



P1.293: First-line Chemo-Immuno-Based Therapy for Advanced Non-Small Cell Lung Cancer with Brain Metastases: Survival Meta-Analysis

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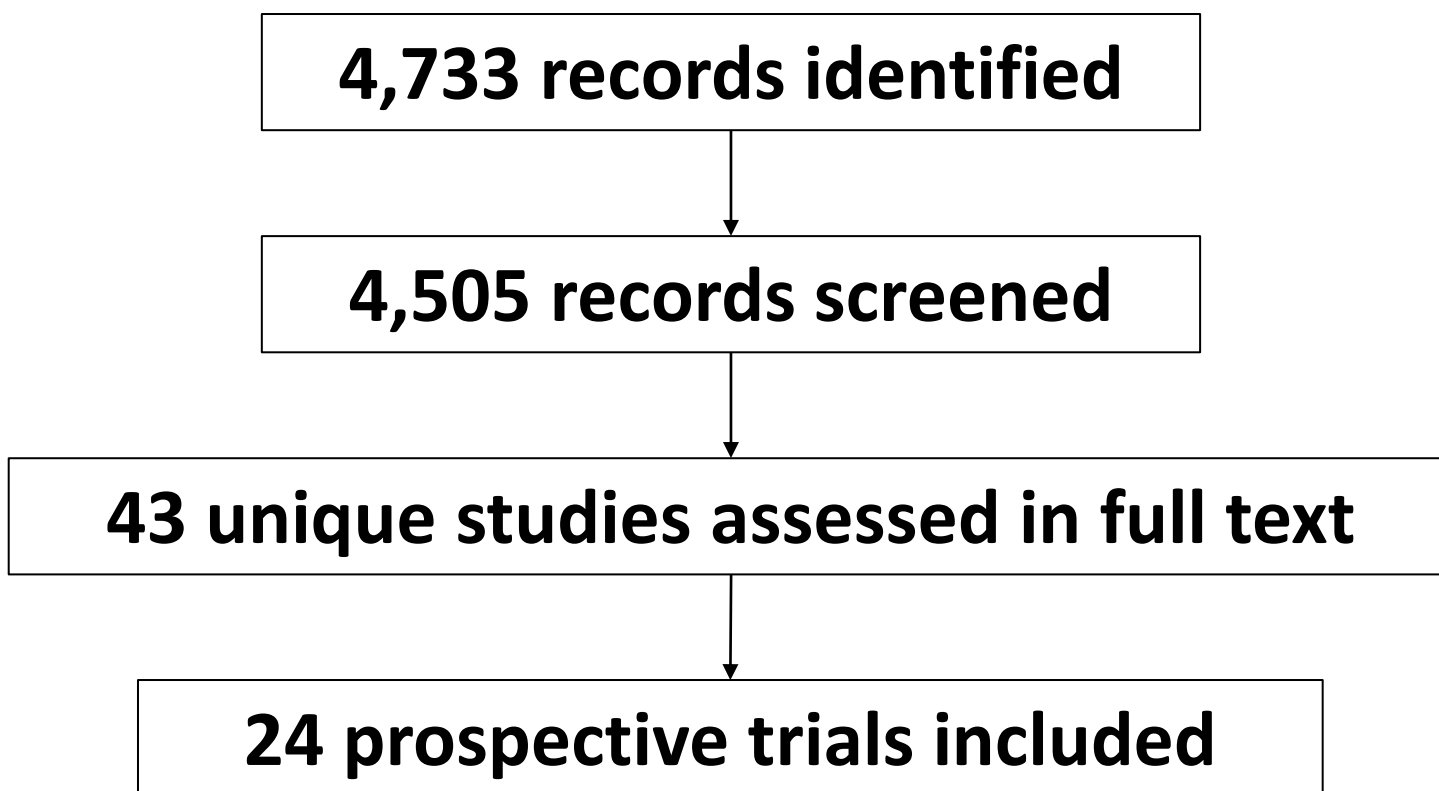
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INTRODUCTION

- Brain metastases substantially impair neurological function, quality of life, and survival in patients with advanced non-small-cell lung cancer (NSCLC).
- Patients with active or symptomatic intracranial disease remain under-represented in pivotal systemic-therapy trials.
- Chemo-ICI is an established first-line systemic backbone, but the relative systemic and intracranial outcomes of Chemo-ICI-Radio and Chemo-ICI-Angio remain uncertain.
- We integrated randomised brain-metastasis subgroup evidence with reconstructed survival data to compare progression-free survival (PFS), overall survival (OS), and intracranial PFS (iPFS) across the three prespecified strategies.

METHODS

- Databases: PubMed, Embase, CENTRAL, and Scopus were searched from Jan 1, 2000, to July 20, 2026, supplemented by trial-name, citation, registry, and conference searches.
- Eligibility: Prospective first-line trials in adults with advanced NSCLC and trial-defined brain metastases reporting brain-metastasis-specific PFS, OS, or iPFS.
- Strategies: Chemo-ICI, Chemo-ICI-Radio, and Chemo-ICI-Angio.
- Evidence synthesis: Published hazard ratios were pooled using random-effects models. Kaplan-Meier curves were digitised, and pseudo-individual patient data were reconstructed using IPDfromKM.
- Outcomes: PFS was the primary outcome; OS and iPFS were secondary outcomes. Primary PFS and OS reconstructions excluded phase 2 Chemo-ICI cohorts, which were included in sensitivity analyses.



DISCUSSION AND CONCLUSION

Actionable Take Away Message

- Randomised evidence supports Chemo-ICI as an evidence-based systemic backbone for selected patients with NSCLC and brain metastases.
- In exploratory, unadjusted cross-trial comparisons, Chemo-ICI-Angio had lower PFS and OS hazard estimates than Chemo-ICI.
- Chemo-ICI-Radio yielded the longest reconstructed iPFS, whereas its OS hazard estimate was similar to that of Chemo-ICI.
- These findings are hypothesis generating and do not establish a head-to-head treatment hierarchy.

Future Direction for Research

- Randomised strategy-comparison trials using harmonised intracranial endpoints.
- Stratification by previous local therapy, neurological symptoms, and brain-metastasis activity.
- Standardised definitions and reporting of safety outcomes.

REFERENCES & ACKNOWLEDGEMENTS

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CONFLICTS OF INTEREST

None declared.

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None.

ARTIFICIAL INTELLIGENCE (AI) USE DISCLOSURE

OpenAI Codex was used solely to support language editing, improve clarity and readability, assist with poster formatting, and perform consistency checks. The authors reviewed and edited all outputs, independently verified the underlying data and analyses, and take full responsibility for the scientific content.

RESULTS

STUDY SET AND RECONSTRUCTION QUALITY

- Twenty-four prospective trials were included: 18 randomised trials and six prospective non-randomised or single-arm trials.
- Twelve trials contributed reconstructable Kaplan-Meier curves, and 18 trials contributed hazard ratios.
- All 31 reconstructed endpoint components met the prespecified quality thresholds. Cohort sizes matched exactly, and risk-table discrepancies were ≤ 2 patients.

RANDOMISED EVIDENCE

- Across eight Chemo-ICI trials, pooled hazard ratios versus chemotherapy-based controls were 0.49 (95% CI 0.37–0.64; $I^2=21\%$) for OS and 0.48 (0.37–0.62; $I^2=0\%$) for PFS.
- Across two placebo-controlled Chemo-ICI-Angio trials, pooled hazard ratios were 0.72 (0.43–1.21) for OS and 0.73 (0.47–1.13) for PFS.

RECONSTRUCTED SURVIVAL

- Primary PFS (n=305): Median PFS was 8.4, 11.2, and 12.1 months with Chemo-ICI, Chemo-ICI-Radio, and Chemo-ICI-Angio, respectively. Hazard ratios versus Chemo-ICI were 0.73 (95% CI 0.52–1.03) and 0.66 (0.47–0.91), respectively (log-rank p=0.033).
- OS (n=316): Median OS was 19.5, 21.0, and 41.8 months, respectively. Hazard ratios versus Chemo-ICI were 0.99 (0.67–1.46) and 0.61 (0.40–0.93), respectively (p=0.062).
- iPFS (n=314): Median iPFS was 8.9, 19.1, and 13.1 months, respectively. Hazard ratios versus Chemo-ICI were 0.47 (0.32–0.68) and 0.48 (0.27–0.86), respectively (p<0.001).
- At 36 months, PFS/OS rates were 17%/33%, 17%/28%, and 25%/52%, respectively.

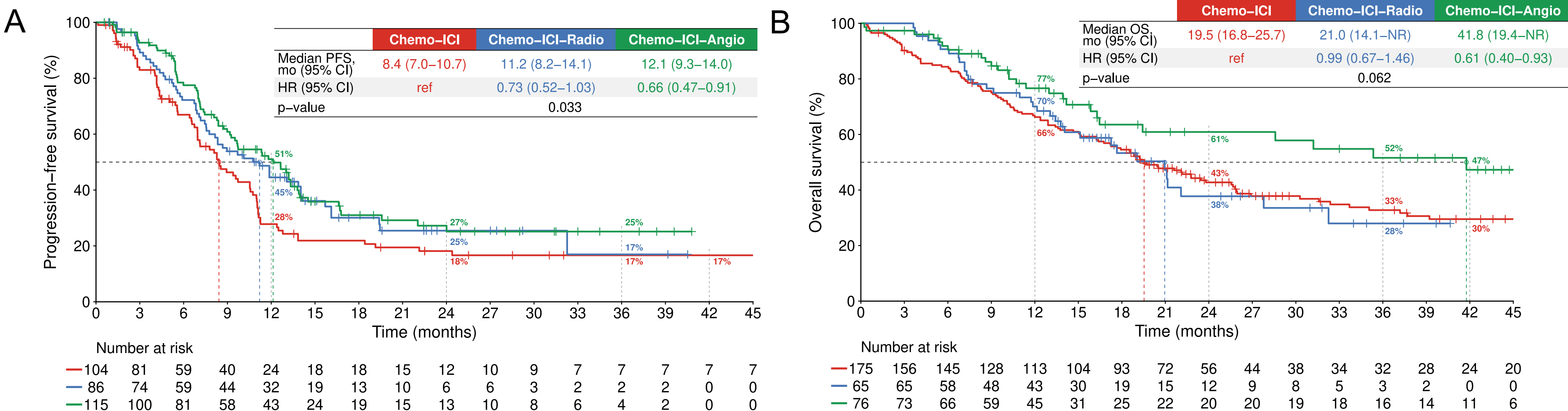


Figure 1. Reconstructed systemic survival outcomes. (A) Primary progression-free survival analysis; (B) overall survival analysis. Curves compare Chemo-ICI, Chemo-ICI-Radio, and Chemo-ICI-Angio.

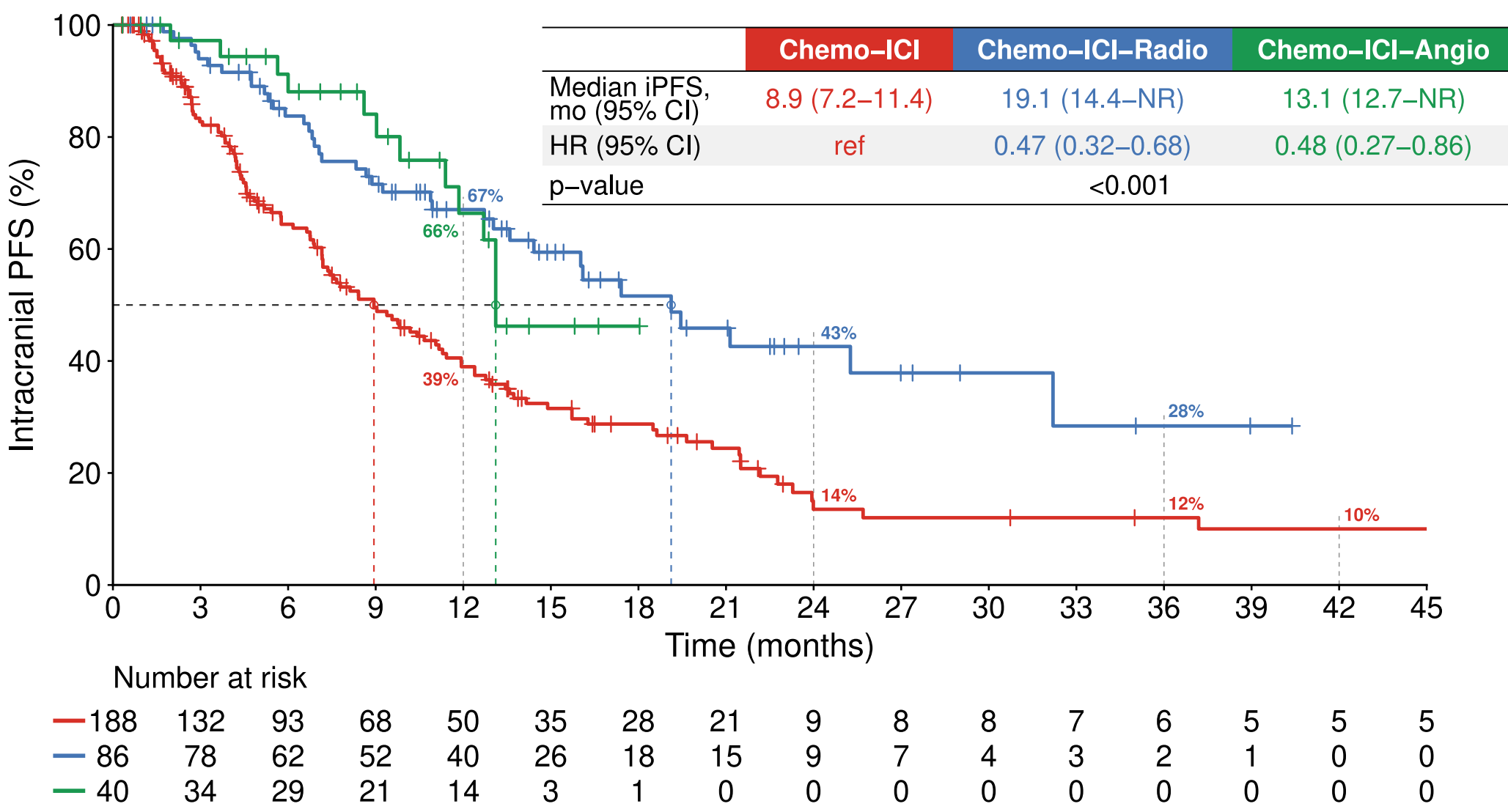


Figure 2. Reconstructed iPFS across the three treatment strategies.

ROBUSTNESS AND EVIDENCE QUALITY

- Sensitivity analysis including phase 2 Chemo-ICI cohorts: Chemo-ICI-Angio versus Chemo-ICI PFS HR 0.61 (95% CI 0.46–0.81) OS HR 0.56 (0.37–0.84)
- Risk of bias: 24/30 outcome-specific results were at low risk; six had some concerns; none were at high risk.
- Safety outcomes were not pooled because definitions and denominators varied across trials.