COMPARISON OF SUGAMMADEX AND NEOSTIGMINE USE IN TERMS OF COST SAVINGS IN HOSPITALS IN TURKISH HEALTHCARE SETTING

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OBJECTIVES

Sugammadex and Neostigmine, two agents for the reversal of neuromuscular blockade following surgery, have been subject to several studies comparing their clinical and cost effectiveness. In settings where patients have full neuromuscular recovery (Train-of-four ratio ≥ 0.9) prior to extubation, the economic impact of Sugammadex is related to a reduction in recovery and operating room (OR) staff times. In settings where full neuromuscular recovery is not verified, economic impact primarily derives from avoided complications of residual neuromuscular blockade. This study aimed to determine the potential cost impact of use of Sugammadex in Turkish hospitals.

METHODS

A budget impact model for hospitals was adapted to the Turkish healthcare setting. The model compared Neostigmine and Sugammadex with different combinations with Rocuronium and Vecuronium and at different blockade levels (**Table 1** and **Figure 1**). The clinical efficacy data relating to OR time and residual blockade occurrence and complications were compiled from clinical studies. The model was populated with cost data from the Ministry of Health (MoH) hospitals. The value of staff time was calculated from the salary data of MoH and the cost of the products were calculated by using current lists of the Social Security Institution (SSI) dated 03/06/2015 and Ministry of Health (MoH) dated 25/03/2016. The timeline of the model was one year.

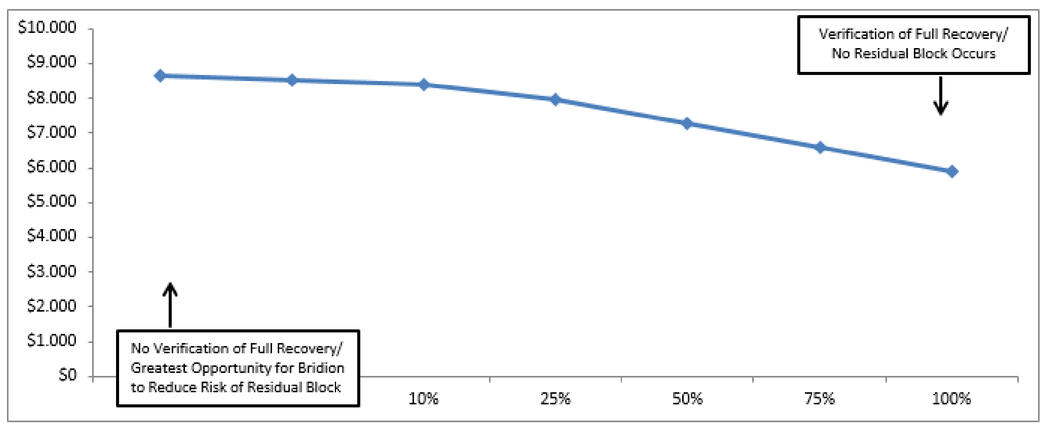
Table 1: Model comparators

Block depth	Comparator	Strategy with Sugammadex
Shallow	Rocuronium + No reversal	Rocuronium + Sugammadex
Shallow	Vecuronium + No reversal	Vecuronium + Sugammadex
Shallow	Rocuronium + Neostigmine	Rocuronium + Sugammadex
Shallow	Vecuronium + Neostigmine	Vecuronium + Sugammadex
Deep	Rocuronium + No reversal	Rocuronium + Sugammadex
Deep	Vecuronium + No reversal	Vecuronium + Sugammadex
Deep	*Rocuronium + Neostigmine*	*Rocuronium + Sugammadex*
Deep	*Vecuronium + Neostigmine*	*Vecuronium + Sugammadex*
Italicized entries reflect exploratory analyses.		

RESULTS

At the institutional level, there was an annual net cost increase of 5,908 TRY, if all patients had full neuromuscular recovery in the OR prior to extubation (Figure 2). When full neuromuscular recovery was not verified prior to extubation, the cost increase was 8,649 TRY, with a 6,633 TRY cost offset from treatment of complications estimated for Sugammadex versus Neostigmine.

Figure 2: Annual institution-level net budget impact * with Sugammadex use, by % of patients for whom neuromuscular full recovery is verified (TOF ratio ≥ 0.9) prior to extubation in the OR



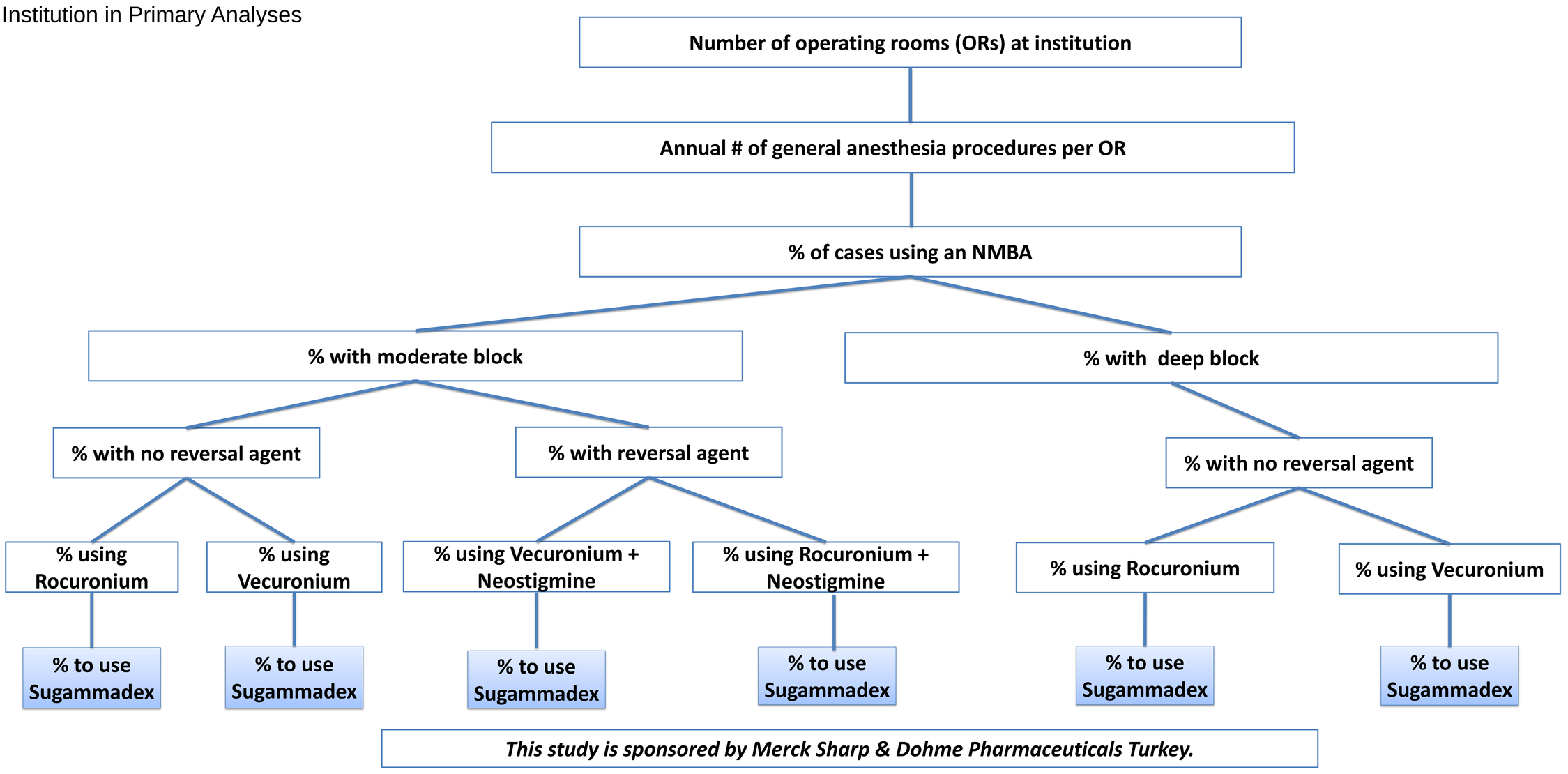
*Negative values for budget impact indicate net cost savings.

	% of patients for whom full neuromuscular recovery is verified prior to extubation in the OR						
	0%	5%	10%	25%	50%	75%	100%
Net budget impact (TRY)	8,649	8,512	8,375	7,964	7,279	6,593	5,908

CONCLUSIONS

Although cost of acquiring Sugammadex is considerably higher than Neostigmine, the cost offsets for hospitals might be substantial. Real world data are needed to understand economic outcomes in clinical practice as the magnitude of offsets depends on assumptions concerning the frequency and intensity with which events are clinically managed.

Figure 1: Drill-down to Utilization of [Rocuronium + Sugammadex] or [Vecuronium + Sugammadex] and Comparator Treatment Strategies Within a Healthcare Institution in Primary Analyses



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