

Figure S1 Risk of bias assessment. (A) Risk of bias graph. (B) Risk of bias summary.

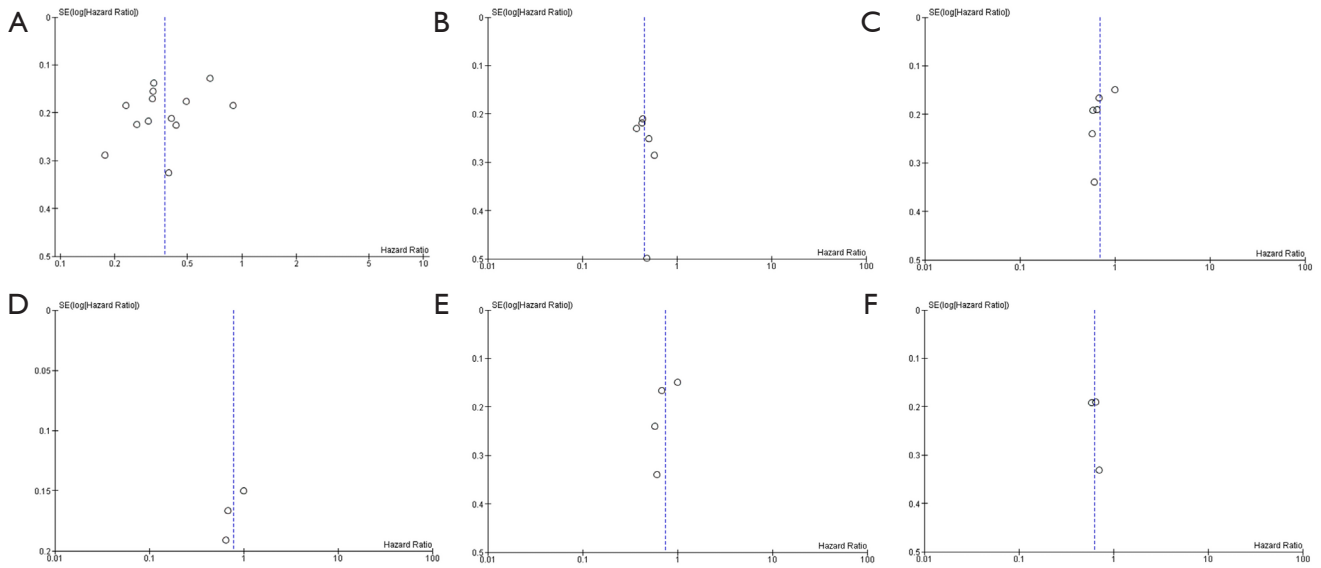
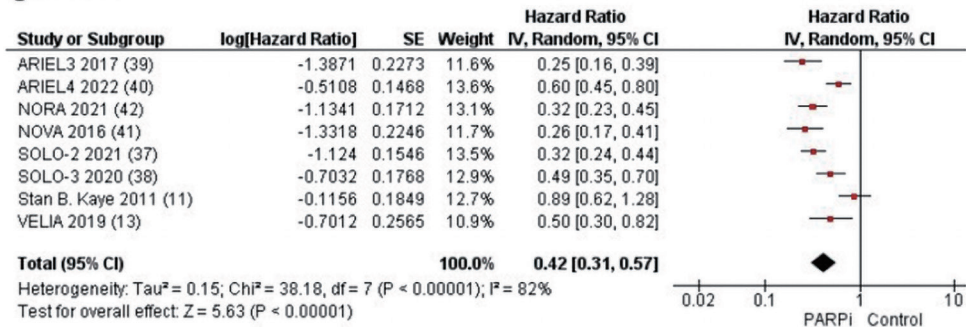
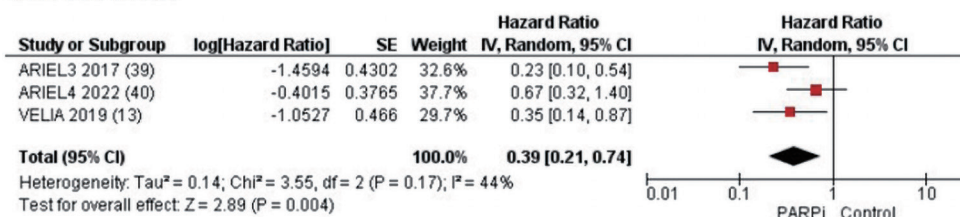


Figure S2 Funnel plots for publication bias. (A) Funnel plot subgroup BRCA mutation; (B) Funnel plot BRCAwt and other HRD; (C) Funnel plot HRP; (D) Funnel plot HRP first-setting; (E) Funnel plot BRCAwt and GIS \geq 42 via Myriad myChoice[®]; (F) Funnel plot BRCAwt and gLOH-high Foundation Medicine T5 NGS; BRCA; BRCAwt, BRCA wild-type. HRD, homologous recombination deficiency. HRP, homologous recombination proficiency. GIS, genomic instability score; gLOH, genome-wide loss-of-heterozygosity; NGS, next-generation sequencing.

gBRCA



sBRCAmut



tBRCAmut

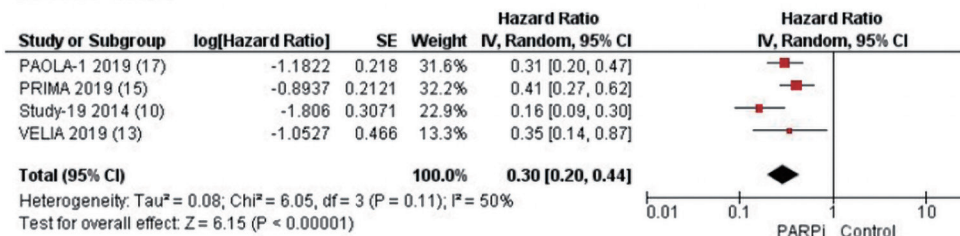


Figure S3 Forest plots from the meta-analysis of gBRCA, sBRCAmut and tBRCAmut. gBRCA, germline BRCA mutations; sBRCAmut, somatic BRCA mutations; tBRCAmut, tumor BRCA mutations.

Table S1 Summary of the search strategy

Database	Keywords	Results
PubMed		
#1	("parp inhibitor"[All Fields] OR "cisplatin"[All Fields] OR "carboplatin"[All Fields] OR "oxaliplatin"[All Fields] OR "olaparib"[All Fields] OR "rucaparib"[All Fields] OR "talazoparib"[All Fields] OR "niraparib"[All Fields] OR "veliparib"[All Fields])	112.153
#2	("HRD"[All Fields] OR "BRCAness"[All Fields] OR "homologous recombination"[All Fields] OR "BRCA"[All Fields])	46.565
#3	("cancer"[All Fields] OR "carcinoma"[All Fields] OR "neoplasm"[All Fields] OR "tumor"[All Fields])	4.071.377
#4	("ovarian"[All Fields] OR "ovary"[All Fields])	297.612
#5	((("randomized controlled trial"[Publication Type] OR "controlled clinical trial"[Publication Type] OR "clinical trials as topic"[MeSH Terms] OR "random allocation"[MeSH Terms] OR "double-blind method"[MeSH Terms] OR "single-blind method"[MeSH Terms] OR "clinical trial"[Publication Type] OR "research design"[MeSH Terms:noexp] OR "comparative study"[Publication Type] OR "evaluation studies"[Publication Type] OR "follow-up studies"[MeSH Terms] OR "prospective studies"[MeSH Terms] OR "clinical trial"[Text Word] OR ("singl*" [Text Word] OR "doubl*" [Text Word] OR "treb*" [Text Word]) AND ("mask*" [Text Word] OR "blind*" [Text Word])) OR "placebo*" [Text Word] OR "random*" [Text Word] OR "control" [Text Word] OR "controls" [Text Word] OR "prospectiv*" [Text Word] OR "volunteer*" [Text Word]))	8.677.020
#6	#1 AND #2	3.217
#7	#3 AND #4	130.004
#8	#6 AND #7	1.331
#9	#5 AND #8	485
Embase		
#1	'parp inhibitor'/exp OR 'parp inhibitor' OR 'cisplatin'/exp OR 'cisplatin' OR 'carboplatin'/exp OR 'carboplatin' OR 'oxaliplatin'/exp OR 'oxaliplatin' OR 'olaparib'/exp OR 'olaparib' OR 'rucaparib'/exp OR 'rucaparib' OR 'talazoparib'/exp OR 'talazoparib' OR 'niraparib'/exp OR 'niraparib' OR 'veliparib'/exp OR 'veliparib'	
#2	'hrd' OR 'brcaness' OR 'homologous recombination'	
#3	'cancer' OR 'carcinoma' OR 'neoplasm' OR 'tumor'	
#4	'ovarian' OR 'ovary'	
#5	#3 AND #4	
#6	#1 AND #2 AND #5	
#7	'randomized controlled trial' OR 'controlled clinical trial' OR 'random*' OR groups	
#8	'clinical trials as topic' OR trial	
#9	#7 AND #8	
#10	#6 AND #9	
#11	#10 AND ('Article'/it OR 'Conference Abstract'/it OR 'Conference Paper'/it)	590
Cochrane Central		
#1	'parp inhibitor' OR 'cisplatin' OR 'carboplatin' OR oxaliplatin OR olaparib OR rucaparib OR talazoparib OR niraparib OR veliparib	26.147
#2	'ovarian cancer' OR 'ovarian neoplasm' OR 'ovarian carcinoma' OR 'ovarian tumor'	8.631
#3	HRD OR BRCAness OR 'homologous recombination'	1.933
#4	#1 AND #2 AND #3	544
#5	('clinical trials as topic' OR trial)	1.400.917
#6	('randomized controlled trial' OR 'controlled clinical trial' OR 'random*' OR groups)	1.513.199
#7	#4 AND #5 AND #6	500

Table S2 Characteristics of the eligible studies

Study	Population	Intervention	Control group	Study design	Number of patients		
				RCT	PARP	Placebo	Total
Study19, 2014 (10)	HGSOC, ≥ 2 lines therapy	olaparib	placebo	phase II	136	129	265
Stan B. Kaye, 2012 (11)	HGSOC, ≥ 1 lines therapy	olaparib	chemotherapy	phase II	64	33	97
VELIA, 2019 (13)	HGSOC, first line	veliparib	placebo	phase III	382	375	757
SOLO-1, 2018 (14)	HGSOC, first line	olaparib	placebo	phase III	260	131	391
PRIMA, 2019 (15)	HGSOC, first line	niraparib	placebo	phase III	487	246	733
Athena-MONO, 2022 (16)	HGSOC, first line	rucaparib	placebo	phase III	427	111	538
PAOLA-1, 2019 (17)	HGSOC, first line	olaparib plus bevacizumab	Placebo plus bevacizumab	phase III	537	269	806
SOLO-2, 2021 (37)	HGSOC, ≥ 2 lines therapy	olaparib	placebo	phase III	196	99	295
SOLO-3, 2020 (38)	HGSOC, ≥ 2 lines therapy	olaparib	chemotherapy	phase III	178	88	266
ARIEL-3, 2017 (39)	HGSOC, ≥ 2 lines therapy	rucaparib	placebo	phase III	375	189	564
ARIEL-4, 2022 (40)	HGSOC, ≥ 2 lines therapy	rucaparib	chemotherapy	phase III	233	116	349
NOVA, 2016 (41)	HGSOC, ≥ 2 lines therapy	niraparib	placebo	phase III	138	65	203
NORA, 2021 (42)	HGSOC, ≥ 2 lines therapy	niraparib	placebo	phase III	177	88	265

HGSOC, high-grade serous ovarian cancer; RCT, Randomized Controlled Trial; PARP, poly(ADP-ribose) polymerase.