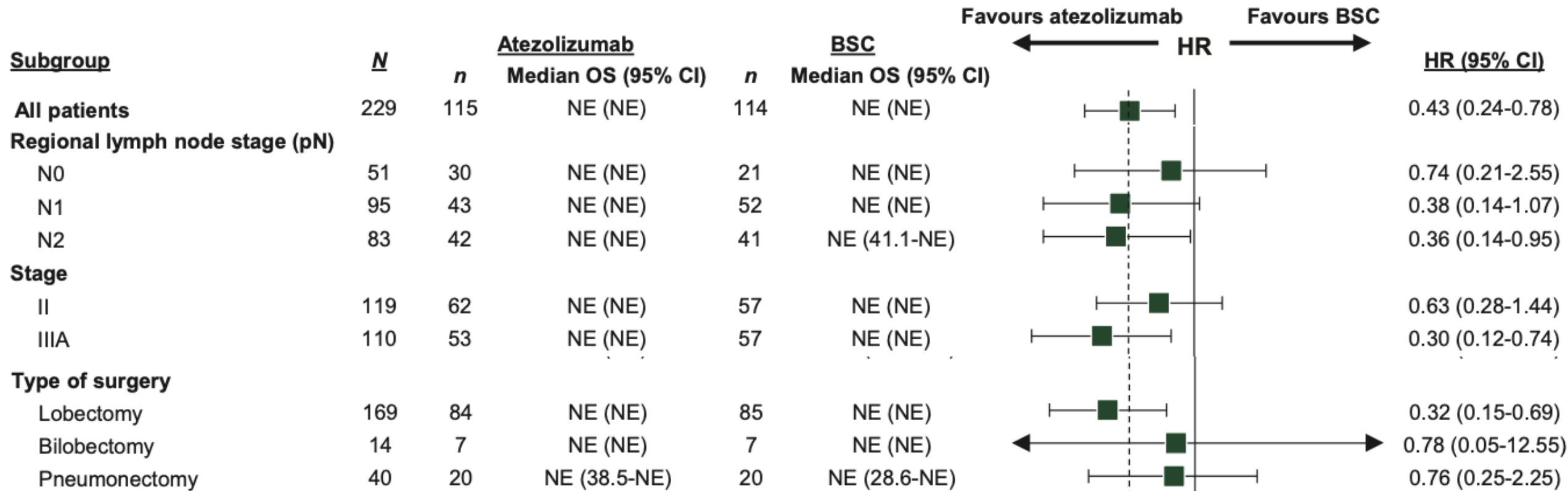
Stage II-III A PD-L1 TC ≥50%



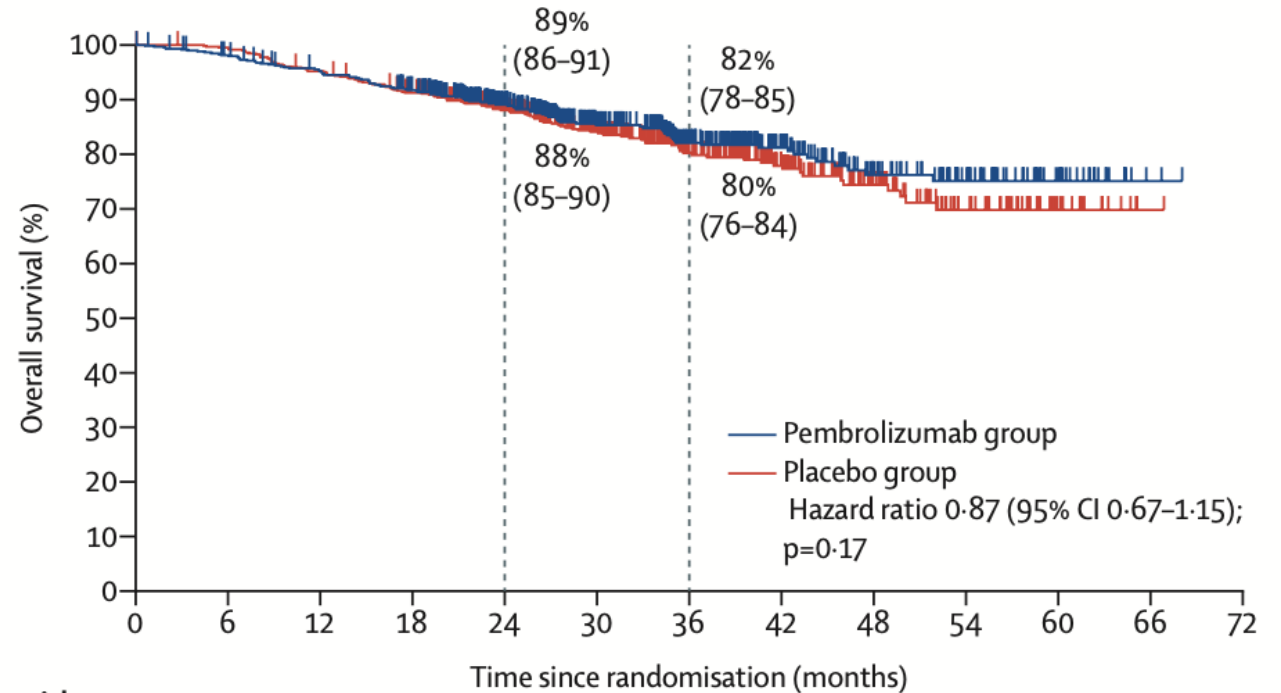
And this...

B

Stage II-IIIa PD-L1 TC ≥50%

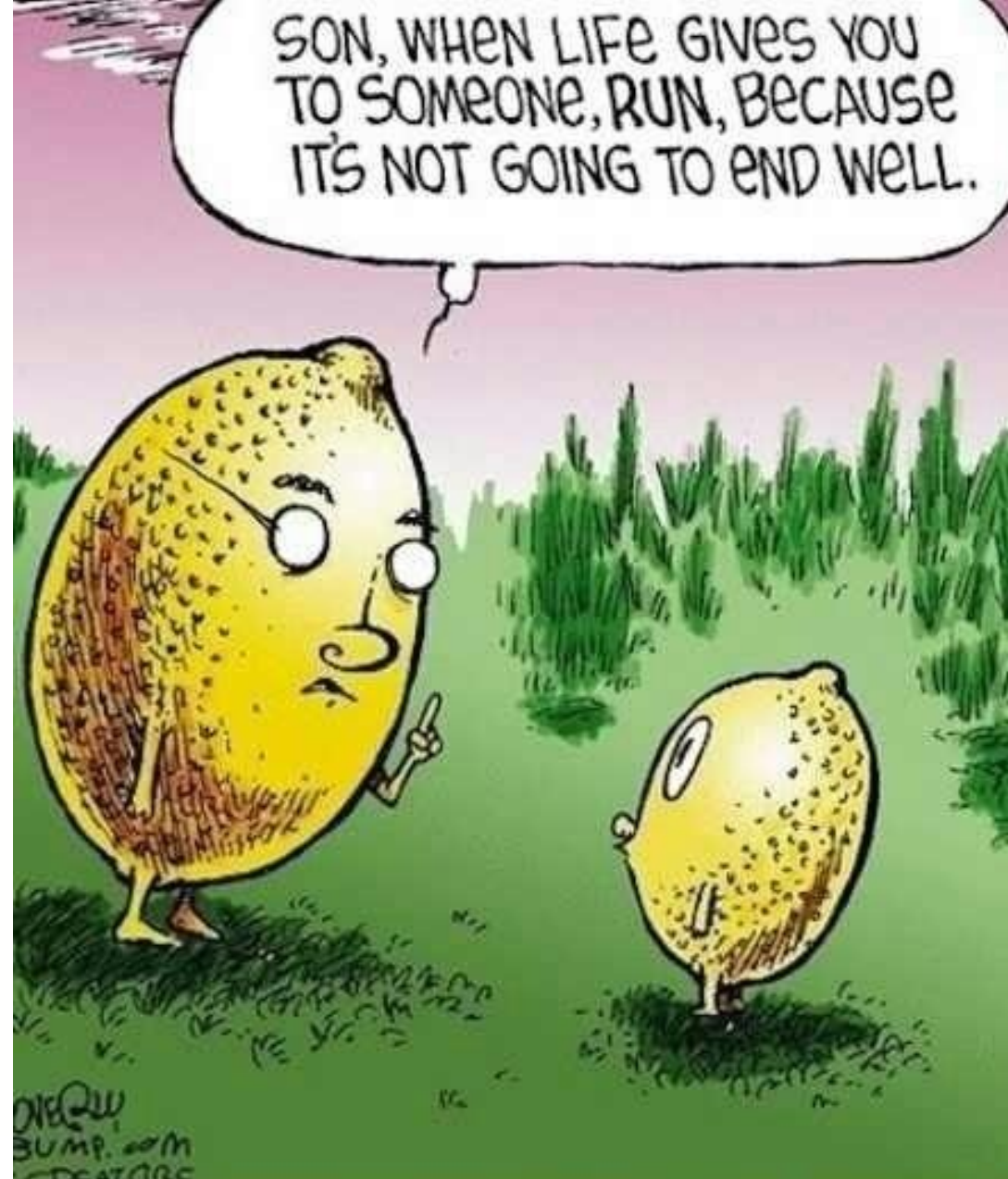


Then he will try to make lemonade from KN091






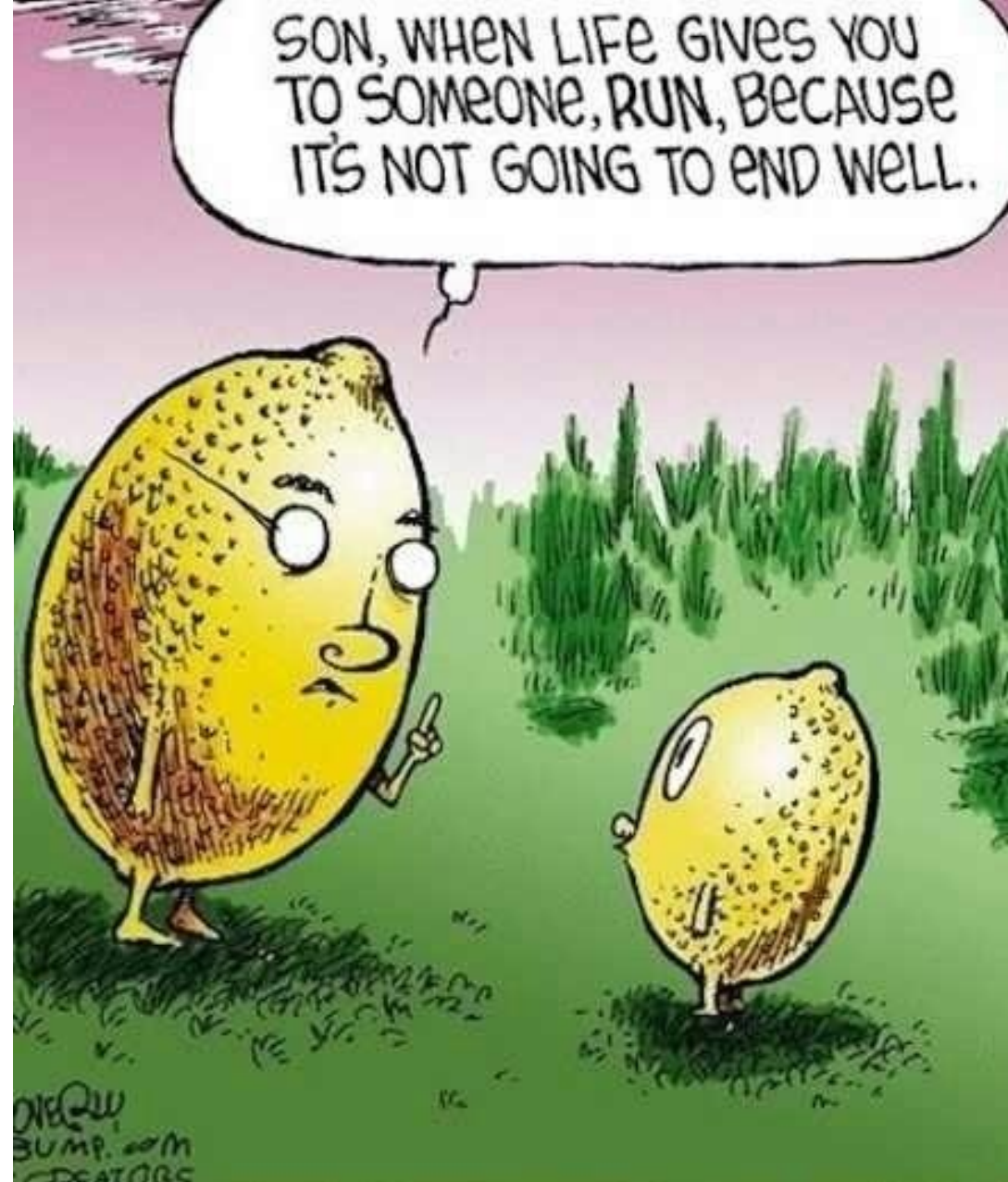
Number at risk
(number censored)

| | 0 | 6 | 12 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 | 66 | 72 |
|---------------|------------|------------|-------------|-------------|--------------|--------------|--------------|--------------|-------------|-------------|-------------|------------|------------|
| Pembrolizumab | 590 (0) | 572 (7) | 548 (14) | 520 (22) | 419 (109) | 318 (194) | 226 (276) | 143 (357) | 83 (410) | 52 (440) | 23 (469) | 2 (490) | 0 (492) |
| Placebo | 587 (0) | 582 (2) | 556 (3) | 524 (12) | 420 (99) | 309 (193) | 213 (277) | 135 (350) | 78 (402) | 44 (432) | 16 (460) | 1 (475) | 0 (476) |

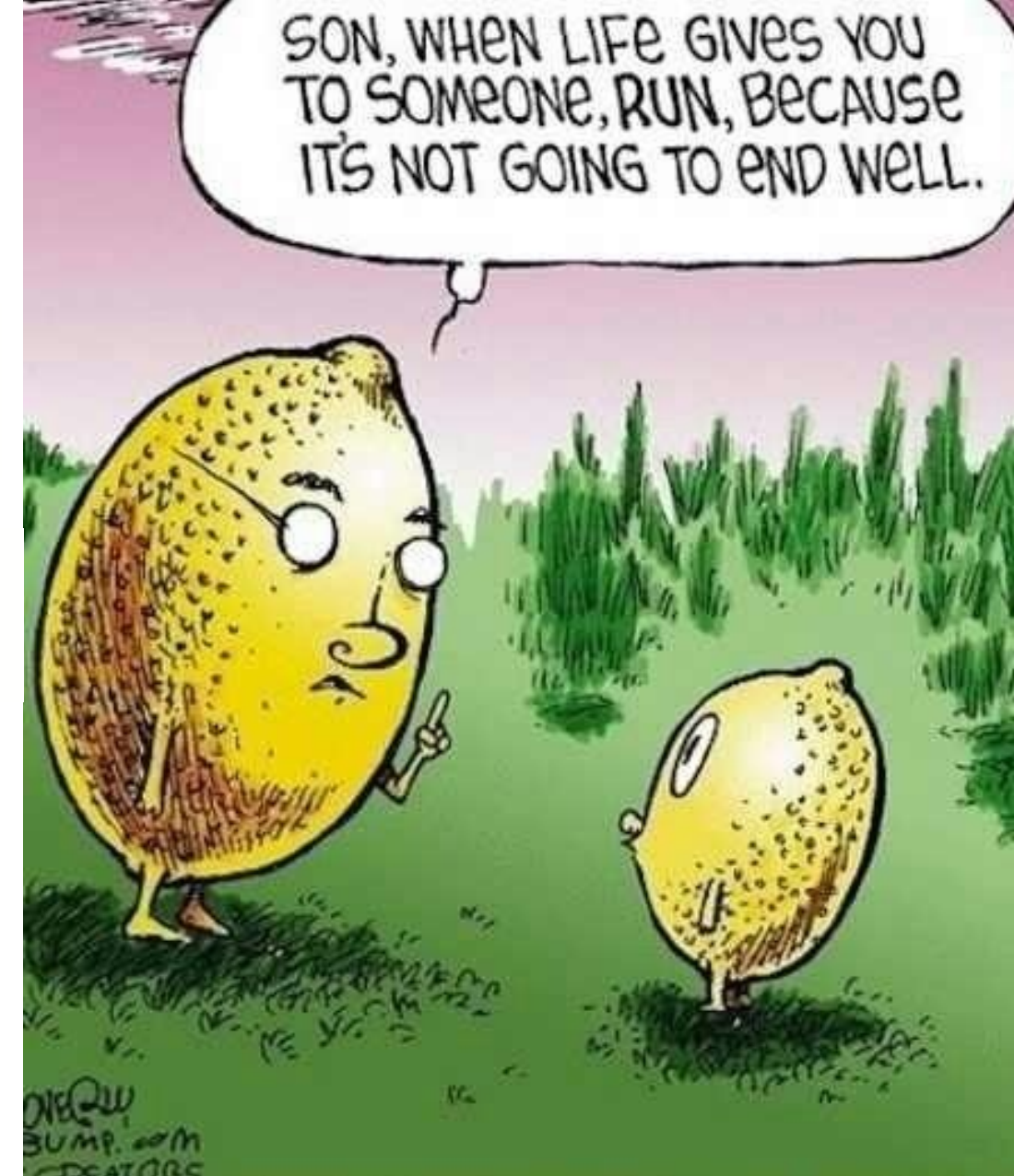
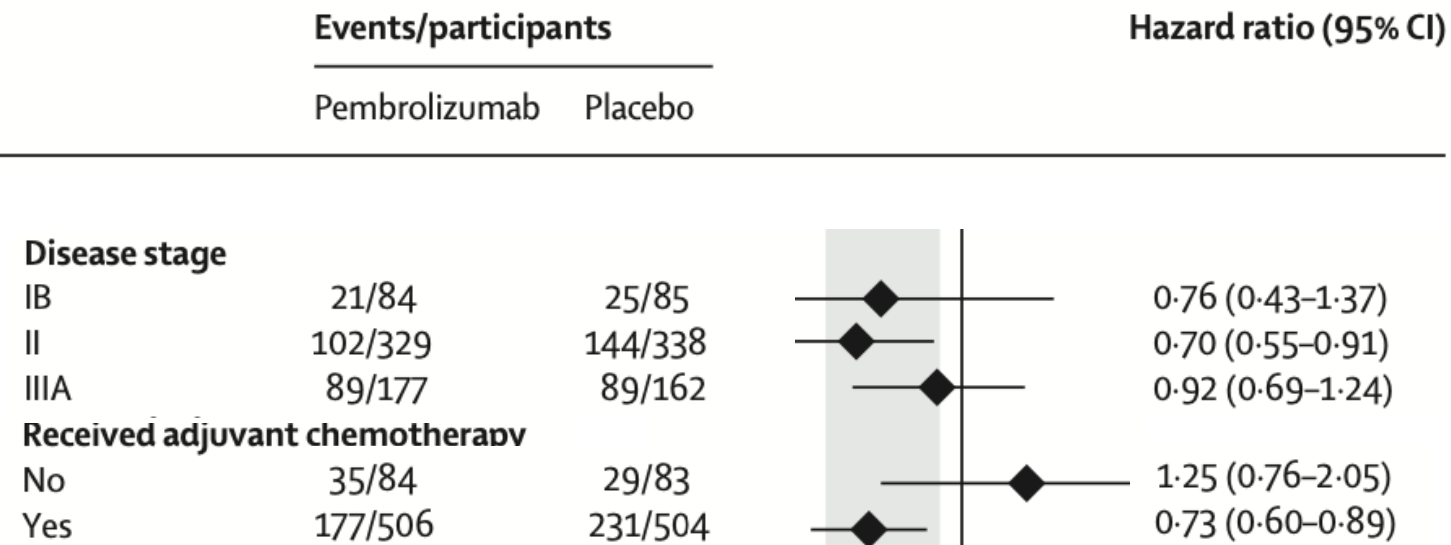


Then he will try to make lemonade from KN091

| | Events/participants | | | Hazard ratio (95% CI) |
|---------------|---------------------|---------|--|-----------------------|
| | Pembrolizumab | Placebo | | |
| Disease stage | | | | |
| IB | 21/84 | 25/85 |  | 0.76 (0.43-1.37) |
| II | 102/329 | 144/338 |  | 0.70 (0.55-0.91) |
| IIIA | 89/177 | 89/162 |  | 0.92 (0.69-1.24) |

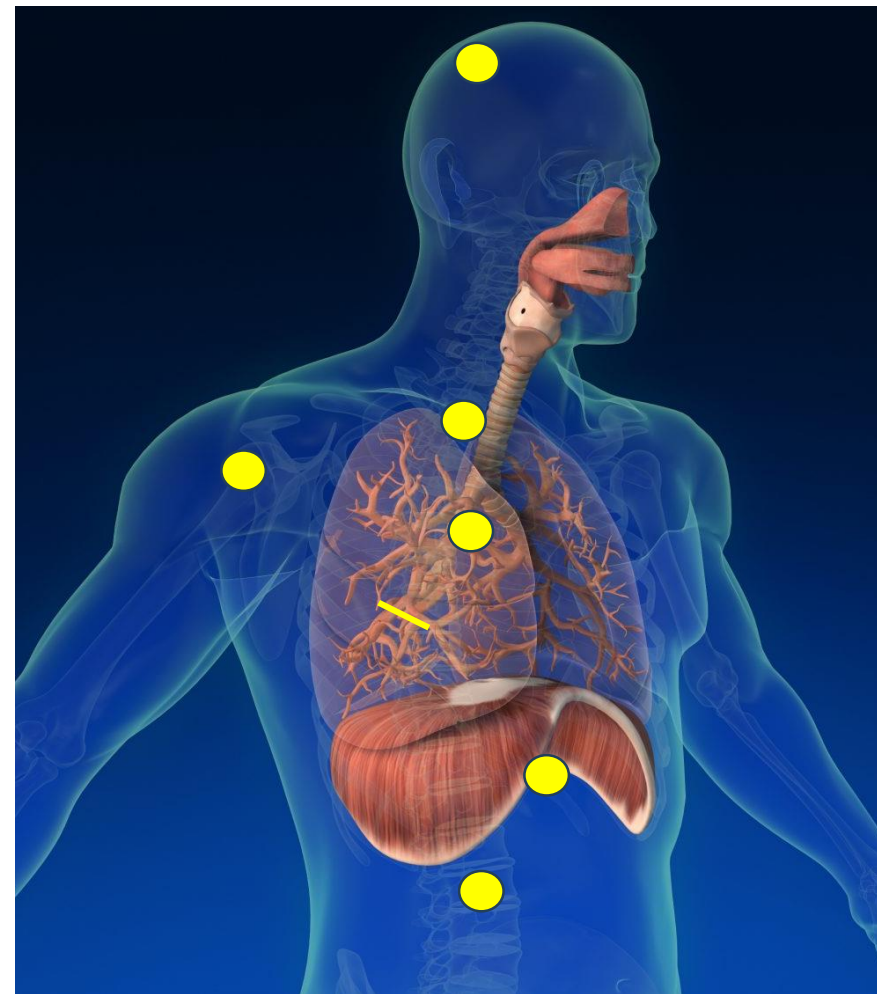
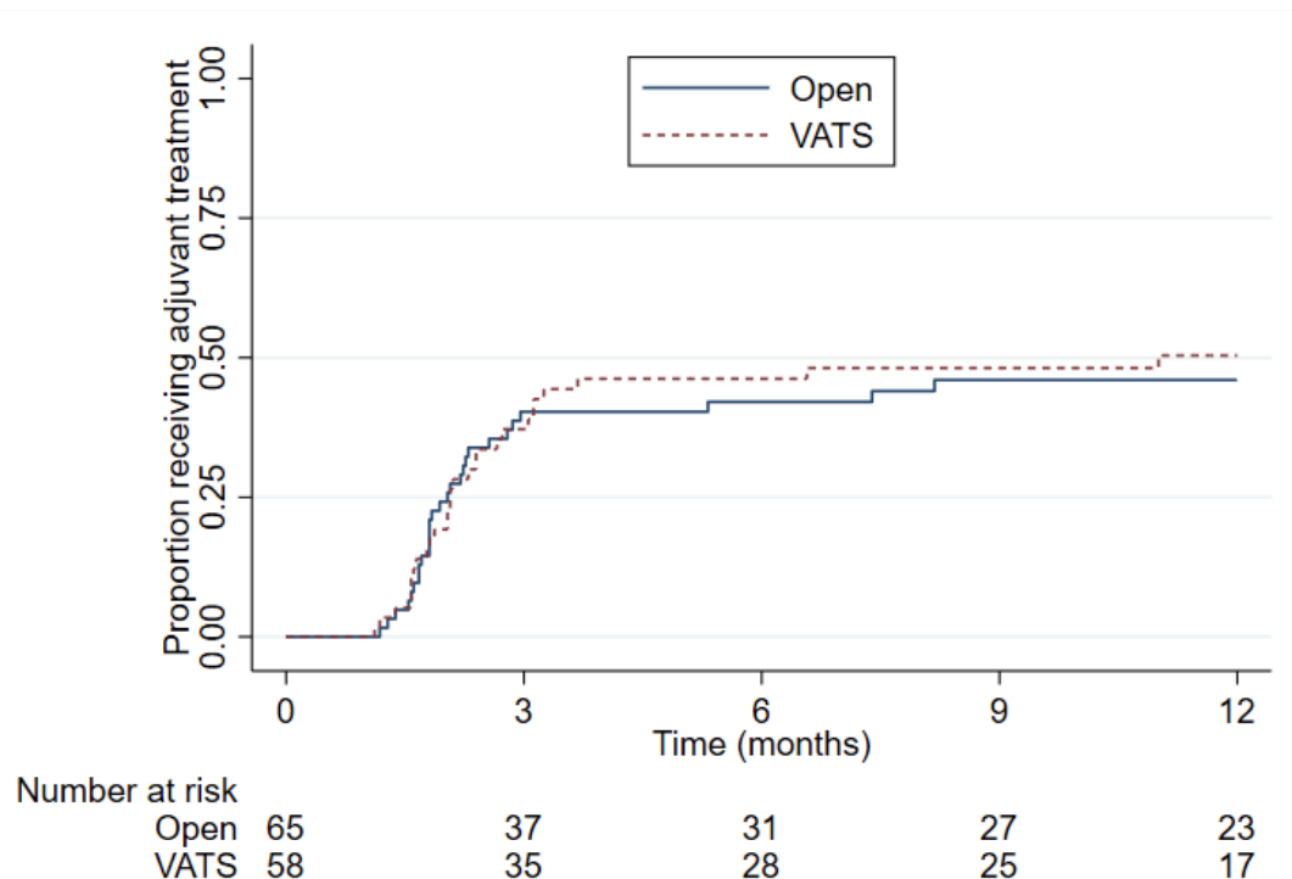


Then he will try to make lemonade from KN091



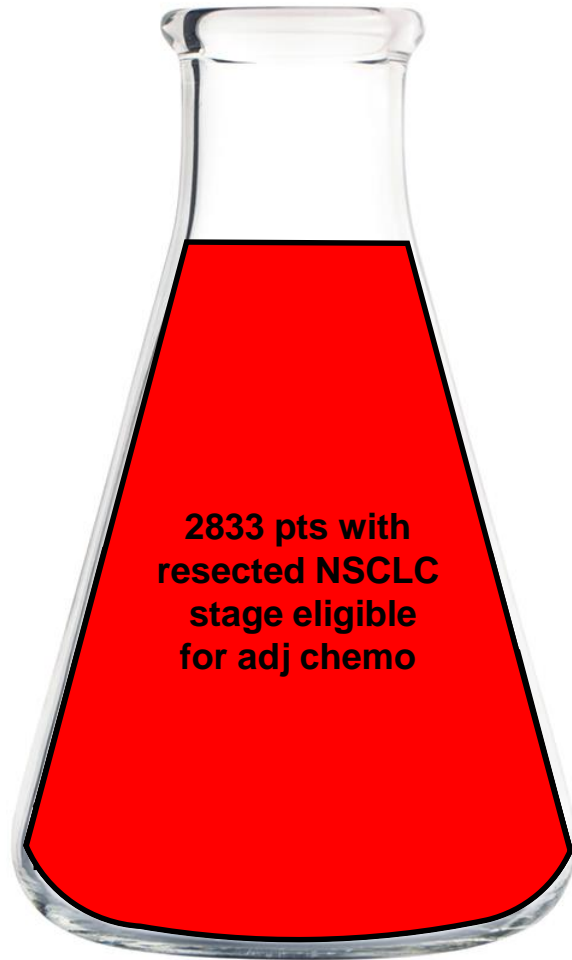
Indicated adjuvant therapy is inconsistently delivered...

Supplementary Figure S29 Uptake of adjuvant treatment: eligible cohort



Russian roulette of adjuvant therapy

- ALCHEMIST trial results on guideline concordant surgery and adjuvant chemotherapy



**If asked what the SoC is for metastatic NSCLC
PDL1 < 50%, Dr. Sacher would say:**

Chemo-IO!



If asked which regimen has the highest objective response rate in metastatic PDL1 >50%, he would say:

Chemo-IO!



If asked how many meta-analyses there are about the survival benefits of adjuvant IO, Dr. Sacher would say:

ZERO!

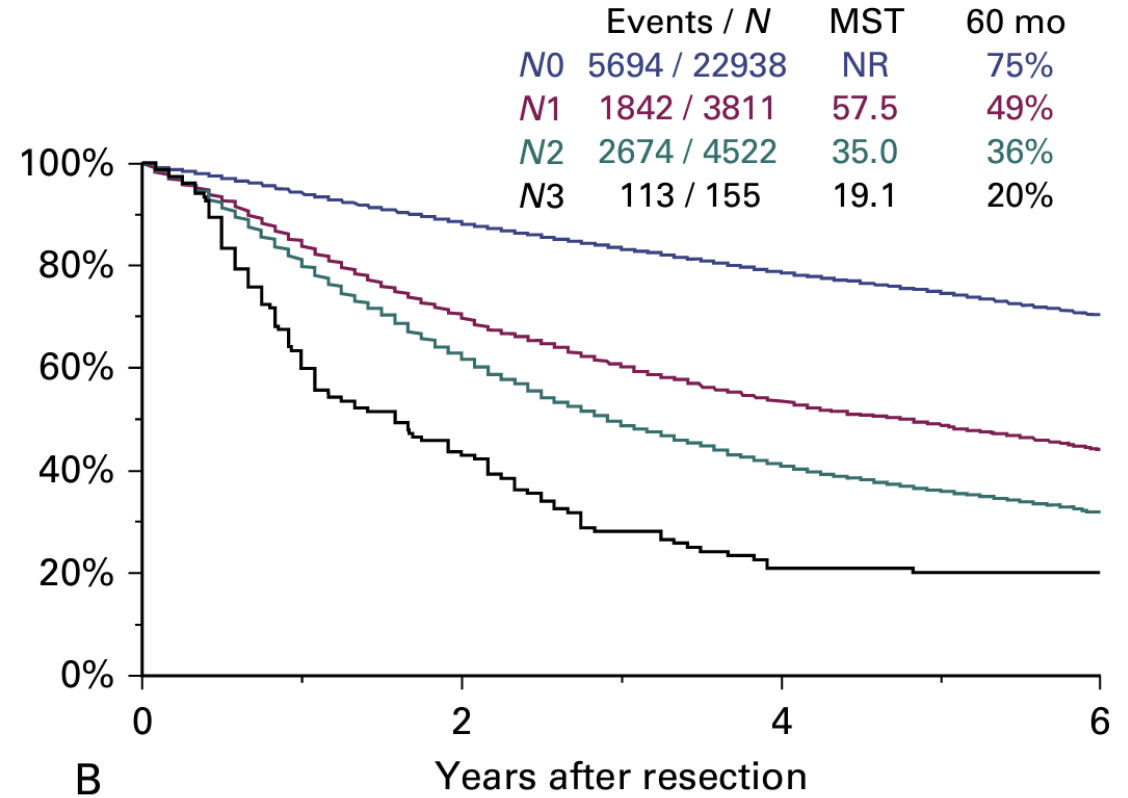
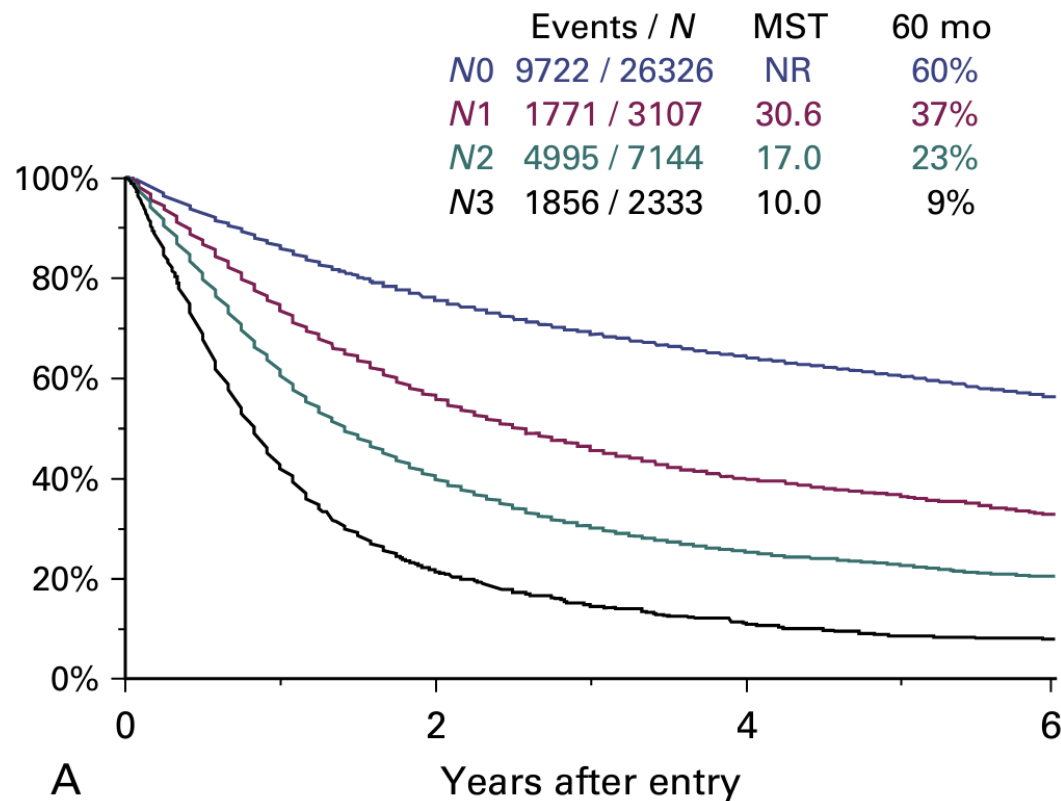


So why would he agree to defend this indefensible position?

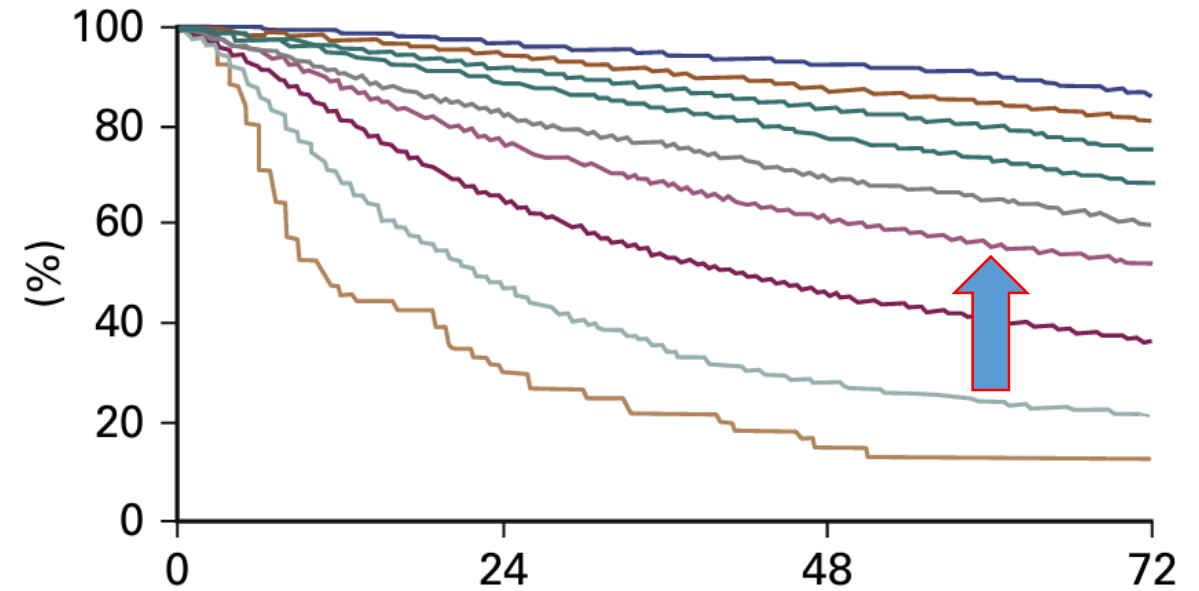
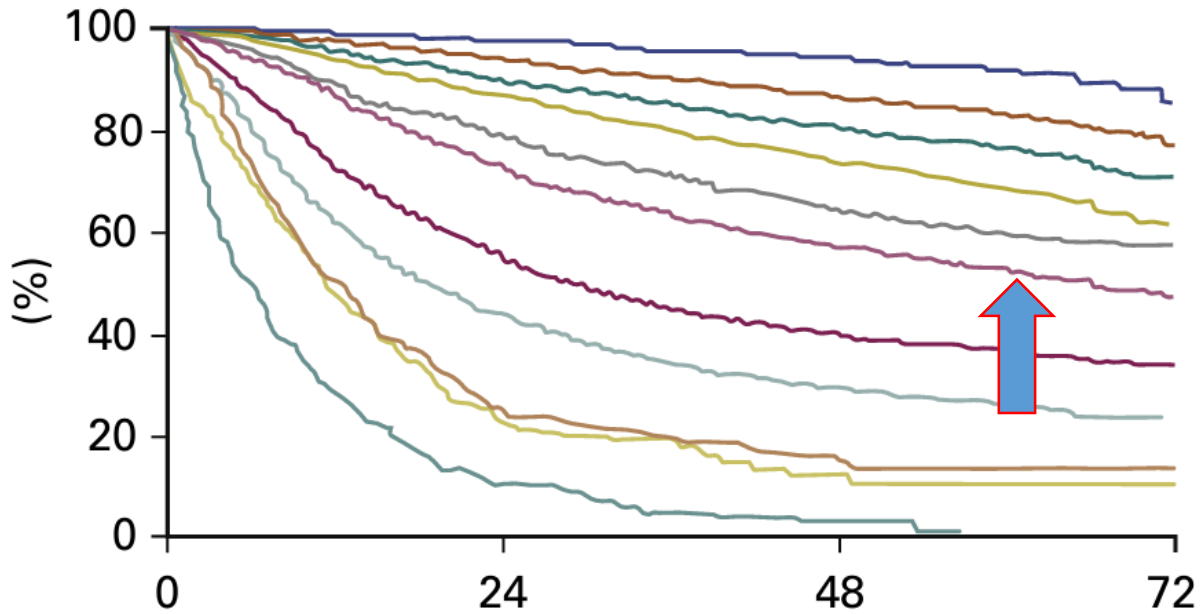


Because
I'm a such
a nice guy!

N1 disease is associated with at least 50% mortality at 5 years



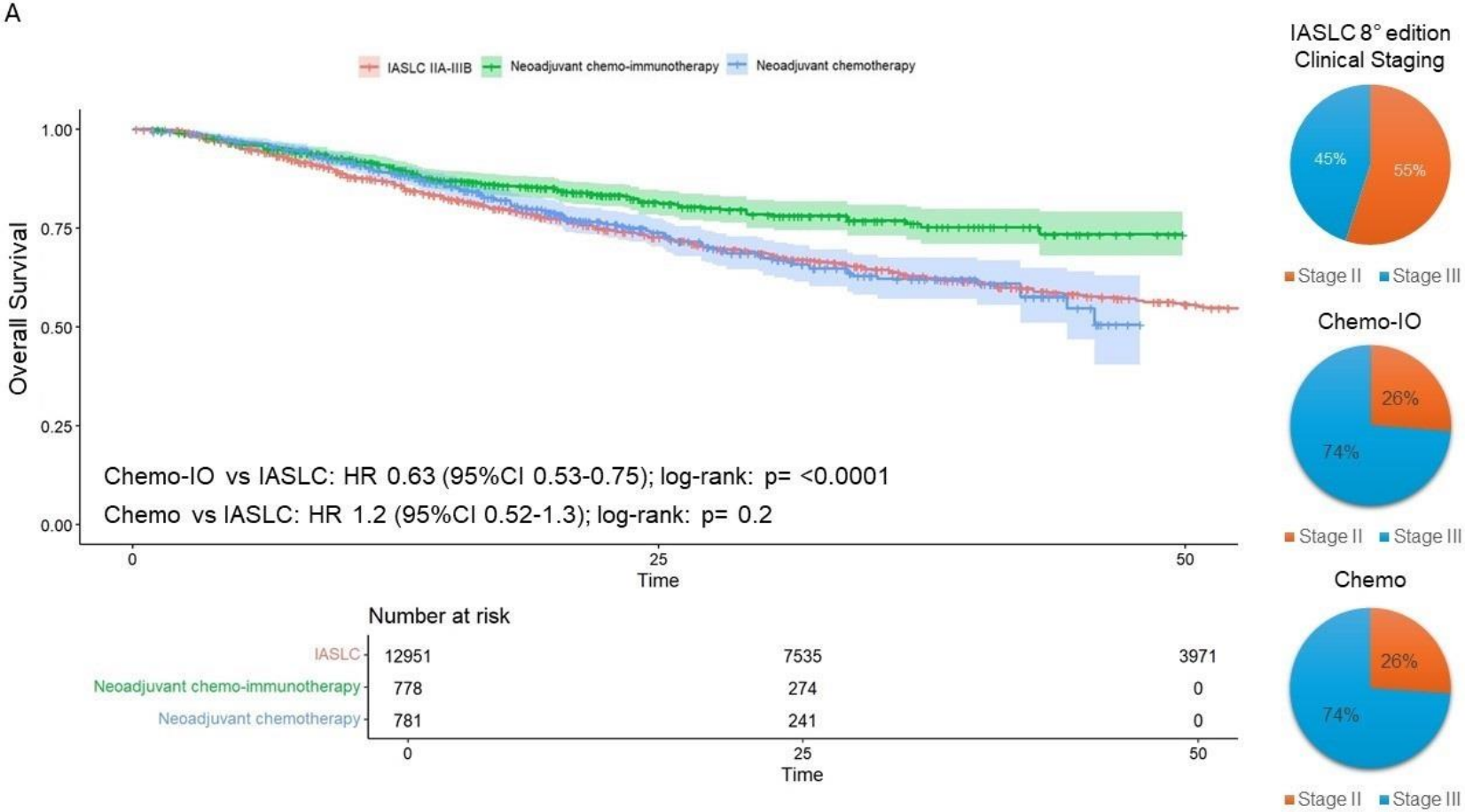
Stage IIB disease is also associated with at least 50% mortality at 5 years



| | Events/N | Months | | |
|------|-----------|--------|-----------|-----------|
| | | MST | 24 mo (%) | 60 mo (%) |
| IA1 | 68/781 | NR | 97 | 92 |
| IA2 | 505/3105 | NR | 94 | 83 |
| IA3 | 546/2417 | NR | 90 | 77 |
| IB | 560/1928 | NR | 87 | 68 |
| IIA | 215/585 | NR | 79 | 60 |
| IIB | 605/1453 | 66.0 | 72 | 53 |
| IIIA | 2052/3200 | 29.3 | 55 | 36 |
| IIIB | 1551/2140 | 19.0 | 44 | 26 |
| IIIC | 831/986 | 12.6 | 24 | 13 |
| IVA | 336/484 | 11.5 | 23 | 10 |
| IVB | 328/398 | 6.0 | 10 | 0 |

| | Events/N | Months | | |
|------|-----------|--------|-----------|-----------|
| | | MST | 24 mo (%) | 60 mo (%) |
| IA1 | 139/1389 | NR | 97 | 90 |
| IA2 | 823/5633 | NR | 94 | 85 |
| IA3 | 875/4401 | NR | 92 | 80 |
| IB | 1618/6095 | NR | 89 | 73 |
| IIA | 556/1638 | NR | 82 | 65 |
| IIB | 2175/5226 | NR | 76 | 56 |
| IIIA | 3219/5756 | 41.9 | 65 | 41 |
| IIIB | 1215/1729 | 22.0 | 47 | 24 |
| IIIC | 55/69 | 11.0 | 30 | 12 |

How well would adjuvant IO have to work to catch up to neoadj/periop chemo+IO on OS?

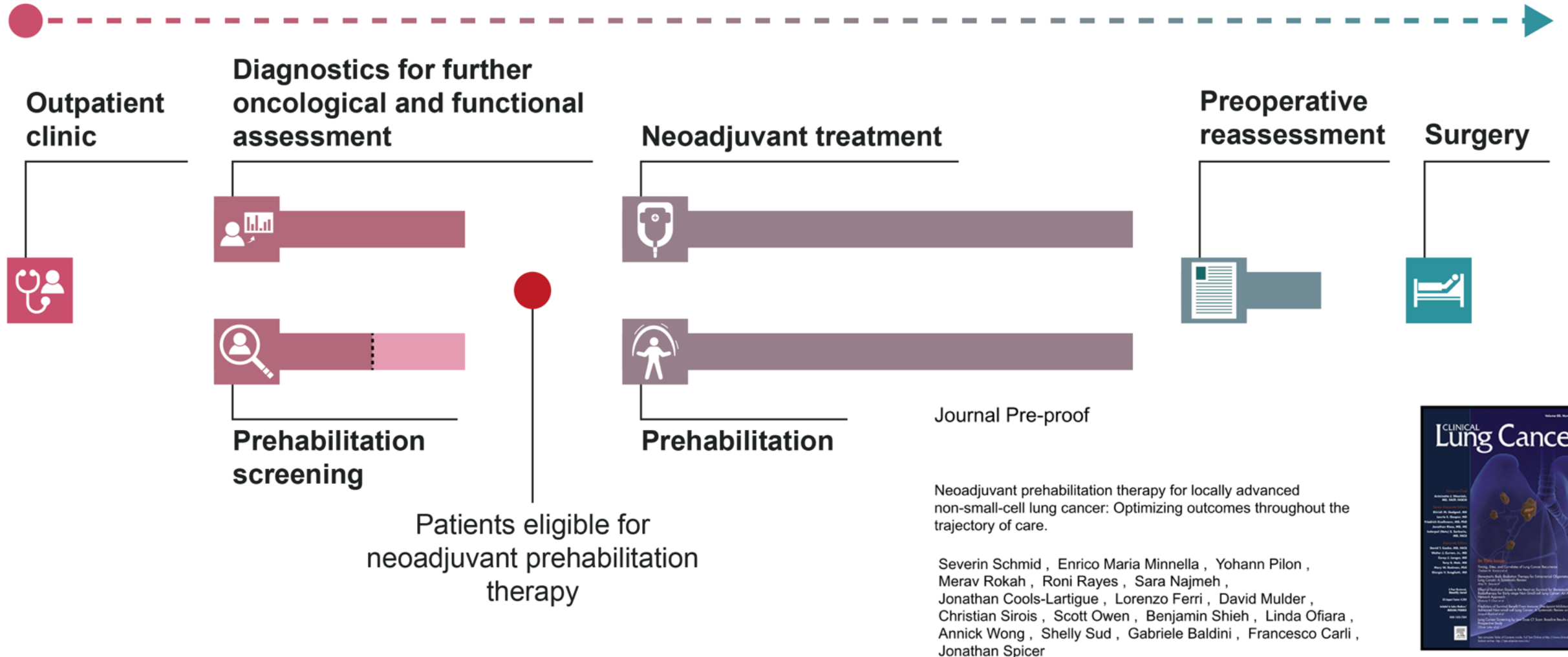


So, why is
neoadj/periop so
much better?

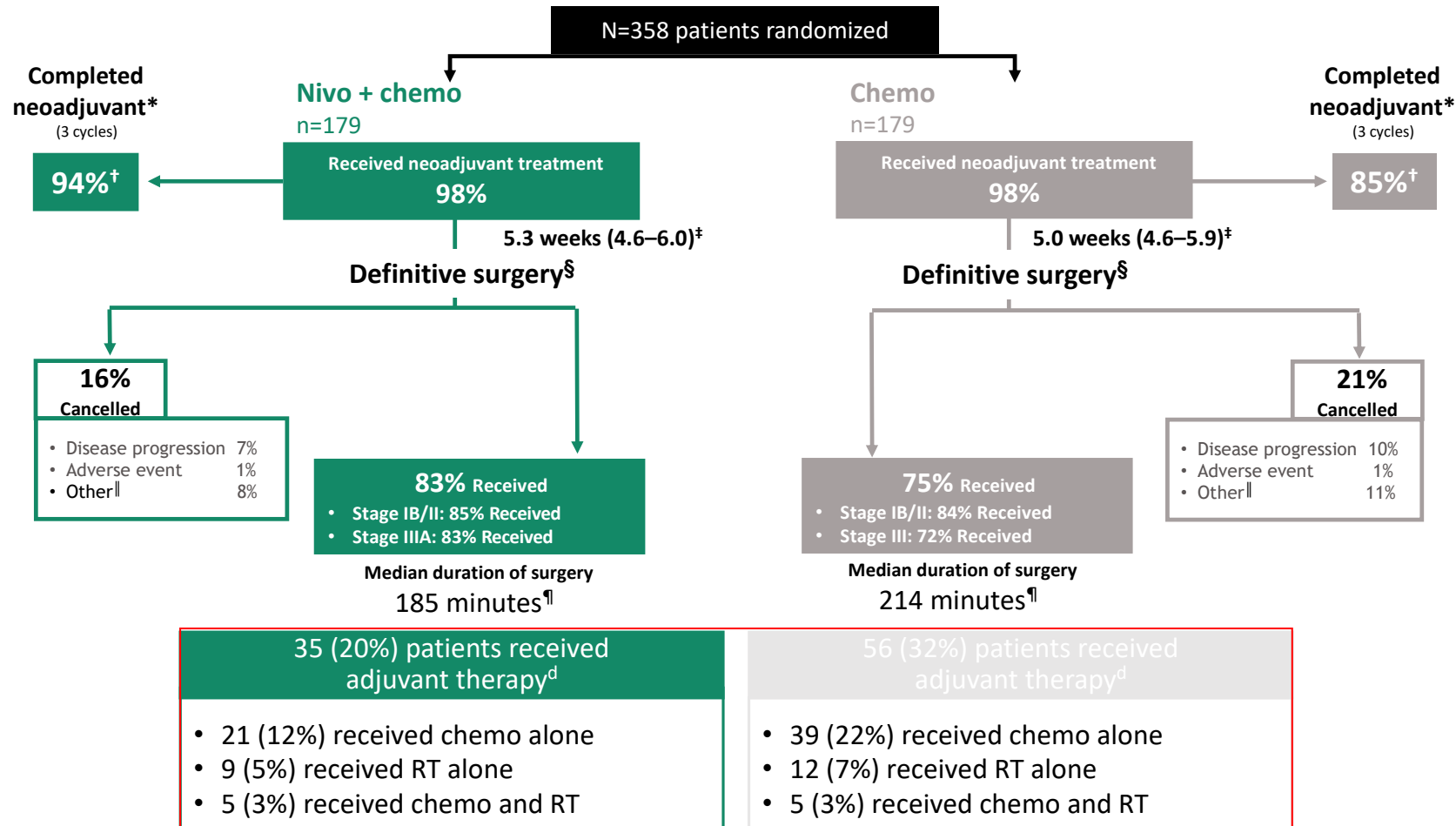


McGill

Patients no longer wait for surgery - they have a strategic plan



94% completed all cycles of systemic tx



Chemotherapy is important for these patients: Canadian data!

VOLUME 28 · NUMBER 1 · JANUARY 1 2010

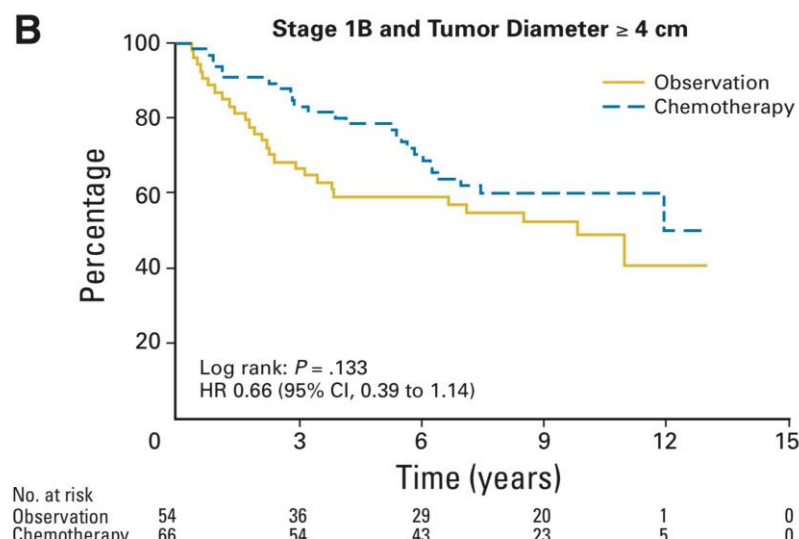
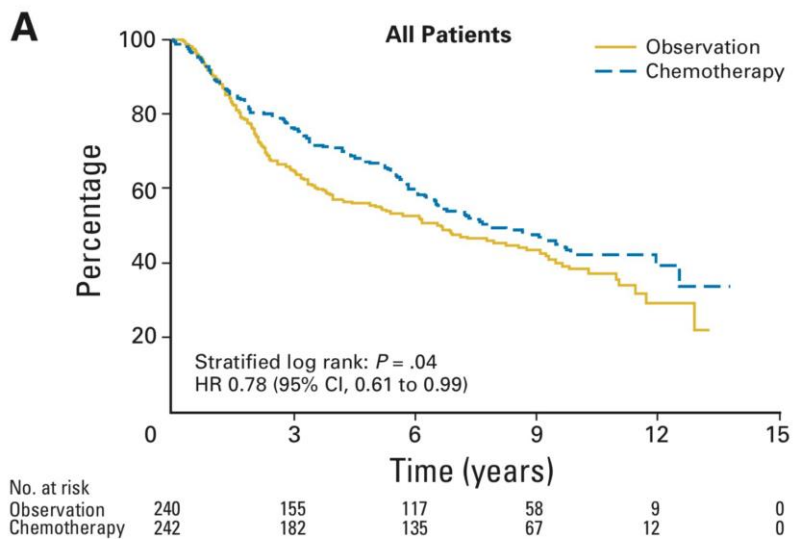
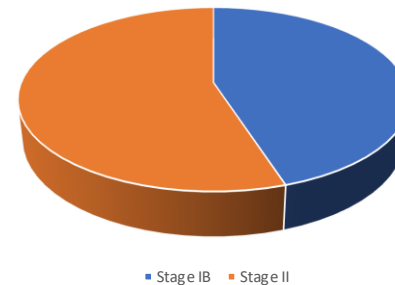
JOURNAL OF CLINICAL ONCOLOGY

ORIGINAL REPORT

Randomized Phase III Trial of Vinorelbine Plus Cisplatin Compared With Observation in Completely Resected Stage IB and II Non-Small-Cell Lung Cancer: Updated Survival Analysis of JBR-10

Charles A. Butts, Keyue Ding, Lesley Seymour, Philip Twumasi-Ankrah, Barbara Graham, David Gandara, David H. Johnson, Kenneth A. Kesler, Mark Green, Mark Vincent, Yvon Cormier, Glenwood Goss, Brian Findlay, Michael Johnston, Ming-Sound Tsao, and Frances A. Shepherd

Stage distribution in JBR.10



Do patients who do not receive definitive surgery benefit from neoadjuvant I-O + chemo?

CheckMate 816: First subsequent therapy in patients with canceled definitive surgery due to disease progression¹

| NIVO + chemo (n=11) | | | | | | |
|---------------------|---------------|---------|-------|----------------|-------------|--------------------------|
| Sex | Region | ECOG PS | Stage | Smoking status | Tumor PD-L1 | First subsequent therapy |
| Male | North America | 0 | IIB | Current/former | ≥1% | Chemotherapy |
| Female | Europe | 0 | IIB | Current/former | ≥1% | Chemotherapy |
| Male | Europe | 0 | IIB | Current/former | ≥1% | Chemotherapy |
| Male | Europe | 0 | IIB | Current/former | ≥1% | Radiotherapy |
| Female | Europe | 0 | IIB | Current/former | ≥1% | Radiotherapy |
| Female | Europe | 0 | IIB | Current/former | ≥1% | Radiotherapy* |
| Female | Europe | 0 | IIB | Current/former | ≥1% | None recorded |
| Female | Europe | 0 | IIB | Current/former | ≥1% | None recorded |
| Female | Europe | 0 | IIB | Current/former | ≥1% | None recorded |
| Female | Europe | 0 | IIB | Current/former | ≥1% | None recorded |
| Female | Europe | 0 | IIB | Current/former | ≥1% | None recorded |
| Female | Europe | 0 | IIB | Current/former | ≥1% | None recorded |
| Female | Europe | 0 | IIB | Current/former | ≥1% | None recorded |
| Female | Europe | 0 | IIB | Current/former | ≥1% | None recorded |
| Female | Europe | 0 | IIB | Current/former | ≥1% | None recorded |
| Female | Europe | 0 | IIB | Current/former | ≥1% | None recorded |
| Female | Europe | 0 | IIB | Current/former | ≥1% | None recorded |
| Female | Europe | 0 | IIB | Current/former | ≥1% | None recorded |

| Chemo (n=17) | | | | | | |
|--------------|---------------|---------|-------|----------------|-------------|--|
| Sex | Region | ECOG PS | Stage | Smoking status | Tumor PD-L1 | First subsequent therapy |
| Male | North America | 0 | IIB | Current/former | ≥1% | Chemotherapy |
| Male | North America | 0 | IIB | Current/former | ≥1% | Chemotherapy |
| Female | Europe | 0 | IIB | Current/former | ≥1% | Radiotherapy |
| Male | North America | 0 | IIB | Current/former | ≥1% | Radiotherapy |
| Female | Europe | 0 | IIB | Current/former | ≥1% | Radiotherapy |
| Female | Europe | 0 | IIB | Current/former | ≥1% | Radiotherapy |
| Female | Europe | 0 | IIB | Current/former | ≥1% | Radiotherapy* |
| Female | Europe | 0 | IIB | Current/former | ≥1% | Radiotherapy + immunotherapy (pembrolizumab) |
| Female | Europe | 0 | IIB | Current/former | ≥1% | Chemoradiotherapy + immunotherapy (durvalumab) |
| Female | Europe | 0 | IIB | Current/former | ≥1% | Chemoradiotherapy + immunotherapy (durvalumab) |
| Female | Europe | 0 | IIB | Current/former | ≥1% | Chemotherapy + immunotherapy (toripalimab) |
| Female | Europe | 0 | IIB | Current/former | ≥1% | Chemotherapy + immunotherapy (pembrolizumab) |
| Female | Europe | 0 | IIB | Current/former | ≥1% | Immunotherapy (nivolumab) |
| Female | Europe | 0 | IIB | Current/former | ≥1% | Immunotherapy (nivolumab) |
| Female | Europe | 0 | IIB | Current/former | ≥1% | Immunotherapy (nivolumab) |
| Female | Europe | 0 | IIB | Current/former | ≥1% | Immunotherapy (pembrolizumab) |
| Female | Europe | 0 | IIB | Current/former | ≥1% | None recorded |

Sex

Male Female

Region

North America Asia
Europe ROW†

ECOG PS

0 1

Stage

IIA IIB IIIA

Smoking status

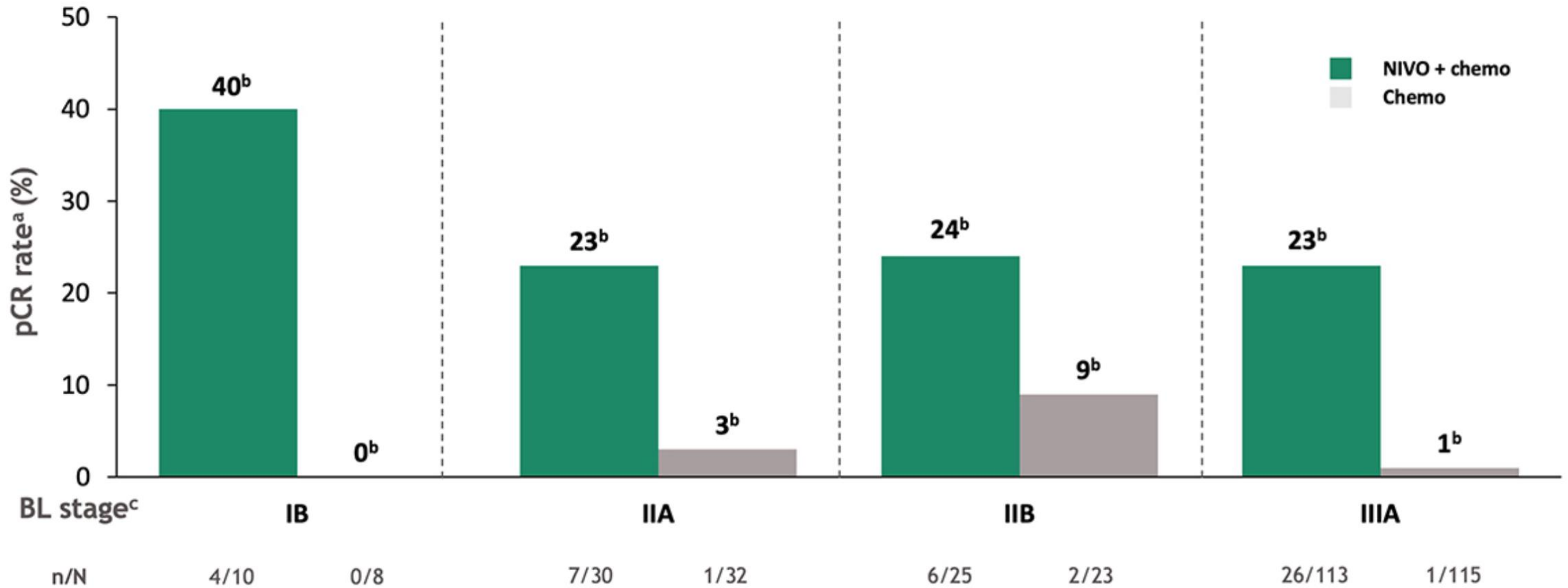
Current/former Never

Tumor PD-L1

≥1% <1%‡

- Of the patients who canceled definitive surgery due to reasons other than disease progression (19, nivo + chemo; 27, chemo), some of the patients received definitive radiotherapy-based treatment modalities as an alternative to surgery, while no subsequent therapies were recorded for other patients¹

Pathological response by cTNM in CM816



Three doses of neoadj chemo-IO reduce distant recurrence by more than 50%

Locoregional recurrence^a

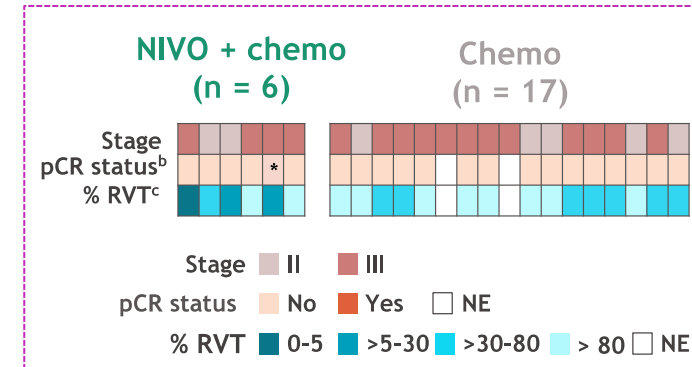
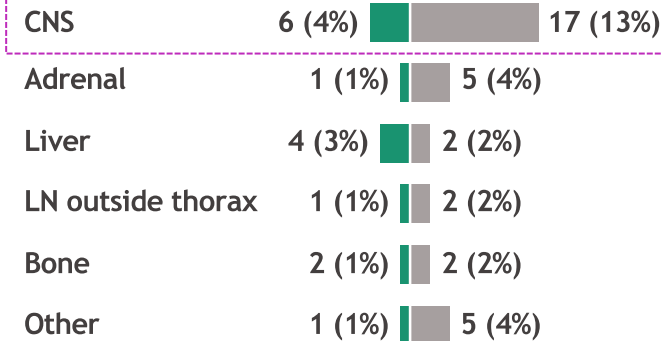
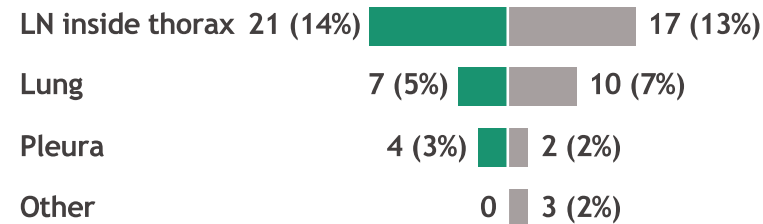
Distant recurrence

■ NIVO + chemo ■ Chemo

28 (19%) 29 (22%)

15 (10%) 30 (22%)

CNS recurrence by disease stage and pathologic response



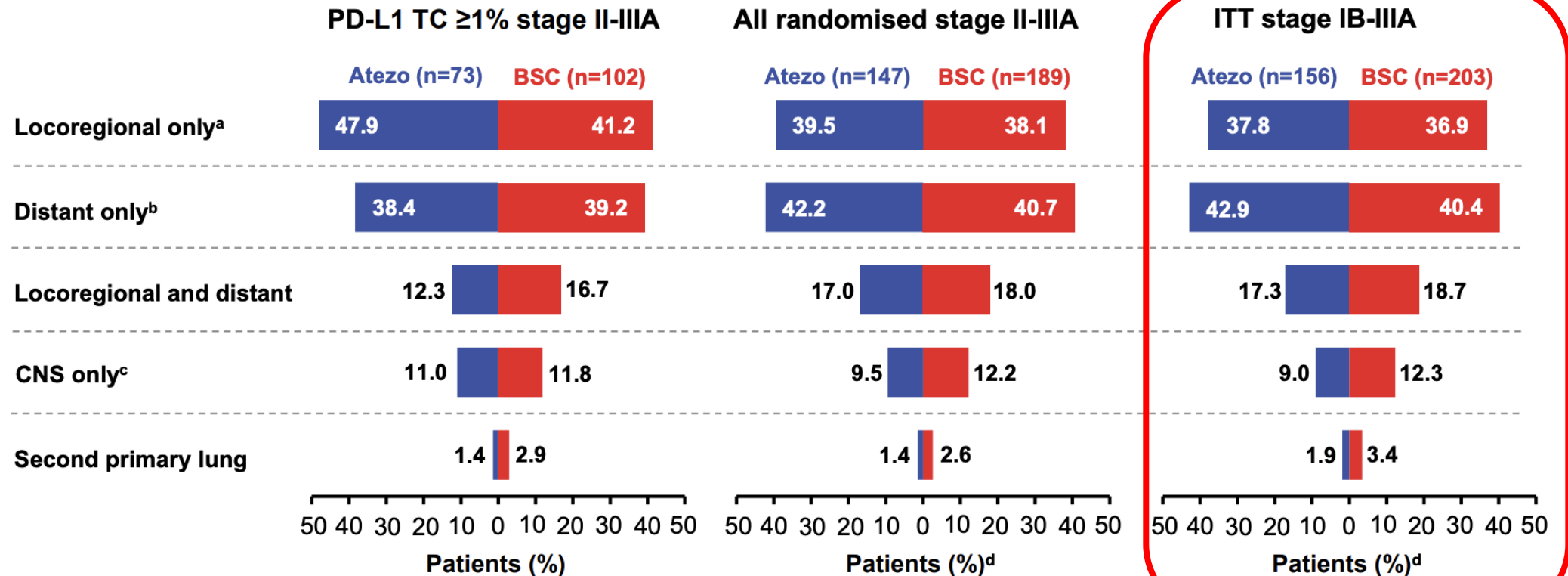
40 30 20 10 0 10 20 30 40
Patients, n (%)

40 30 20 10 0 10 20 30 40
Patients, n (%)

Forde et al, ELCC 2023

16 doses of IO impact on distant recurrence?

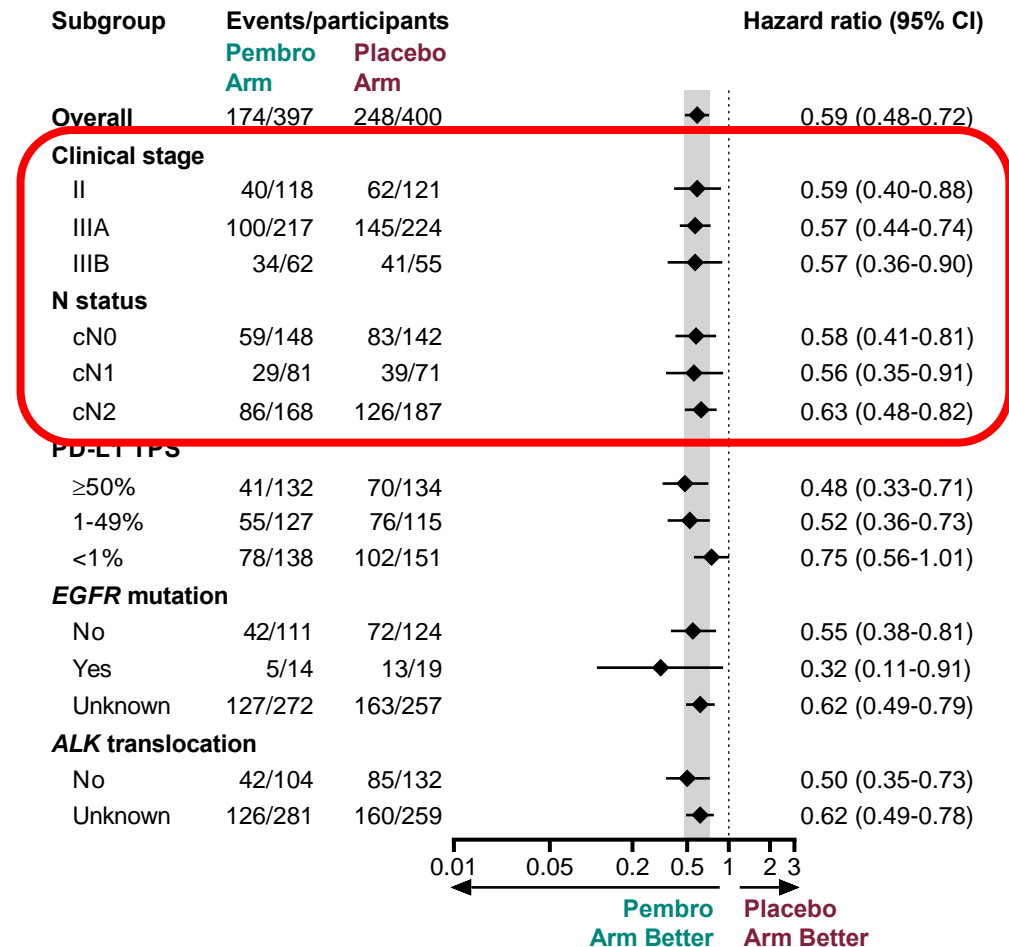
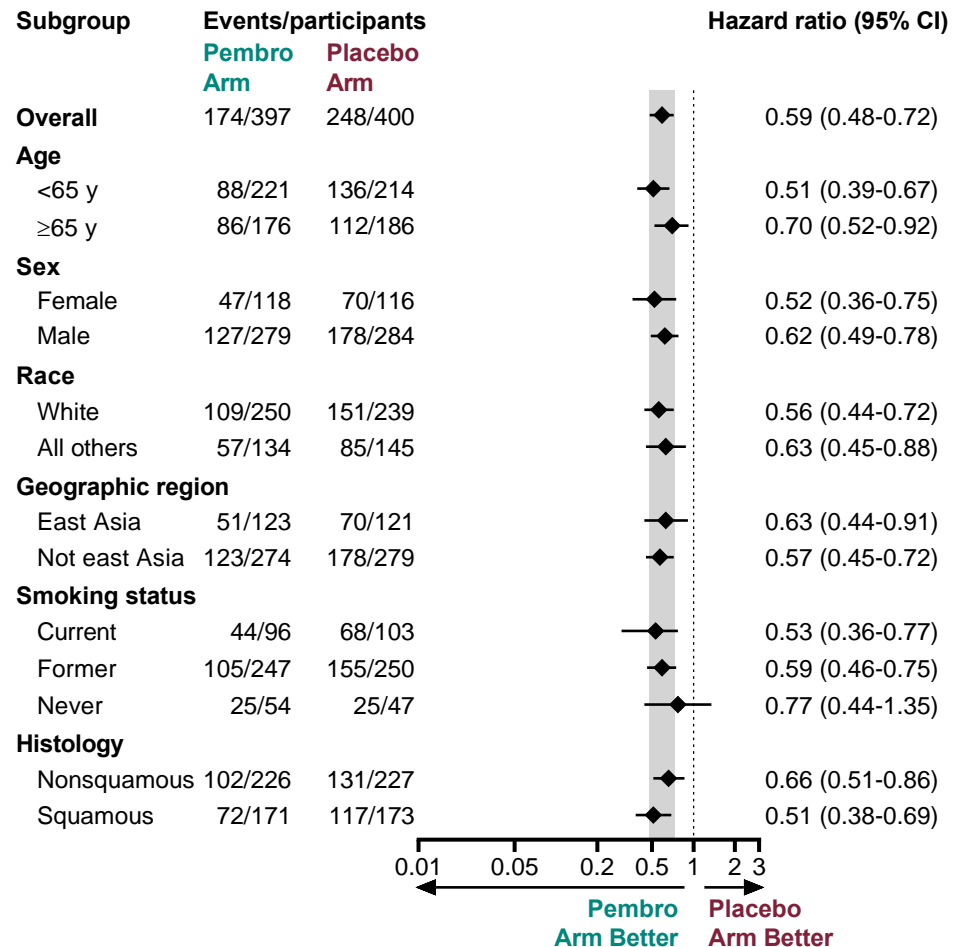
Patterns of relapse



Clinical cutoff: 21 January 2021. ^a Includes patients with 'local' and/or 'regional' recurrence only. ^b Includes patients with distant sites only; patients could have >1 distant site. ^c Subset of the Distant only category; includes patients with only distant CNS site. Patients with recurrence in CNS and other sites are not included. ^d One patient in the BSC arm had distant + second primary non-lung sites.

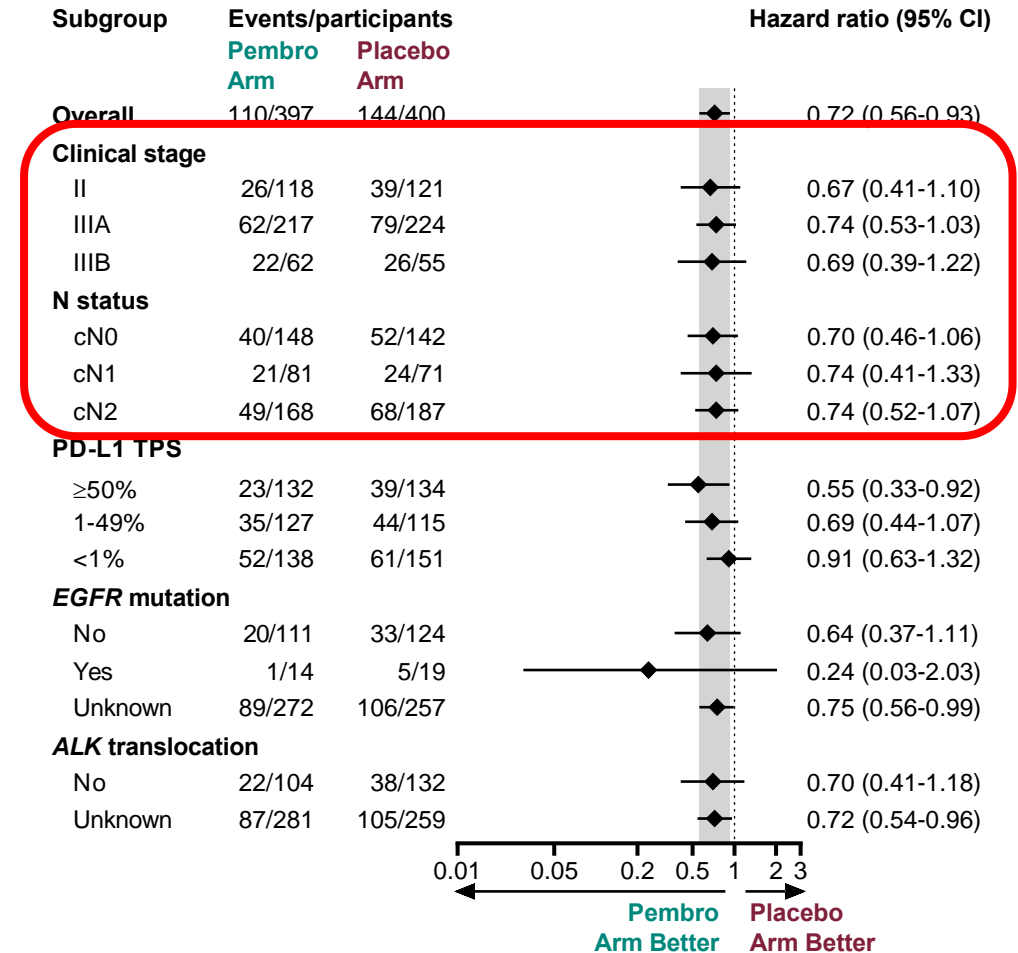
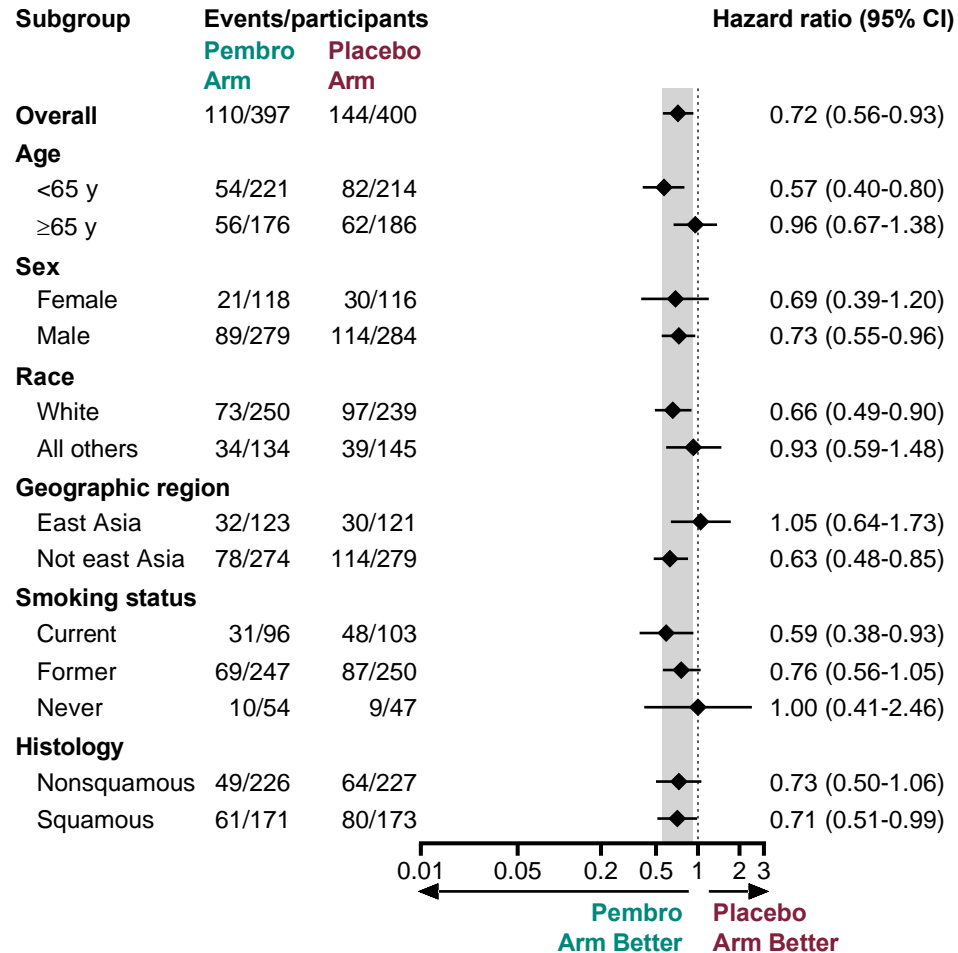
Felip et al. IMpower010 Relapse Patterns. <https://bit.ly/3mNMSAi> 8

Event-Free Survival in Subgroups, IA2



Per the prespecified analysis plan, subgroups with <30 participants are excluded from the forest plot. Subgroups for stage IIIA and IIIB and pN status were post hoc; all other subgroups were prespecified. Data cutoff date for IA2: July 10, 2023.

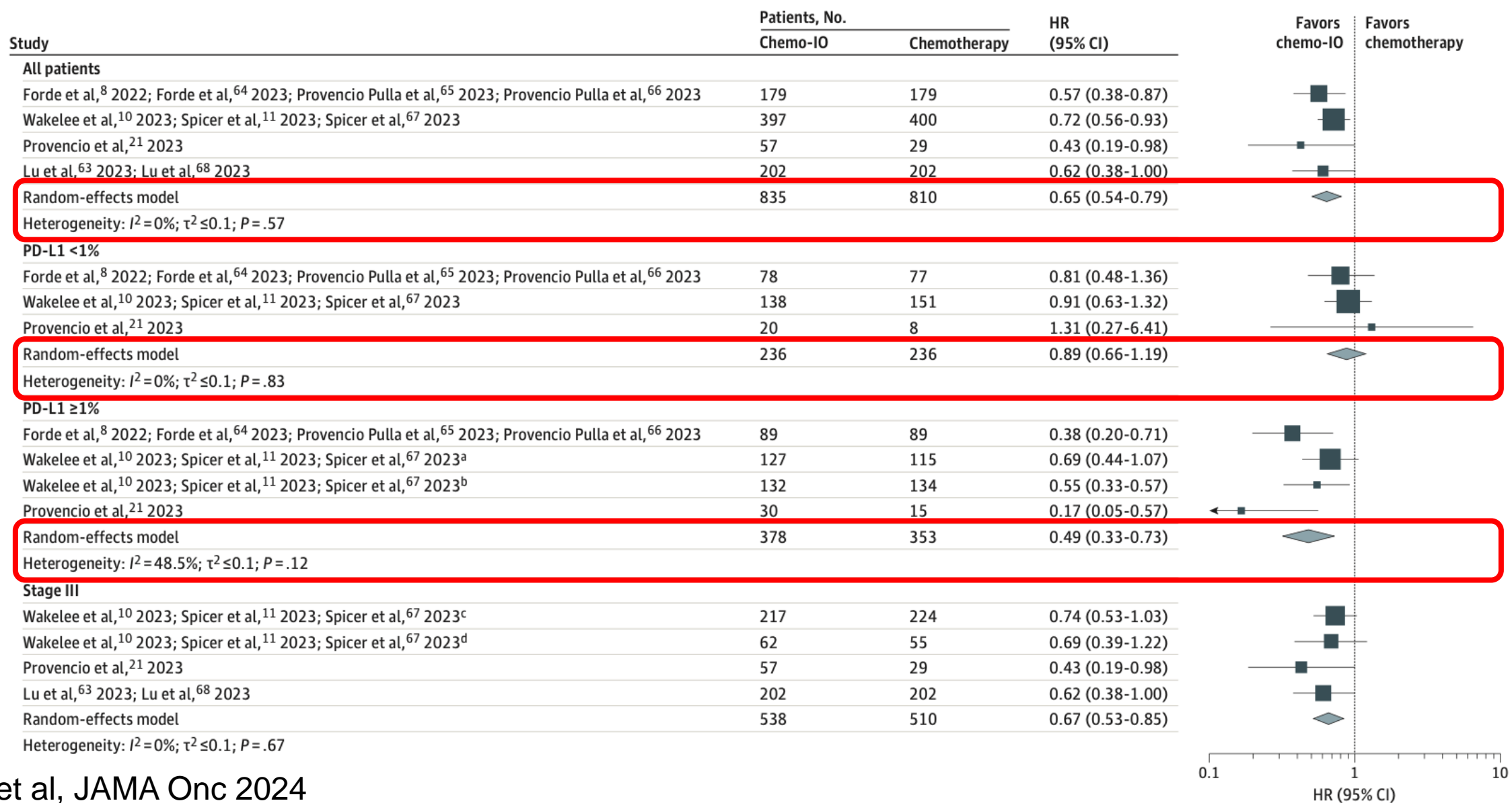
Overall Survival in Subgroups, IA2



Per the prespecified analysis plan, subgroups with <30 participants are excluded from the forest plot. Subgroups for stage IIIA and IIIB and pN status were post hoc; all other subgroups were prespecified. Data cutoff date for IA2: July 10, 2023.

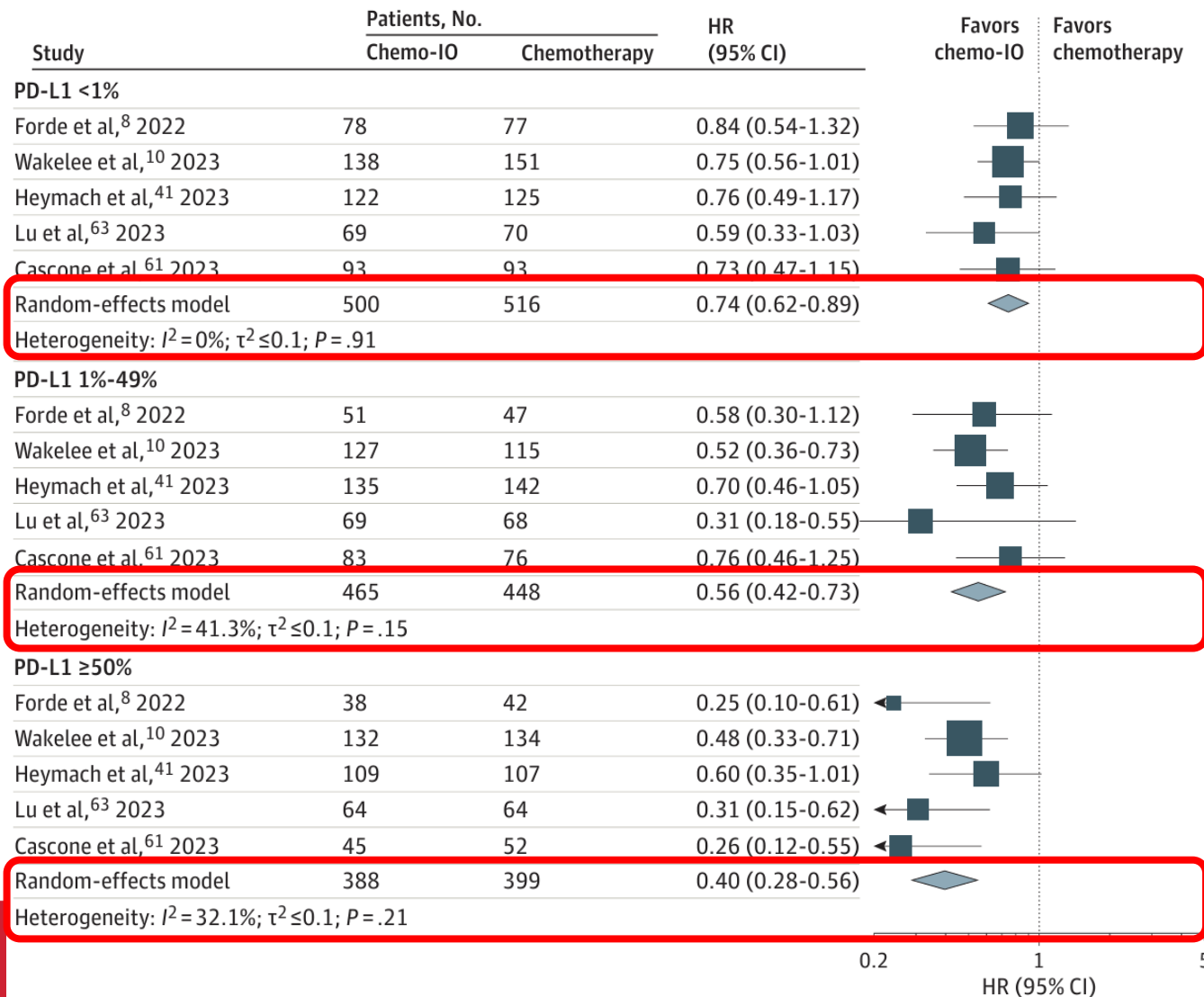
Neoadj/periop strategy: Overall Survival

Figure 1. Pooled Hazard Ratios (HRs) of Overall Survival Across Randomized Clinical Trials



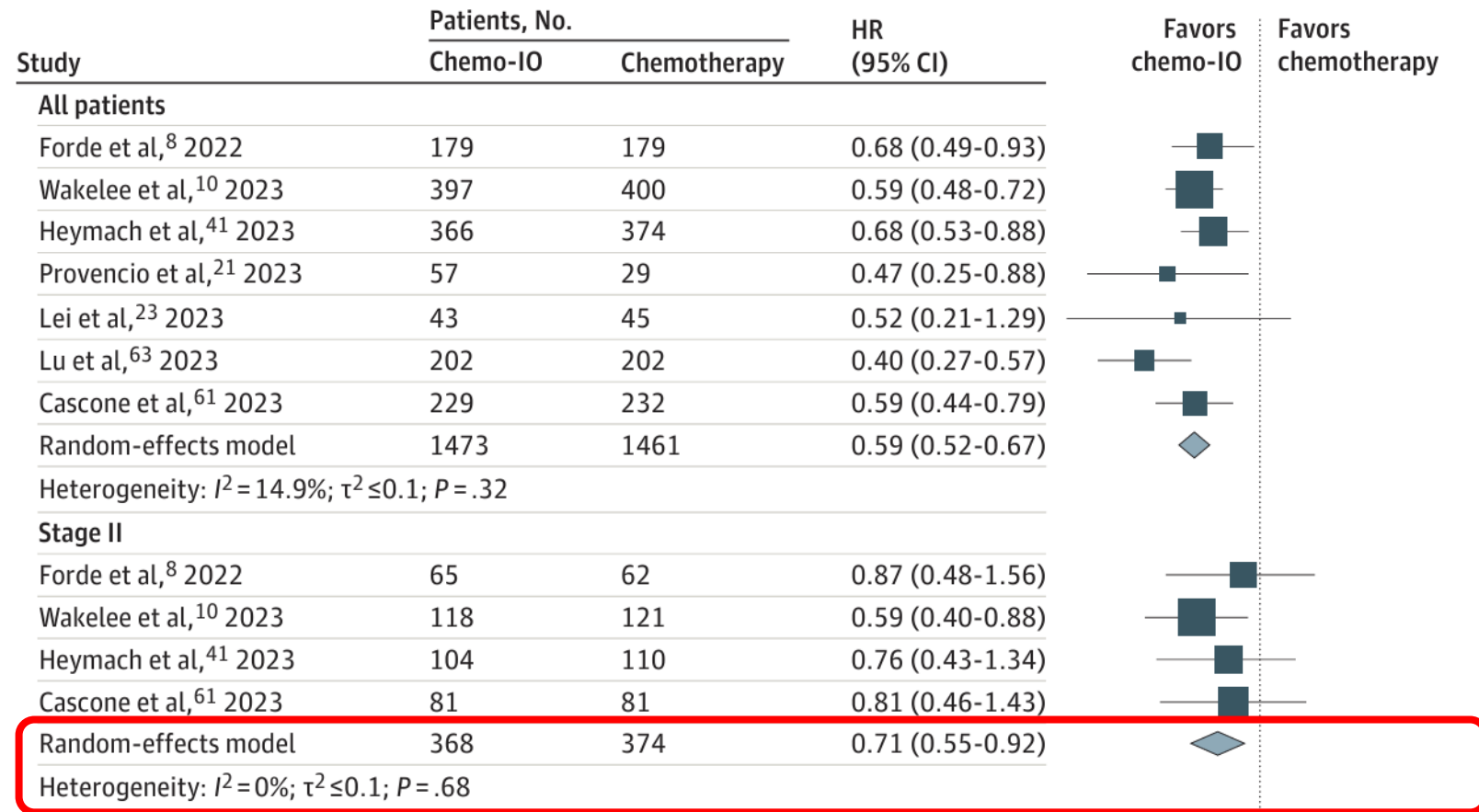
Neoadj/periop strategy and EFS

Figure 2. Pooled Hazard Ratios (HRs) of Event-Free Survival Across Randomized Clinical Trials

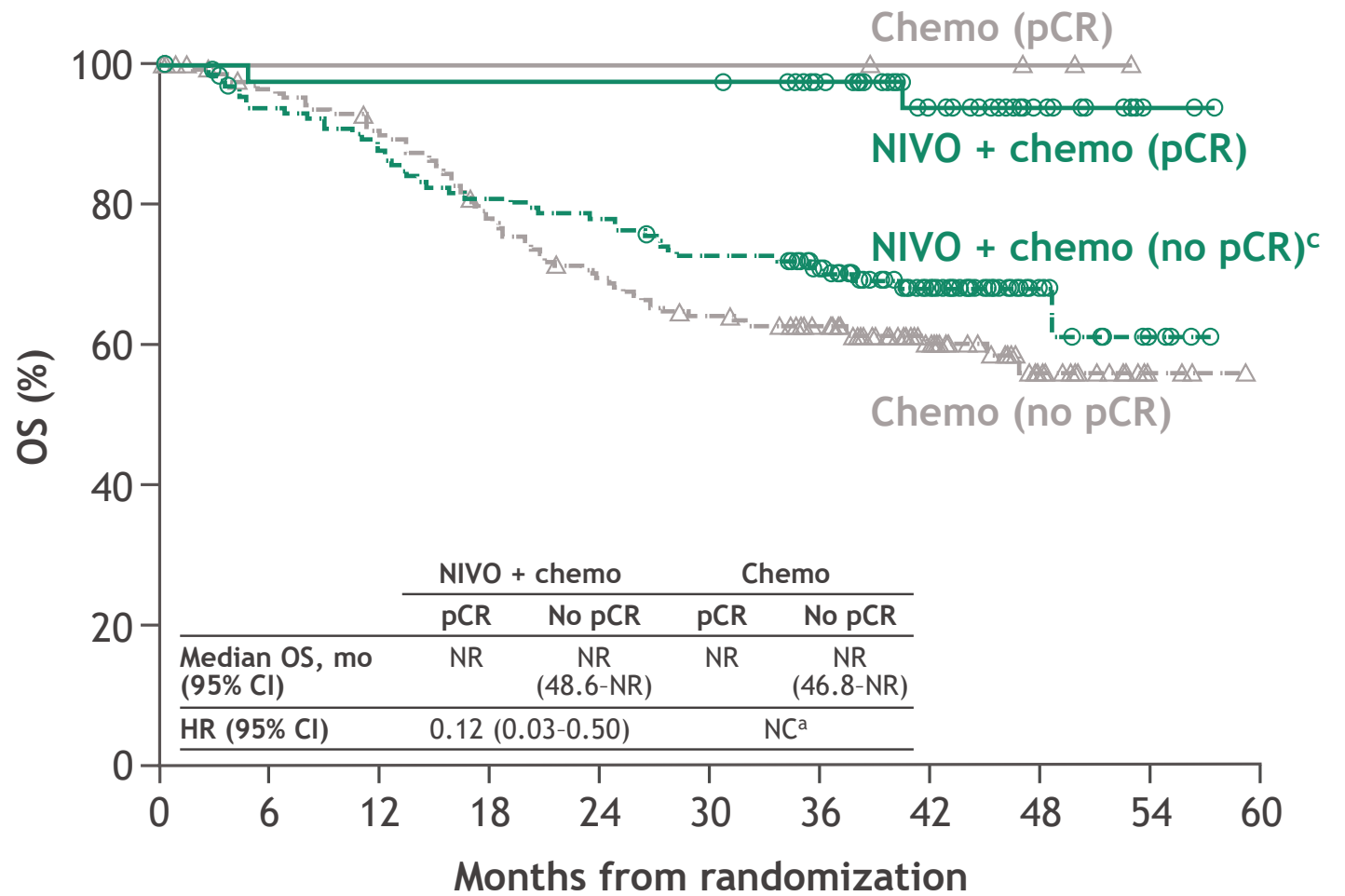


Neoadj/periop strategy: EFS for stage II

Figure 2. Pooled Hazard Ratios (HRs) of Event-Free Survival Across Randomized Clinical Trials



Providing a roadmap for Dr. Sacher and the patient



| | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|----|----|----|---|---|
| 43 | 42 | 42 | 42 | 42 | 42 | 36 | 22 | 10 | 2 | 0 |
| 4 | 4 | 4 | 4 | 4 | 4 | 4 | 3 | 2 | 0 | 0 |
| 136 | 124 | 116 | 107 | 103 | 95 | 81 | 45 | 13 | 4 | 0 |
| 175 | 162 | 151 | 130 | 115 | 105 | 91 | 49 | 20 | 4 | 0 |

3.5 months



940 pts will complete 3 cycles of chemo-IO

780 pts will go to surgery

1000 pts with resectable clinical stage IIB NSCLC

950 pts will go to surgery

900 pts will have R0

450 pts will make it to cycle 1 of adj chemo

150 pts will have PDL1 > 50% and potentially benefit from adj IO

18 months



**Up front surgery for
N1 disease is not a
plan! It's wishful
thinking**

**It's like bringing
these kids to the
museum with no
snacks.**

Don't do it!



Final take home points

- Melanoma has proven that neoadj for resectable disease is vastly preferable
- Progression or death occurs in 50% of resectable cIIB NSCLC @ 5 years
- Until we can predict which 50% is cured with surgery, we need to consider that systemic progression is highest risk for cause of death in these patients
- Neoadjuvant chemo-IO is the most optimal way to address this risk
- Most robust survival data favour neoadjuvant/perioperative chemo-IO