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INPLASY

Efficacy and safety of PARP inhibitors maintenance therapy in patients with newly diagnosed advanced ovarian cancer: A systematic review and network meta-analysis

INPLASY2025110086
doi: 10.37766/inplasy2025.11.0086
Received: 26 November 2025
Published: 26 November 2025

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ADMINISTRATIVE INFORMATION

Support - This work was supported by the Pudong New Area 'National Experimental Zone for Comprehensive Reform of Chinese Medicine Development' Construction Project (PDZY-2023-1104), Shanghai Municipal Health Commission Famous Elderly Traditional Chinese Medicine Academic Experience Research Studio (SHGZS-202229), Major Difficult Traditional Chinese and Western Medicine Clinical Collaboration Project of the State Administration of Traditional Chinese Medicine (ZDYN-2024-A-095), and Key Discipline Construction Project of High level Traditional Chinese Medicine of the State Administration of Traditional Chinese Medicine (ZYYZDKK-2023065).

Review Stage at time of this submission - Completed but not published.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY2025110086

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 26 November 2025 and was last updated on 26 November 2025.

INTRODUCTION

Review question / Objective This network meta-analysis aimed to compare the efficacy and safety of different PARP inhibitors in treating of newly diagnosed advanced ovarian cancer.

Condition being studied Poly (ADP-ribose) polymerase (PARP) inhibitors are established as maintenance therapy for newly diagnosed advanced ovarian cancer. While several agents are available, their comparative effectiveness and safety profiles remain unclear.

METHODS

Search strategy
PubMed
#1 "Ovarian Neoplasms"[Mesh] OR "Fallopian Tube Neoplasms"[Mesh] OR "Peritoneal Neoplasms"[Mesh]
#2 (ovar*[Title/Abstract] OR tubal[Title/Abstract] OR periton*[Title/Abstract]) AND (cancer*[Title/Abstract] OR neoplas*[Title/Abstract] OR carcinoma*[Title/Abstract] OR tumor*[Title/Abstract] OR malignant*[Title/Abstract])
#3 #1 OR #2
#4 "Poly(ADP-ribose) Polymerase Inhibitors"[Mesh] OR "Poly(ADP-ribose) Polymerases"[Mesh]

#5 (PARP[Title/Abstract] AND inhibit*[Title/Abstract]) OR "PARP inhibitor*"[Title/Abstract] OR "poly(ADP-ribose) polymerase inhibitor*"[Title/Abstract] OR "poly ADP ribose polymerase inhibitor*"[Title/Abstract]
#6 Olaparib[Title/Abstract] OR Lynparza[Title/Abstract] OR rucaparib[Title/Abstract] OR Rubraca[Title/Abstract] OR niraparib[Title/Abstract] OR Zejula[Title/Abstract] OR veliparib[Title/Abstract] OR ABT-888[Title/Abstract] OR talazoparib[Title/Abstract] OR Talzenna[Title/Abstract] OR pamiparib[Title/Abstract] OR fluzoparib[Title/Abstract] OR Senaparib[Title/Abstract]
#7 #4 OR #5 OR #6
#8 #3 AND #7

EmBase:
#1 'ovary tumor'/exp OR 'fallopian tube cancer'/exp OR 'peritoneum cancer'/exp
#2 (ovar*:ti,ab OR tubal:ti,ab OR periton*:ti,ab) AND (cancer*:ti,ab OR neoplas*:ti,ab OR carcinoma*:ti,ab OR tumor*:ti,ab OR malignant*:ti,ab)
#3 #1 OR #2
#4 'poly(ADP ribose) polymerase inhibitor'/exp OR 'olaparib'/exp OR 'rucaparib'/exp OR 'niraparib'/exp OR 'talazoparib'/exp OR 'veliparib'/exp
#5 (PARP:ti,ab AND inhibit*:ti,ab) OR 'PARP inhibitor*':ti,ab OR 'poly(ADP-ribose) polymerase inhibitor*':ti,ab OR 'poly ADP ribose polymerase inhibitor*':ti,ab
#6 pamiparib:ti,ab OR fluzoparib:ti,ab OR Senaparib:ti,ab
#7 #4 OR #5 OR #6
#8 #3 AND #7

Cochrane Library
#1 MeSH descriptor: [Ovarian Neoplasms] explode all trees
#2 MeSH descriptor: [Fallopian Tube Neoplasms] explode all trees
#3 MeSH descriptor: [Peritoneal Neoplasms] explode all trees
#4 (ovar* OR tubal OR periton*) NEAR/3 (cancer* OR neoplas* OR carcinoma* OR tumor* OR malignant*):ti,ab,kw
#5 #1 OR #2 OR #3 OR #4
#6 MeSH descriptor: [Poly(ADP-ribose) Polymerase Inhibitors] explode all trees
#7 (PARP NEAR/3 inhibit*) OR "PARP inhibitor*" OR "poly(ADP-ribose) polymerase inhibitor*":ti,ab,kw
#8 Olaparib OR Lynparza OR rucaparib OR Rubraca OR niraparib OR Zejula OR veliparib OR ABT-888 OR talazoparib OR Talzenna OR pamiparib OR fluzoparib OR Senaparib:ti,ab,kw
#9 #6 OR #7 OR #8
#10 #5 AND #9

Web of Science
#1 TS=((ovar* OR tubal OR periton*) AND (cancer* OR neoplas* OR carcinoma* OR tumor* OR malignant*))
#2 TS=((PARP AND inhibit*) OR "PARP inhibitor*" OR "poly(ADP-ribose) polymerase inhibitor*" OR "poly ADP ribose polymerase inhibitor*")
#3 TS=(Olaparib OR Lynparza OR rucaparib OR Rubraca OR niraparib OR Zejula OR veliparib OR ABT-888 OR talazoparib OR Talzenna OR pamiparib OR fluzoparib OR Senaparib)
#4 #2 OR #3
#5 #1 AND #4.

Participant or population Patients with newly diagnosed, histologically confirmed advanced (FIGO stage III-IV) epithelial ovarian, fallopian tube, or primary peritoneal cancer who had achieved a complete or partial response following first-line platinum-based chemotherapy.

Intervention Maintenance therapy with any PARP inhibitor.

Comparator Placebo or another PARP inhibitor.

Study designs to be included Randomized controlled trials (RCTs).

Eligibility criteria Studies were included based on the following PICOS criteria: (1) Population: patients with newly diagnosed, histologically confirmed advanced (FIGO stage III-IV) epithelial ovarian, fallopian tube, or primary peritoneal cancer who had achieved a complete or partial response following first-line platinum-based chemotherapy; (2) Intervention: maintenance therapy with any PARP inhibitor; (3) Comparator: placebo or another PARP inhibitor; (4) Outcomes: the primary outcome was investigator-assessed progression-free survival (PFS). Secondary outcomes included overall survival (OS) and safety events (incidence of grade 3 or higher adverse events); and (5) Study design: randomized controlled trials (RCTs).

Information sources PubMed, Embase, the Cochrane Central Register of Controlled Trials (CENTRAL), and Web of Science.

Main outcome(s) Investigator-assessed progression-free survival (PFS).

Additional outcome(s) Overall survival (OS) and safety events (incidence of grade 3 or higher adverse events).

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Quality assessment / Risk of bias analysis Cochrane Risk of Bias tool.

Strategy of data synthesis For pairwise meta-analyses, pooled hazard ratios (HRs) with 95% confidence intervals (CIs) were calculated using the inverse-variance method. A random-effects model was employed for all syntheses due to anticipated clinical and methodological heterogeneity. NMA was conducted within a frequentist framework using the netmeta package in R software. This approach integrated direct and indirect evidence to estimate relative treatment effects. The consistency between direct and indirect evidence was rigorously evaluated, and a design-by-treatment interaction model was used to validate the consistency assumption of the entire network. The surface under the cumulative ranking curve (SUCRA) was calculated to rank the treatments for each outcome; a higher SUCRA value (presented as a percentage) indicates a more favorable ranking.

Subgroup analysis We performed subgroup analyses based on mean age, FIGO stage, ECOG performance status, response status after chemotherapy, presence of residual macroscopic disease after debulking surgery, BRCA status, and HRD status.

Sensitivity analysis Sensitivity analyses were performed by sequentially excluding individual studies to test the robustness of the pooled results.

Language restriction No restriction.

Country(ies) involved China.

Keywords PARP inhibitor; newly diagnosed advanced ovarian cancer; maintenance therapy; systematic review; network meta-analysis.

Contributions of each author
Author 1 - Bowen Xu.
Author 2 - Tingting Zhang.
Author 3 - Li Tan.

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