Comparison of olaparib versus bevacizumab in the second-line maintenance setting using value frameworks

Shenolikar R[1], Gibbs SN[2], Yermilov I[2], Broder MS[2]
[1]AstraZeneca, Gaithersburg, MD, USA; [2]Partnership for Health Analytic Research, LLC, Beverly Hills, CA, USA

Background

- Ovarian cancer is the leading cause of death from gynecological malignancies in the US, with approximately 22,000 new cases and 14,000 deaths in 2018.[1]
- Poly (ADP-ribose) polymerase inhibitors (PARPis) and vascular endothelial growth factors have emerged as promising new therapies for the treatment of advanced ovarian cancer in patients who have been treated with two or more prior lines of chemotherapy.[2]
- Several organizations have developed value framework tools to assist individual healthcare decision makers, such as physicians, pharmacists and health services researchers to systematically assess the value of oncology drugs. These tools include the American Society of Clinical Oncology (ASCO) Value Framework;[3] the Institute for Clinical and Economic Review (ICER) Value Assessment Framework;[4] the National Comprehensive Cancer Network (NCCN) Evidence Blocks.[5]
- Value frameworks were developed to assist healthcare decision makers, including physicians, pharmacists and health services researchers.
- This study aimed at illustrating how value frameworks can be used in real-world practice, comparing olaparib and bevacizumab use in ovarian cancer as an example.

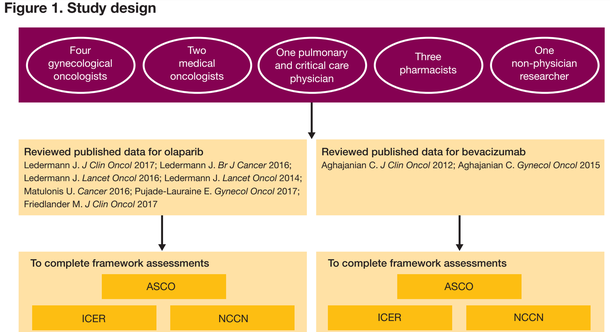
Objectives

- To have panelists assess the value of olaparib and bevacizumab as second-line maintenance treatment for platinum-sensitive relapsed ovarian cancer using three value frameworks.
- To illustrate how value frameworks can be used in real-world practice.

Methods

- Eleven panelists representing a range of potential framework users were convened to assess the value of multiple drugs using various value frameworks. A subset of assessments are presented here, specifically panelist assessments of olaparib and bevacizumab in second-line maintenance setting using the ASCO, ICER, and NCCN frameworks (Fig. 1).

Figure 1. Study design



Methods (continued)

- Panelists were provided select published clinical data on olaparib and bevacizumab, and instructions on how to complete each framework.
- Panelists completed the three value framework assessments for olaparib and bevacizumab, with drug and framework order randomized to reduce bias.
- Each assessment produced a single numerical or categorical outcome ('value score') (Fig. 2):
  - The ASCO framework produces a 'net health benefit' score ranging from -20 (worst) to +180 (best), based on the drug's clinical efficacy, toxicity, effects on long-term survival, palliation, quality of life, and treatment-free interval
  - The ICER value framework is represented by the Comparative Effectiveness Research (CER) Tool, which allows any individual to perform a value evaluation:
    - the framework reports final grades from D to A based on comparative net benefits and level of certainty associated with these benefits
    - a score of P/I is assigned when there is only moderate certainty that the drug provides a comparable, small, or substantial net benefit
    - a score of I is assigned, either when there is only moderate certainty that the drug provides comparable or inferior net benefit, or when the level of certainty is low
    - grades D–A were converted to a numerical scale from 1 (worst) to 4 (best); grades P/I and I were assigned scores of 0.5 and 0, respectively[6]
  - The NCCN framework produces a score from 1 (worst) to 5 (best) for each of four health-benefit measures: efficacy, safety, quality of evidence, and consistency of evidence. Affordability was excluded and a mean of these three scores was used
  - We converted each of these framework scores to a standard scale (from 0 to 100), so that scores could be compared across frameworks. To rescale scores, the following formula was used for all three frameworks: (mean score–minimum possible score/maximum possible score–minimum possible score) x 100.

Figure 2. Framework scales

NCCN	1	2	3	4	5
ASCO	-120	-45	35	75	180
ICER	I (0)	D (1)	C (2)	B (3)	A (4)
Rescaled scores	0	25	50	75	100

- Mean value scores and standard deviations were estimated for each drug and framework, both overall and by subdomain. Results were also stratified by type of panel-member specialty (gynecological oncologist: yes/no).

Results

- Panelists included: four gynecological oncologists, two medical oncologists, one pulmonary and critical care physician, three pharmacists, and one non-physician health services researcher.
- Olaparib received higher mean value scores than bevacizumab on all frameworks as second-line maintenance treatment for platinum-sensitive relapsed ovarian cancer.
- Results were consistent after stratification by specialty; on the ICER framework, all gynecological oncologists gave the highest possible score to olaparib (Tables 1 & 2; Fig. 3).
- Across both therapies, panelists took 39.1 minutes to complete the ASCO framework, 31.7 minutes to complete ICER, and 9.5 minutes to complete NCCN. Panelists took less time to review the literature on bevacizumab (54.0 minutes) than olaparib (70.6 minutes).

Table 1. Olaparib and bevacizumab overall mean (standard deviation) value scores across three value frameworks (among all panelists and by specialty)

	ASCO	ICER	NCCN
All panelists (n=11)			
Olaparib	69.29 (18.65)	3.00 (1.45)	3.84 (0.38)
Bevacizumab	38.03 (17.61)	2.73 (1.33)	3.50 (0.49)
Gynecological oncologists (n=4)			
Olaparib	63.90 (15.03)	4.00 (0.00)	3.94 (0.31)
Bevacizumab	30.67 (22.48)	3.38 (0.48)	3.56 (0.24)
Other panelists (n=7)			
Olaparib	72.37 (20.89)	2.43 (1.57)	3.79 (0.42)
Bevacizumab	42.23 (14.41)	2.36 (1.55)	3.46 (0.60)

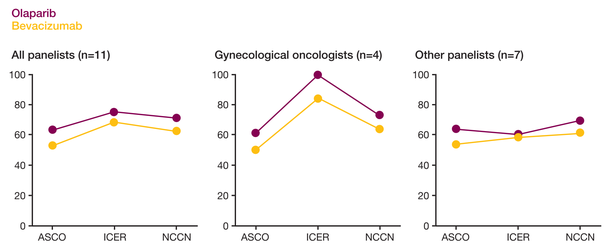
Range of possible scores: ASCO -120–180; ICER 0–4; NCCN 1–5

Table 2. Olaparib and bevacizumab framework subdomain mean (standard deviation) value scores across three value frameworks (among all panelists)

	ASCO	ICER	NCCN
Clinical benefit[a]			
Olaparib	62.25 (5.82)	n/a	3.45 (0.52)
Bevacizumab	36.61 (12.08)	n/a	3.00 (0.77)
Toxicity[b]			
Olaparib	-5.34 (8.41)	n/a	3.64 (0.92)
Bevacizumab	-1.49 (13.14)	n/a	2.73 (0.79)
Quality of life[c]			
Olaparib	0.91 (3.02)	n/a	n/a
Bevacizumab	0.00 (0.00)	n/a	n/a
Certainty[d]			
Olaparib	n/a	1.82 (1.08)	4.14 (0.55)
Bevacizumab	n/a	2.00 (0.89)	4.14 (0.45)

Range of possible scores: [a]ASCO: -100–100; NCCN: 1–5; [b]ASCO: -20–20 (lower scores represent more toxicity); NCCN: 1–5 (lower scores represent more toxicity); [c]ASCO: 0–10; [d]ICER: 1–4; NCCN: 1–5. For ICER, lower scores represent higher rankings

Figure 3. Rescaled mean value scores for olaparib and bevacizumab across three value frameworks (among all panelists and by specialty)



Limitations

- Panelists were provided instructions, but were not trained on how to complete the value frameworks.
- We did not include the affordability component of the NCCN framework.
- We created a numerical scale for the ICER framework in order to compare value scores across all frameworks. We assigned the lowest scores (0 and 0.5) to the 'insufficient net benefit, moderate or low certainty' (I) and 'promising but inconclusive net benefit, moderate certainty' (P/I) grades.

Discussion

- This study provides a unique comparison of olaparib versus bevacizumab for second-line maintenance treatment of platinum-sensitive relapsed ovarian cancer.
- While olaparib scored slightly higher on all value frameworks, there were consistent differences seen in rescaled scores across the value frameworks.
- Value frameworks were developed to assist providers, payers, and patients in incorporating value into decisions. Using these frameworks, a panel consistently rated the value of olaparib higher than that of bevacizumab. Results were consistent among the subset of gynecological oncologists.
- Value assessments should be repeated as new clinical data are released for PARPis, to ensure that the results accurately represent the body of literature.
- This study is an example of a real-world application of the value frameworks, and demonstrates how they can be used by decision makers. With many emerging oncological therapies, measuring value in a structured manner will become increasingly crucial to treatment decisions.

References

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Presented at AMCP Managed Care and Specialty Pharmacy Annual Meeting, March 25–28, 2019, San Diego, CA, USA

Sponsored by AstraZeneca Pharmaceuticals, LP