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Cost of first-line treatment of hepatocellular carcinoma with the immune checkpoint inhibitor-based regimens STRIDE and atezolizumab plus bevacizumab in Brazil

Barry Rodgers-Gray [1], Marília Hernani[2], Carolina Meyn Teixeira[2], Ricardo Paranhos Pires Moreira[2], Ian Keary[1], John Fullarton[1], Melda Dinç[3], Li Sun[4], Kate Keeping[4], Doreen Tay[5]

[1]Violicom Medical Limited, Aldermaston, United Kingdom; [2]AstraZeneca, São Paulo, Brazil; [3]AstraZeneca, Türkiye; [4]AstraZeneca UK Limited, Cambridge, UK; [5]AstraZeneca, Singapore Pte Ltd

Why did we perform this research?

- The efficacy of STRIDE (Single Tremelimumab Regular Interval Durvalumab) for the first-line treatment of unresectable hepatocellular carcinoma (HCC) was established in the HIMALAYA trial[1]
- Atezolizumab plus bevacizumab (A+B) is another immune checkpoint inhibitor-based regimen available in Brazil

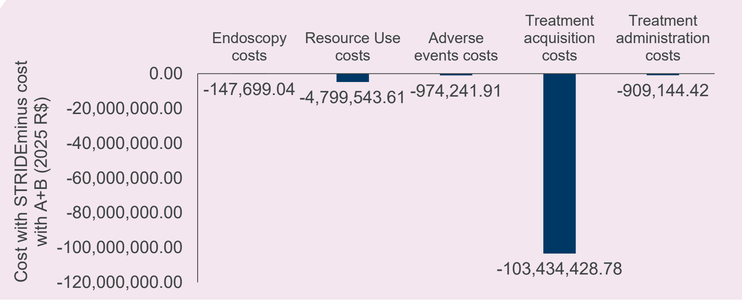
This analysis considers the total cost of care associated with STRIDE versus A+B in the Brazilian private healthcare context (payer perspective)

Summary

STRIDE and A+B are effective options for the first-line treatment of hepatocellular carcinoma that are available for use in Brazil

To assess cost of care with each regimen a model considering work-up prior to treatment, treatment acquisition and administration, and the management of subsequent grade ≥3 adverse events (AEs) was developed

Results demonstrated savings with STRIDE versus A+B across all cost categories considered

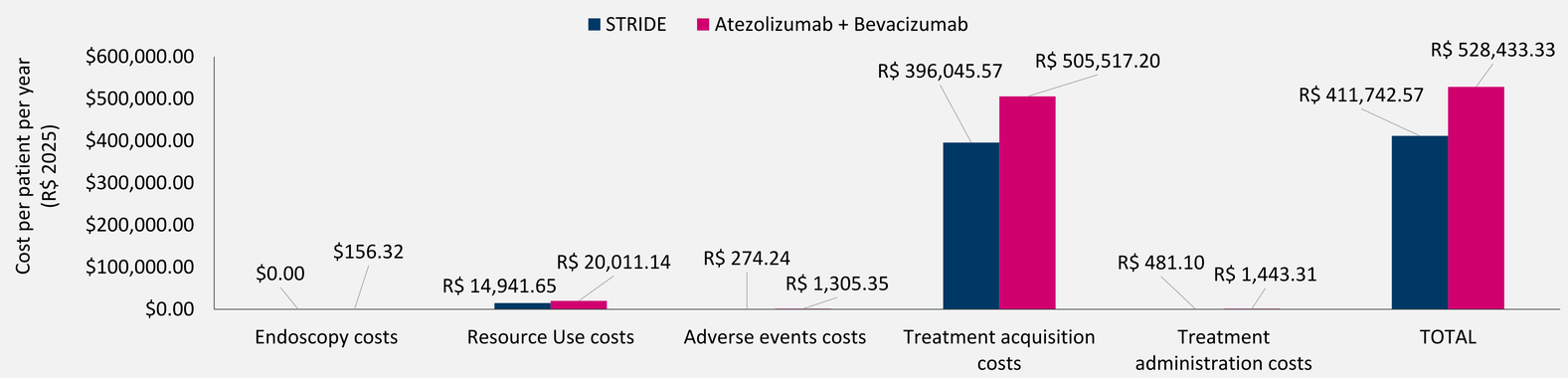


Key takeaways

- Taking a total cost of care approach, STRIDE was associated with cost savings compared with A+B from a Brazilian private healthcare perspective
- With the availability of bevacizumab biosimilars, consideration of other contributors to cost of care will take on increasing importance

What did we find?

Figure 1. Annual cost per patient



- The total annual cost of care per patient was estimated to be R$411,743 (€65,755) for STRIDE and R$528,433 (€84,391)for A+B respectively
- These costs equated to an average saving per patient of R$116,691 (€18,636) with STRIDE
- Considering the private healthcare perspective, the total annual cost of care among the 945 eligible patients was estimated to be R$389,035,567 (€62,128,980) with STRIDE and R$499,290,996 (€79,736,772) with A+B, a saving of R$110,255,429 (€17,607,792) in favour of STRIDE (Table 1)
  - Treatment acquisition costs accounted for 93.8% of the cost savings, healthcare resource use 4.3%; all other factors each accounted for less than 1% of the total cost

Table 1. Annual cost burden from private healthcare perspective (n=945)

Cost Category	STRIDE (R$ 2025)	A+B (R$ 2025)	Incremental (R$ 2025)
Endoscopy	0.00	$147,699.04	-147,699.04
Resource Use	14,117,643.97	18,907,558.89	-4,789,914.63
Adverse events	259,118.16	1,233,360.07	-974,241.91
Treatment acquisition	374,204,232.68	477,638,661.47	-103,434,428.78
Treatment administration	454,572.21	1,363,716.63	-909,144.42
TOTAL	**389,063,946.33**	**499,329,004.10**	**-110,265,057.77**

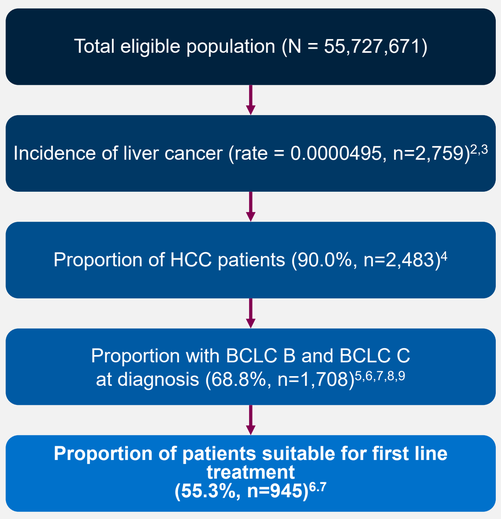
- In a scenario analysis that weighted the cost of bevacizumab according to market share of the various biosimilars available in Brazil, total cost savings were R$18,989,015 (€3,032,546)
  - Treatment acquisition costs accounted for 64.1% of the cost savings, healthcare resource use 25.2%, adverse events 5.1%, administration 4.8% and endoscopy less than 1%

How did we perform this research?

Model Structure and Population

- A cost of care model followed patients with unresectable HCC eligible for first-line systemic therapy for one year and considered direct medical costs only from the perspective of a Brazilian private healthcare perspective
- The model estimated the total cost of care among patients using STRIDE versus A+B. Costs considered in the model included treatment acquisition and administration, endoscopy, healthcare resource use, and cost for treating grade ≥3 treatment-emergent adverse events (TEAEs)
- The population eligible to receive first-line systemic therapy in Brazil was estimated as shown in Figure 1. Eligible patients were considered to be those with newly diagnosed unresectable HCC and (1) Barcelona Clinic Liver Cancer (BCLC) stage C with Child-Pugh A or (2) BCLC stage B with Child-Pugh A who would be ineligible for locoregional treatment

Figure 2. Calculation of population to receive 1st line systemic therapy



Model inputs and costs

- Drug administration costs were estimated based on IV infusion duration and frequency[10-14] (Table 2)
- Drug acquisition costs were estimated according to list price[15] and the mean treatment frequency and duration in the HIMALAYA[1] and IMbrave150 clinical trials.[16] (Table 3)
- Weekly resource use rates for A+B were sourced from NICE Technology appraisal guidance [TA666][17], based on progression-free health state data from the IMbrave150 clinical trial.[16] Rates for STRIDE were assumed equal to A+B. Healthcare resource use accounted for physician visits, laboratory and radiological tests, and hospitalization (Table 4)
- Weekly healthcare resource use costs were calculated by multiplying weekly rates by unit costs obtained from local sources[14] (Table 4). The annual cost-of-care per patient was calculated by multiplying weekly cost by 52 weeks
- The cost of managing grade ≥3 TEAEs were calculated by multiplying the cost of treatment by the mean frequency of TEAEs associated with STRIDE and A+B in HIMALAYA[1] and IMBRAVE150[16] (Table 5)
  - Costs were calculated using a clinically validated micro-costing approach based on available Brazilian sources[14,15,18,19]
- An endoscopy is required before initiating A+B to assess bleeding risk but is not required before initiating STRIDE as there is no increase in bleeding risk associated with this treatment;[1] a one-time cost of R$156.32 for endoscopy was applied only to patients receiving A+B[14]
- Adverse events, treatment acquisition and administration were assumed to be annual costs
- Costs were uplifted to 2025 R$ as required[20]
- The total annual burden from the plan perspective was calculated by multiplying the annual cost-of-care per patient with the number of eligible patients (n = 945) (Figure 1)
- Scenario analysis replaced the list price of the originator bevacizumab product with a weighted average price based on the market share of the available biosimilars and their individual unit costs

Table 2. Treatment administration frequency and costs

Treatment	Infusion time	Number of administrations	Cost of IV infusion (2025 R$)		Annual cost of administration (2025 R$)
			For initial hour	For additional hour	
Atezolizumab	60 min; 30 min for subsequent infusions	10	68.73	68.73	687.29
Bevacizumab	(a) First: 90 min (b) second: 60 min (c) subsequent: 30 min	10	68.73	68.73	756.02
Durvalumab	60 min	6	68.73	68.73	412.38
Tremelimumab	60 min	1	68.73	68.73	68.73

Table 3. Treatment regimen and acquisition costs

Drug acquisition	Atezolizumab	Bevacizumab	Durvalumab	Tremelimumab
Dose per vial (mg)	1200	100	500	300
Drug dose (mg)	1200	1063.5	1500	300
Dose frequency (per week)	0.33	0.33	0.25	N/A
Mean treatment duration (days)	225	210	168	N/A
Number of vials used per administration	1	3	3	1
Total number of administrations per patient per year	10	10	6	1
Total number of drug vials used per patient per year	10	30	18	1
Cost per vial (2025 R$)	28,080.07	7,490.55	13,928.72	145,328.61
Cost per patient per year (2025 R$)	280,800.70	224,716.50	250,716.96	145,328.61

Table 4. Weekly healthcare resource use rates and costs

Resource Use		Unit Cost (2025 R$)	Frequency per week	Cost per week (2025 R$)	
				STRIDE	A+B
Physician visits	Appointment with oncologist	107.72	0.563	60.69	60.69
	Appointment with hepatologist	107.72	0.002	0.26	0.26
	Appointment with gastroenterologist	107.72	0.000	0.00	0.00
	Appointment with radiologist	107.72	0.013	1.35	1.35
	Appointment with palliative care physician/nurse	107.72	0.035	3.79	3.79
Laboratory tests	AFP test	54.88	0.230	12.62	12.62
	Liver function test inc. biochemistry	53.61	0.240	12.87	12.87
	INR	5.54	0.240	1.33	1.33
	Complete blood count	9.52	0.230	2.19	2.19
Radiological tests	Abdominal CT	279.74	0.126	35.25	35.25
	Abdominal MRI	531.48	0.059	31.25	31.25
Hospitalization	Hospitalisation	33,457.72	0.014	455.02	455.02
	Hospital follow-up: Specialist	107.72	0.023	2.52	2.52
	Hospital follow-up: General Practitioner	107.72	0.052	5.57	5.57

Table 5. Frequency and cost of grade ≥3 treatment emergent adverse events

Grade ≥3 TEAEs	Cost (2025 R$)	Frequency		Total costs per year (2025 R$)	
		STRIDE	A+B	STRIDE	A+B
ALT increased	397.43	1.5%	2.0%	6.15	7.84
AST increased	397.43	3.9%	6.9%	15.36	27.42
Blood bilirubin increased	397.43	0.6%	1.0%	2.30	3.92
Lipase increased	397.43	4.6%	0.0%	18.44	0.00
Diarrhoea	2,551.85	4.4%	1.8%	112.28	45.93
Fatigue	319.58	2.1%	0.0%	6.71	0.00
Hypertension	2,209.09	1.4%	16.8%	29.89	370.21
Thrombocytopenia	7,936.29	0.4%	3.9%	30.68	312.94
Proteinuria	405.29	0.2%	4.4%	0.78	17.98
Weight loss	15,842.60	0.2%	0.0%	30.62	0.00
Upper GI bleeding	7,643.55	0.0%	6.4%	0.00	489.19

Limitations

- Local pricing agreements/discounts have the potential to markedly influence the relative cost of care of the regimens
- Definitive AE costs are lacking in Brazil and costs of management may vary across different hospitals
- Rates of adverse events in clinical trials may not reflect rates in clinical practice

What are the implications for payors?

Taking a total cost of care approach, STRIDE was associated with cost savings compared with A+B from a Brazilian private healthcare perspective

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Disclosures

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