

Safety and efficacy of bridging radiation therapy prior to CD19 CAR T for non-Hodgkin lymphoma: a systematic review and meta-analysis

Mohammad Alhomoud,^{1,2*} Rahma Ibrahim,^{3*} Michelle Demetres,⁴ Kai Rejeski,^{1,5} Michael Scordo,^{1,2,6} Roni Shouval,^{1,2} Tobias Tix,⁵ Jeremie Martinet,^{7,8} Michelle Foley,⁹ Alexandra Gomez-Arteaga,⁷ Tsiporah Shore,⁷ Paul Pagnini,¹⁰ Mahmoud Aljurf,¹¹ Monica L. Guzman,⁷ Silvia Formenti,¹⁰ Joachim Yahalom,¹² Koen van Besien,¹³ Brandon S. Imber,^{12#} Zhengming Chen^{14#} and Samuel Yamshon^{7#}

¹Adult Bone Marrow Transplant Service, Department of Medicine, Memorial Sloan Kettering Cancer Center, New York, NY, USA; ²Department of Medicine, Weill Cornell Medical College, New York, NY, USA; ³Weill Cornell Medical College, New York, NY, USA; ⁴Samuel J. Wood Library & C.V. Starr Biomedical Information Center, Weill Cornell Medicine, New York, NY, USA; ⁵Department of Medicine III – Hematology/Oncology, LMU University Hospital, LMU Munich, Munich, Germany; ⁶Cellular Therapy Service, Department of Medicine, Memorial Sloan Kettering Cancer Center, New York, NY, USA; ⁷Division of Hematology and Oncology, Weill Cornell Medicine, New York, NY, USA; ⁸Department of Immunology and Biotherapy, Rouen University Hospital, Rouen, France; ⁹Section of Pediatric Hematology and Oncology, Department of Pediatrics, Yale, New Haven, CT, USA; ¹⁰Department of Radiation Oncology, Weill Cornell Medical College, New York, NY, USA; ¹¹King Faisal Specialist Hospital & Research Center, Riyadh, Saudi Arabia; ¹²Department of Radiation Oncology, Memorial Sloan Kettering Cancer Center, New York, NY, USA; ¹³University Hospitals, Seidman Cancer Center and Case Comprehensive Cancer Center, Cleveland, OH, USA and ¹⁴Division of Biostatistics, Department of Population Health Sciences, Weill Cornell Medicine, New York, NY, USA

*MALh and RI contributed equally as first authors.

#BSI, ZC and SY contributed equally as senior authors.

Correspondence: M. Alhomoud
alhomom@mskcc.org

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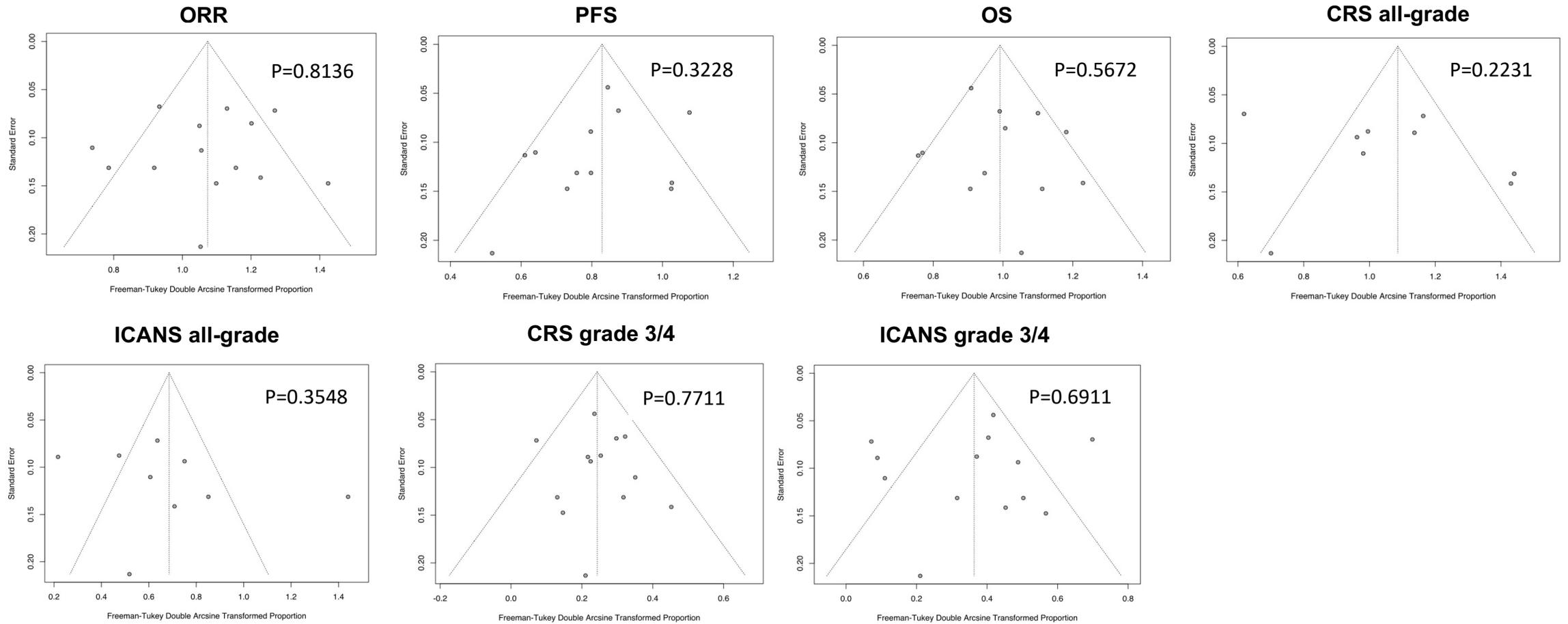
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Supplementary Materials

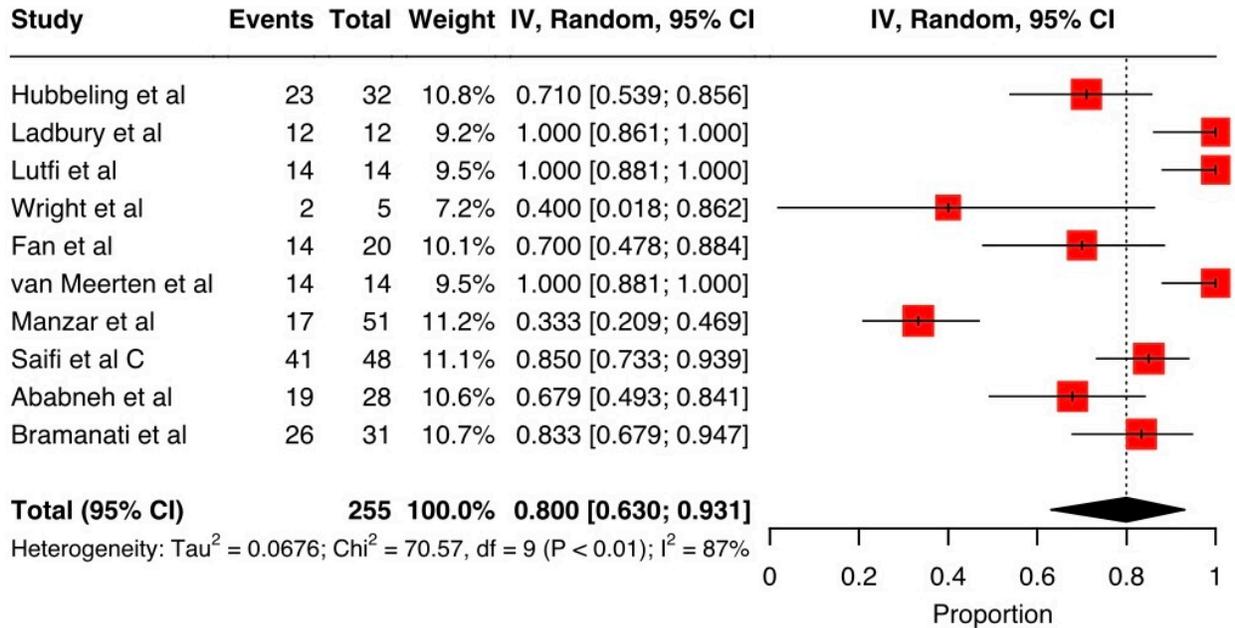
Supplementary Figure 1



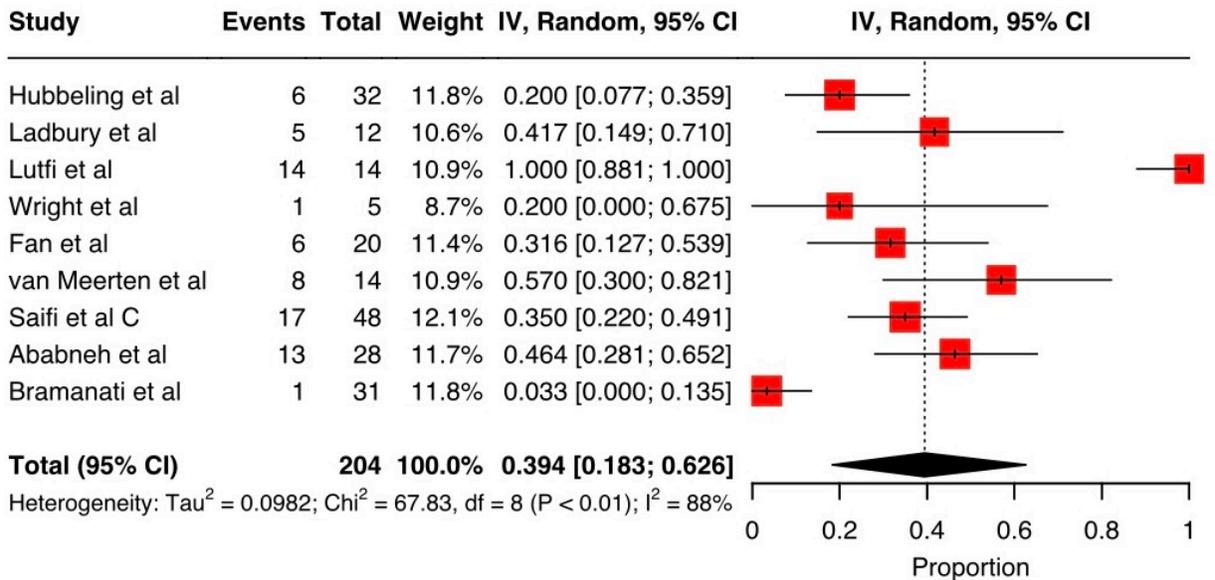
Supplementary Figure 1: Publication bias was analyzed by funnel plots. P-values for funnel plot asymmetry were derived from Egger tests.

Supplementary Figure 2

CRS all-grade



ICANS all-grade

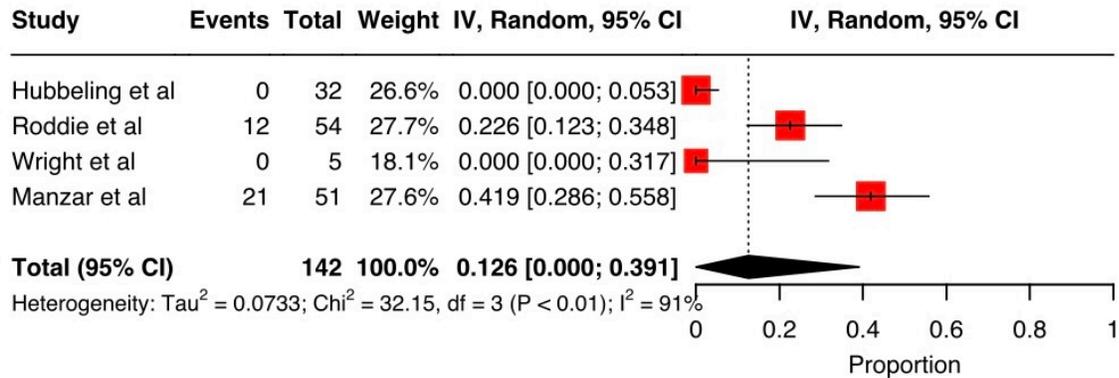


Supplementary Figure 2:

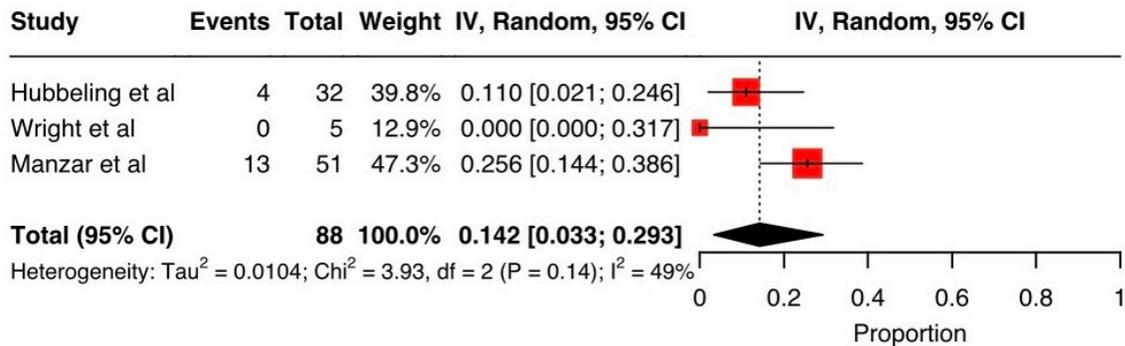
Forest plots of all-grade cytokine release syndrome (CRS) and immune effector cell-associated neurotoxicity syndrome (ICANS) among patients included in the meta-analysis. IV, inverse variance.

Supplementary Figure 3

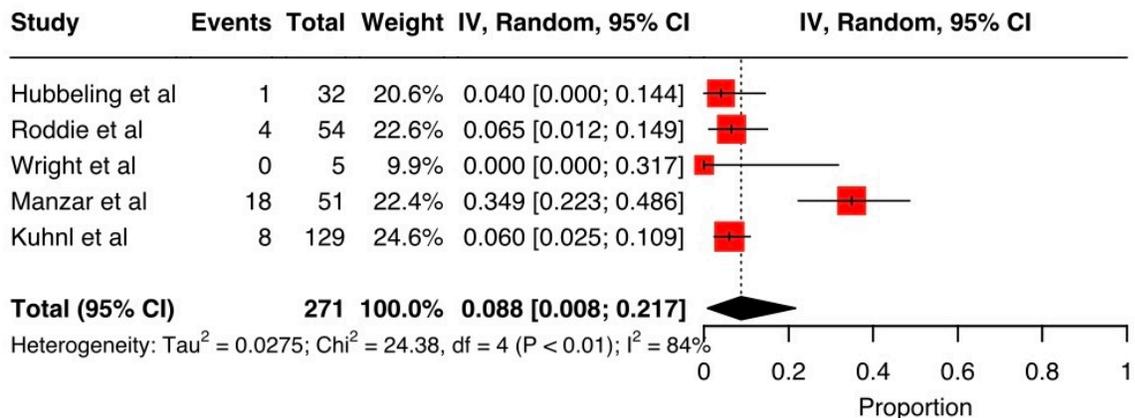
Neutropenia grade 3/4



Anemia grade 3/4



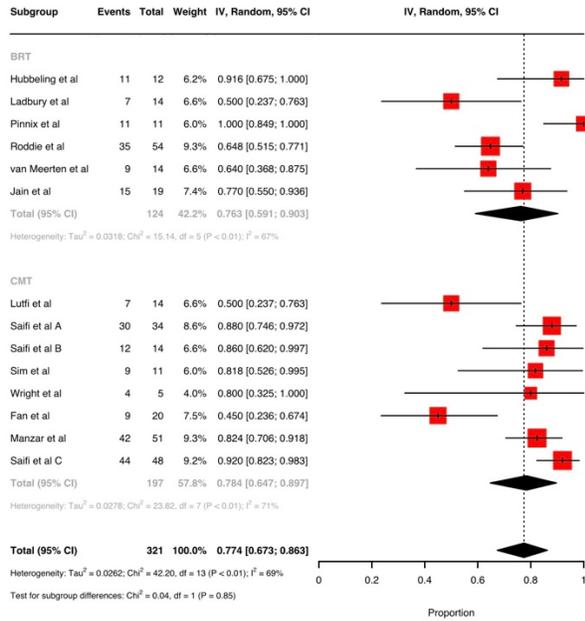
Thrombocytopenia grade 3/4



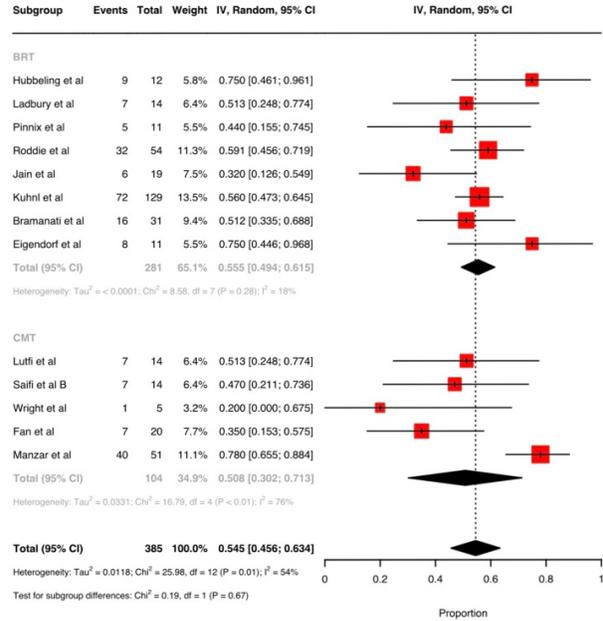
Supplementary Figure 3: Forest plots of grade 3/4 cytopenia among patients included in the meta-analysis. IV, inverse variance.

Supplementary Fig. 4

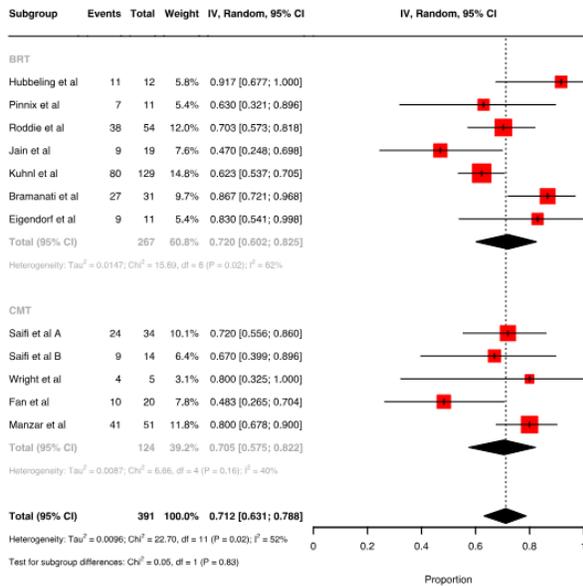
ORR



PFS

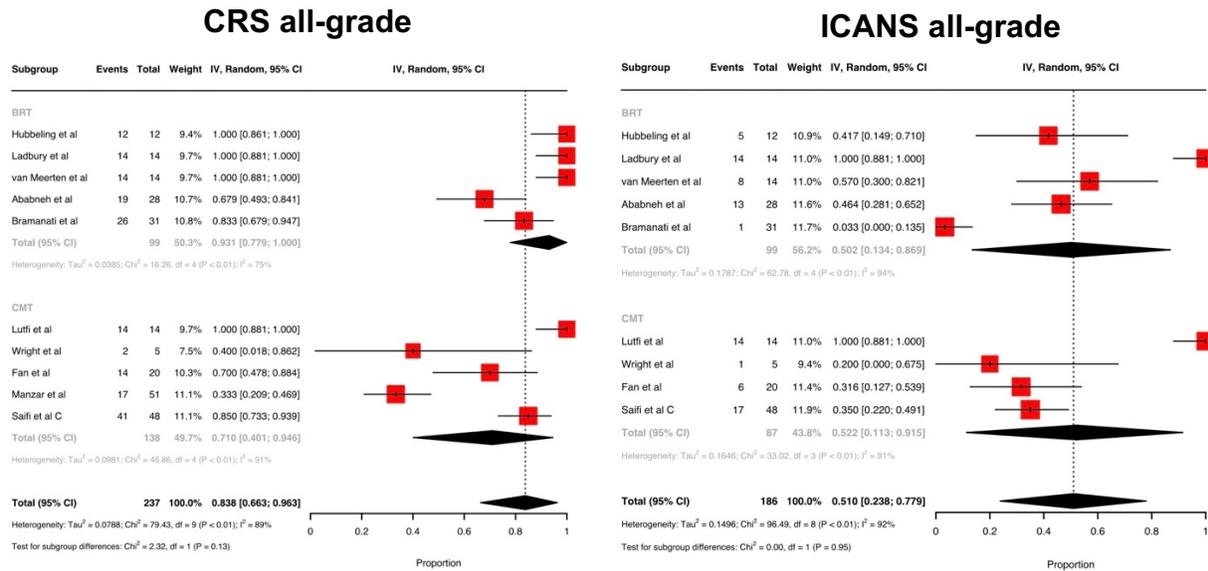


OS



Supplementary Fig. 4. Meta-regression analysis comparing BRT studies to CMT studies outcomes represented as forest plots including overall response rate (ORR), progression-free survival (PFS), overall survival (OS). IV, inverse variance. BRT, bridging radiation therapy. CMT, combined-modality treatment.

Supplementary Fig. 5



Supplementary Fig. 5. Meta-regression analysis comparing BRT studies to CMT studies outcomes represented as forest plots including all-grade cytokine release syndrome (CRS) and immune effector cell-associated neurotoxicity syndrome (ICANS). IV, inverse variance. BRT, bridging radiation therapy. CMT, combined-modality treatment.

Supplementary Table 1

Line	Ovid MEDLINE (1946 to October 16, 2024): No language, publication date, or article type filters.
1	Immunotherapy, Adoptive/
2	(adoptive immunotherap* or adoptive cellular immunotherap* or chimeric antigen receptor or CAR T or CAR Tcell or "(CAR) T" or "(CAR) Tcell" or CAR engineered T cell or CAR engineered T lymphocyte or CAR modified T cell or CAR modified T lymphocyte).tw.
3	Receptors, Chimeric Antigen/
4	(chimeric t cell receptor* or artificial t-cell receptor* or chimeric immunoreceptor*).tw.
5	(axicabtagene ciloleucel or yescarta or axi cel or "fkc 876" or "fkc876" or "kte c19" or "ktec19" or lisocabtagene maraleucel or breyanzi or "jcar 017" or "jcar 17" or "jcar017" or "jcar17" or liso-cel or tisagenlecleucel or Kymriah or "cart 19" or "cart19" or "ctl 019" or "ctl019" or "lg 740" or "lg740").tw.
6	or/1-5
7	exp Lymphoma, Non-Hodgkin/
8	lymphoma*.tw.
9	(Non Hodgkin or "Non Hodgkin's" or Non Hodgkins or NHL or DLBCL or LBCL).tw.
10	(Burkitt leukemia or Burkitt's leukemia or Burkitts leukemia or Burkitt cell leukemia or Burkitt-type leukemia or Burkitt tumor or Burkitts tumor or Burkitt's tumor).tw.
11	or/7-10
12	exp Radiotherapy/ or Radiation Oncology/ or Radiotherapy Dosage/
13	(radiation* or radiotherap* or irradiation* or chemoradiotherap* or radiochemotherap* or radioimmunotherap* or xray therap* or x-ray therap* or roentgenotherap* or roentgen therap*).tw.
14	12 or 13
15	6 and 11 and 14
Line	Ovid Embase (1974 to October 16, 2024): No language, publication date, or article type filters.
1	adoptive immunotherapy/
2	(adoptive immunotherap* or adoptive cellular immunotherap* or chimeric antigen receptor or CAR T or CAR Tcell or "(CAR) T" or "(CAR) Tcell" or CAR engineered T cell or CAR engineered T lymphocyte or CAR modified T cell or CAR modified T lymphocyte).tw.
3	chimeric antigen receptor/
4	(chimeric t cell receptor* or artificial t-cell receptor* or chimeric immunoreceptor*).tw.
5	(axicabtagene ciloleucel or yescarta or axi cel or "fkc 876" or "fkc876" or "kte c19" or "ktec19" or lisocabtagene maraleucel or breyanzi or "jcar 017" or "jcar 17" or "jcar017" or "jcar17" or liso-cel or tisagenlecleucel ot Kymriah or "cart 19" or "cart19" or "ctl 019" or "ctl019" or "lg 740" or "lg740").tw.

6	or/1-5
7	nonhodgkin lymphoma/
8	lymphoma*.tw.
9	(Non Hodgkin or "Non Hodgkin's" or Non Hodgkins or NHL or DLBCL or LBCL).tw.
10	(Burkitt leukemia or Burkitt's leukemia or Burkitts leukemia or Burkitt cell leukemia or Burkitt-type leukemia or Burkitt tumor or Burkitts tumor or Burkitt's tumor).tw.
11	or/7-10
12	radiotherapy/ or radioimmunotherapy/ or radiation oncology/ or cancer radiotherapy/
13	(radiation* or radiotherap* or irradiation* or chemoradiotherap* or radiochemotherap* or radioimmunotherap* or xray therap* or x-ray therap* or roentgenotherap* or roentgen therap*).tw.
14	12 or 13
15	6 and 11 and 14
Line	Cochrane Library (Wiley): October 16, 2024. No language, publication date, or article type filters
#1	(adoptive immunotherap* or adoptive cellular immunotherap* or chimeric antigen receptor or CAR T or CAR Tcell or "(CAR) T" or "(CAR) Tcell" or CAR engineered T cell or CAR engineered T lymphocyte or CAR modified T cell or CAR modified T lymphocyte):ti,ab
#2	(chimeric t cell receptor* or artificial t-cell receptor* or chimeric immunoreceptor*):ti,ab
#3	(axicabtagene ciloleucel or yescarta or axi cel or "fkc 876" or "fkc876" or "kte c19" or "ktec19" or lisocabtagene maraleucel or breyanzi or "jcar 017" or "jcar 17" or "jcar017" or "jcar17" or liso-cel or tisagenlecleucel or Kymriah or "cart 19" or "cart19" or "ctl 019" or "ctl019" or "lg 740" or "lg740"):ti,ab
#4	#1 OR #2 OR #3
#5	(lymphoma* or Non Hodgkin or "Non Hodgkin's" or Non Hodgkins or NHL or DLBCL or LBCL):ti,ab
#6	(Burkitt leukemia or Burkitt's leukemia or Burkitts leukemia or Burkitt cell leukemia or Burkitt-type leukemia or Burkitt tumor or Burkitts tumor or Burkitt's tumor):ti,ab
#7	#5 OR #6
#8	(radiation* or radiotherap* or irradiation* or chemoradiotherap* or radiochemotherap* or radioimmunotherap* or xray therap* or x-ray therap* or roentgenotherap* or roentgen therap*):ti,ab
#9	#4 AND #7 AND #8

Supplementary Table 1: Systematic review search strategy.

Supplementary Table 2

Author	Year	Criterion 1: Inclusion criteria	Criterion 2: measurement of efficacy/safety	Criterion 3: identification of efficacy/ safety	Criterion 4: Consecutive Inclusion	Criterion 5: demographics	Criterion 6: Clinical information	Criterion 7: Follow- Up results	Criterion 8: Statistical analysis
Hubbeling et al.	2023	Yes	Yes/Yes	Yes/Yes	Yes	Yes	Yes	Yes	Yes
Ladbury et al.	2023	Yes	Yes/Yes	Yes/Yes	Yes	Yes	Yes	Yes	Yes
Lutfi et al.	2021	Yes	Yes/Yes	Yes/Yes	Yes	Yes	Yes	Yes	Yes
Pinnix et al.	2020	Yes	Yes/Yes	Yes/Yes	Yes	Yes	Yes	Yes	Yes
Roddie et al.	2023	Yes	Yes/Yes	Yes/Yes	Yes	Yes	Yes	Yes	Yes
Saifi et al.	2023A	Yes	Yes/No	Yes/No	Yes	Yes	No	Yes	Yes
Saifi et al.	2022B	Yes	Yes/Yes	Yes/Yes	Yes	Yes	Yes	Yes	Yes
Sim et al.	2019	Yes	Yes/No	Yes/No	Yes	Yes	No	Yes	Yes
Wright et al.	2020	Yes	Yes/Yes	Yes/Yes	Yes	Yes	Yes	Yes	Yes
Fan et al.	2023	Yes	Yes/Yes	Yes/Yes	Yes	Yes	Yes	Yes	Yes
Van Meerten et al.	2024	Yes	Yes/Yes	Yes/Yes	Yes	Yes	Yes	Yes	Yes
Jain et al.	2024	Yes	Yes/Yes	Yes/Yes	Yes	Yes	Yes	Yes	Yes
Manzar et al.	2024	Yes	Yes/Yes	Yes/Yes	Yes	Yes	Yes	Yes	Yes
Saifi et al.	2024C	Yes	Yes/Yes	Yes/Yes	Yes	Yes	Yes	Yes	Yes
Ababneh et al.	2024	Yes	Yes/Yes	Yes/Yes	Yes	Yes	Yes	Yes	Yes
Kuhnl et al.	2024	Yes	Yes/Yes	Yes/Yes	Yes	Yes	Yes	Yes	Yes

Bramanti et al.	2024	Yes	Yes/Yes	Yes/Yes	Yes	Yes	Yes	Yes	Yes
Eigendorff et al.	2024	Yes	Yes/No	Yes/No	Yes	Yes	No	Yes	Yes

Supplementary Table 2: Joanna-Brigg’s Institute assessment of study bias. Criterion 5 (complete inclusion) was assessed within criterion 4. Criterion 9 (presenting sites’/clinics’ demographics) was assessed within criterion 5.

