

Appendix 1 Search strategy

((((((((((((((Immune checkpoint inhibitor OR immune therapy OR immunotherapy) OR ipilimumab) OR nivolumab) OR pembrolizumab) OR sintilimab) OR camrelizumab) OR atezolizumab) OR durvalumab) OR avelumab) OR toripalimab) OR cytotoxic T-lymphocyte associated antigen-4) OR CTLA-4) OR programmed cell death protein-1) OR programmed cell death protein) OR PD-1) OR programmed cell death-Ligand 1) OR PD-L1)) AND (((((((((((gastric cancer OR gastric carcinoma) OR gastric neoplasm) OR gastric malignancy) OR gastric malignancies) OR gastric tumor) OR stomach cancer) OR stomach carcinoma) OR stomach neoplasm) OR stomach malignancy) OR stomach malignancies) OR stomach tumor)) AND (((((trial OR clinical trial) OR randomized controlled trial) OR randomized clinical trial) OR RCT)))

Placebo/ chemotherapy	0.60 (0.49–0.74)	1.57 (1.29–1.91)	1.49 (1.25–1.77)	1.62 (1.03–2.55)	0.49 (0.27–0.91)	0.52 (0.19–1.41)
1.67 (1.35–2.06)	Nivolumab 3 mg/kg/2 weeks	2.62 (1.96–3.50)	2.48 (1.89–3.26)	2.70 (1.63–4.44)	0.82 (0.47–1.45)	0.87 (0.33–2.28)
0.64 (0.52–0.78)	0.38 (0.29–0.51)	Avelumab 10 mg/kg/2 weeks	0.95 (0.73–1.23)	1.03 (0.63–1.68)	0.31 (0.17–0.60)	0.33 (0.12–0.91)
0.67 (0.56–0.80)	0.40 (0.31–0.53)	1.05 (0.81–1.37)	Pembrolizumab 200 mg/3 weeks	1.09 (0.67–1.76)	0.33 (0.18–0.62)	0.35 (0.13–0.96)
0.62 (0.39–0.98)	0.37 (0.22–0.62)	0.97 (0.59–1.60)	0.92 (0.57–1.50)	Ipilimumab 10 mg/kg/3 weeks	0.30 (0.15–0.65)	0.32 (0.11–0.95)
2.02 (1.10–3.72)	1.21 (0.69–2.15)	3.17 (1.68–6.06)	3.02 (1.60–5.61)	3.26 (1.53–7.00)	Nivolumab 1 mg/kg/3 weeks plus ipilimumab 3 mg/kg/3 weeks	1.48 (0.54–4.09)
1.36 (0.72–2.58)	0.81 (0.45–1.50)	2.13 (1.10–4.20)	2.86 (1.05–7.74)	2.19 (1.01–4.83)	0.67 (0.24–1.85)	Nivolumab 3 mg/kg/3 weeks plus ipilimumab 1 mg/kg/3 weeks

Figure S1 Comparison of HRs of PFS for different interventions. HR, hazard ratio; PFS, progression-free survival.

Placebo/ chemotherapy	0.62 (0.51–0.76)	1.01 (0.80–1.27)	0.94 (0.79–1.12)	1.09 (0.67–1.77)	0.59 (0.31–1.14)	0.77 (0.26–2.29)
1.61 (1.32–1.97)	Nivolumab 3 mg/kg/2 weeks	1.63 (1.20–2.22)	1.52 (1.16–1.97)	1.76 (1.04–2.96)	0.95 (0.51–1.78)	1.24 (0.43–3.61)
0.99 (0.78–1.26)	0.61 (0.45–0.84)	Avelumab 10 mg/kg/2 weeks	0.93 (0.69–1.25)	1.08 (0.63–1.84)	0.58 (0.29–1.18)	0.76 (0.25–2.32)
1.06 (0.90–1.27)	0.66 (0.51–0.86)	1.07 (0.80–1.44)	Pembrolizumab 200 mg/3 weeks	1.16 (0.69–1.93)	0.63 (0.32–1.24)	0.82 (0.28–2.47)
0.92 (0.56–1.50)	0.57 (0.33–0.97)	0.92 (0.54–1.60)	0.86 (0.52–1.45)	Ipilimumab 10 mg/kg/3 weeks	0.54 (0.24–1.23)	0.70 (0.22–2.31)
1.69 (0.88–3.28)	1.05 (0.56–1.98)	1.71 (0.85–3.48)	1.60 (0.81–3.12)	1.83 (0.81–4.20)	Nivolumab 1 mg/kg/3 weeks plus ipilimumab 3 mg/kg/3 weeks	1.21 (0.41–3.63)
1.39 (0.72–2.72)	0.86 (0.46–1.64)	1.40 (0.70–2.89)	1.22 (0.40–3.62)	1.51 (0.66–3.47)	0.82 (0.27–2.45)	Nivolumab 3 mg/kg/3 weeks plus ipilimumab 1 mg/kg/3 weeks

Figure S2 Comparison of HRs of OS for different interventions. HR, hazard ratio; OS, overall survival.

Placebo/ chemotherapy	0.65 (0.07–6.15)	6.10 (0.60–58.79)	3.23 (0.34–30.56)	0.17 (0.01–1.98)	0.15 (0.01–3.70)	0.35 (0.01–9.62)
1.54 (0.16–15.16)	Nivolumab 3 mg/kg/2 weeks	9.17 (0.40–237.69)	5.02 (0.22–111.78)	0.25 (0.01–7.93)	0.23 (0.02–2.48)	0.56 (0.05–5.97)
0.16 (0.02–1.68)	0.11 (0.00–2.51)	Avelumab 10 mg/kg/2 weeks	0.55 (0.02–13.31)	0.03 (0.00–0.79)	0.02 (0.00–1.27)	0.06 (0.00–3.07)
0.31 (0.03–2.95)	0.20 (0.01–4.49)	1.83 (0.08–44.33)	Pembrolizumab 200 mg/3 weeks	0.05 (0.00–1.43)	0.05 (0.00–2.14)	0.11 (0.00–5.24)
6.05 (0.51–78.49)	3.94 (0.13– 114.38)	36.79 (1.26– 1,066.00)	19.96 (0.70– 602.22)	Ipilimumab 10 mg/kg/3 weeks	0.92 (0.02, 57.25)	2.25 (0.04, 139.97)
6.63 (0.27– 159.98)	4.35 (0.40–42.44)	40.41 (0.79– 2,149.80)	21.68 (0.47– 939.68)	1.08 (0.02–65.18)	Nivolumab 1 mg/kg/3 weeks plus ipilimumab 3 mg/kg/3 weeks	2.39 (0.24, 24.89)
2.84 (0.10–70.72)	1.79 (0.17–18.69)	16.76 (0.33–873.46)	8.97 (0.19–438.11)	0.44 (0.01–26.56)	0.42 (0.04–4.10)	Nivolumab 3 mg/kg/3 weeks plus ipilimumab 1 mg/kg/3 weeks

Figure S3 Comparison of ORs of no severe TRAEs for different interventions. OR, odds ratio; TRAE, treatment-related adverse event.

Placebo/chemotherapy	1.04 (0.91–1.18)	1.57 (1.29–1.91)	1.62 (1.03–2.55)	1.04 (0.76–1.44)
0.97 (0.85–1.11)	Anti-PD-1	1.52 (1.20–1.93)	1.57 (0.97–2.51)	1.01 (0.76–1.34)
0.64 (0.52–0.78)	0.66 (0.52–0.84)	Anti-PD-L1	1.04 (0.63–1.69)	0.66 (0.46–0.97)
0.62 (0.39–0.98)	0.64 (0.40–1.03)	0.97 (0.59–1.59)	Anti-CTLA-4	0.64 (0.37–1.12)
0.96 (0.70–1.32)	0.99 (0.75–1.33)	1.51 (1.04–2.18)	1.56 (0.89–2.70)	Anti-PD-1 + anti-CTLA-4

Figure S4 Comparison of HRs of PFS for different interventions. HR, hazard ratio; PFS, progression-free survival.

Placebo/chemotherapy	0.78 (0.69–0.89)	1.01 (0.80–1.28)	1.09 (0.67–1.77)	0.82 (0.59–1.16)
1.28 (1.12–1.45)	Anti-PD-1	1.29 (0.98–1.69)	1.39 (0.84–2.30)	1.06 (0.77–1.44)
0.99 (0.78–1.25)	0.78 (0.59–1.02)	Anti-PD-L1	1.08 (0.63–1.84)	0.82 (0.54–1.24)
0.92 (0.57–1.50)	0.72 (0.44–1.19)	0.93 (0.54–1.59)	Anti-CTLA-4	0.76 (0.42–1.38)
1.21 (0.86–1.70)	0.95 (0.70–1.30)	1.22 (0.81–1.84)	1.32 (0.73–2.39)	Anti-PD-1 + anti-CTLA-4

Figure S5 Comparison of HRs of OS for different interventions. HR, hazard ratio; OS, overall survival.

Placebo/chemotherapy	1.45 (0.25–8.59)	5.98 (0.51–71.27)	0.21 (0.01–3.15)	0.50 (0.02–11.18)
0.69 (0.12–4.02)	Anti-PD-1	4.10 (0.20–78.41)	0.15 (0.01–3.69)	0.34 (0.03–4.34)
0.17 (0.01–1.98)	0.24 (0.01, 5.04)	Anti-PD-L1	0.04 (0.00–1.49)	0.09 (0.00–4.29)
4.68 (0.32–70.63)	6.69 (0.27–179.89)	28.05 (0.67–1099.07)	Anti-CTLA-4	2.35 (0.04–147.56)
2.00 (0.09–44.70)	2.93 (0.23–36.14)	11.70 (0.23–675.57)	0.43 (0.01–24.73)	Anti-PD-1 + anti-CTLA-4

Figure S6 Comparison of ORs of no severe TRAE for different interventions. OR, odds ratio; TRAE, treatment-related adverse event.