

BUDGET IMPACT OF ALTEPLASE IN TREATMENT OF ACUTE ISCHEMIC STROKE IN TURKEY

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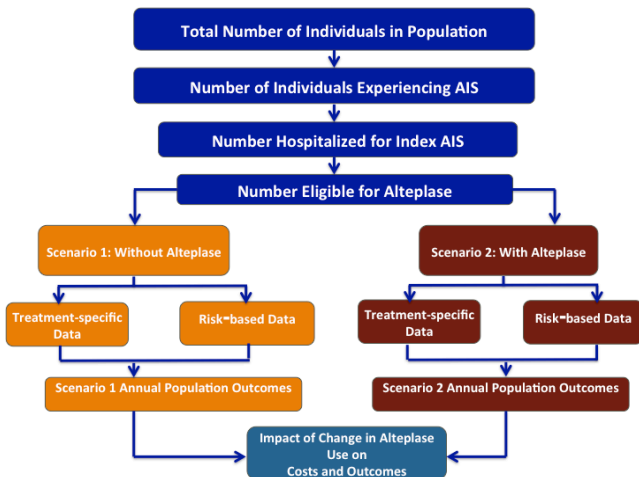
OBJECTIVES

Cerebrovascular diseases are the sixth cause of total DALYs lost in Turkey and the Turkish Social Security Institution (SSI) faces considerable challenge on reimbursement decisions for treatment. Alteplase is a recombinant human tissue plasminogen activator indicated for treatment of acute ischemic stroke (AIS). Clinical trials have proved efficacy in reducing 90-day disability measured by the Modified Rankin Score (mRS) if administered within 4,5, hours of onset of symptoms. The agent is used as an addition to Standard of Care (SoC). This study aimed at assessing the budget impact of Alteplase from a national perspective in Turkey.

METHODS

A budget impact model assessing the impact with and without use of Alteplase was developed. First, the number of individuals with AIS that are hospitalized and eligible for Alteplase was determined from published data and expert views. Calculations were made for 0 to 1,5 hours after onset, 1,5 to 3,0 hours after onset and 3 to 4,5 hours after onset for both scenarios. AIS hospitalization costs and the average annual costs after hospitalization were included. Cost estimates were calculated according to mRS score. Literature review and expert opinions were used in calculating the Turkish costs. Figure 1 summarizes the budget impact model.

Figure 1: Budget Impact Model of Alteplase



FINDINGS

Table 1: Number of People Eligible for Alteplase

Total Number of People in Population*	54,844,406
Annual Incidence of AIS (per 100,000)	236
% Hospitalized for AIS%79.41**	79.41
% Eligible for Alteplase**	12.60
Number of People Eligible for Alteplase	12,951

\* Turkish Statistics Institute, \*\* Du et al, 2014

Table 2: Overall Utilization for the Scenario With Alteplase

	Year 1	Year 2	Year 3	Year 4	Year 5
Alteplase+SoC	64%	65%	66%	67%	68%
Only SoC	36%	35%	34%	33%	32%
No of People With Alteplase	7,802	7,924	8,046	8,167	8,289

SoC: Standart Of Care

\*Year 1 share is derived from Du et al, 2014

The number, type and duration of resources used by AIS patients during hospitalization and post hospitalization were derived from expert views as there is no published data to estimate resource utilization of AIS patients in Turkey.

CONCLUSION

The burden of AIS on the Turkish healthcare system and unmet need is expected to increase with current ageing trends. The budget impact model revealed that given the efficacy of Alteplase, use of the product will result in net cost savings for the SSI. In addition to this, the reduced disability observed with Alteplase will also lower the need for long-term care and associated resource use, and will therefore generate an additional budget decrease.

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Table 3 : Resource Utilization of AIS Patients During Hospitalization by mRS Score

	mRS 0-1	mRS 2-3	mRS 4-5	mRS 6
Patient Time From Onset of AIS Symptoms to Needle (%)				
0-1,5 hours after the onset of symptoms	0	10	25	25
1,5-3 hours after the onset of symptoms	40	40	45	45
3-4,5 hours after the onset of symptoms	60	50	30	30
Average Length of Stay (Days)	5	5	14	14
% of Patients in Intensive Care Unit	5	50	100	100
Average Length of Stay in Intensive Care Unit (Days)	2	7	21	21
% of Patients Undergoing Surgical Operation	0	5	40	50
% of Patients Receiving Brain Imaging Services	100	100	100	100
Number of Brain Imaging Services During Hospitalization	3	4	6	6
% of Patients Receiving Nutritional Support	5	10	80	100
% of Patients Receiving Physiotherapy	0	80	100	100
No of Physiotherapy Sessions During Hospitalization	-	1	2	2

Table 4 : Resource Utilization of AIS Patients Post-Hospitalization by mRS Score

	mRS 0-1	mRS 2-3	mRS 4-5	mRS 6
% of Patients With Second Hospitalization	5	10	10	0
Average Length of Stay During Second Hospitalization	7	10	14	0
% of Patients Receiving Home Care	0	20	40	0
No of Days in Home Care	0	30	120	0
% of Patients Receiving Speech Therapy	5	10	25	0
No of Speech Therapies	12	12	12	0
% of Patients Receiving Psychotherapy	0	0	5	0
No of Psychotherapy Sessions	0	0	6	0
% of Patients Receiving Physiotherapy	5	40	80	0
No of Physiotherapy Sessions	21	21	21	0
% of Patients Visiting Neurologist	100	100	100	0
No of Neurologist Visits	5	5	5	0
% of Patients Visiting General Practitioner	20	30	50	0
No of General Practitioner Visits	2	6	6	0
% of Patients Visiting Other Physicians	50	100	100	0
No of Visits to Other Physicians	2	6	6	0

Table 5 : Breakdown of AIS Costs

	Cost (TRY)
Surgery	3,670
Brain Imaging	507
Rehabilitation	45
Nutritional Support	78,67
Intracranial Bleeding	7,218

Table 6 : Budget Impact of Alteplase (TRY)

	Year 1	Year 2	Year 3	Year 4	Year 5
<b>TOTAL</b>					
Without Alteplase	173,190,158	173,190,158	172,190,158	173,190,158	173,190,158
With Alteplase	173,157,906	172,907,193	172,656,480	172,405,768	172,155,055
Budget Impact	-32,252	-282,965	-533,677	-784,390	-1,035,103
<b>Drug Costs</b>					
Without Alteplase	0	0	0	0	0
With Alteplase	272,376	276,650	280,924	285,198	289,471
Budget Impact	272,376	276,650	280,924	285,198	289,471
<b>Acute Hospitalization Costs</b>					
Without Alteplase	161,880,498	161,880,498	161,880,498	161,880,498	161,880,498
With Alteplase	160,376,700	160,102,898	159,829,096	159,555,294	159,281,492
Budget Impact	-1,503,798	-1,777,600	-2,051,402	-2,325,205	-2,599,007
<b>Post Hospitalization Costs</b>					
Without Alteplase	10,302,620	10,302,620	10,302,620	10,302,620	10,302,620
With Alteplase	9,504,376	9,491,852	9,479,327	9,466,802	9,454,277
Budget Impact	-798,294	-810,769	-823,294	-835,818	-848,343

RESULTS

The number of patients eligible for Alteplase was estimated as 12,951. Use of Alteplase resulted in cost savings for the Turkish health care system. The budget impact of Alteplase was estimated as -32,252 TRY, -282,965 TRY, -533,677 TRY, -784,390 TRY and -1,035,103 TRY for the first, second, third, fourth and fifth years respectively.