**Supplementary Table S1.** Main characteristics of the clinical trials with ICB treatment enrolled in our meta-analysis.

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Dataset****(PMID)** | **Author****Year** | **Cancer****type** | **Intervention****(No.)** | **Control Treatment****(No.)** | **Age (No.)** | **Overall Survival****HR, 95%CI** | **Wu et al** | **Yang et al** | **Previous Treatment** |
| **Young****(<65)** | **Elderly****(≥65)** | **Young****(<65)** | **Elderly****(≥65)** |
| 30280658 | Antonia et al 2018 | NSCLC | Durvalumab(473) | Placebo(236) | 391 | 322 | 0.62(0.44-0.86) | 0.76(0.55-1.06) | No | Yes | Chemoradiotherapy  |
| 30052729 | Bang et al2018 | GEJC | Avelumab(185) | Chemotherapy(186) | 230 | 141 | 1.22(0.89-1.65) | 0.95(0.65-1.38) | No | Yes | Two prior lines of systemic treatment |
| 30262187 | Barlesi et al2018 | NSCLC | Avelumab(264) | Docetaxel(265) | 279 | 250 | 0.84(0.63-1.13) | 0.98(0.71-1.34) | No | Yes | Platinum-based chemotherapy |
| 28212060 | Bellmunt et al 2017 | Urothelial | Pembrolizumab(270) | Chemotherapy(272) | 230 | 312 | 0.75(0.53-1.05) | 0.76(0.56-1.02) | Yes | Yes | Platinum-based chemotherapy |
| 26412456 | Borghaei et al 2015 | NSCLC | Nivolumab(292) | Docetaxel(290) | 339 | 243 | 0.81(0.62-1.04) | 0.65(0.44-0.86) | Yes | Yes | Platinum-based chemotherapy |
| 26028407 | Brahmer et al 2015 | NSCLC | Nivolumab(135) | Docetaxel(137) | 152 | 120 | 0.52(0.35-0.75) | 0.59(0.31-0.87) | Yes | Yes | First-line chemotherapy |
| 28636851 | Carbone et al 2017 | NSCLC | Nivolumab(271) | Chemotherapy(270) | 281 | 260 | 1.13(0.83-1.54) | 1.04(0.77-1.41) | No | Yes | None |
| 32379280 | Chen et al2020 | Colorectal | Tremelimumab+Durvalumab(119) | Best supportive care (248) | 87 | 93 | 0.83(0.55-1.23) | 0.59(0.40-0.87) | No | No | All available standard systemic therapies  |
| 31003911 | Eng et al2019 | Colorectal | Atezolozumab+Cobimetinib(183) | Regorafenib(90) | 187 | 86 | 0.84(0.58-1.23) | 1.50(0.85-2.64) | No | Yes | At least two previous systemic chemotherapy regimens |
| 31003911 | Eng et al2019 | Colorectal | Atezolozumab(90) | Regorafenib(90) | 130 | 50 | 1..20(0.80-1.81) | 0.99(0.47-2.07) | NO | Yes | At least two previous systemic chemotherapy regimens |
| 26970723 | Fehrenbacheret al 2016 | NSCLC | Atezolizumab(144) | Docetaxel(143) | 175 | 112 | 0.70(0.48-1.01) | 0.65(0.42-0.99) | Yes | No | Platinum-based chemotherapy |
| 29777823 | Fehrenbacheret al 2018 | NSCLC | Atezolizumab(425) | Docetaxel(425) | 453 | 397 | 0.81(0.65-1.01) | 0.69(0.54-0.87) | Yes | No | One or two previous cytotoxic chemotherapy regimens |
| 29777823 | Fehrenbacheret al 2018 | NSCLC | Atezolizumab(613) | Docetaxel(612) | 661 | 564 | 0.84(0.70-1.01) | 0.75(0.61-0.91) | Yes | Yes | One or two previous cytotoxic chemotherapy regimens |
| 29658856 | Gandhi et al 2018 | NSCLC | Perbrolizumab+Chemotherapy(410) | Placebo+Chemotherapy(206) | 312 | 304 | 0.43(0.31-0.61) | 0.64(0.43-0.95) | No | Yes | None |
| 26712084 | Herbst et al2016 | NSCLC | Perbrolizumab(690) | Docetaxel(343) | 604 | 429 | 0.63(0.50-0.79) | 0.76(0.57-1.02) | Yes | Yes | Two or more cycles of platinum-doublet chemotherapy |
| 20525992 | Hodi et al2010 | Melanoma | Ipilimumab+gp100(403) | gp100(136) | 385 | 154 | 0.70(0.54-0.90) | 0.69(0.47-1.01) | Yes | Yes | One or two previous systemic treatments |
| 20525992 | Hodi et al2010 | Melanoma | Ipilimumab(137) | gp100(136) | 189 | 84 | 0.65(0.47-0.90) | 0.61(0.38-0.99) | Yes | Yes | One or two previous systemic treatments |
| 30280641 | Horn et al2018 | SCLC | Atezolizumab+Chemotherapy(201) | Placebo+Chemotherapy(202) | 217 | 186 | 0.92(0.64-1.32) | 0.53(0.36-0.77) | No | Yes | None |
| 28993052 | Kang et al2017 | GEJC | Nivolumab(330) | Placebo(163) | 284 | 209 | 0.76(0.58-1.00) | 0.53(0.38-0.74) | Yes | Yes | Two or more previous chemotherapy regimens |
| 28671856 | Larkin et al2018 | Melanoma | Nivolumab(272) | Investigator's choice(133) | 257 | 148 | 1.17(0.84-1.63) | 0.62(0.41-0.94) | Yes | Yes | None |
| 28729154 | Miao et al2017 | Mesothelioma | Tremelimumab(382) | Placebo(189) | 237 | 334 | 0.87(0.64-1.20) | 0.99(0.77-1.26) | No | Yes | One or two previous systemic treatments |
| 30955977 | Mok et al2019 | NSCLC | Pembrolizumab(637) | Chemotherapy(637) | 707 | 567 | 0.81(0.67-0.98) | 0.82(0.66-1.01) | No | Yes | None |
| 26406148 | Motzer et al 2015 | RCC | Nivolumab(410) | Everolimus(411) | 497 | 324 | 0.78(0.60-1.01) | 0.68(0.46-0.90) | Yes | Yes | One or two regimens of antiangiogenic therapy |
| 30280635 | Paz-Ares et al 2018 | NSCLC | Perbrolizumab+Chemotherapy(278) | Placebo+Chemotherapy(281) | 254 | 309 | 0.52(0.34-0.80) | 0.74(0.51-1.07) | No | Yes | None |
| 33476593 | Paz-Ares et al 2021 | NSCLC | Nivolumab+Ipilimumab+Chemotherapy(361) | Chemotherapy(358) | 354 | 295 | 0.61(0.47-0.80) | 0.62(0.46-0.85) | No | No | None |
| 30620668 | Reck et al2019 | NSCLC | Pembrolizumab(154) | Platinum-based Chemotherapy(151) | 141 | 164 | 0.60(0.38-0.96) | 0.64(0.42-0.98) | No | Yes | None |
| 23295794 | Ribas et al2013 | Melanoma | Tremelimumab(328) | Chemotherapy(327) | 455 | 200 | 0.88(0.72-1.08) | 0.87(0.64-1.18) | Yes | Yes | None |
| 30779529 | Rini et al2019 | RCC | Pembrolizumab+Axitinib(432) | Sunitinib(429) | 538 | 323 | 0.47(0.30-0.73) | 0.59(0.36-0.97) | No | Yes | None |
| 27979383 | Rittmeyer et al 2016 | NSCLC | Atezolizumab(425) | Docetaxel(425) | 453 | 397 | 0.80(0.64-1.00) | 0.60(0.52-0.83) | Yes | No | One or more platinum based combination therapies |
| 25399552 | Robert et al2015 | Melanoma | Nivolumab(210) | Dacarbazine(208) | 200 | 218 | 0.52(0.32-0.85) | 0.33(0.14-0.52) | Yes | Yes | None |
| 21639810 | Robert et al2011 | Melanoma | Ipilimumab+Dacarbazine(250) | Placebo+Dacarbazine(252) | 342 | 160 | 0.44(0.25-0.74) | 0.81(0.36-1.78) | No | Yes | None |
| 29880231 | Schitara et al 2018 | GEJC | Pembrolizumab(196) | Paclitaxel(199) | 232 | 163 | 0.77(0.58-1.02) | 0.90(0.63-1.29) | No | Yes | First-line therapy with platinum, fluoropyrimidine or trastuzumab |
| 30345906 | Schmid et al2018 | TNBC | Atezolizumab+Nab-paclitaxel(451) | Placebo+Nab-paclitaxel(451) | 569 | 219 | 0.84(0.70-1.01) | 0.69(0.51-0.94) | No | Yes | None |
| 31122901 | West et al2019 | NSCLC | Atezolizumab+Chemotherapy(451) | Chemotherapy(228) | 341 | 338 | 0.79(0.58-1.08) | 0.78(0.58-1.05) | No | Yes | None |
| NSCLC, non-small cell lung cancer; RCC, renal cell carcinoma; GEJC, gastric or gastroesophageal junction carcinoma; SCLC, small cell lung cancer; HNC, head and neck cancer; TNBC, triple-negative breast cancer; MESO, mesothelioma. |