



Title	Sugammadex for the Reversal of Muscle Relaxation in General Anesthesia: A Systematic Review and Economic Assessment
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Aim

To determine the clinical and cost effectiveness of sugammadex for the reversal of neuromuscular blockade (NMB).

Conclusions and results

Sugammadex may be a cost-effective option compared with neostigmine + glycopyrrolate for reversal of moderate NMB and also provides the facility to recover patients from profound blockade. Rocuronium + sugammadex could be considered as a replacement for succinylcholine for rapid sequence induction (and reversal) of NMB, but this might not be a cost-effective option in some types of patients at current list prices for sugammadex. Uncertainties remain about whether the full benefits of sugammadex can be realized in clinical practice. The review of clinical effectiveness included 4 randomized active-control trials of sugammadex, 9 randomized placebo-controlled trials, and 5 studies in special populations. The included trials indicated that sugammadex produces more rapid recovery from moderate or profound NMB than do placebo or neostigmine. Median time to recovery from moderate blockade was 1.3 to 1.7 minutes for rocuronium + sugammadex, 21 to 86 minutes for rocuronium + placebo, and 17.6 minutes for rocuronium + neostigmine. In profound blockade, median time to recovery was 2.7 minutes for rocuronium + sugammadex, 30 to >90 minutes for rocuronium + placebo, and 49 minutes for rocuronium + neostigmine. Results for vecuronium were similar. Recovery from NMB was faster with rocuronium reversed by sugammadex 16 mg/kg after 3 minutes (immediate reversal) than with succinylcholine followed by spontaneous recovery (median time to primary outcome 4.2 versus 7.1 minutes). The evidence base for modeling cost effectiveness is limited. However, assuming that the reductions in recovery times observed in the trials can be achieved in routine practice, and can be used productively, sugammadex (2 mg/kg [4 mg/kg]) is potentially cost effective at its current list price for routine reversal of rocuronium-induced moderate (profound) blockade,

if each minute of recovery time saved can be valued at approximately 2.40 pounds sterling (GBP) (GBP 1.75) or more.

Recommendations

See Executive Summary link www.hta.ac.uk/project/1780.asp.

Methods

See Executive Summary link www.hta.ac.uk/project/1780.asp.

Further research/reviews required

1) Evaluate the effects of replacing succinylcholine with rocuronium + sugammadex for rapid induction and reversal of NMB on morbidity, mortality, patient-reported outcomes, and resource use. 2) Collect data on the use of sugammadex in clinical practice to obtain better estimates of the incidence and implications of rare major adverse events, eg, allergic/anaphylactic reactions. 3) Evaluate outcomes of sugammadex use in routine surgery for which there is little information, eg, patient-reported outcomes, clinical signs of recovery, resource use, and costs. 4) Evaluate the use of sugammadex in pediatric and obstetric practice. 5) Evaluate the need for further randomized trials of sugammadex. 6) Evaluate the use of a 4-mg/kg dose of sugammadex for immediate reversal of blockade induced by low-dose (0.6-mg/kg) rocuronium in routine settings. 6) Evaluate new theatre practices that could potentially make optimum use of the time saved by using sugammadex, eg, a nationwide prospective study. 7) Evaluate the effects of using different combinations of anesthesia and analgesia with sugammadex, specifically in situations where potent inhalational agents have been used but discontinued. 8) Quantify the mortality risk of patients with different clinical characteristics in the setting of rapid induction of NMB.