

Cost-effectiveness of sacituzumab govitecan for hormone receptor-positive human epidermal growth factor receptor 2-negative metastatic breast cancer

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Supplementary Materials

Supplementary Table 1 | CHEERS Checklist 2022

Supplementary Table 2 | Summary of statistical goodness-of-fit of Kaplan-Meier curves

Supplementary Table 3 | Model parameter.

Supplementary Table 4 | Scenario analysis results (INV)

Supplementary Table 5 | Scenario analysis results (price reduction)

Supplementary Fig. 1 | The reconstructed Kaplan-Meier PFS curve of chemotherapy (BICR)

Supplementary Fig. 2 | The reconstructed Kaplan-Meier PFS curve of chemotherapy (INV)

Supplementary Fig. 3 | The reconstructed Kaplan-Meier PFS curve of sacituzumab govitecan (BICR)

Supplementary Fig. 4 | The reconstructed Kaplan-Meier PFS curve of sacituzumab govitecan (BICR)

Supplementary Fig. 5 | The reconstructed Kaplan-Meier OS curve of chemotherapy

Supplementary Fig. 6 | The reconstructed Kaplan-Meier OS curve of sacituzumab govitecan

Supplementary Fig. 7 | Scenario analysis of the price reduction for sacituzumab govitecan

Supplementary Fig. 8 | Scenario analysis of the reduction in patient weight

Supplementary Fig. 9 | Two-way sensitivity analyses for the cost of sacituzumab govitecan and the patient weight

Supplementary Table 1 | CHEERS Checklist 2022

Section	Item No	Guidance for reporting	Reported
Title			
Title	1	Identify the study as an economic evaluation and specify the interventions being compared	Title
Abstract			
Abstract	2	Provide a structured summary that highlights context, key methods, results, and alternative analyses	Abstract
Introduction			
Background and objectives	3	Give the context for the study, the study question, and its practical relevance for decision making in policy or practice	Introduction
Methods			
Health economic analysis plan	4	Indicate whether a health economic analysis plan was developed and where available	Not applicable
Study population	5	Describe characteristics of the study population (such as age range, demographics, socioeconomic, or clinical characteristics)	Patient characteristics and treatment regimes
Setting and location	6	Provide relevant contextual information that may influence findings	Model structure
Comparators	7	Describe the interventions or strategies being compared and why chosen	Patient characteristics and treatment regimes
Perspective	8	State the perspective(s) adopted by the study and why chosen	Model structure
Time horizon	9	State the time horizon for the study and why appropriate	Model structure
Discount rate	10	Report the discount rate(s) and reason chosen	Model structure
Selection of outcomes	11	Describe what outcomes were used as the measure(s) of benefit(s) and harm(s)	Model structure, Clinical data and Utilities
Measurement of outcomes	12	Describe how outcomes used to capture benefit(s) and harm(s) were measured	Model structure, Clinical Data and Utilities
Valuation of outcomes	13	Describe the population and methods used to measure and value outcomes	Model structure
Measurement and valuation of resources and costs	14	Describe how costs were valued	Costs
Currency, price date, and conversion	15	Report the dates of the estimated resource quantities and unit costs, plus the currency and year of conversion	Model structure
Rationale and description of model	16	If modelling is used, describe in detail and why used. Report if the model is publicly available and where it can be accessed	Model structure
Analytics and assumptions	17	Describe any methods for analysing or statistically transforming data, any extrapolation methods, and approaches for validating any model used	Model structure

Characterising heterogeneity	18	Describe any methods used for estimating how the results of the study vary for subgroups	Scenario Analyses
Characterising distributional effects	19	Describe how impacts are distributed across different individuals or adjustments made to reflect priority populations	Not applicable
Characterising uncertainty	20	Describe methods to characterise any sources of uncertainty in the analysis	Sensitivity Analyses
Approach to engagement with patients and others affected by the study	21	Describe any approaches to engage patients or service recipients, the general public, communities, or stakeholders (such as clinicians or payers) in the design of the study	Scenario Analyses and Sensitivity Analyses
Results			
Study parameters	22	Report all analytic inputs (such as values, ranges, references) including uncertainty or distributional assumptions	Table 1
Summary of main results	23	Report the mean values for the main categories of costs and outcomes of interest and summarise them in the most appropriate overall measure	Base-Case Results
Effect of uncertainty	24	Describe how uncertainty about analytic judgments, inputs, or projections affect findings. Report the effect of choice of discount rate and time horizon, if applicable	Sensitivity Analyses
Effect of engagement with patients and others affected by the study	25	Report on any difference patient/service recipient, general public, community, or stakeholder involvement made to the approach or findings of the study	Scenario Analyses and Sensitivity Analyses
Discussion			
Study findings, limitations, generalisability, and current knowledge	26	Report key findings, limitations, ethical or equity considerations not captured, and how these could affect patients, policy, or practice	Discussion
Other relevant information Source of funding	27	Describe how the study was funded and any role of the funder in the identification, design, conduct, and reporting of the analysis	Funding
Conflicts of interest	28	Report authors conflicts of interest according to journal or International Committee of Medical Journal Editors requirements	Disclosure

Supplementary Table 2 | Summary of statistical goodness-of-fit of Kaplan-Meier curves

	Exponential	Weibull	Gamma	Generalised gamma	Gompertz	Lognormal	Log-logistic
Chemotherapy-PFS-BICR							
parameter 1	0.1833	1.3523	1.8469	1.0667	0.0306	1.2989	2.056
parameter 2		5.4560	0.376	0.8104	0.1647	0.8181	3.666
parameter 3				-0.5903			
AIC	557.5506	543.4760	536.0204	521.5979	557.9927	522.4475	528.0125
BIC	560.6565	549.6878	542.2323	530.9157	564.2046	528.6594	534.2244
Chemotherapy-PFS-INV							
parameter 1	0.1878	1.2807	1.6841	1.1472	0.0228	1.3080	2.006
parameter 2		5.5206	0.3322	0.8445	0.1722	0.8473	3.661
parameter 3				-0.3991			
AIC	723.5130	712.7510	705.4972	688.1968	724.6544	688.4084	692.4152
BIC	726.6189	718.9629	711.7091	697.5147	730.8663	694.6202	698.6271
Sacituzumab Govitecan-PFS-BICR							
parameter 1	0.1395	1.2748	1.6084	1.2991	0.0308	1.5742	1.871
parameter 2		7.2744	0.2402	0.8737	0.1208	0.8901	4.765
parameter 3				-0.6563			
AIC	720.6069	711.6902	706.6419	690.5202	720.6780	692.1185	699.1981
BIC	723.7189	717.9141	712.8659	699.8562	726.9020	698.3424	705.4221
Sacituzumab Govitecan-PFS-INV							
parameter 1	0.1267	1.3431	1.6959	1.7199	0.0507	1.7129	1.922
parameter 2		8.2284	0.2245	0.8707	0.0951	0.8718	5.634
parameter 3				0.0171			
AIC	860.4442	845.2624	841.4235	837.4689	854.9077	835.4717	842.7438
BIC	863.5562	851.4863	847.6474	846.8049	861.1317	841.6956	848.9678
Chemotherapy-OS							
parameter 1	0.04217	1.548	1.8571	2.9613	0.06731	2.7604	1.870
parameter 2		20.120	0.0974	0.7102	0.02336	0.9827	15.672
parameter 3				0.8005			
AIC	718.5507	702.1381	701.9393	703.9100	707.3373	706.3670	702.5626
BIC	721.6567	708.3499	708.1512	713.2279	713.5492	712.5789	708.7745
Sacituzumab Govitecan-OS							
parameter 1	0.02841	1.81	2.3911	3.0649	0.07981	3.0443	2.14
parameter 2		25.23	0.1006	0.8121	0.01286	0.8358	20.53
parameter 3				0.0911			
AIC	613.1977	589.9776	588.0240	588.6493	598.7332	586.6842	587.7612
BIC	616.3097	596.2016	594.2480	597.9852	604.9572	592.9082	593.9852

Abbreviations: PFS, progression-free survival; OS, overall survival; BICR, blinded independent central review; INV, investigator; AIC, Akaike information criterion; BIC, Bayesian information criterion.

Supplementary Table 3 | Model parameter.

Parameters	Baseline	Range		Distribution	Probability data
		Minimum	Maximum		
Costs (\$)					
Sacituzumab govitecan per 180mg	1192.05	953.64	1430.46	Gamma	(SE3, 10.60)
Eribulin per 1mg	101.17	80.94	121.41	Gamma	(SE3, 0.90)
Capecitabine per 500mg	0.69	0.56	0.83	Gamma	(SE3, 0.01)
Gemcitabine per 200mg	17.08	13.67	20.50	Gamma	(SE3, 0.15)
Vinorelbine per 10mg	19.05	15.24	22.86	Gamma	(SE3, 0.17)
Best supportive care per cycle	359.00	287.20	430.80	Gamma	(SE3, 3.19)
Laboratory tests per event	70.96	56.76	85.15	Gamma	(SE3, 0.63)
CT of chest and abdomen per event	170.29	136.23	204.35	Gamma	(SE3, 1.51)
Bone scan per event	113.53	90.82	136.23	Gamma	(SE3, 1.01)
Routine follow-up per unit	38.39	30.71	46.07	Gamma	(SE3, 0.34)
Cost of Neutropenia	701.00	560.80	841.20	Gamma	(SE3, 6.23)
Cost of Anemia	531.70	425.36	638.04	Gamma	(SE3, 4.73)
Cost of Leukopenia	446.05	356.84	535.26	Gamma	(SE3, 3.96)
Cost of Diarrhea	44.30	35.44	53.16	Gamma	(SE3, 0.39)
Cost of Fatigue	131.78	105.42	158.14	Gamma	(SE3, 1.17)
Cost of Hypokalemia	3000.00	2400.00	3600.00	Gamma	(SE3, 26.67)
Cost of Gamma-glutamyl transferase increased	1000.00	800.00	1200.00	Gamma	(SE3, 8.89)
Utility value					
Utility of PFS	0.82	0.78	0.86	Beta	(308.89, 68.27)
Utility of PD	0.55	0.44	0.66	Beta	(50.08, 40.97)
Disutility of Neutropenia	0.15	0.12	0.18	Beta	(95.48, 541.03)
Disutility of Anemia	0.07	0.06	0.09	Beta	(104.21, 1323.38)
Disutility of Leukopenia	0.13	0.10	0.16	Beta	(97.74, 654.14)
Disutility of Diarrhea	0.10	0.08	0.12	Beta	(100.81, 877.92)
Disutility of Fatigue	0.12	0.09	0.14	Beta	(99.45, 765.31)
Disutility of Hypokalemia	0.04	0.03	0.05	Beta	(107.96, 2591.04)
Disutility of Gamma-glutamyl transferase increased	0.10	0.08	0.12	Beta	(101.15, 910.35)
Adverse events (%)					
Neutropenia of Chemotherapy	61.59	49.27	73.90	Beta	(42.60, 26.57)
Anemia of Chemotherapy	6.10	4.88	7.32	Beta	(105.58, 1625.92)
Leukopenia of Chemotherapy	36.59	29.27	43.90	Beta	(70.98, 123.02)
Gamma-glutamyl transferase increased of Chemotherapy	6.10	4.88	7.32	Beta	(105.58, 1625.92)
Neutropenia of SG	69.09	55.27	82.91	Beta	(34.08, 15.25)
Anemia of SG	18.18	14.55	21.82	Beta	(91.86, 413.39)
Leukopenia of SG	41.82	33.45	50.18	Beta	(65.04, 90.49)
Diarrhea of SG	6.67	5.33	8.00	Beta	(104.93, 1469.07)
Fatigue of SG	7.27	5.82	8.73	Beta	(104.25, 1329.13)
Hypokalemia of SG	9.7	7.76	11.64	Beta	(101.49, 945.16)
Other parameters					

Discount rate (%)	5	0	8	Beta	(6.49, 123.37)
Patient weight (kg)	57.37	45.90	68.84	Normal	(57.37, 5.41)
Body surface area (m ²)	1.72	1.38	2.06	Normal	(1.72, 0.16)

Abbreviations: CT, Computed tomography; PFS, progression-free survival; PD, progressive disease; SG, sacituzumab govitecan.

Supplementary Table 4 | Scenario analysis results (INV).

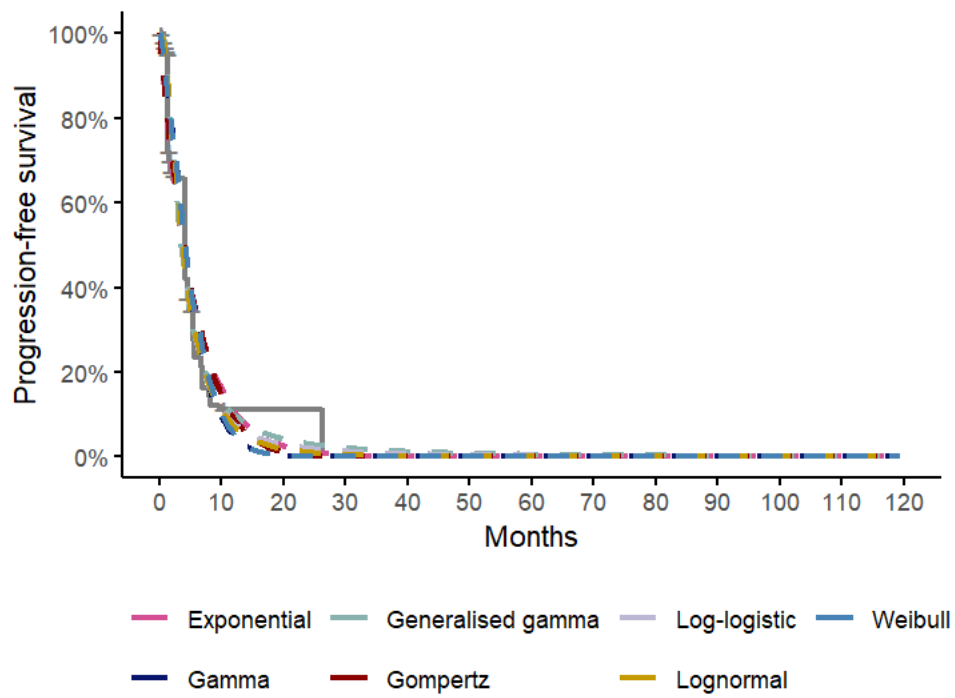
Strategy	Total Cost	Total QALYs	Incremental cost	Incremental QALYs	ICER (\$/QALY)
Chemotherapy	13,706.56	0.95			
Sacituzumab govitecan	101,395.48	1.37	87,688.92	0.43	205,977.64

Abbreviation: QALYs, quality-adjusted life years; ICER, incremental cost-effectiveness ratio.

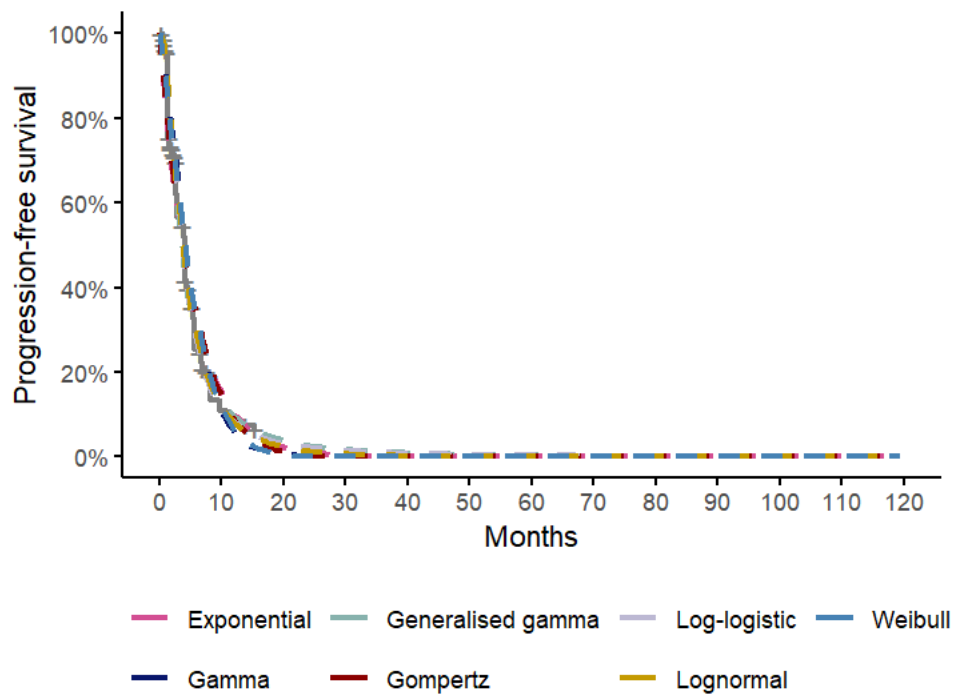
Supplementary Table 5 | Scenario analysis results (price reduction).

Strategy	Total Cost	Total QALYs	Incremental cost	Incremental QALYs	ICER (\$/QALY)
The price of sacituzumab govitecan decreased by 50%					
Chemotherapy	13,717.50	0.95			
Sacituzumab govitecan	59,915.57	1.38	46,198.07	0.43	107,277.51
The price of sacituzumab govitecan decreased by 60%					
Chemotherapy	13,717.50	0.95			
Sacituzumab govitecan	50,900.45	1.38	37,182.94	0.43	86,343.29
The price of sacituzumab govitecan decreased by 70%					
Chemotherapy	13,717.50	0.95			
Sacituzumab govitecan	41,885.32	1.38	28,167.81	0.43	65,409.07
The price of sacituzumab govitecan decreased by 80%					
Chemotherapy	13,717.50	0.95			
Sacituzumab govitecan	32,870.19	1.38	19,152.69	0.43	44,474.85
The price of sacituzumab govitecan decreased by 90%					
Chemotherapy	13,717.50	0.95			
Sacituzumab govitecan	23,855.06	1.38	10,137.56	0.43	23,540.63

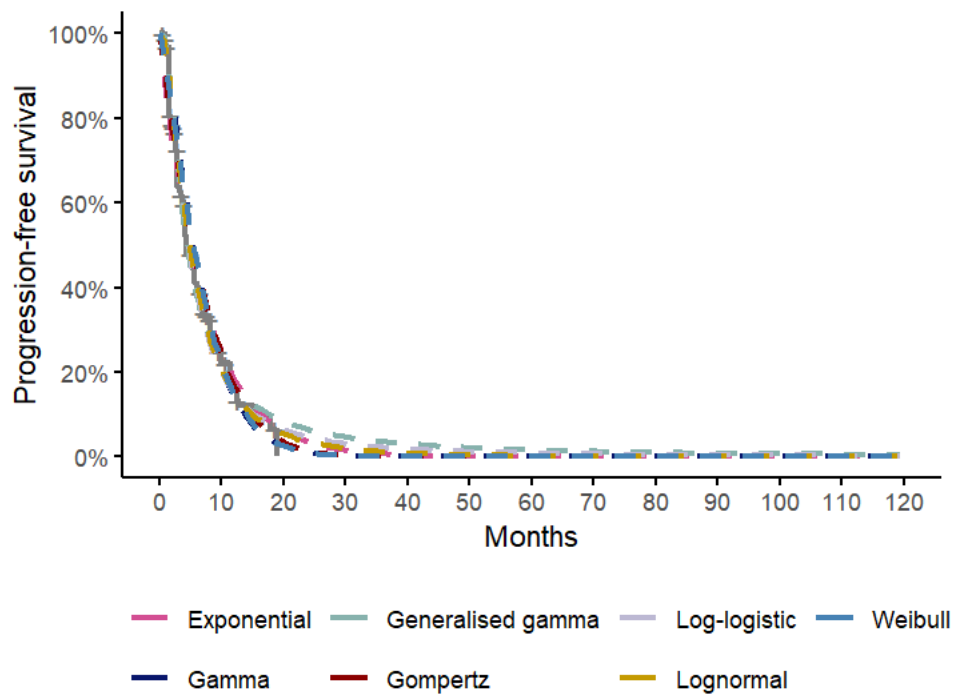
Abbreviation: QALYs, quality-adjusted life years; ICER, incremental cost-effectiveness ratio.



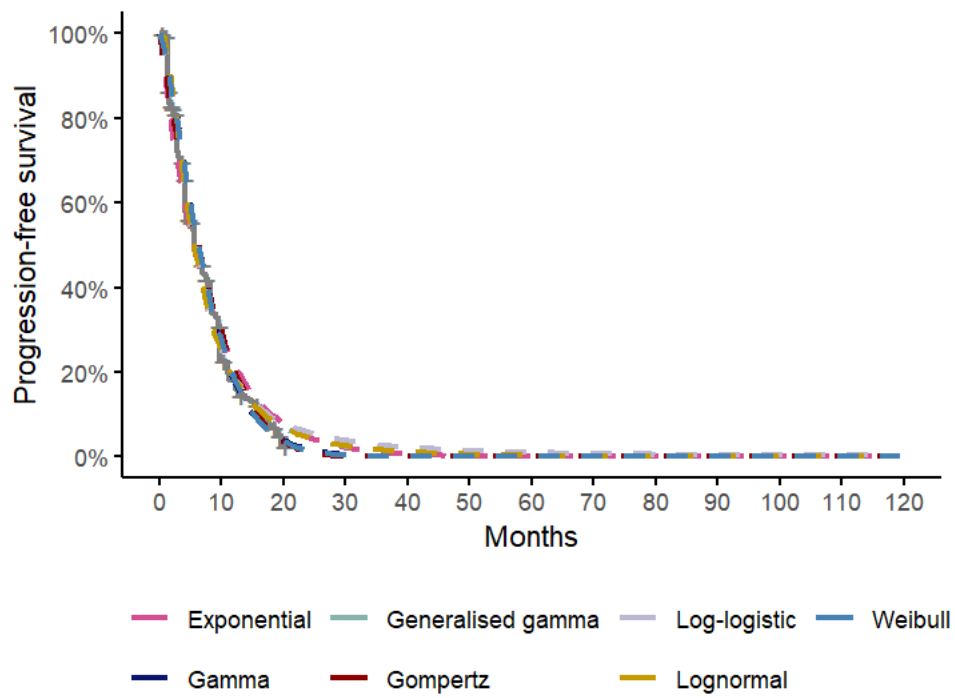
Supplementary Fig. 1 | The reconstructed Kaplan-Meier PFS curve of chemotherapy (BICR).



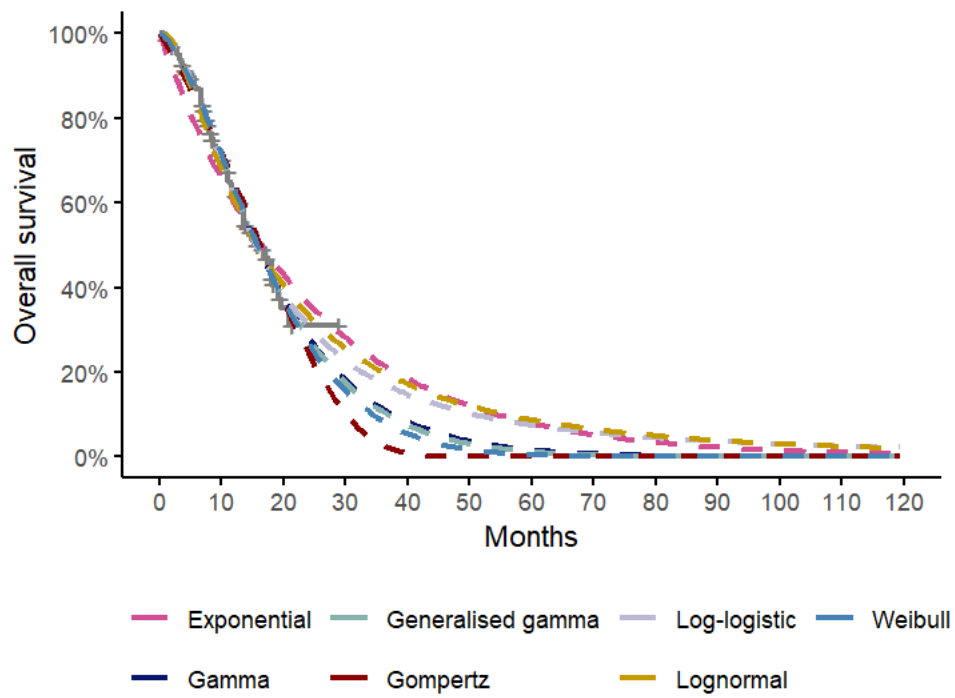
Supplementary Fig. 2 | The reconstructed Kaplan-Meier PFS curve of chemotherapy (INV).



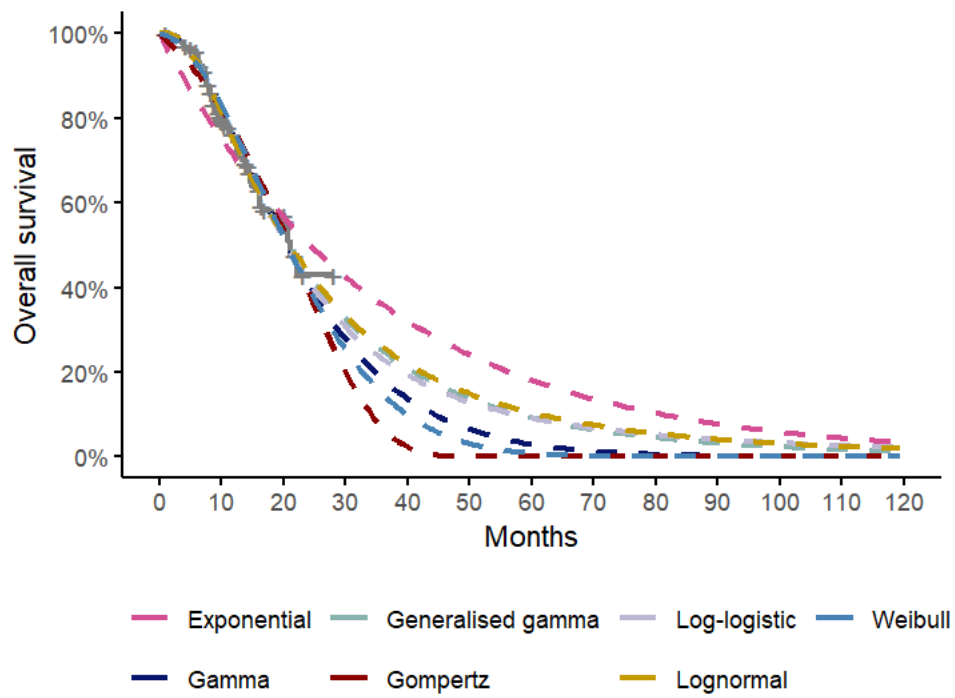
Supplementary Fig. 3 | The reconstructed Kaplan-Meier PFS curve of sacituzumab govitecan (BICR).



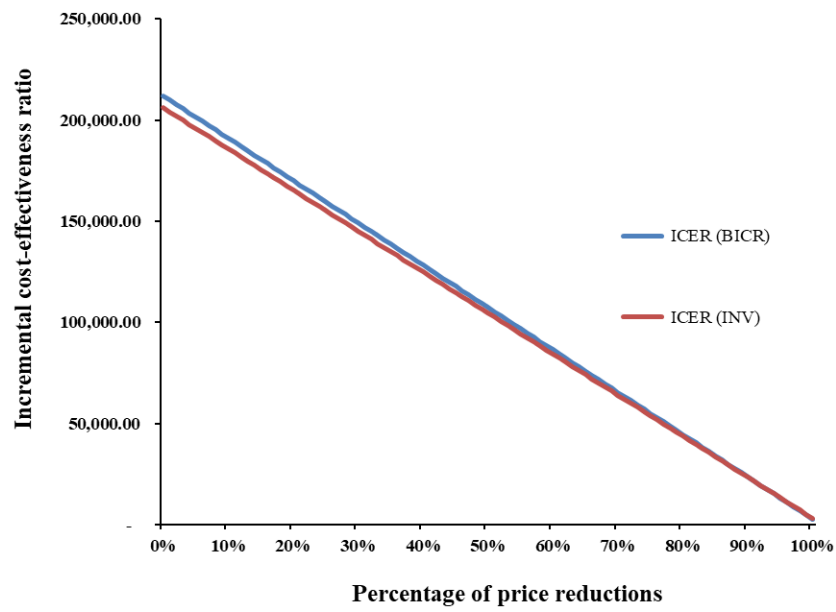
Supplementary Fig. 4 | The reconstructed Kaplan-Meier PFS curve of sacituzumab govitecan (INV).



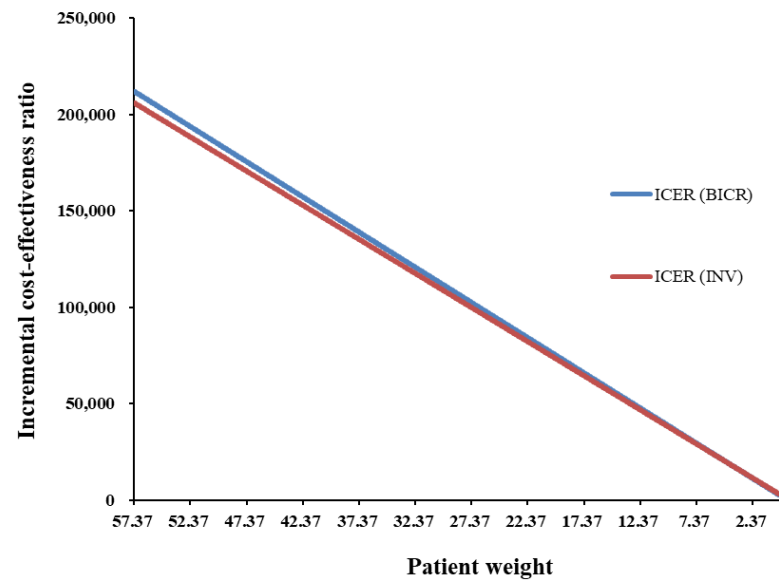
Supplementary Fig. 5 | The reconstructed Kaplan-Meier OS curve of chemotherapy.



Supplementary Fig. 6 | The reconstructed Kaplan-Meier OS curve of sacituzumab govitecan.



Supplementary Fig. 7 | Scenario analysis of the price reduction for sacituzumab govitecan.



Supplementary Fig. 8 | Scenario analysis of the reduction in patient weight.

Parameters			Cost of Sacituzumab govitecan (180mg)										
			0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
			0.00	119.20	238.41	357.61	476.82	596.02	715.23	834.43	953.64	1072.84	1192.05
Patient weight (kg)	50%	28.69	2,606.41	13,073.52	23,540.63	34,007.74	44,474.85	54,941.96	65,409.07	75,876.18	86,343.29	96,810.40	104,529.35
	60%	34.42	2,606.41	15,166.94	27,727.48	40,288.01	52,848.54	65,409.07	77,969.61	90,530.14	103,090.67	115,651.20	128,211.74
	70%	40.16	2,606.41	17,260.37	31,914.32	46,568.27	61,222.23	75,876.18	90,530.14	105,184.09	119,838.05	134,492.00	149,145.96
	80%	45.90	2,606.41	19,353.79	36,101.16	52,848.54	69,595.92	86,343.29	103,090.67	119,838.05	136,585.42	153,332.80	170,080.18
	90%	51.63	2,606.41	21,447.21	40,288.01	59,128.81	77,969.61	96,810.40	115,651.20	134,492.00	153,332.80	172,173.60	191,014.40
	100%	57.37	2,606.41	23,540.63	44,474.85	65,409.07	86,343.29	107,277.51	128,211.74	149,145.96	170,080.18	191,014.40	211,948.62
	110%	63.11	2,606.41	25,634.05	48,661.70	71,689.34	94,716.98	117,744.62	140,772.27	163,799.91	186,827.55	209,855.20	232,882.84
	120%	68.84	2,606.41	27,727.48	52,848.54	77,969.61	103,090.67	128,211.74	153,332.80	178,453.87	203,574.93	228,695.99	253,817.06
	130%	74.58	2,606.41	29,820.90	57,035.38	84,249.87	111,464.36	138,678.85	165,893.33	193,107.82	220,322.31	247,536.79	274,751.28
	140%	80.32	2,606.41	31,914.32	61,222.23	90,530.14	119,838.05	149,145.96	178,453.87	207,761.77	237,069.68	266,377.59	295,685.50
	150%	86.06	2,606.41	34,007.74	65,409.07	96,810.40	128,211.74	159,613.07	191,014.40	222,415.73	253,817.06	285,218.39	316,619.72

Supplementary Fig. 9 | Two-way sensitivity analyses for the cost of sacituzumab govitecan and the patient weight.