Rocuronium versus succinylcholine for rapid sequence induction intubation (Review)

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[Intervention Review]

Rocuronium versus succinylcholine for rapid sequence induction intubation

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ABSTRACT

Background

Patients requiring emergency endotracheal intubation often require a rapid sequence induction (RSI) intubation technique to protect against aspiration or increased intracranial pressure, or to facilitate intubation. Succinylcholine is the most commonly used muscle relaxant because of its fast onset and short duration; unfortunately, it can have serious side effects. Rocuronium has been suggested as an alternative to succinylcholine for intubation. This meta-analysis is an update since our initial Cochrane systematic review in 2003.

Objectives

To determine if rocuronium creates comparable intubating conditions to succinylcholine during RSI intubation. Comparisons were made based on dose of rocuronium, narcotic use, emergency versus elective intubation, age and induction agent. The primary outcome was excellent intubation conditions. The secondary outcome was acceptable conditions.

Search strategy

In our initial systematic review we searched all databases until March 2000. We have updated that search and searched the Cochrane Central Register of Controlled Trials (*The Cochrane Library*, 2007 issue 3), MEDLINE (1966 to June Week 3 2007), EMBASE (1988 to 2007 Week 26) for randomized controlled trials or controlled clinical trials relating to the use of rocuronium and succinylcholine. We included foreign language journals and handsearched the references of identified studies for additional citations.

Selection criteria

We included all trials meeting the inclusion criteria (comparison of rocuronium and succinylcholine, main outcomes of intubation conditions).

Data collection and analysis

Two authors (JP, JL or VS) independently extracted data and assessed methodological quality for allocation concealment. We combined the outcomes in RevMan using relative risk (RR) with a random-effects model.

Main results

In our initial systematic review we identified 40 studies and included 26. In this update we identified a further 18 studies and included 11. In total, we identified 58 potential studies; 37 were combined for meta-analysis. Overall, succinylcholine was superior to rocuronium, RR 0.86 (95% confidence interval (95% CI) 0.80 to 0.92) (n = 2690). In the group that used propofol for induction, the intubation conditions were superior with succinylcholine (RR 0.88, 95% CI 0.80 to 0.97) (n = 1183). This is contrary to our previous meta-analysis results where we reported that intubation conditions were superior in the rocuronium group when propofol was used. We found no statistical difference in intubation conditions when succinylcholine was compared to 1.2mg/kg rocuronium; however, succinylcholine was clinically superior as it has a shorter duration of action.

Authors' conclusions

Succinylcholine created superior intubation conditions to rocuronium when comparing both excellent and clinically acceptable intubating conditions.

PLAIN LANGUAGE SUMMARY

Comparison of two muscle relaxants, rocuronium and succinylcholine, to facilitate rapid sequence induction intubation

In emergency situations some patients need a general anaesthetic with an endotracheal tube (tube to help them breathe). It is important to have fast acting medications to allow physicians to complete this procedure quickly and safely. Currently, the muscle relaxant medication most often used to accomplish this is succinylcholine. Succinylcholine is fast acting and lasts for only a few minutes which is very desirable in this setting. However, some patients cannot use this medication as it can cause serious salt imbalances or reactions, so an equally effective medication without these side effects is desired. This meta-analysis compared one possible alternative, rocuronium, for the quality of intubation conditions (the ease with which physicians can quickly and safely pass the endotracheal tube). In this review, we have combined the results of 37 studies, with a total of 2690 patients, which compared the effects of succinylcholine versus rocuronium on intubation conditions. We have found that rocuronium is less effective than succinylcholine for creating excellent intubation conditions. Rocuronium should therefore only be used as an alternative to succinylcholine when it is known that succinylcholine should not be used.

BACKGROUND

Patients who require tracheal intubation in the emergency department often require a rapid sequence induction (RSI) technique to protect against aspiration of gastric contents, to facilitate intubation, and prevent increased intracranial pressure (Huizinga 1992; McCourt 1998). This involves the rapid administration of a sequence of medications (including a sedative induction anaesthetic and a muscle relaxant, with or without narcotic) followed by endotracheal intubation within one minute of administering a muscle relaxant. In emergency situations, intubation is often required in unstable situations with the potential of haemodynamic instability or a full stomach. This often requires modification of the rapid sequence induction for the individual patient, with the goal of securing a patent airway as safely and quickly as possible.

Succinylcholine, a depolarizing muscle relaxant, is the most common agent used in both the controlled and emergent settings (Weiss 1997). Succinylcholine is the current favourite muscle relaxant because it has a rapid onset of 40 to 60 seconds and a short duration, lasting only 6 to 10 minutes (Combs 1994). Succinylcholine is contraindicated in patients with major burns (beyond 48 hours), major crush injuries (beyond 48 hours), severe abdominal sepsis, denervation syndromes, and major nerve or spinal cord injuries due to the risk of hyperkalaemia as a result of its depolarizing action, possibly leading to fatal cardiac arrhythmia (Combs 1994; Sullivan 1994). It is also contraindicated in patients with a history of malignant hyperthermia or previous allergic reaction to succinylcholine (Lebowitz 1989).

Alternative agents, among others, include pancuronium, vecuronium, and atracurium; however, none achieve acceptable intubating conditions as rapidly as succinylcholine (Mazurek 1998). Rocuronium is a steroid based non-depolarizing muscle relaxant, which has been proposed for creating intubating conditions similar to those of succinylcholine. The duration of action is longer, lasting 37 to 72 minutes with standard doses (Margorian 1993). The only absolute contraindication to rocuronium is allergy. Care must be taken with patients who have myasthenia gravis or myasthenic syndrome, hepatic disease, neuromuscular disease, carcinomatosis, or severe cachexia as the duration of action may be profoundly increased. There have been many studies looking at the equivalence of rocuronium and succinylcholine, with conflicting outcomes. It has been suggested that inconsistencies in the use of narcotics, the sedative propofol, or the dose of rocuronium administered may have accounted for these differences (Margorian 1993).

No previous systematic review comparing the intubation conditions created by rocuronium and succinylcholine has been published.

OBJECTIVES

The objective of this study was to determine whether rocuronium creates similar intubating conditions to those of succinylcholine during RSI intubation. This meta-analysis was necessary because of the conflicting results of the previous studies and the lack of any single randomized controlled study with sufficient power to demonstrate equivalence (this requires a larger sample size then comparative trials). This study is an update of our previous systematic review (meta-analysis) (Perry 2003).

Intubating conditions were assessed using the criteria of Goldberg et al (see Additional Table 1), (Goldberg 1989). This scale gives a total point value of 12 in which 3 represents excellent; 4 to 6 represents good; 7 to 9 represents poor and 10 to 12 represents impossible or inadequate intubation conditions. Intubation conditions were converted to the Goldberg scale (four levels) if required and adequate information was provided to do so. Rocuronium was compared to succinylcholine by comparing the proportion of excellent intubation scores to not excellent scores and the proportion of clinically acceptable scores (good or excellent) to the proportion of not clinically acceptable scores (poor or impossible).

Table 1. Intubating conditions

Score	Ease of laryngoscopy	Vocal cords	Intubation response
(1) Excellent	Good	Open	None
(2) Good	Fair	Open	Diaphragmatic movement
(3) Poor	Difficult	Movement	Moderate coughing

Table 1. Intubating conditions (*Continued*)

(4) Impossible	Poor	Closed	Severe coughing or bucking

METHODS

Criteria for considering studies for this review

Types of studies

We included all randomized clinical trials (RCTs) and controlled clinical trials (CCTs) meeting the following inclusion criteria:
1. the study reported a score of intubation conditions as one of the main outcomes;
2. the study compared rocuronium and succinylcholine; and,
3. the dose of rocuronium administered was at least 0.6 mg/kg and the dose of succinylcholine was at least 1 mg/kg (Danzl 2000).

Types of participants

We included males and females of any age who underwent a rapid sequence induction (RSI), or modified RSI, intubation either electively or emergently, in the analysis. We defined a modified RSI as using both a sedative and a muscle relaxant followed by intubation, with either a delay between the administrations of the two drugs or a delay of more than 60 seconds between the administration of the muscle relaxant and the intubation attempt, or both.

Types of interventions

All of the studies we included in this review compared rocuronium to succinylcholine for neuromuscular blockade. The sedative used for induction anaesthesia was thiopental, propofol, benzodiazepines or etomidate. We accepted studies with or without narcotic agents. Additional medications allowed in this review were the use of pre-treatment sedatives (e.g. low dose benzodiazepines).

Types of outcome measures

We assessed intubating conditions using the Goldberg scale (see Addional Table 1), (Goldberg 1989; Weiss 1997). This is a widely used scale (although not always attributed to Goldberg et al) that allocates a score for each of: ease of intubation, vocal cord movement, and patient response to intubation (diaphragmatic movement, coughing or bucking). Excellent intubation conditions had a score of three which means there must have been good conditions recorded by the operator, open vocal cords that were immobile, and no response by the patient to intubation. We converted studies to this scale if this had not been directly reported, but sufficient detail was available to do so. We compared rocuronium with succinylcholine by comparing the proportions of excellent intubation scores and the proportions of clinically acceptable intubation scores (good or excellent).

Primary Outcome

The primary outcome assessed was excellent intubation conditions created during RSI (or modified RSI) comparing rocuronium with succinylcholine.

Secondary Outcome

The secondary outcome assessed was clinically acceptable (excellent or good) intubation conditions comparing rocuronium with succinylcholine.

Subgroup Analysis

A-priori subgroup analysis for the outcome of excellent intubation conditions compared the following groups: simulated RSI (i.e., the neuromuscular-blocking agent is administered immediately following the sedative and conditions evaluated within 60 seconds) versus modified RSI, induction agent, use versus nonuse of a narcotic, doses of rocuronium (0.6, 0.9, or 1.2 mg/kg) and adult versus paediatric age groups. In this most recent version of the review, we have added a subgroup for emergent intubations as our most recent search identified two additional articles (Larsen 2005; Sluga 2005) which examined RSI in emergent patients. We felt that this comparison could now be included.
The simulated RSI subgroup is likely to be the closest to an emergent intubation out of all the patients studied.

Search methods for identification of studies

Electronic searches

In our initial systematic review we searched all databases until March 2000. In this updated version we searched the Cochrane Central Register of Controlled Trials (CENTRAL) (*The Cochrane Library,* 2007 Issue 3), MEDLINE (1966 to June Week 3 2007), EMBASE (1988 to 2007 Week 26) to identify all clinical trials relating to the use of rocuronium and succinylcholine during RSI. The validated RCT filter was used for the search (Haynes 1994). Please refer to Appendix 1 (MEDLINE) and Appendix 2 (EMBASE) for our search strategies.

Searching other resources

We handsearched the references of included studies to add any citations missed by the electronic searches.
We did not apply any language restrictions to the search.

Data collection and analysis

The local director of library services reviewed our search strategy. We retrieved studies by searching by title or abstract. Two independent appraisers (JP, JL or VS) reviewed relevant articles using specific criteria defined in 'Types of studies'. We measured Inter-rater agreement kappa statistics. We resolved all disagreements by consensus. If we could not reach consensus, then a third author (GW) was available to give a final decision. Two independent authors (JP, JL or VS) extracted data using a standardized data collection forms. Two independent authors (JP, JL or VS) assessed the methodological quality; both authors rated all studies for allocation concealment.

We combined all studies using Review Manager software (RevMan 5.0). We calculated dichotomous variables as relative risks (RRs) for both excellent and acceptable intubation conditions, both with 95% confidence intervals (95% CIs) with a random-effects model. In the previous version of this review (Perry 2003), we used a RR for the primary outcomes and risk differences (RD) for the secondary outcomes. In this updated version, we have chosen to use RR for both to facilitate comparison of our primary and secondary endpoints. We assessed statistical heterogeneity by using a chi-squared test with a P-value of 0.05 predetermined to indicate significant heterogeneity as well as visual inspection of the graphic representation of the studies with their 95% confidence intervals (CIs).

RESULTS

Description of studies

See: Characteristics of included studies; Characteristics of excluded studies.

In our initial systematic review we identified 40 studies and included 28. In our updated systematic review we identified 18 new studies. We included 11 of those studies in this review (Alanoglu 2006; Cheng 2002; Chung 2001; Koroglu 2002; Lam 2000; Larsen 2005; Malik 2004; Mencke 2006; Mitra 2001; Sluga 2005; Yorukoglu 2003) (see table 'Characteristics of included studies'). We excluded five studies (Demirkiran 2001; Hemmerling 2000; Karcioglu 2005; Ortiz-Gomez 2005; Robertson 2004) (see table Characteristics of excluded studies'). Two of the studies were foreign language articles which are currently pending translation (Mencke 2005; Turkmen 2004). The revised total search identified 58 studies of which, 39 met the inclusion criteria. Two of these were duplicate publications (Dubois 1991; Mirakhur 1994) and were therefore included as secondary references. Thirty-seven studies were combined for the analysis. Two articles are pending translation and 17 articles were excluded. Four did not compare rocuronium with succinylcholine, three were not RCTs, the data could not be retrieved from two, five did not look at intubation conditions in their comparison, one used gallamine plus succinylcholine in the control group, one had an inconsistent dose of rocuronium and one abstract was not obtainable by the library resources. There were no CCTs identified by the search.

Risk of bias in included studies

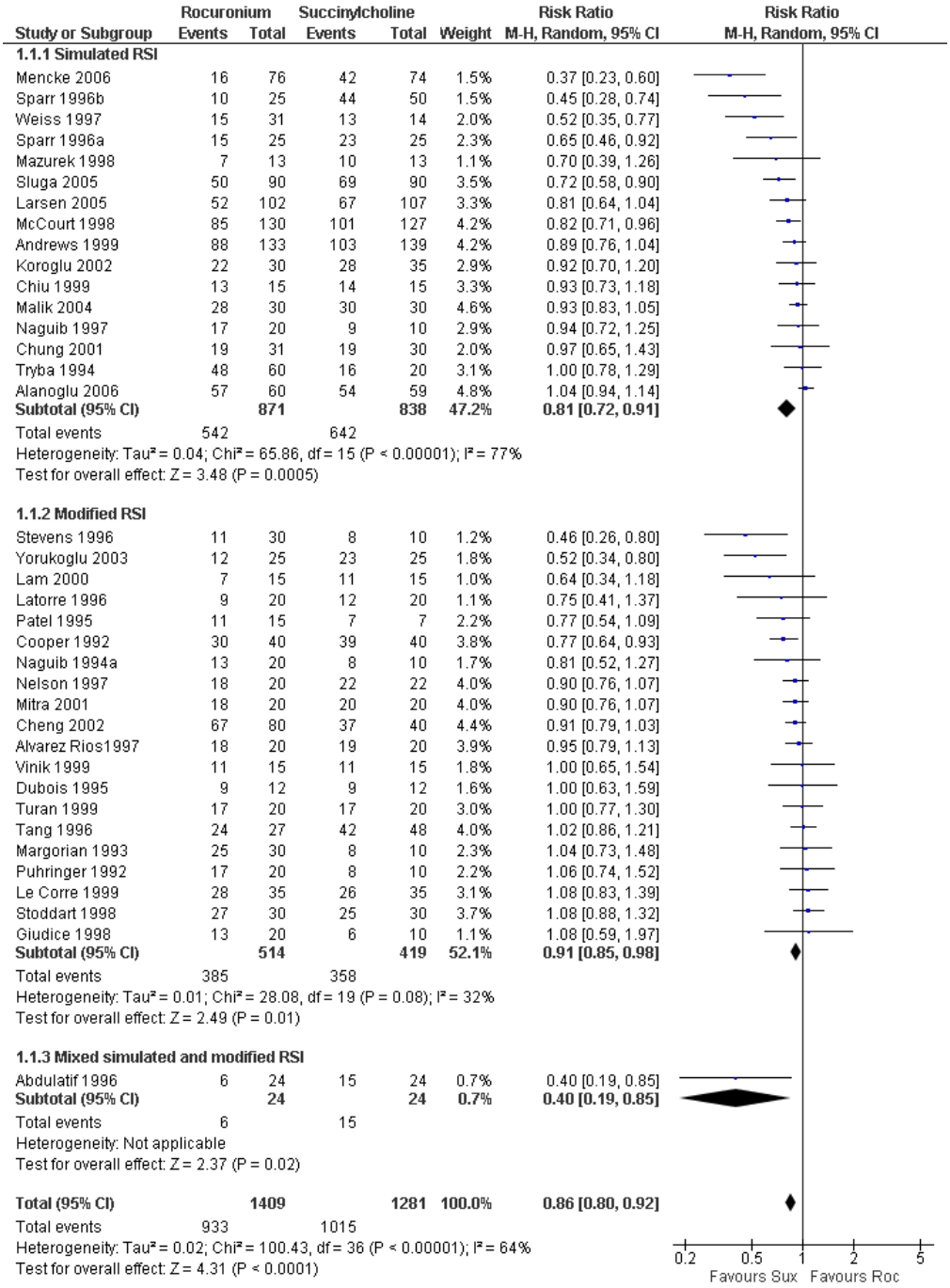
Two independent authors reviewed selected studies to determine eligibility and extract data. We resolved disagreements by consensus. We assessed quality by determining allocation concealment (see table 'Characteristics of included studies').

Effects of interventions

Primary outcome of excellent intubation conditions

There was a statistically significant RR favouring succinylcholine when comparing the primary outcome of excellent intubating conditions with a RR of 0.86, (95% CI 0.80 to 0.92). The number needed to harm (NNH) for this outcome was 8. Visually, there was heterogeneity present in this comparison as demonstrated graphically with the 95% CIs for each study. The chi-squared for heterogeneity was significant (Analysis 1.1, Figure 1)

Figure 1. Forest plot of comparison: 1 Rocuronium any dose versus succinylcholine, outcome: 1.1 Excellent versus other intubation conditions.



Secondary outcome of clinically acceptable intubations

There was also a statistically significant difference found using the less stringent endpoint of clinically acceptable conditions (excellent or good, excluding poor or failed) (RR 0.96, 95% CI 0.93 to 0.99)(Analysis 1.2) The chi-squared test for heterogeneity was significant for this group of studies.

Subgroup analysis for the primary outcome of excellent intubation conditions: simulated versus modified RSI

The subgroup which used a simulated RSI technique had a statistically significant RR favouring succinylcholine (RR 0.81, 95% CI 0.72 to 0.91). The NNH for this outcome was 7 and there was significant heterogeneity present. The subgroup using modified RSI also had significantly better intubation conditions in the succinylcholine group, RR 0.91, 95% CI 0.85, 0.98, NNH 11. There was no heterogeneity present for this subgroup. The subgroup using mixed simulated and modified RSI included only one study and demonstrated superior intubation conditions in the succinylcholine group (RR 0.40; 95% CI 0.19, 0.85). The NNH for this subgroup is 3.

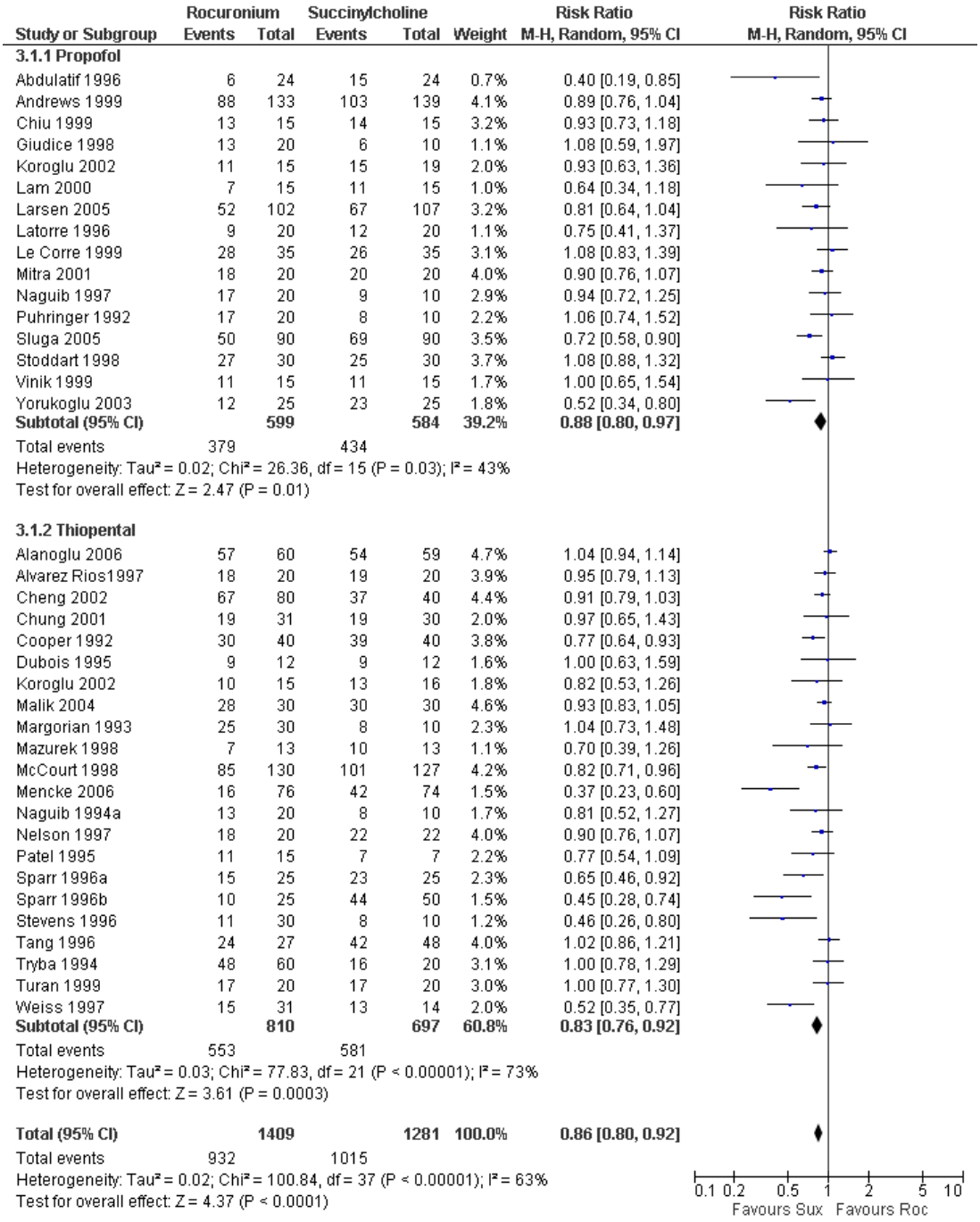
Subgroup analysis for the primary outcome of excellent intubation conditions: comparing the dose of rocuronium

The subgroup using a dose of rocuronium of 0.6-0.7 mg/kg had a RR favouring succinylcholine for excellent conditions (RR 0.81, 95% CI 0.73 to 0.90). The NNH for this subgroup is 6. There was significant heterogeneity between the studies. There were no statistical differences for excellent or acceptable intubation conditions in the group that received 0.9-1.0 mg/kg of rocuronium or the group that received 1.2 mg/kg of rocuronium. There was no significant heterogeneity between the studies in the 0.9-1.0 mg/kg or 1.2 mg/kg rocuronium groups.(Analysis 2.1)

Subgroup analysis for the primary outcome of excellent intubation conditions: induction agents

The subgroup that used propofol for induction (Analysis 3.1) demonstrated a statistical difference favouring succinylcholine with a RR 0.88, (95% CI 0.80 to 0.97). The NNH was 9 and there was statistically significant heterogeneity between the studies. Visually, the study by Abdulatif 1996 did appear to be outlying from the other studies (Figure 2). We performed additional analyses examining the effect of narcotic use with propofol induction on intubation conditions. When a narcotic is used with propofol, succinylcholine creates superior intubation conditions to rocuronium (RR 0.84, 95% CI 0.74 to 0.96); however, there is no significant difference when a narcotic is not included in the sequence.

Figure 2. Forest plot of comparison: 3 Rocuronium versus succinylcholine for induction agent, outcome: 3.1 Excellent versus other intubation conditions.



The thiopental subgroup displayed a statistical difference between succinylcholine and rocuronium for the outcome of excellent intubation conditions (RR 0.83, 95% CI 0.76 to 0.92) (Analysis 3.1). The NNH for this outcome was 7. The chi-squared test for heterogeneity was significant. Further analysis for the thiopental subgroup compared the effect of thiopental when used with or without a narcotic. Succinylcholine created significantly better outcomes when narcotics in sequence with thiopental (RR 0.85, 95% CI 0.78, 0.92). There was no significant difference when a narcotic was not used. There were no studies that used benzodiazepines or etomidate for induction, which compared rocuronium to succinylcholine.

Subgroup analysis for the primary outcome of excellent intubation Conditions: use of narcotics

The subgroup of studies using a narcotic in the sequence favoured the succinylcholine group (RR of 0.85, 95% CI 0.78 to 0.92) (Analysis 4.1). The NNH for the subgroup using narcotics was 7. The subgroup without a narcotic in sequence demonstrated no statistical difference (Analysis 5.1). There was significant heterogeneity present for both groups.

Subgroup analysis for the primary outcome of excellent intubation conditions: age groups

The paediatric subgroup had results for both excellent and clinically acceptable conditions which demonstrated no statistical difference. There was no significant heterogeneity between the three paediatric studies (Analysis 6.1).

Subgroup analysis for the primary outcome of excellent intubation conditions: emergency intubation

For the subgroup comparing rocuronium and succinylcholine in emergency patients, there was a significant RR favouring succinylcholine (RR 0.79, 95% CI 0.71 to 0.88) (Analysis 7.1). The NNH was 6 for this subgroup and there was no significant heterogeneity between studies.

Inter-observer Agreement

In the original version of this review, there was complete agreement between both evaluators regarding article selection (Kappa statistics 1.0). For this most recent version, the kappa statistic was 0.75 for selected articles.

DISCUSSION

Primary and Secondary Outcomes

The results of this meta-analysis demonstrate that succinylcholine creates better intubation conditions than rocuronium for both the primary outcome of excellent intubation conditions and the secondary outcome of clinically acceptable intubation conditions. We had previously reported no significant differences between rocuronium and succinylcholine for clinically acceptable intubation conditions (Perry 2003). However, in this update which includes 11 new studies, results now show significantly better conditions for succinylcholine. The number of failed intubations was very small with no clinically or statistically significant difference between rocuronium and succinylcholine.

Subgroup analysis

In the updated version of this review, we have restructured the analysis to place more emphasis on the subgroups of 'simulated' and 'modified' RSI. We have demonstrated that succinylcholine is superior to rocuronium when either a simulated or modified RSI technique is used.

The a-priori subgroup analysis of patients with propofol induction demonstrated a statistically significant difference between rocuronium and succinylcholine. This is a change from our previous version of the review (Perry 2003) in which we reported no significant difference between rocuronium and succinylcholine. This change in outcome is most likely because two of the new studies we included in the updated review (Larsen 2005; Sluga 2005) were much larger than the other studies included in this subgroup. In fact, these two studies account for approximately 30% of the weight for this subgroup. Further analysis within the propofol induction group for the addition of narcotics demonstrated a significant benefit to succinylcholine. This can again be attributed to the inclusion of the two larger studies conducted by Larsen and Sluga (Larsen 2005; Sluga 2005). It is interesting to note that the results for excellent and clinically acceptable intubation conditions are very similar with and without the use of narcotic. This is contrary to research which has reported significantly improved intubation conditions with the addition of a narcotic to the induction sequence (Sparr 1996b). This suggests that narcotics can safely be omitted in patients for whom they are contraindicated.

We previously reported that rocuronium and succinylcholine were not significantly different when thiopental (thiopentone) was used in the RSI (Perry 2003). In this updated review, we have demonstrated that fewer patients had either excellent or clinically acceptable intubation conditions in the rocuronium group. However, there is considerable heterogeneity present. The outlying studies which found a difference did not differ from the studies that failed to find a difference in any way that we could determine based on use of narcotic, age, true versus modified rapid sequence or the dose of narcotic or sedatives used. As with the propofol subgroup, we analysed the effect of narcotic administration in sequence with thiopental. The addition of narcotics to thiopental did not change intubating conditions for either excellent or clinically acceptable outcomes.

The dose of rocuronium has been thought to be important in creating intubation conditions equivalent to succinylcholine. This meta-analysis did not find conclusive evidence that increasing doses of rocuronium led to better intubating conditions. Succinyl-

choline created significantly more excellent intubation conditions than rocuronium at doses of 0.6-0.7 mg/kg . There was no statistical difference for the 0.9-1.0 mg/kg or 1.2 mg/kg groups. It is difficult to draw conclusions regarding the higher doses of rocuronium as there are relatively few studies which have examined the higher dose (1.2mg/kg) of rocuronium (n = 86). It is possible that there may be a benefit to using an increased dose of rocuronium but this meta-analysis does not support this with the studies conducted to date. However it should be noted that rocuronium has a longer duration of action compared to succinylcholine and that increasing the dose of rocuronium increases it's duration of action which can result in an increased incidence of adverse outcomes (i.e. increased duration of paralysis in a patient who cannot be successfully intubated).

We included a subgroup analysis for patients undergoing emergency intubation in this updated version of the review. We have demonstrated that succinylcholine is superior to rocuronium in creating excellent intubation conditions. This is consistent with our findings the less than 60 second time delay subgroup. There was, however, no significant difference between groups for the outcome of clinically acceptable intubation indicating that in emergency patients for whom succinylcholine is contraindicated, rocuronium can still be used to reliably create acceptable intubating conditions.

The four paediatric studies (Cheng 2002; Mazurek 1998; Naguib 1997; Stoddart 1998) did not demonstrate a difference in creating excellent intubation conditions between the rocuronium and succinylcholine groups. However, these had very little power to demonstrate any statistical difference due to the small sample size (i.e. underpowered for an equivalence trial). In addition, two of the studies (Naguib 1997; Stoddart 1998) used propofol in the sequence while a third (Mazurek 1998) used a high dose of rocuronium (1.2 mg/kg) which may have confounded the results. No additional studies were included in this subgroup in this update.

Explanation of the results

Overall, succinylcholine is superior to rocuronium for creating both excellent and clinically acceptable intubation conditions. The subgroup analysis demonstrated that succinylcholine is superior for creating excellent intubation conditions when propofol induction is used. This is contrary to the results of the previous version of this review (Perry 2003) and is likely due to the inclusion of some larger studies in the analysis (Larsen 2005; Sluga 2005). The subgroup analysis for thiopental induction found that succinylcholine is superior to rocuronium for creating both excellent and clinically acceptable intubation conditions when thiopentone is used as an induction agent.

Rationale for excluded information from included studies

The study by Andrews and the study by McCourt are two of the largest studies conducted to date (Andrews 1999; McCourt 1998). Both studies had planned a-priori to do interim analysis at the half way mark and in both cases, the steering committees decided to drop the lower dose rocuronium as it was shown to be inferior to the larger dose (Dubois 1995). Neither study reported the results of the low dose control groups. Hence, the data for the low dose rocuronium was not included in this meta-analysis. In addition, Sparr's study used four different treatment groups with only one control group (Sparr 1996b). Only one of the four treatment groups using rocuronium was appropriately controlled for: the succinylcholine group in which thiopentone without alfentanyl was used. Hence the rocuronium groups with propofol or alfentanyl were not included in this meta-analysis (no control group).

Limitations

With the large number of possible sequences used, one must remain cognisant that multiple testing can result in erroneous conclusions just by chance. This effect was minimized with the use of sensitivity analysis on the subgroups, by deciding on the subgroup analysis a-priori and performing sensitivity analysis on this subgroup.

AUTHORS' CONCLUSIONS

Implications for practice

Overall, succinylcholine creates excellent intubation conditions more reliably than rocuronium and should still be used as a first line muscle relaxant for rapid sequence induction intubations. If an alternative agent is required, rocuronium can be used to create acceptable intubation conditions but should only be used as a second line treatment.

Implications for research

Although we have now included four studies in this area (Larsen 2005; Mazurek 1998; McCourt 1998; Sluga 2005), future study should be done to look at patients undergoing emergency RSI in the emergency department by emergency physicians. In addition, future studies could further examine the effects of the larger doses (i.e. 0.9mg/kg and 1.2mg/kg) of rocuronium compared to succinylcholine. Further study looking at etomidate versus propofol with rocuronium is also desirable, in light of reports suggesting it is superior to both thiopental and propofol, and the lack of existing studies comparing this combination to succinylcholine.

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* *Indicates the major publication for the study*

CHARACTERISTICS OF STUDIES

Characteristics of included studies *[ordered by study ID]*

Abdulatif 1996

Methods	RCT Mixed simulated and modified RSI N = 48
Participants	ASA I-II 19-57 years Elective OR Baseline comparison information not provided.

Abdulatif 1996 (*Continued*)

Interventions	1. Rocuronium 0.6 mg/kg 2. Succinylcholine 1 mg/kg 3. Atracurium 0.5 mg/kg * 4. above groups with priming dose of Rocuronium * sequence included: fentanyl 2 mcg/kg propofol 2.5-3.0 mg/kg Premedication: diazepam 10 mg po
Outcomes	1. Intubating conditions (60 sec.)
Notes	Efficacy analysis

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Yes	A - Adequate

Alanoglu 2006

Methods	RCT Modified RSI N = 119
Participants	ASA II-III Adult Controlled hypertensive
Interventions	1. Succinylcholine 1.0 mg/kg with lidocaine 2. Rocuronium 1mg/kg with lidocaine 3. Succinylcholine 1.0 mg/kg with remifentanil 4. Rocuronium 1.0 mg/kg with remifentanil sequences with opiate (remifentanil) or no opiate and thiopental
Outcomes	1. Intubating conditions 2. Haemodynamics
Notes	ITT analysis Turkish

Risk of bias

Alanoglu 2006 (*Continued*)

Item	Authors' judgement	Description
Allocation concealment?	Yes	A - Adequate

Alvarez Rios1997

Methods	RCT Modified RSI N = 40
Participants	ASA I-II Elective OR Mean age 28.5 Mean weight 62.5 kg
Interventions	1. Rocuronium 0.6 mg/kg 2. Mivacurium 0.25 mg/kg* 3. Succinylcholine 1 mg/kg sequence with: no opioid thiopental titrated to response (average 5.3 mg/kg with succinylcholine group and 5.9 mg/kg in rocuronium group) Premedication: midazolam 2 mg
Outcomes	1. Intubating conditions (90 sec.)
Notes	Efficacy analysis Mexican

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B - Unclear

Andrews 1999

Methods	RCT Simulated RSI N = 272

Andrews 1999 (*Continued*)

Participants	ASA I-V 18-75 years Elective OR Mean age 47.5 Mean weight 61.5 kg
Interventions	1. Rocuronium 0.6 mg/kg 2. Rocuronium 1.0 mg/kg 3. Succinylcholine 1 mg/kg sequence with: no opioid propofol 2.5 mg/kg Premedication: none
Outcomes	1. Intubating conditions (60 sec.)
Notes	Efficacy analysis

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Yes	A - Adequate

Cheng 2002

Methods	RCT Modified RSI N = 120
Participants	ASA I 1-10 years Elective OR
Interventions	1. Rocuronium 0.6 mg/kg 2. Rocuronium 0.9 mg/kg 3 Succinylcholine 1.5 mg/kg Sequence with: alfentanil 10 mcg/kg thiopentone 5 mg/kg Premedication: none
Outcomes	1. Intubating conditions 30 seconds

Cheng 2002 (*Continued*)

Notes	ITT analysis Hong Kong	
Risk of bias		
Item	**Authors' judgement**	**Description**
Allocation concealment?	Yes	A - Adequate

Chiu 1999

Methods	RCT Simulated RSI N = 30	
Participants	ASA I 18-50 years Elective OR Mean age 32.4 Mean weight 55.6 kg	
Interventions	1. Rocuronium 0.9 mg/kg 2. Succinylcholine 1 mg/kg Sequence with: fentanyl 2 mcg/kg propofol 2 mg/kg Premedication: midazolam 0.15 mg/kg po	
Outcomes	1. IOP 2. Intubating conditions (60 sec.)	
Notes	Efficacy analysis	
Risk of bias		
Item	**Authors' judgement**	**Description**
Allocation concealment?	Unclear	B - Unclear

Chung 2001

Methods	RCT Simulated RSI N = 61
Participants	ASA I-II Adult Elective OR Mean age 45.8
Interventions	1. Rocuronium 0.6 mg/kg 2. Succinylcholine 1 mg/kg Sequence with: fentanyl 2 mcg/kg Thiopental 5 mg/kg lidocaine 20 mg Premedication: none
Outcomes	1. Intubating conditions (60 sec)
Notes	Efficacy analysis Taiwan

Risk of bias

Item	**Authors' judgement**	**Description**
Allocation concealment?	Unclear	B - Unclear

Cooper 1992

Methods	RCT Modified RSI N = 80
Participants	ASA I-II 18-65 years Elective OR Mean age 34.5 Mean weight 66.3 kg
Interventions	1. Rocuronium 0.6 mg/kg 2. Succinylcholine 1 mg/kg Sequence with: fentanyl 1-3 mcg/kg

Cooper 1992 (*Continued*)

	thiopentone 3-5 mg/kg Premedication: temazepam 10-20 mg po
Outcomes	1. Intubating conditions (60 and 90 sec.)
Notes	Efficacy analysis

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B - Unclear

Dubois 1991

Methods	RCT Modified RSI N = 24
Participants	ASA I-II 18-65 years Elective OR Baseline information not provided
Interventions	1. Rocuronium 0.6mg/kg 2. Succinylcholine 1 mg/kg Sequence with: fentanyl 1-3 mcg/kg thiopentone 3-5 mg/kg Premedication: Midazolam or droperidol (?doses) Sequence with:
Outcomes	1. Intubating conditions (90 sec.)
Notes	Abstract publication of Dubois 1995

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Yes	A - Adequate

Dubois 1995

Methods	RCT Modified RSI N = 24
Participants	ASA I-II 18-65 years Elective OR Baseline information not provided (told groups tested and no difference)
Interventions	1. Rocuronium 0.6 mg/kg 2. Succinylcholine 1 mg/kg Sequence with: fentanyl 1-3 mcg/kg thiopentone 3-5 mg/kg Premedication: midazolam or droperidol (?dose)
Outcomes	1. Intubating conditions (90 sec.)
Notes	Efficacy analysis

Risk of bias

Item	**Authors' judgement**	**Description**
Allocation concealment?	Yes	A - Adequate

Giudice 1998

Methods	RCT Modified RSI N = 40
Participants	ASA I-II Age 18-56 Mean age uncertain but told groups homogenous Mean weight also homogenous
Interventions	1. Rocuronium 0.3 mg/kg 2. Rocuronium 0.6 mg/kg 3. Rocuronium 0.9 mg/kg 4. Succinylcholine 1 mg/kg Sequence with: fentanyl prn propofol 1.5 mg/kg

Giudice 1998 (*Continued*)

	Premedication: lorazepam 1 mg p.o. 1 hour prior atropine 0.08 mg/kg few minutes prior
Outcomes	1. Intubating conditions (between 56 sec and 170 sec) 2. Intubating time 3. Recovery time
Notes	Italian

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B - Unclear

Koroglu 2002

Methods	RCT Simulated RSI N = 80
Participants	ASA I-II Adult females Pregnant
Interventions	1. Rocuronium 0.6 mg/kg 2. Succinylcholine 1.5 mg/kg Sequence with: either a) propofol 2 mg/kg or b) thiopentone 5 mg/kg Premedication: none
Outcomes	1. Intubating conditions 2. Haemodynamic effects on mother 3. Physiologic effects on fetus
Notes	Efficacy analysis Turkish

Risk of bias

Item	Authors' judgement	Description

Koroglu 2002 (*Continued*)

Allocation concealment?	Yes	A - Adequate

Lam 2000

Methods	RCT Modified RSI N = 30
Participants	ASA I-II 18-65 years Elective OR
Interventions	1. Rocuronium 0.6 mg/kg 2. Succinylcholine 1 mg/kg Sequence with: fentanyl 2 mcg/kg propofol 2.5 mg/kg Premedication: midazolam 2 mg
Outcomes	1. Intubating conditions (60 sec.) 2. onset muscle relaxation 3. offset muscle relaxation
Notes	Efficacy analysis USA

Risk of bias

Item	**Authors' judgement**	**Description**
Allocation concealment?	Yes	A - Adequate

Larsen 2005

Methods	RCT Simulated RSI N = 209
Participants	ASA I - III >17 years Emergency OR

Larsen 2005 (*Continued*)

Interventions	1. Rocuronium 0.6 mg/kg 2. Succinylcholine 1 mg/kg Sequence with: alfentanil 10-20 ug/kg and propofol 2-3 mg/kg Premedication: i.m morphine 30 minutes prior
Outcomes	1. Intubating conditions (60 sec.) 2. Hemodynamics
Notes	Efficacy analysis

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Yes	A - Adequate

Latorre 1996

Methods	RCT Modified RSI N = 40
Participants	ASA I-III Mean age 44.5 Mean weight 73.5 kg
Interventions	1. Rocuronium 0.6 mg/kg 2. Succinylcholine 1 mg/kg Sequence with: fentanyl 2-3 mcg/kg propofol 1.5-2.0 mg/kg Premedication: none
Outcomes	1. Intubating conditions (60 sec.) 2. onset time 3. clinical duration 4. % blocked at time of intubation
Notes	German

Risk of bias

Latorre 1996 (*Continued*)

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B - Unclear

Le Corre 1999

Methods	RCT Modified RSI N = 70
Participants	ASA I-II 18-75 years Elective OR Mean age 47.5 Mean weight 61.5 kg
Interventions	1. Rocuronium 0.6 mg/kg 2. Succinylcholine 1 mg/kg 3. Atracurium 0.5 mg/kg* 4. Mivacurium 0.2 mg/kg* Sequence with: fentanyl 3 mcg/kg propofol 2.5 mg/kg Premedication: alprazolam 0.5 mg/kg po
Outcomes	1. Onset times at the orbicularis oculi 2. intubation conditions
Notes	Efficacy analysis

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Yes	A - Adequate

Malik 2004

Methods	RCT Simulated RSI N = 60

Malik 2004 (*Continued*)

Participants	ASA I-II 20-50 years elective non-ophthalmic surgery
Interventions	1. Rocuronium 0.9 mg/kg 2. Succinylcholine 1.5mg/kg Sequence with an opiate and thiopental
Outcomes	1. Intubation conditions 2. Haemodynamics 3. Intraocular pressure
Notes	Efficacy analysis Indian

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B - Unclear

Margorian 1993

Methods	RCT Modified RSI N = 40
Participants	ASA I-III 18-70 years uncertain location Mean age 36 Mean weight 68 kg
Interventions	1. Rocuronium 0.6 mg/kg 2. Rocuronium 0.9 mg/kg 3. Rocuronium 1.2 mg/kg 4. Vecuronium 0.1 mg/kg* 5. Succinylcholine 1 mg/kg Sequence with: fentanyl (?dose) thiopental 2-7 mg/kg Premedication: midazolam 0.02-0.05 mg/kg

Margorian 1993 (*Continued*)

Outcomes	1. Ablation of T1 (onset) 2. Return of T1 (duration) 3. Intubation Conditions 4. Fasciculations
Notes	Efficacy analysis

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B - Unclear

Mazurek 1998

Methods	RCT Simulated RSI N = 26
Participants	ASA I-III 2-15 years Emergency OR Mean age 6.6 Mean weight 28 kg
Interventions	1. Rocuronium 1.2 mg/kg 2. Succinylcholine 1.5 mg/kg Sequence with: atropine 0.01 mg/kg no opioid thiopental 5 mg/kg Premedication: none
Outcomes	1. Onset and quality of muscle paralysis 2. Intubation conditions
Notes	Efficacy analysis

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Yes	A - Adequate

McCourt 1998

Methods	RCT Simulated RSI N = 257
Participants	ASA I-IV 18-75 years Emergency and Elective patients in OR Mean age 41.5 Mean weight 71 kg
Interventions	1. Rocuronium 0.6 mg/kg 2. Rocuronium 1.0 mg/kg 3. Succinylcholine 1 mg/kg Sequence with: fentanyl 1-2 mcg/kg thiopentone 5 mg/kg Premedication: none
Outcomes	1. Intubation conditions (3 point scale)
Notes	Efficacy analysis

Risk of bias

Item	**Authors' judgement**	**Description**
Allocation concealment?	Yes	A - Adequate

Mencke 2006

Methods	RCT Simulated RSI N = 160
Participants	ASA I-II 18-77 years Uncertain location
Interventions	1. Rocuronium 0.6 mg/kg 2. Succinylcholine 1.0 mg/kg Sequence with: fentanyl 3mcg/kg and thiopental 5.0 mg/kg
Outcomes	1. Intubation conditions 2. Intubation time

Mencke 2006 (*Continued*)

Notes	Efficacy analysis	
Risk of bias		
Item	**Authors' judgement**	**Description**
Allocation concealment?	Yes	A - Adequate

Mirakhur 1994

Methods	RCT Modified RSI N = 80
Participants	ASA I-II 18-65 years ELective OR Mean age 34.5 years Mean weight 66.3kg
Interventions	1. Rocuronium 0.6 mg/kg 2. Succinylcholine 1 mg/kg Sequence with: fentanyl 1-3 mcg/kg Thiopentone 3-5 mg/kg Premedication: Temazepam 10-20mg po
Outcomes	1. Intubating conditions (60 & 90 sec.)
Notes	Duplicate publication of Cooper 1992

Risk of bias		
Item	**Authors' judgement**	**Description**
Allocation concealment?	Unclear	B - Unclear

Mitra 2001

Methods	RCT Modified RSI N = 40

Mitra 2001 (*Continued*)

Participants	ASA I-II Adult Elective OR
Interventions	1. Rocuronium 0.6 mg/kg 2. Succinylcholine 1.5 mg/kg Sequence with: morphine 1 mg/kg propofol 2.0 mg/kg Premedication: diazepam 5 mg
Outcomes	1. Intraocular pressure 2. Intubating conditions (60 sec.)
Notes	Efficacy analysis India

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B - Unclear

Naguib 1994a

Methods	RCT Modified RSI N = 30
Participants	ASA I-II Elective OR Mean age 33.5 Mean weight 68.4 kg
Interventions	1. Mivacurium 0.15 mg/kg* 2. Mivacurium in split dose* 3. Rocuronium 0.6 mg/kg 4. Rocuronium 0.6 mg/kg in split dose 5. Mivacurium 0.015 mg/kg then Rocuronium 0.54 mg/kg* 6. Rocuronium 0.06 mg/kg then Mivacurium 0.135 mg/kg* 7. Succinylcholine 1.0 mg/kg Sequence with: incremental doses of fentanyl midazolam 0.03 mg/kg thiopentone 5-7 mg/kg Premedication:

Naguib 1994a (*Continued*)

	none
Outcomes	1. Intubation Conditions
Notes	Efficacy analysis

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B - Unclear

Naguib 1997

Methods	RCT Simulated RSI N = 30
Participants	ASA I 3-10 years weight 12-40 kg Elective OR Mean Age 5.0 Mean weight 20.1 kg
Interventions	1. Succinylcholine 1 mg/kg 2. Mivacurium 0.2 mg/kg* 3. Rocuronium 0.6 mg/kg 4. Rocuronium 0.9 mg/kg 5. Mivacurium 0.2 mg/kg+ Rocuronium 0.3 mg/kg* 6. Mivacurium 0.1 mg/kg + Rocuronium 0.45 mg/kg* Sequence with: fentanyl 2 mcg/kg propofol 2 mg/kg Premedication: trimprazine 2 mg/kg po
Outcomes	1. Intubation conditions (60 sec.) 2. TOF at 60 sec. 3.Pharmodynamic study (not used)
Notes	Efficacy analysis

Risk of bias

Naguib 1997 (*Continued*)

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B - Unclear

Nelson 1997

Methods	RCT Modified RSI N = 42
Participants	ASA I-II 25-77 years Elective OR Mean age 50 Mean weight 73.5 kg
Interventions	1. Rocuronium 0.6 mg/kg 2. Succinylcholine 1 mg/kg Sequence with: fentanyl 2-3 mcg/kg thiopental 4-5 mg/kg Premedication: midazolam 0.02-0.03 mg/kg
Outcomes	1. Onset time of neuromuscular blocker 2. Intubation conditions
Notes	Efficacy analysis

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Yes	A - Adequate

Patel 1995

Methods	RCT Modified RSI N = 22
Participants	Uncertain ASA Adult patients Emergency OR Mean age 44.2 Mean weight 74.7 kg

Patel 1995 (*Continued*)

Interventions	1. Rocuronium 0.6 mg/kg 2. Rocuronium 0.9 mg/kg 3. Succinylcholine 1 mg/kg Sequence with: fentanyl (?dose) thiopental (?dose) Premedication: none
Outcomes	1. Intubation conditions
Notes	Efficacy analysis Abstract only

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B - Unclear

Puhringer 1992

Methods	RCT Modified RSI N = 30
Participants	ASA I-II 18-65 years Elective OR Mean age 28.9 Mean weight 66.1 kg
Interventions	1. Rocuronium 0.6 mg/kg 2. Succinylcholine 1 mg/kg Sequence with: afentanyl 25 mcg/kg propofol up to 2.5 mg/kg Premedication: meperidine 1 mg/kg atropine 0.01 mg/kg
Outcomes	1. Intubation conditions (60 sec.)
Notes	Efficacy analysis

Puhringer 1992 (*Continued*)

Risk of bias		
Item	**Authors' judgement**	**Description**
Allocation concealment?	Unclear	B - Unclear

Sluga 2005

Methods	RCT Simulated RSI N = 180
Participants	ASA I - IV 18 years or older Emergency OR
Interventions	1. Rocuronium 0.6 mg/kg 2. Succinylcholine 1 mg/kg
Outcomes	1. Intubation conditions 2. Intubation time
Notes	ITT analysis Exact numbers for intubating conditions provided by authors

Risk of bias		
Item	**Authors' judgement**	**Description**
Allocation concealment?	Yes	A - Adequate

Sparr 1996a

Methods	RCT Simulated RSI N = 50
Participants	ASA I-II 18-65 years Elective OR Mean age 31 Mean weight 75.5 kg

Sparr 1996a (*Continued*)

Interventions	1. Rocuronium 0.6 mg/kg 2. Succinylcholine 1 mg/kg Sequence with: no opioid thiopentane 6 mg/kg Premedication: none
Outcomes	1. Intubating conditions 2. fasciculations 3. intubation time (45 sec.)
Notes	Efficacy analysis

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B - Unclear

Sparr 1996b

Methods	RCT Simulated RSI N = 75
Participants	ASA I-II 18-65 years Elective OR Mean age 34 Mean weight 69 kg
Interventions	1. Rocuronium 0.6 + Thiopentane 5 mg/kg 2. Rocuronium 0.6 mg/kg + Propofol 2.5 mg/kg * 3. Rocuronium 0.6 mg/kg + Thiopentane 5 mg/kg + Afentanyl 20/kg * 4. Rocuronium 0.6 mg/kg + Propofol 2.5 mg/kg + Afentanyl 20/kg * 5. Succinylcholine 1 mg/kg + Thiopentane 5 mg/kg Sequence with: as above Premedication: none
Outcomes	1. Intubating conditions 2. Intubating time 3. fasciculations

Sparr 1996b (*Continued*)

Notes	Efficacy analysis	
Risk of bias		
Item	**Authors' judgement**	**Description**
Allocation concealment?	Unclear	B - Unclear

Stevens 1996

Methods	Modified RCT N RSI N = 40
Participants	ASA I-II 18-65 years Elective OR Mean age 37.6 Mean weight 73.9 kg
Interventions	1. Rocuronium 0.6 mg/kg 2. Succinylcholine 1 mg/kg Sequence with: fentanyl 3 mcg/kg thiopental up to 7 mg/kg Premedication: midazolam 0.02-0.05 mg/kg i.v
Outcomes	1. Onset time of neuromuscular blocker 2. Duration of neuromuscular blocker 3. Intubation conditions
Notes	Efficacy analysis

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Yes	A - Adequate

Stoddart 1998

Methods	RCT Modified RSI N = 60
Participants	Uncertain ASA 3-15 years Elective OR for tonsillectomy Mean Age 7.5 Mean weight 26.9 kg
Interventions	1. Rocuronium 0.6 mg/kg 2. Succinylcholine 1 mg/kg Sequence with: no opioid propofol 3-4 mg/kg Premedication: paracetamol 20 mg/kg p.o.
Outcomes	1. Intubation conditions 2. Duration of neuromuscular blocker 3. Onset time of neuromuscular blocker
Notes	Efficacy analysis

Risk of bias

Item	**Authors' judgement**	**Description**
Allocation concealment?	Yes	A - Adequate

Tang 1996

Methods	RCT Modified RSI N = 75
Participants	Uncertain ASA All women getting elective laparoscopic surgery Mean Age 29.4 Mean weight 70.0 kg
Interventions	1. Succinylcholine 1 mg/kg 2. Mivacurium 0.2 mg/kg * 3. Rocuronium 0.6 mg/kg Sequence with:

Tang 1996 (*Continued*)

	fentanyl 1.5 mcg/kg thiopental 4 mg/kg Premedication: none
Outcomes	1. Intubating conditions (3 point scale) 2. Neuromuscular effects
Notes	Efficacy analysis

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B - Unclear

Tryba 1994

Methods	RCT Simulated RSI N = 80
Participants	ASA I-III Adult patients Uncertain type of OR Mean age 31.7 Mean weight 74.5 kg
Interventions	1. Rocuronium 0.6 mg/kg prior to induction agent 2. Rocuronium 0.6 mg/kg following induction agent (true RSI) 3. Rocuronium 0.56 mg/kg prior to induction agent after Rocuronium primer 0.04 mg/kg 4. Succinylcholine 1.5 mg/kg (with Rocuronium primer 0.04 mg/kg) Sequence with: fentanyl 2 mcg/kg thiopental 6 mg/kg Premedication: lormethazepam 2-3 mg p.o. and clorazepate 0.4 mg/kg p.o.
Outcomes	1. Intubating conditions
Notes	ITT analysis

Risk of bias

Item	Authors' judgement	Description

Tryba 1994 (*Continued*)

Allocation concealment?	Unclear	B - Unclear

Turan 1999

Methods	RCT Modified RSI N = 40
Participants	Uncertain ASA Adult patients Uncertain type of OR Mean age 36.3 years Mean weight 74.5 kg
Interventions	1. Rocuronium 1.2 mg/kg 2. Succinylcholine 1.0 mg/kg Sequence with: No narcotic Thiopentone 6 mg/kg No premedication
Outcomes	1. Intubation conditions 2. SBP
Notes	ITT analysis Turkish

Risk of bias

Item	**Authors' judgement**	**Description**
Allocation concealment?	Unclear	B - Unclear

Vinik 1999

Methods	RCT Modified RSI N = 30
Participants	ASA I-III 18-65 years Elective OR for eye surgery Mean age 41.4 Mean weight 74.5 kg

Vinik 1999 (*Continued*)

Interventions	1. Rocuronium 0.6 mg/kg 2. Succinylcholine 1-1.5 mg/kg 3. Atracurium 0.5 mg/kg* Sequence with: afentanyl 0.025 mg/kg propofol 1.5 mg/kg midazolam 0.025 mg/kg Premedication: none
Outcomes	1. IOP 2. Intubating conditions (60 sec.)
Notes	Efficacy analysis

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B - Unclear

Weiss 1997

Methods	RCT Simulated RSI N = 45
Participants	ASA I-II 18-65 years Elective OR Mean age 36.7 Mean weight 73.2 kg
Interventions	1. Rocuronium 0.7 mg/kg 2. Rocuronium 0.9 mg/kg 3. Succinylcholine 1.5 mg/kg Sequence with: fentanyl 2 mcg/kg thiopental 4-5 mg/kg Premedication: none
Outcomes	1. Intubating conditions
Notes	Efficacy analysis

Weiss 1997 (*Continued*)

Risk of bias		
Item	**Authors' judgement**	**Description**
Allocation concealment?	Yes	A - Adequate

Yorukoglu 2003

Methods	RCT Modified RSI N = 50
Participants	ASA I-II Adult OR
Interventions	1. Rocuronium 0.6 mg/kg 2. Succinylcholine 1 mg/kg Sequence with: alfentanyl 10 mcg/kg propofol 2 mg/kg Premedication: atropine 0.5 mg/kg Pethidine 50 mg i.m.
Outcomes	1. Intubating conditions (60 sec.) 2. haemodynamic changes
Notes	Efficacy analysis Turkish

Risk of bias		
Item	**Authors' judgement**	**Description**
Allocation concealment?	Yes	A - Adequate

* Not used in analysis
ASA status: American Society of Anesthesia score I-IV, determined by health (decreased health as score increases)
ITT: Intention to treat
IOP: intraocular pressure
RCT: Randomized Controlled Trial
RSI: Rapid Sequence Induction
OR: Operating room

Characteristics of excluded studies *[ordered by study ID]*

Combs 1994	Not RCT. Review of topic only.
Demirkiran 2001	Not RCT. Alternated rocuronium then succinylcholine.
Dobson 1999	Only looked at rocuronium with propofol versus rocuronium with thiopental without comparing to succinylcholine.
Dubois 1992	No comparison with succinylcholine.
Guler 1996	Not clear if the study is a randomized controlled study versus a cohort study.
Hemmerling 2000	No outcome of intubation conditions
Huizinga 1992	The control group used not only succinylcholine but also gallamine in the sequence which cannot be controlled for when combining studies.
Karcioglu 2005	Not RCT. Meta-analysis on topic
Lam 1997	Abstract data only. Unclear what intubation scores were based on results given.
Martin 1998	No comparison of single intubating dose of rocuronium versus succinylcholine. Study looks at priming does of non depolarizing muscle relaxants with succinylcholine only.
Naguib 1994b	No comparison with succinylcholine.
Ortiz-Gomez 2005	RCT but intubation condition data is presented in graphic form only and cannot be reliably extracted
Robertson 2004	No outcome of intubation conditions
Scott 1998	Letter only, not RSI.
Vianna 1997	Does not document intubation scores in paper.
Vincent 1996	Abstract only. Unable to obtain document from North American source. Will reconsider if able to obtain in future.
Woolf 1997	Did not record intubating conditions, measures other parameters only.

RCT = randomized controlled trial

DATA AND ANALYSES

Comparison 1. Rocuronium any dose versus succinylcholine

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Excellent versus other intubation conditions	37	2690	Risk Ratio (M-H, Random, 95% CI)	0.86 [0.80, 0.92]
1.1 Simulated RSI	16	1709	Risk Ratio (M-H, Random, 95% CI)	0.81 [0.72, 0.91]
1.2 Modified RSI	20	933	Risk Ratio (M-H, Random, 95% CI)	0.91 [0.85, 0.98]
1.3 Mixed simulated and modified RSI	1	48	Risk Ratio (M-H, Random, 95% CI)	0.05 [0.19, 0.85]
2 Acceptable versus suboptimal intubation conditions	36	2571	Risk Ratio (M-H, Random, 95% CI)	0.96 [0.93, 0.99]
2.1 Simulated RSI	15	1590	Risk Ratio (M-H, Random, 95% CI)	0.94 [0.89, 1.00]
2.2 Modified RSI	20	933	Risk Ratio (M-H, Random, 95% CI)	0.98 [0.95, 1.01]
2.3 Mixed simulated and modified RSI	1	48	Risk Ratio (M-H, Random, 95% CI)	0.71 [0.55, 0.93]

Comparison 2. Rocuronium specific dose versus succinylcholine

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Excellent versus other intubation conditions	37	2791	Risk Ratio (M-H, Random, 95% CI)	0.87 [0.81, 0.93]
1.1 Rocuronium 0.6-0.7mg/kg	30	1782	Risk Ratio (M-H, Random, 95% CI)	0.81 [0.73, 0.90]
1.2 Rocuronium 0.9-1.0mg/kg	11	923	Risk Ratio (M-H, Random, 95% CI)	0.96 [0.89, 1.02]
1.3 Rocuronium 1.2mg/kg	3	86	Risk Ratio (M-H, Random, 95% CI)	0.93 [0.75, 1.15]
2 Acceptable versus suboptimal intubation conditions	36	2672	Risk Ratio (M-H, Random, 95% CI)	0.96 [0.93, 0.99]
2.1 Rocuronium 0.6-0.7mg/kg	30	1782	Risk Ratio (M-H, Random, 95% CI)	0.95 [0.90, 1.00]
2.2 Rocuronium 0.9-1.0mg/kg	10	804	Risk Ratio (M-H, Random, 95% CI)	0.98 [0.95, 1.01]
2.3 Rocuronium 1.2mg/kg	3	86	Risk Ratio (M-H, Random, 95% CI)	1.01 [0.80, 1.25]

Comparison 3. Rocuronium versus succinylcholine for induction agent

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Excellent versus other intubation conditions	37	2690	Risk Ratio (M-H, Random, 95% CI)	0.86 [0.80, 0.92]
1.1 Propofol	16	1183	Risk Ratio (M-H, Random, 95% CI)	0.88 [0.80, 0.97]
1.2 Thiopental	22	1507	Risk Ratio (M-H, Random, 95% CI)	0.83 [0.76, 0.92]
2 Acceptable versus suboptimal intubation conditions	36	2571	Risk Ratio (M-H, Random, 95% CI)	0.96 [0.93, 0.99]
2.1 Propofol	16	1183	Risk Ratio (M-H, Random, 95% CI)	0.98 [0.94, 1.02]
2.2 Thiopental	21	1388	Risk Ratio (M-H, Random, 95% CI)	0.94 [0.89, 1.00]

Comparison 4. Rocuronium versus succinylcholine with narcotic

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Excellent versus other intubation outcomes	28	1972	Risk Ratio (M-H, Random, 95% CI)	0.85 [0.78, 0.92]
1.1 Propofol Induction	12	787	Risk Ratio (M-H, Random, 95% CI)	0.84 [0.74, 0.96]
1.2 Thiopental Induction	16	1185	Risk Ratio (M-H, Random, 95% CI)	0.85 [0.77, 0.94]
2 Acceptable versus suboptimal intubation conditions	27	1913	Risk Ratio (M-H, Random, 95% CI)	0.96 [0.92, 1.00]
2.1 Propofol Induction	12	787	Risk Ratio (M-H, Random, 95% CI)	0.97 [0.92, 1.03]
2.2 Thiopental Induction	15	1126	Risk Ratio (M-H, Random, 95% CI)	0.95 [0.89, 1.01]

Comparison 5. Rocuronium versus succinylcholine without narcotic

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Excellent versus other intubation conditions	9	688	Risk Ratio (M-H, Random, 95% CI)	0.89 [0.78, 1.03]
1.1 Propofol Induction	3	366	Risk Ratio (M-H, Random, 95% CI)	0.96 [0.84, 1.10]
1.2 Thiopental Induction	7	322	Risk Ratio (M-H, Random, 95% CI)	0.82 [0.65, 1.04]
2 Acceptable versus suboptimal intubation conditions	8	628	Risk Ratio (M-H, Random, 95% CI)	0.96 [0.90, 1.02]
2.1 Propofol Induction	3	366	Risk Ratio (M-H, Random, 95% CI)	1.00 [0.88, 1.14]
2.2 Thiopental Induction	6	262	Risk Ratio (M-H, Random, 95% CI)	0.93 [0.84, 1.02]

Comparison 6. Comparison of children and adults

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Excellent versus other intubation conditions	37	2690	Risk Ratio (M-H, Random, 95% CI)	0.85 [0.79, 0.92]
1.1 Adults	33	2454	Risk Ratio (M-H, Random, 95% CI)	0.84 [0.77, 0.91]
1.2 Children	4	236	Risk Ratio (M-H, Random, 95% CI)	0.95 [0.85, 1.05]
2 Acceptable versus suboptimal intubation conditions	36	2571	Risk Ratio (M-H, Random, 95% CI)	0.96 [0.93, 0.99]
2.1 Adults	32	2335	Risk Ratio (M-H, Random, 95% CI)	0.96 [0.92, 1.00]
2.2 Children	4	236	Risk Ratio (M-H, Random, 95% CI)	0.95 [0.89, 1.01]

Comparison 7. Rocuronium versus succinylcholine in emergency intubation

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Excellent versus other intubation conditions	4	672	Risk Ratio (M-H, Random, 95% CI)	0.79 [0.71, 0.88]
2 Acceptable versus suboptimal intubation conditions	4	672	Risk Ratio (M-H, Random, 95% CI)	1.00 [0.96, 1.03]

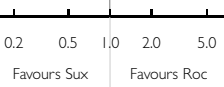
Analysis 1.1. Comparison 1 Rocuronium any dose versus succinylcholine, Outcome 1 Excellent versus other intubation conditions.

Review: Rocuronium versus succinylcholine for rapid sequence induction intubation

Comparison: 1 Rocuronium any dose versus succinylcholine

Outcome: 1 Excellent versus other intubation conditions

Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Simulated RSI					
Alanoglu 2006	57/60	54/59		4.8 %	1.04 [0.94, 1.14]
Andrews 1999	88/133	103/139		4.2 %	0.89 [0.76, 1.04]
Chiu 1999	13/15	14/15		3.3 %	0.93 [0.73, 1.18]
Chung 2001	19/31	19/30		2.0 %	0.97 [0.65, 1.43]
Koroglu 2002	22/30	28/35		2.9 %	0.92 [0.70, 1.20]
Larsen 2005	52/102	67/107		3.3 %	0.81 [0.64, 1.04]
Malik 2004	28/30	30/30		4.6 %	0.93 [0.83, 1.05]
Mazurek 1998	7/13	10/13		1.1 %	0.70 [0.39, 1.26]
McCourt 1998	85/130	101/127		4.2 %	0.82 [0.71, 0.96]
Mencke 2006	16/76	42/74		1.5 %	0.37 [0.23, 0.60]
Naguib 1997	17/20	9/10		2.9 %	0.94 [0.72, 1.25]
Sluga 2005	50/90	69/90		3.5 %	0.72 [0.58, 0.90]
Sparr 1996a	15/25	23/25		2.3 %	0.65 [0.46, 0.92]
Sparr 1996b	10/25	44/50		1.5 %	0.45 [0.28, 0.74]
Tryba 1994	48/60	16/20		3.1 %	1.00 [0.78, 1.29]
Weiss 1997	15/31	13/14		2.0 %	0.52 [0.35, 0.77]
Subtotal (95% CI)	**871**	**838**		**47.2 %**	**0.81 [0.72, 0.91]**
Total events: 542 (Rocuronium), 642 (Succinylcholine)					
Heterogeneity: $Tau^2 = 0.04$; $Chi^2 = 65.86$, df = 15 ($P<0.00001$); $I^2 = 77\%$					
Test for overall effect: Z = 3.48 (P = 0.00050)					
2 Modified RSI					
Alvarez Rios1997	18/20	19/20		3.9 %	0.95 [0.79, 1.13]
Cheng 2002	67/80	37/40		4.4 %	0.91 [0.79, 1.03]
Cooper 1992	30/40	39/40		3.8 %	0.77 [0.64, 0.93]
Dubois 1995	9/12	9/12		1.6 %	1.00 [0.63, 1.59]
Giudice 1998	13/20	6/10		1.1 %	1.08 [0.59, 1.97]



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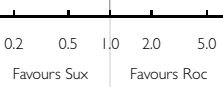
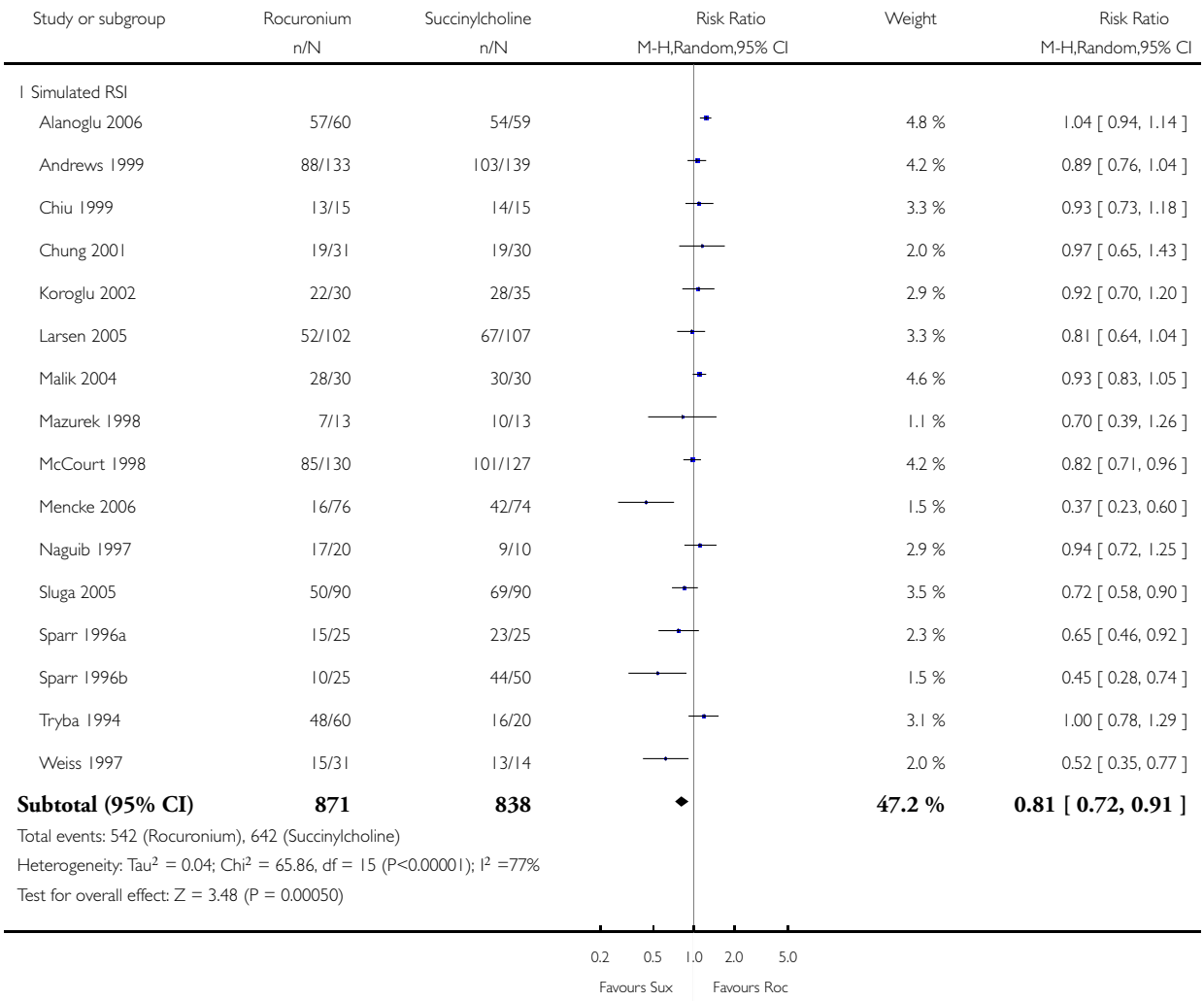
Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
Lam 2000	7/15	11/15		1.0 %	0.64 [0.34, 1.18]
Latorre 1996	9/20	12/20		1.1 %	0.75 [0.41, 1.37]
Le Corre 1999	28/35	26/35		3.1 %	1.08 [0.83, 1.39]
Margorian 1993	25/30	8/10		2.3 %	1.04 [0.73, 1.48]
Mitra 2001	18/20	20/20		4.0 %	0.90 [0.76, 1.07]
Naguib 1994a	13/20	8/10		1.7 %	0.81 [0.52, 1.27]
Nelson 1997	18/20	22/22		4.0 %	0.90 [0.76, 1.07]
Patel 1995	11/15	7/7		2.2 %	0.77 [0.54, 1.09]
Puhringer 1992	17/20	8/10		2.2 %	1.06 [0.74, 1.52]
Stevens 1996	11/30	8/10		1.2 %	0.46 [0.26, 0.80]
Stoddart 1998	27/30	25/30		3.7 %	1.08 [0.88, 1.32]
Tang 1996	24/27	42/48		4.0 %	1.02 [0.86, 1.21]
Turan 1999	17/20	17/20		3.0 %	1.00 [0.77, 1.30]
Vinik 1999	11/15	11/15		1.8 %	1.00 [0.65, 1.54]
Yorukoglu 2003	12/25	23/25		1.8 %	0.52 [0.34, 0.80]
Subtotal (95% CI)	**514**	**419**		**52.1 %**	**0.91 [0.85, 0.98]**
Total events: 385 (Rocuronium), 358 (Succinylcholine)					
Heterogeneity: $Tau^2 = 0.01$; $Chi^2 = 28.08$, df = 19 (P = 0.08); $I^2 = 32\%$					
Test for overall effect: Z = 2.49 (P = 0.013)					
3 Mixed simulated and modified RSI					
Abdulatif 1996	6/24	15/24		0.7 %	0.40 [0.19, 0.85]
Subtotal (95% CI)	**24**	**24**		**0.7 %**	**0.40 [0.19, 0.85]**
Total events: 6 (Rocuronium), 15 (Succinylcholine)					
Heterogeneity: not applicable					
Test for overall effect: Z = 2.37 (P = 0.018)					
Total (95% CI)	**1409**	**1281**		**100.0 %**	**0.86 [0.80, 0.92]**
Total events: 933 (Rocuronium), 1015 (Succinylcholine)					
Heterogeneity: $Tau^2 = 0.02$; $Chi^2 = 100.43$, df = 36 (P<0.00001); $I^2 = 64\%$					
Test for overall effect: Z = 4.31 (P = 0.000016)					



Review: Rocuronium versus succinylcholine for rapid sequence induction intubation

Comparison: 1 Rocuronium any dose versus succinylcholine

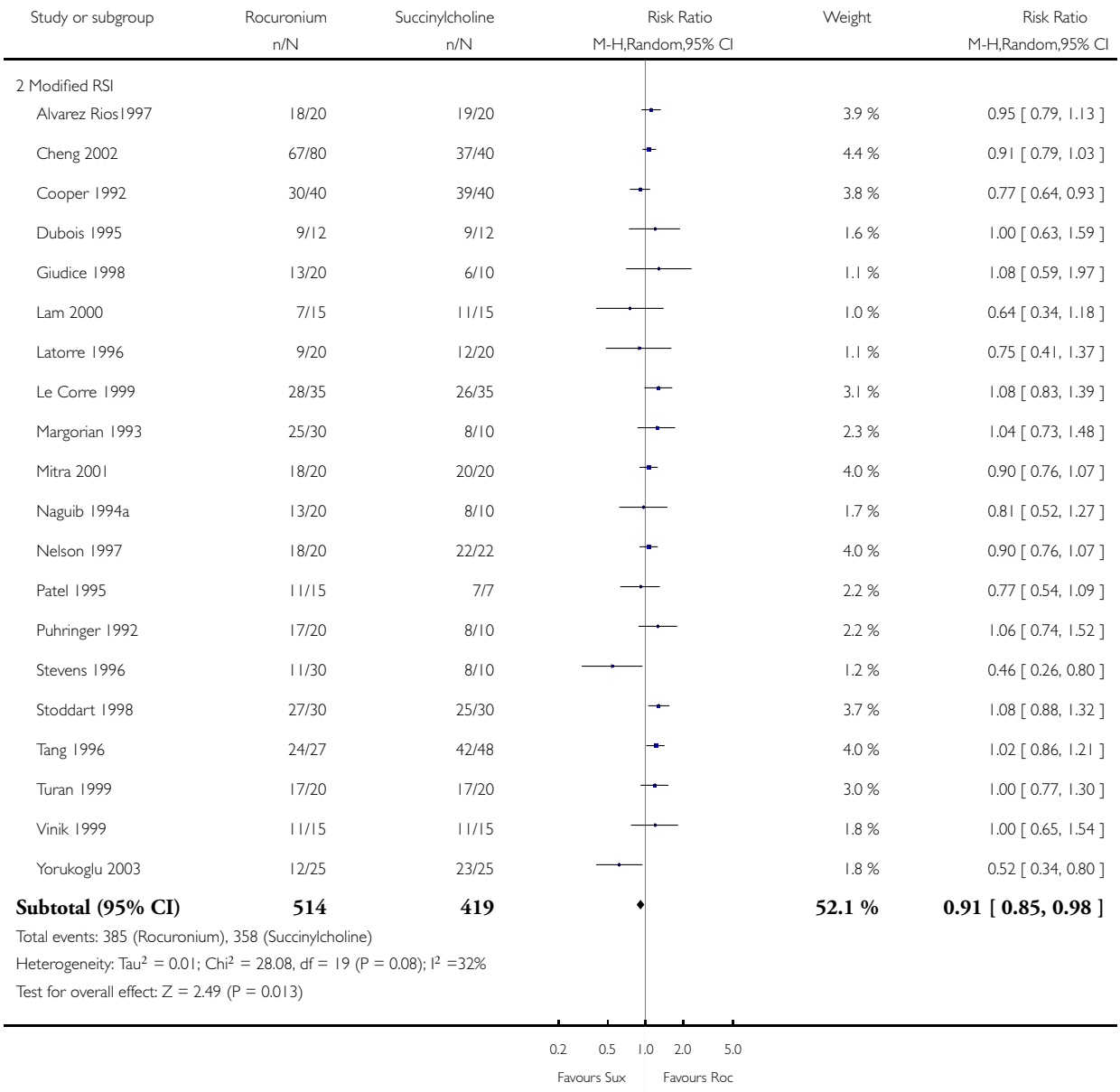
Outcome: 1 Excellent versus other intubation conditions



Review: Rocuronium versus succinylcholine for rapid sequence induction intubation

Comparison: 1 Rocuronium any dose versus succinylcholine

Outcome: 1 Excellent versus other intubation conditions



Review: Rocuronium versus succinylcholine for rapid sequence induction intubation

Comparison: 1 Rocuronium any dose versus succinylcholine

Outcome: 1 Excellent versus other intubation conditions

Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
3 Mixed simulated and modified RSI					
Abdulatif 1996	6/24	15/24		0.7 %	0.40 [0.19, 0.85]
Subtotal (95% CI)	**24**	**24**		**0.7 %**	**0.40 [0.19, 0.85]**
Total events: 6 (Rocuronium), 15 (Succinylcholine)					
Heterogeneity: not applicable					
Test for overall effect: Z = 2.37 (P = 0.018)					

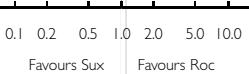
Analysis 1.2. Comparison 1 Rocuronium any dose versus succinylcholine, Outcome 2 Acceptable versus suboptimal intubation conditions.

Review: Rocuronium versus succinylcholine for rapid sequence induction intubation

Comparison: 1 Rocuronium any dose versus succinylcholine

Outcome: 2 Acceptable versus suboptimal intubation conditions

Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Simulated RSI					
Andrews 1999	124/133	135/139		8.2 %	0.96 [0.91, 1.01]
Chiu 1999	15/15	15/15		0.0 %	0.0 [0.0, 0.0]
Chung 2001	29/31	27/30		3.4 %	1.04 [0.89, 1.21]
Koroglu 2002	28/30	32/35		3.8 %	1.02 [0.89, 1.17]
Larsen 2005	98/102	100/107		7.6 %	1.03 [0.96, 1.10]
Malik 2004	30/30	30/30		0.0 %	0.0 [0.0, 0.0]
Mazurek 1998	12/13	12/13		1.9 %	1.00 [0.80, 1.25]
McCourt 1998	125/130	123/127		8.6 %	0.99 [0.95, 1.04]
Mencke 2006	45/76	66/74		2.2 %	0.66 [0.54, 0.81]



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Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
Naguib 1997	20/20	10/10		0.0 %	0.0 [0.0, 0.0]
Sluga 2005	78/90	83/90		5.4 %	0.94 [0.85, 1.04]
Sparr 1996a	24/25	25/25		5.0 %	0.96 [0.86, 1.07]
Sparr 1996b	20/25	50/50		2.3 %	0.80 [0.65, 0.97]
Tryba 1994	53/60	20/20		4.7 %	0.90 [0.80, 1.01]
Weiss 1997	21/31	13/14		1.3 %	0.73 [0.55, 0.97]
Subtotal (95% CI)	**811**	**779**		**54.4 %**	**0.94 [0.89, 1.00]**
Total events: 722 (Rocuronium), 741 (Succinylcholine)					
Heterogeneity: Tau^2 = 0.01; Chi^2 = 37.25, df = 11 (P = 0.00010); I^2 =70%					
Test for overall effect: Z = 2.10 (P = 0.036)					
2 Modified RSI					
Alvarez Rios1997	20/20	20/20		0.0 %	0.0 [0.0, 0.0]
Cheng 2002	75/80	40/40		7.3 %	0.94 [0.88, 1.01]
Cooper 1992	39/40	40/40		7.3 %	0.98 [0.91, 1.04]
Dubois 1995	12/12	11/12		1.9 %	1.09 [0.87, 1.36]
Giudice 1998	20/20	10/10		0.0 %	0.0 [0.0, 0.0]
Lam 2000	13/15	15/15		1.8 %	0.87 [0.69, 1.09]
Latorre 1996	18/20	18/20		2.2 %	1.00 [0.81, 1.23]
Le Corre 1999	30/35	30/35		2.4 %	1.00 [0.83, 1.21]
Margorian 1993	30/30	10/10		0.0 %	0.0 [0.0, 0.0]
Mitra 2001	20/20	20/20		0.0 %	0.0 [0.0, 0.0]
Naguib 1994a	20/20	10/10		0.0 %	0.0 [0.0, 0.0]
Nelson 1997	20/20	22/22		0.0 %	0.0 [0.0, 0.0]
Patel 1995	14/15	7/7		1.7 %	0.97 [0.76, 1.23]
Puhringer 1992	20/20	9/10		1.6 %	1.13 [0.89, 1.44]
Stevens 1996	29/30	10/10		3.4 %	1.00 [0.86, 1.16]
Stoddart 1998	30/30	30/30		0.0 %	0.0 [0.0, 0.0]
Tang 1996	27/27	47/48		7.1 %	1.01 [0.94, 1.09]
Turan 1999	20/20	20/20		0.0 %	0.0 [0.0, 0.0]
Vinik 1999	14/15	14/15		2.4 %	1.00 [0.83, 1.21]
Yorukoglu 2003	24/25	25/25		5.0 %	0.96 [0.86, 1.07]
Subtotal (95% CI)	**514**	**419**		**44.2 %**	**0.98 [0.95, 1.01]**
Total events: 495 (Rocuronium), 408 (Succinylcholine)					
Heterogeneity: Tau^2 = 0.0; Chi^2 = 5.61, df = 11 (P = 0.90); I^2 =0.0%					

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Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
Test for overall effect: Z = 1.19 (P = 0.23)					
3 Mixed simulated and modified RSI					
Abdulatif 1996	17/24	24/24		1.4 %	0.71 [0.55, 0.93]
Subtotal (95% CI)	**24**	**24**		**1.4 %**	**0.71 [0.55, 0.93]**
Total events: 17 (Rocuronium), 24 (Succinylcholine)					
Heterogeneity: not applicable					
Test for overall effect: Z = 2.51 (P = 0.012)					
Total (95% CI)	**1349**	**1222**		**100.0 %**	**0.96 [0.93, 0.99]**
Total events: 1234 (Rocuronium), 1173 (Succinylcholine)					
Heterogeneity: Tau^2 = 0.00; Chi^2 = 48.64, df = 24 (P = 0.002); I^2 =51%					
Test for overall effect: Z = 2.30 (P = 0.021)					

Review: Rocuronium versus succinylcholine for rapid sequence induction intubation

Comparison: 1 Rocuronium any dose versus succinylcholine

Outcome: 2 Acceptable versus suboptimal intubation conditions

Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Simulated RSI					
Andrews 1999	124/133	135/139		8.2 %	0.96 [0.91, 1.01]
Chiu 1999	15/15	15/15		0.0 %	0.0 [0.0, 0.0]
Chung 2001	29/31	27/30		3.4 %	1.04 [0.89, 1.21]
Koroglu 2002	28/30	32/35		3.8 %	1.02 [0.89, 1.17]
Larsen 2005	98/102	100/107		7.6 %	1.03 [0.96, 1.10]
Malik 2004	30/30	30/30		0.0 %	0.0 [0.0, 0.0]
Mazurek 1998	12/13	12/13		1.9 %	1.00 [0.80, 1.25]
McCourt 1998	125/130	123/127		8.6 %	0.99 [0.95, 1.04]
Mencke 2006	45/76	66/74		2.2 %	0.66 [0.54, 0.81]
Naguib 1997	20/20	10/10		0.0 %	0.0 [0.0, 0.0]

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Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
Sluga 2005	78/90	83/90		5.4 %	0.94 [0.85, 1.04]
Sparr 1996a	24/25	25/25		5.0 %	0.96 [0.86, 1.07]
Sparr 1996b	20/25	50/50		2.3 %	0.80 [0.65, 0.97]
Tryba 1994	53/60	20/20		4.7 %	0.90 [0.80, 1.01]
Weiss 1997	21/31	13/14		1.3 %	0.73 [0.55, 0.97]
Subtotal (95% CI)	**811**	**779**		**54.4 %**	**0.94 [0.89, 1.00]**
Total events: 722 (Rocuronium), 741 (Succinylcholine)					
Heterogeneity: $Tau^2 = 0.01$; $Chi^2 = 37.25$, df = 11 (P = 0.00010); $I^2 = 70\%$					
Test for overall effect: Z = 2.10 (P = 0.036)					

0.1 0.2 0.5 1.0 2.0 5.0 10.0
Favours Sux Favours Roc

Review: Rocuronium versus succinylcholine for rapid sequence induction intubation

Comparison: 1 Rocuronium any dose versus succinylcholine

Outcome: 2 Acceptable versus suboptimal intubation conditions

Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
2 Modified RSI					
Alvarez Rios1997	20/20	20/20		0.0 %	0.0 [0.0, 0.0]
Cheng 2002	75/80	40/40		7.3 %	0.94 [0.88, 1.01]
Cooper 1992	39/40	40/40		7.3 %	0.98 [0.91, 1.04]
Dubois 1995	12/12	11/12		1.9 %	1.09 [0.87, 1.36]
Giudice 1998	20/20	10/10		0.0 %	0.0 [0.0, 0.0]
Lam 2000	13/15	15/15		1.8 %	0.87 [0.69, 1.09]
Latorre 1996	18/20	18/20		2.2 %	1.00 [0.81, 1.23]
Le Corre 1999	30/35	30/35		2.4 %	1.00 [0.83, 1.21]
Margorian 1993	30/30	10/10		0.0 %	0.0 [0.0, 0.0]
Mitra 2001	20/20	20/20		0.0 %	0.0 [0.0, 0.0]
Naguib 1994a	20/20	10/10		0.0 %	0.0 [0.0, 0.0]

0.1 0.2 0.5 1.0 2.0 5.0 10.0
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Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
Nelson 1997	20/20	22/22		0.0 %	0.0 [0.0, 0.0]
Patel 1995	14/15	7/7		1.7 %	0.97 [0.76, 1.23]
Puhringer 1992	20/20	9/10		1.6 %	1.13 [0.89, 1.44]
Stevens 1996	29/30	10/10		3.4 %	1.00 [0.86, 1.16]
Stoddart 1998	30/30	30/30		0.0 %	0.0 [0.0, 0.0]
Tang 1996	27/27	47/48		7.1 %	1.01 [0.94, 1.09]
Turan 1999	20/20	20/20		0.0 %	0.0 [0.0, 0.0]
Vinik 1999	14/15	14/15		2.4 %	1.00 [0.83, 1.21]
Yorukoglu 2003	24/25	25/25		5.0 %	0.96 [0.86, 1.07]
Subtotal (95% CI)	**514**	**419**		**44.2 %**	**0.98 [0.95, 1.01]**
Total events: 495 (Rocuronium), 408 (Succinylcholine)					
Heterogeneity: $Tau^2 = 0.0$; $Chi^2 = 5.61$, df = 11 (P = 0.90); $I^2 = 0.0\%$					
Test for overall effect: Z = 1.19 (P = 0.23)					

Review: Rocuronium versus succinylcholine for rapid sequence induction intubation

Comparison: 1 Rocuronium any dose versus succinylcholine

Outcome: 2 Acceptable versus suboptimal intubation conditions

Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
3 Mixed simulated and modified RSI					
Abdulatif 1996	17/24	24/24		1.4 %	0.71 [0.55, 0.93]
Subtotal (95% CI)	**24**	**24**		**1.4 %**	**0.71 [0.55, 0.93]**
Total events: 17 (Rocuronium), 24 (Succinylcholine)					
Heterogeneity: not applicable					
Test for overall effect: Z = 2.51 (P = 0.012)					

Analysis 2.1. Comparison 2 Rocuronium specific dose versus succinylcholine, Outcome 1 Excellent versus other intubation conditions.

Review: Rocuronium versus succinylcholine for rapid sequence induction intubation

Comparison: 2 Rocuronium specific dose versus succinylcholine

Outcome: 1 Excellent versus other intubation conditions

Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Rocuronium 0.6-0.7mg/kg					
Abdulatif 1996	6/24	15/24		0.7 %	0.40 [0.19, 0.85]
Alvarez Rios1997	18/20	19/20		3.5 %	0.95 [0.79, 1.13]
Cheng 2002	29/40	37/40		3.2 %	0.78 [0.64, 0.97]
Chung 2001	19/31	19/30		1.8 %	0.97 [0.65, 1.43]
Cooper 1992	30/40	39/40		3.4 %	0.77 [0.64, 0.93]
Dubois 1995	9/12	9/12		1.5 %	1.00 [0.63, 1.59]
Giudice 1998	5/10	6/10		0.6 %	0.83 [0.37, 1.85]
Koroglu 2002	21/30	28/35		2.5 %	0.88 [0.66, 1.17]
Lam 2000	7/15	11/15		1.0 %	0.64 [0.34, 1.18]
Larsen 2005	52/102	67/107		2.9 %	0.81 [0.64, 1.04]
Latorre 1996	9/20	12/20		1.0 %	0.75 [0.41, 1.37]
Le Corre 1999	28/35	26/35		2.8 %	1.08 [0.83, 1.39]
Margorian 1993	10/10	8/10		2.1 %	1.24 [0.87, 1.75]
Mencke 2006	16/76	42/74		1.4 %	0.37 [0.23, 0.60]
Mitra 2001	18/20	20/20		3.5 %	0.90 [0.76, 1.07]
Naguib 1994a	13/20	8/10		1.6 %	0.81 [0.52, 1.27]
Naguib 1997	7/10	9/10		1.5 %	0.78 [0.49, 1.23]
Nelson 1997	18/20	22/22		3.5 %	0.90 [0.76, 1.07]
Patel 1995	4/7	7/7		0.9 %	0.60 [0.32, 1.13]
Puhringer 1992	17/20	8/10		2.0 %	1.06 [0.74, 1.52]
Sluga 2005	50/90	69/90		3.1 %	0.72 [0.58, 0.90]
Sparr 1996a	15/25	23/25		2.2 %	0.65 [0.46, 0.92]
Sparr 1996b	10/25	44/50		1.4 %	0.45 [0.28, 0.74]
Stevens 1996	11/30	8/10		1.1 %	0.46 [0.26, 0.80]

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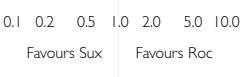
Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
Stoddart 1998	27/30	25/30		3.3 %	1.08 [0.88, 1.32]
Tang 1996	24/27	42/48		3.5 %	1.02 [0.86, 1.21]
Tryba 1994	48/60	16/20		2.8 %	1.00 [0.78, 1.29]
Vinik 1999	11/15	11/15		1.6 %	1.00 [0.65, 1.54]
Weiss 1997	3/15	13/14		0.4 %	0.22 [0.08, 0.60]
Yorukoglu 2003	12/25	23/25		1.7 %	0.52 [0.34, 0.80]
Subtotal (95% CI)	**904**	**878**		**62.7 %**	**0.81 [0.73, 0.90]**
Total events: 547 (Rocuronium), 686 (Succinylcholine)					
Heterogeneity: $Tau^2 = 0.04$; $Chi^2 = 88.31$, df = 29 (P<0.00001); I^2 =67%					
Test for overall effect: Z = 4.07 (P = 0.000047)					
2 Rocuronium 0.9-1.0mg/kg					
Alanoglu 2006	57/60	54/59		4.1 %	1.04 [0.94, 1.14]
Andrews 1999	88/133	103/139		3.7 %	0.89 [0.76, 1.04]
Cheng 2002	38/40	37/40		4.0 %	1.03 [0.92, 1.15]
Chiu 1999	13/15	14/15		2.9 %	0.93 [0.73, 1.18]
Giudice 1998	8/10	6/10		1.0 %	1.33 [0.74, 2.41]
Malik 2004	28/30	30/30		4.0 %	0.93 [0.83, 1.05]
Margorian 1993	8/10	8/10		1.6 %	1.00 [0.65, 1.55]
McCourt 1998	85/130	101/127		3.7 %	0.82 [0.71, 0.96]
Naguib 1997	10/10	9/10		2.7 %	1.11 [0.85, 1.44]
Patel 1995	7/8	7/7		2.1 %	0.89 [0.63, 1.25]
Weiss 1997	12/16	13/14		2.3 %	0.81 [0.59, 1.11]
Subtotal (95% CI)	**462**	**461**		**32.2 %**	**0.96 [0.89, 1.02]**
Total events: 354 (Rocuronium), 382 (Succinylcholine)					
Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 15.47$, df = 10 (P = 0.12); I^2 =35%					
Test for overall effect: Z = 1.29 (P = 0.20)					
3 Rocuronium 1.2mg/kg					
Margorian 1993	7/10	8/10		1.3 %	0.88 [0.53, 1.46]
Mazurek 1998	7/13	10/13		1.1 %	0.70 [0.39, 1.26]
Turan 1999	17/20	17/20		2.7 %	1.00 [0.77, 1.30]
Subtotal (95% CI)	**43**	**43**		**5.1 %**	**0.93 [0.75, 1.15]**
Total events: 31 (Rocuronium), 35 (Succinylcholine)					
Heterogeneity: $Tau^2 = 0.0$; $Chi^2 = 1.46$, df = 2 (P = 0.48); I^2 =0.0%					
Test for overall effect: Z = 0.66 (P = 0.51)					
Total (95% CI)	**1409**	**1382**		**100.0 %**	**0.87 [0.81, 0.93]**
Total events: 932 (Rocuronium), 1103 (Succinylcholine)					



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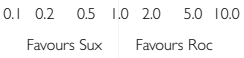
Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
Heterogeneity: Tau² = 0.03; Chi² = 123.13, df = 43 (P<0.00001); I² =65%					
Test for overall effect: Z = 4.05 (P = 0.000051)					



Review: Rocuronium versus succinylcholine for rapid sequence induction intubation

Comparison: 2 Rocuronium specific dose versus succinylcholine

Outcome: 1 Excellent versus other intubation conditions

Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Rocuronium 0.6-0.7mg/kg					
Abdulatif 1996	6/24	15/24		0.7 %	0.40 [0.19, 0.85]
Alvarez Rios1997	18/20	19/20		3.5 %	0.95 [0.79, 1.13]
Cheng 2002	29/40	37/40		3.2 %	0.78 [0.64, 0.97]
Chung 2001	19/31	19/30		1.8 %	0.97 [0.65, 1.43]
Cooper 1992	30/40	39/40		3.4 %	0.77 [0.64, 0.93]
Dubois 1995	9/12	9/12		1.5 %	1.00 [0.63, 1.59]
Giudice 1998	5/10	6/10		0.6 %	0.83 [0.37, 1.85]
Koroglu 2002	21/30	28/35		2.5 %	0.88 [0.66, 1.17]
Lam 2000	7/15	11/15		1.0 %	0.64 [0.34, 1.18]
Larsen 2005	52/102	67/107		2.9 %	0.81 [0.64, 1.04]
Latorre 1996	9/20	12/20		1.0 %	0.75 [0.41, 1.37]
Le Corre 1999	28/35	26/35		2.8 %	1.08 [0.83, 1.39]
Margorian 1993	10/10	8/10		2.1 %	1.24 [0.87, 1.75]
Mencke 2006	16/76	42/74		1.4 %	0.37 [0.23, 0.60]
Mitra 2001	18/20	20/20		3.5 %	0.90 [0.76, 1.07]
Naguib 1994a	13/20	8/10		1.6 %	0.81 [0.52, 1.27]
Naguib 1997	7/10	9/10		1.5 %	0.78 [0.49, 1.23]

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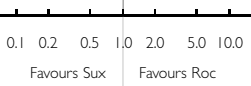
Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
Nelson 1997	18/20	22/22		3.5 %	0.90 [0.76, 1.07]
Patel 1995	4/7	7/7		0.9 %	0.60 [0.32, 1.13]
Puhringer 1992	17/20	8/10		2.0 %	1.06 [0.74, 1.52]
Sluga 2005	50/90	69/90		3.1 %	0.72 [0.58, 0.90]
Sparr 1996a	15/25	23/25		2.2 %	0.65 [0.46, 0.92]
Sparr 1996b	10/25	44/50		1.4 %	0.45 [0.28, 0.74]
Stevens 1996	11/30	8/10		1.1 %	0.46 [0.26, 0.80]
Stoddart 1998	27/30	25/30		3.3 %	1.08 [0.88, 1.32]
Tang 1996	24/27	42/48		3.5 %	1.02 [0.86, 1.21]
Tryba 1994	48/60	16/20		2.8 %	1.00 [0.78, 1.29]
Vinik 1999	11/15	11/15		1.6 %	1.00 [0.65, 1.54]
Weiss 1997	3/15	13/14		0.4 %	0.22 [0.08, 0.60]
Yorukoglu 2003	12/25	23/25		1.7 %	0.52 [0.34, 0.80]
Subtotal (95% CI)	**904**	**878**	◆	**62.7 %**	**0.81 [0.73, 0.90]**

Total events: 547 (Rocuronium), 686 (Succinylcholine)

Heterogeneity: $Tau^2 = 0.04$; $Chi^2 = 88.31$, df = 29 ($P<0.00001$); $I^2 = 67\%$

Test for overall effect: Z = 4.07 (P = 0.000047)



Review: Rocuronium versus succinylcholine for rapid sequence induction intubation

Comparison: 2 Rocuronium specific dose versus succinylcholine

Outcome: 1 Excellent versus other intubation conditions

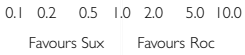
Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
2 Rocuronium 0.9-1.0mg/kg					
Alanoglu 2006	57/60	54/59		4.1 %	1.04 [0.94, 1.14]
Andrews 1999	88/133	103/139		3.7 %	0.89 [0.76, 1.04]
Cheng 2002	38/40	37/40		4.0 %	1.03 [0.92, 1.15]
Chiu 1999	13/15	14/15		2.9 %	0.93 [0.73, 1.18]
Giudice 1998	8/10	6/10		1.0 %	1.33 [0.74, 2.41]
Malik 2004	28/30	30/30		4.0 %	0.93 [0.83, 1.05]
Margorian 1993	8/10	8/10		1.6 %	1.00 [0.65, 1.55]
McCourt 1998	85/130	101/127		3.7 %	0.82 [0.71, 0.96]
Naguib 1997	10/10	9/10		2.7 %	1.11 [0.85, 1.44]
Patel 1995	7/8	7/7		2.1 %	0.89 [0.63, 1.25]
Weiss 1997	12/16	13/14		2.3 %	0.81 [0.59, 1.11]
Subtotal (95% CI)	**462**	**461**		**32.2 %**	**0.96 [0.89, 1.02]**
Total events: 354 (Rocuronium), 382 (Succinylcholine)					
Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 15.47$, df = 10 (P = 0.12); $I^2 = 35\%$					
Test for overall effect: Z = 1.29 (P = 0.20)					

Review: Rocuronium versus succinylcholine for rapid sequence induction intubation

Comparison: 2 Rocuronium specific dose versus succinylcholine

Outcome: 1 Excellent versus other intubation conditions

Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
3 Rocuronium 1.2mg/kg					
Margorian 1993	7/10	8/10		1.3 %	0.88 [0.53, 1.46]
Mazurek 1998	7/13	10/13		1.1 %	0.70 [0.39, 1.26]
Turan 1999	17/20	17/20		2.7 %	1.00 [0.77, 1.30]
Subtotal (95% CI)	**43**	**43**		**5.1 %**	**0.93 [0.75, 1.15]**
Total events: 31 (Rocuronium), 35 (Succinylcholine)					
Heterogeneity: Tau² = 0.0; Chi² = 1.46, df = 2 (P = 0.48); I² =0.0%					
Test for overall effect: Z = 0.66 (P = 0.51)					



Analysis 2.2. Comparison 2 Rocuronium specific dose versus succinylcholine, Outcome 2 Acceptable versus suboptimal intubation conditions.

Review: Rocuronium versus succinylcholine for rapid sequence induction intubation

Comparison: 2 Rocuronium specific dose versus succinylcholine

Outcome: 2 Acceptable versus suboptimal intubation conditions

Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Rocuronium 0.6-0.7mg/kg					
Abdulatif 1996	17/24	24/24		1.4 %	0.71 [0.55, 0.93]
Alvarez Rios1997	20/20	20/20		0.0 %	0.0 [0.0, 0.0]
Cheng 2002	36/40	40/40		4.6 %	0.90 [0.81, 1.01]
Chung 2001	29/31	27/30		3.3 %	1.04 [0.89, 1.21]
Cooper 1992	39/40	40/40		6.8 %	0.98 [0.91, 1.04]
Dubois 1995	12/12	11/12		1.9 %	1.09 [0.87, 1.36]
Giudice 1998	10/10	10/10		0.0 %	0.0 [0.0, 0.0]

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Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
Koroglu 2002	28/30	32/35		3.7 %	1.02 [0.89, 1.17]
Lam 2000	13/15	15/15		1.8 %	0.87 [0.69, 1.09]
Larsen 2005	98/102	100/107		7.1 %	1.03 [0.96, 1.10]
Latorre 1996	18/20	18/20		2.1 %	1.00 [0.81, 1.23]
Le Corre 1999	30/35	30/35		2.4 %	1.00 [0.83, 1.21]
Margorian 1993	10/10	10/10		0.0 %	0.0 [0.0, 0.0]
Mencke 2006	45/76	66/74		2.2 %	0.66 [0.54, 0.81]
Mitra 2001	20/20	20/20		0.0 %	0.0 [0.0, 0.0]
Naguib 1994a	20/20	10/10		0.0 %	0.0 [0.0, 0.0]
Naguib 1997	10/10	10/10		0.0 %	0.0 [0.0, 0.0]
Nelson 1997	20/20	22/22		0.0 %	0.0 [0.0, 0.0]
Patel 1995	6/7	7/7		0.8 %	0.87 [0.59, 1.26]
Puhringer 1992	20/20	9/10		1.6 %	1.13 [0.89, 1.44]
Sluga 2005	78/90	83/90		5.2 %	0.94 [0.85, 1.04]
Sparr 1996a	24/25	25/25		4.8 %	0.96 [0.86, 1.07]
Sparr 1996b	20/25	50/50		2.2 %	0.80 [0.65, 0.97]
Stevens 1996	29/30	10/10		3.3 %	1.00 [0.86, 1.16]
Stoddart 1998	30/30	30/30		0.0 %	0.0 [0.0, 0.0]
Tang 1996	27/27	47/48		6.7 %	1.01 [0.94, 1.09]
Tryba 1994	53/60	20/20		4.5 %	0.90 [0.80, 1.01]
Vinik 1999	14/15	14/15		2.4 %	1.00 [0.83, 1.21]
Weiss 1997	7/15	13/14		0.4 %	0.50 [0.29, 0.88]
Yorukoglu 2003	24/25	25/25		4.8 %	0.96 [0.86, 1.07]
Subtotal (95% CI)	**904**	**878**		**74.0 %**	**0.95 [0.90, 1.00]**
Total events: 807 (Rocuronium), 838 (Succinylcholine)					
Heterogeneity: Tau² = 0.01; Chi² = 54.50, df = 21 (P = 0.00008); I² =61%					
Test for overall effect: Z = 2.16 (P = 0.031)					
2 Rocuronium 0.9-1.0mg/kg					
Andrews 1999	124/133	135/139		7.6 %	0.96 [0.91, 1.01]
Cheng 2002	39/40	40/40		6.8 %	0.98 [0.91, 1.04]
Chiu 1999	15/15	15/15		0.0 %	0.0 [0.0, 0.0]
Giudice 1998	10/10	10/10		0.0 %	0.0 [0.0, 0.0]
Malik 2004	30/30	30/30		0.0 %	0.0 [0.0, 0.0]

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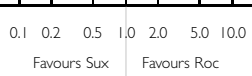
Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
Margorian 1993	10/10	10/10		0.0 %	0.0 [0.0, 0.0]
McCourt 1998	125/130	123/127		8.0 %	0.99 [0.95, 1.04]
Naguib 1997	10/10	10/10		0.0 %	0.0 [0.0, 0.0]
Patel 1995	8/8	7/7		0.0 %	0.0 [0.0, 0.0]
Weiss 1997	14/16	13/14		1.7 %	0.94 [0.74, 1.19]
Subtotal (95% CI)	**402**	**402**		**24.1 %**	**0.98 [0.95, 1.01]**
Total events: 385 (Rocuronium), 393 (Succinylcholine)					
Heterogeneity: $Tau^2 = 0.0$; $Chi^2 = 1.00$, df = 3 (P = 0.80); $I^2 = 0.0\%$					
Test for overall effect: Z = 1.45 (P = 0.15)					
3 Rocuronium 1.2mg/kg					
Margorian 1993	10/10	10/10		0.0 %	0.0 [0.0, 0.0]
Mazurek 1998	12/13	12/13		1.9 %	1.00 [0.80, 1.25]
Turan 1999	20/20	20/20		0.0 %	0.0 [0.0, 0.0]
Subtotal (95% CI)	**43**	**43**		**1.9 %**	**1.00 [0.80, 1.25]**
Total events: 42 (Rocuronium), 42 (Succinylcholine)					
Heterogeneity: $Tau^2 = 0.0$; $Chi^2 = 0.0$, df = 0 (P = 1.00); $I^2 = 0.0\%$					
Test for overall effect: Z = 0.0 (P = 1.0)					
Total (95% CI)	**1349**	**1323**		**100.0 %**	**0.96 [0.93, 0.99]**
Total events: 1234 (Rocuronium), 1273 (Succinylcholine)					
Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 54.21$, df = 26 (P = 0.00096); $I^2 = 52\%$					
Test for overall effect: Z = 2.37 (P = 0.018)					

Review: Rocuronium versus succinylcholine for rapid sequence induction intubation

Comparison: 2 Rocuronium specific dose versus succinylcholine

Outcome: 2 Acceptable versus suboptimal intubation conditions

Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Rocuronium 0.6-0.7mg/kg					
Abdulatif 1996	17/24	24/24		1.4 %	0.71 [0.55, 0.93]
Alvarez Rios1997	20/20	20/20		0.0 %	0.0 [0.0, 0.0]
Cheng 2002	36/40	40/40		4.6 %	0.90 [0.81, 1.01]
Chung 2001	29/31	27/30		3.3 %	1.04 [0.89, 1.21]
Cooper 1992	39/40	40/40		6.8 %	0.98 [0.91, 1.04]
Dubois 1995	12/12	11/12		1.9 %	1.09 [0.87, 1.36]
Giudice 1998	10/10	10/10		0.0 %	0.0 [0.0, 0.0]
Koroglu 2002	28/30	32/35		3.7 %	1.02 [0.89, 1.17]
Lam 2000	13/15	15/15		1.8 %	0.87 [0.69, 1.09]
Larsen 2005	98/102	100/107		7.1 %	1.03 [0.96, 1.10]
Latorre 1996	18/20	18/20		2.1 %	1.00 [0.81, 1.23]
Le Corre 1999	30/35	30/35		2.4 %	1.00 [0.83, 1.21]
Margorian 1993	10/10	10/10		0.0 %	0.0 [0.0, 0.0]
Mencke 2006	45/76	66/74		2.2 %	0.66 [0.54, 0.81]
Mitra 2001	20/20	20/20		0.0 %	0.0 [0.0, 0.0]
Naguib 1994a	20/20	10/10		0.0 %	0.0 [0.0, 0.0]
Naguib 1997	10/10	10/10		0.0 %	0.0 [0.0, 0.0]
Nelson 1997	20/20	22/22		0.0 %	0.0 [0.0, 0.0]
Patel 1995	6/7	7/7		0.8 %	0.87 [0.59, 1.26]
Puhringer 1992	20/20	9/10		1.6 %	1.13 [0.89, 1.44]
Sluga 2005	78/90	83/90		5.2 %	0.94 [0.85, 1.04]
Sparr 1996a	24/25	25/25		4.8 %	0.96 [0.86, 1.07]
Sparr 1996b	20/25	50/50		2.2 %	0.80 [0.65, 0.97]
Stevens 1996	29/30	10/10		3.3 %	1.00 [0.86, 1.16]
Stoddart 1998	30/30	30/30		0.0 %	0.0 [0.0, 0.0]



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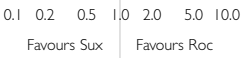
Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
Tang 1996	27/27	47/48		6.7 %	1.01 [0.94, 1.09]
Tryba 1994	53/60	20/20		4.5 %	0.90 [0.80, 1.01]
Vinik 1999	14/15	14/15		2.4 %	1.00 [0.83, 1.21]
Weiss 1997	7/15	13/14		0.4 %	0.50 [0.29, 0.88]
Yorukoglu 2003	24/25	25/25		4.8 %	0.96 [0.86, 1.07]
Subtotal (95% CI)	**904**	**878**		**74.0 %**	**0.95 [0.90, 1.00]**
Total events: 807 (Rocuronium), 838 (Succinylcholine)					
Heterogeneity: Tau^2 = 0.01; Chi^2 = 54.50, df = 21 (P = 0.00008); I^2 =61%					
Test for overall effect: Z = 2.16 (P = 0.031)					



Review: Rocuronium versus succinylcholine for rapid sequence induction intubation

Comparison: 2 Rocuronium specific dose versus succinylcholine

Outcome: 2 Acceptable versus suboptimal intubation conditions

Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
2 Rocuronium 0.9-1.0mg/kg					
Andrews 1999	124/133	135/139		7.6 %	0.96 [0.91, 1.01]
Cheng 2002	39/40	40/40		6.8 %	0.98 [0.91, 1.04]
Chiu 1999	15/15	15/15		0.0 %	0.0 [0.0, 0.0]
Giudice 1998	10/10	10/10		0.0 %	0.0 [0.0, 0.0]
Malik 2004	30/30	30/30		0.0 %	0.0 [0.0, 0.0]
Margorian 1993	10/10	10/10		0.0 %	0.0 [0.0, 0.0]
McCourt 1998	125/130	123/127		8.0 %	0.99 [0.95, 1.04]
Naguib 1997	10/10	10/10		0.0 %	0.0 [0.0, 0.0]
Patel 1995	8/8	7/7		0.0 %	0.0 [0.0, 0.0]
Weiss 1997	14/16	13/14		1.7 %	0.94 [0.74, 1.19]
Subtotal (95% CI)	**402**	**402**		**24.1 %**	**0.98 [0.95, 1.01]**

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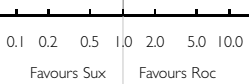
Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
Total events: 385 (Rocuronium), 393 (Succinylcholine)					
Heterogeneity: $Tau^2 = 0.0$; $Chi^2 = 1.00$, df = 3 (P = 0.80); $I^2 = 0.0\%$					
Test for overall effect: Z = 1.45 (P = 0.15)					



Review: Rocuronium versus succinylcholine for rapid sequence induction intubation

Comparison: 2 Rocuronium specific dose versus succinylcholine

Outcome: 2 Acceptable versus suboptimal intubation conditions

Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
3 Rocuronium 1.2mg/kg					
Margorian 1993	10/10	10/10		0.0 %	0.0 [0.0, 0.0]
Mazurek 1998	12/13	12/13		1.9 %	1.00 [0.80, 1.25]
Turan 1999	20/20	20/20		0.0 %	0.0 [0.0, 0.0]
Subtotal (95% CI)	**43**	**43**		**1.9 %**	**1.00 [0.80, 1.25]**
Total events: 42 (Rocuronium), 42 (Succinylcholine)					
Heterogeneity: $Tau^2 = 0.0$; $Chi^2 = 0.0$, df = 0 (P = 1.00); $I^2 = 0.0\%$					
Test for overall effect: Z = 0.0 (P = 1.0)					

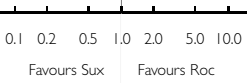
Analysis 3.1. Comparison 3 Rocuronium versus succinylcholine for induction agent, Outcome 1 Excellent versus other intubation conditions.

Review: Rocuronium versus succinylcholine for rapid sequence induction intubation

Comparison: 3 Rocuronium versus succinylcholine for induction agent

Outcome: 1 Excellent versus other intubation conditions

Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Propofol					
Abdulatif 1996	6/24	15/24		0.7 %	0.40 [0.19, 0.85]
Andrews 1999	88/133	103/139		4.1 %	0.89 [0.76, 1.04]
Chiu 1999	13/15	14/15		3.2 %	0.93 [0.73, 1.18]
Giudice 1998	13/20	6/10		1.1 %	1.08 [0.59, 1.97]
Koroglu 2002	11/15	15/19		2.0 %	0.93 [0.63, 1.36]
Lam 2000	7/15	11/15		1.0 %	0.64 [0.34, 1.18]
Larsen 2005	52/102	67/107		3.2 %	0.81 [0.64, 1.04]
Latorre 1996	9/20	12/20		1.1 %	0.75 [0.41, 1.37]
Le Corre 1999	28/35	26/35		3.1 %	1.08 [0.83, 1.39]
Mitra 2001	18/20	20/20		4.0 %	0.90 [0.76, 1.07]
Naguib 1997	17/20	9/10		2.9 %	0.94 [0.72, 1.25]
Puhringer 1992	17/20	8/10		2.2 %	1.06 [0.74, 1.52]
Sluga 2005	50/90	69/90		3.5 %	0.72 [0.58, 0.90]
Stoddart 1998	27/30	25/30		3.7 %	1.08 [0.88, 1.32]
Vinik 1999	11/15	11/15		1.7 %	1.00 [0.65, 1.54]
Yorukoglu 2003	12/25	23/25		1.8 %	0.52 [0.34, 0.80]
Subtotal (95% CI)	**599**	**584**		**39.2 %**	**0.88 [0.80, 0.97]**
Total events: 379 (Rocuronium), 434 (Succinylcholine)					
Heterogeneity: $Tau^2 = 0.02$; $Chi^2 = 26.36$, df = 15 (P = 0.03); $I^2 = 43\%$					
Test for overall effect: Z = 2.47 (P = 0.014)					
2 Thiopental					
Alanoglu 2006	57/60	54/59		4.7 %	1.04 [0.94, 1.14]
Alvarez Rios1997	18/20	19/20		3.9 %	0.95 [0.79, 1.13]
Cheng 2002	67/80	37/40		4.4 %	0.91 [0.79, 1.03]
Chung 2001	19/31	19/30		2.0 %	0.97 [0.65, 1.43]
Cooper 1992	30/40	39/40		3.8 %	0.77 [0.64, 0.93]



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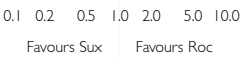
Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
Dubois 1995	9/12	9/12		1.6 %	1.00 [0.63, 1.59]
Koroglu 2002	10/15	13/16		1.8 %	0.82 [0.53, 1.26]
Malik 2004	28/30	30/30		4.6 %	0.93 [0.83, 1.05]
Margorian 1993	25/30	8/10		2.3 %	1.04 [0.73, 1.48]
Mazurek 1998	7/13	10/13		1.1 %	0.70 [0.39, 1.26]
McCourt 1998	85/130	101/127		4.2 %	0.82 [0.71, 0.96]
Mencke 2006	16/76	42/74		1.5 %	0.37 [0.23, 0.60]
Naguib 1994a	13/20	8/10		1.7 %	0.81 [0.52, 1.27]
Nelson 1997	18/20	22/22		4.0 %	0.90 [0.76, 1.07]
Patel 1995	11/15	7/7		2.2 %	0.77 [0.54, 1.09]
Sparr 1996a	15/25	23/25		2.3 %	0.65 [0.46, 0.92]
Sparr 1996b	10/25	44/50		1.5 %	0.45 [0.28, 0.74]
Stevens 1996	11/30	8/10		1.2 %	0.46 [0.26, 0.80]
Tang 1996	24/27	42/48		4.0 %	1.02 [0.86, 1.21]
Tryba 1994	48/60	16/20		3.1 %	1.00 [0.78, 1.29]
Turan 1999	17/20	17/20		3.0 %	1.00 [0.77, 1.30]
Weiss 1997	15/31	13/14		2.0 %	0.52 [0.35, 0.77]
Subtotal (95% CI)	**810**	**697**		**60.8 %**	**0.83 [0.76, 0.92]**
Total events: 553 (Rocuronium), 581 (Succinylcholine)					
Heterogeneity: Tau^2 = 0.03; Chi^2 = 77.83, df = 21 (P<0.00001); I^2 =73%					
Test for overall effect: Z = 3.61 (P = 0.00030)					
Total (95% CI)	**1409**	**1281**		**100.0 %**	**0.86 [0.80, 0.92]**
Total events: 932 (Rocuronium), 1015 (Succinylcholine)					
Heterogeneity: Tau^2 = 0.02; Chi^2 = 100.84, df = 37 (P<0.00001); I^2 =63%					
Test for overall effect: Z = 4.37 (P = 0.000012)					



Review: Rocuronium versus succinylcholine for rapid sequence induction intubation

Comparison: 3 Rocuronium versus succinylcholine for induction agent

Outcome: 1 Excellent versus other intubation conditions

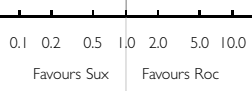
Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Propofol					
Abdulatif 1996	6/24	15/24		0.7 %	0.40 [0.19, 0.85]
Andrews 1999	88/133	103/139		4.1 %	0.89 [0.76, 1.04]
Chiu 1999	13/15	14/15		3.2 %	0.93 [0.73, 1.18]
Giudice 1998	13/20	6/10		1.1 %	1.08 [0.59, 1.97]
Koroglu 2002	11/15	15/19		2.0 %	0.93 [0.63, 1.36]
Lam 2000	7/15	11/15		1.0 %	0.64 [0.34, 1.18]
Larsen 2005	52/102	67/107		3.2 %	0.81 [0.64, 1.04]
Latorre 1996	9/20	12/20		1.1 %	0.75 [0.41, 1.37]
Le Corre 1999	28/35	26/35		3.1 %	1.08 [0.83, 1.39]
Mitra 2001	18/20	20/20		4.0 %	0.90 [0.76, 1.07]
Naguib 1997	17/20	9/10		2.9 %	0.94 [0.72, 1.25]
Puhringer 1992	17/20	8/10		2.2 %	1.06 [0.74, 1.52]
Sluga 2005	50/90	69/90		3.5 %	0.72 [0.58, 0.90]
Stoddart 1998	27/30	25/30		3.7 %	1.08 [0.88, 1.32]
Vinik 1999	11/15	11/15		1.7 %	1.00 [0.65, 1.54]
Yorukoglu 2003	12/25	23/25		1.8 %	0.52 [0.34, 0.80]
Subtotal (95% CI)	**599**	**584**		**39.2 %**	**0.88 [0.80, 0.97]**
Total events: 379 (Rocuronium), 434 (Succinylcholine)					
Heterogeneity: $Tau^2 = 0.02$; $Chi^2 = 26.36$, df = 15 (P = 0.03); $I^2 = 43\%$					
Test for overall effect: Z = 2.47 (P = 0.014)					

Review: Rocuronium versus succinylcholine for rapid sequence induction intubation

Comparison: 3 Rocuronium versus succinylcholine for induction agent

Outcome: 1 Excellent versus other intubation conditions

Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
2 Thiopental					
Alanoglu 2006	57/60	54/59		4.7 %	1.04 [0.94, 1.14]
Alvarez Rios1997	18/20	19/20		3.9 %	0.95 [0.79, 1.13]
Cheng 2002	67/80	37/40		4.4 %	0.91 [0.79, 1.03]
Chung 2001	19/31	19/30		2.0 %	0.97 [0.65, 1.43]
Cooper 1992	30/40	39/40		3.8 %	0.77 [0.64, 0.93]
Dubois 1995	9/12	9/12		1.6 %	1.00 [0.63, 1.59]
Koroglu 2002	10/15	13/16		1.8 %	0.82 [0.53, 1.26]
Malik 2004	28/30	30/30		4.6 %	0.93 [0.83, 1.05]
Margorian 1993	25/30	8/10		2.3 %	1.04 [0.73, 1.48]
Mazurek 1998	7/13	10/13		1.1 %	0.70 [0.39, 1.26]
McCourt 1998	85/130	101/127		4.2 %	0.82 [0.71, 0.96]
Mencke 2006	16/76	42/74		1.5 %	0.37 [0.23, 0.60]
Naguib 1994a	13/20	8/10		1.7 %	0.81 [0.52, 1.27]
Nelson 1997	18/20	22/22		4.0 %	0.90 [0.76, 1.07]
Patel 1995	11/15	7/7		2.2 %	0.77 [0.54, 1.09]
Sparr 1996a	15/25	23/25		2.3 %	0.65 [0.46, 0.92]
Sparr 1996b	10/25	44/50		1.5 %	0.45 [0.28, 0.74]
Stevens 1996	11/30	8/10		1.2 %	0.46 [0.26, 0.80]
Tang 1996	24/27	42/48		4.0 %	1.02 [0.86, 1.21]
Tryba 1994	48/60	16/20		3.1 %	1.00 [0.78, 1.29]
Turan 1999	17/20	17/20		3.0 %	1.00 [0.77, 1.30]
Weiss 1997	15/31	13/14		2.0 %	0.52 [0.35, 0.77]
Subtotal (95% CI)	**810**	**697**	◆	**60.8 %**	**0.83 [0.76, 0.92]**
Total events: 553 (Rocuronium), 581 (Succinylcholine)					
Heterogeneity: $Tau^2 = 0.03$; $Chi^2 = 77.83$, df = 21 ($P<0.00001$); $I^2 = 73\%$					
Test for overall effect: Z = 3.61 (P = 0.00030)					



Analysis 3.2. Comparison 3 Rocuronium versus succinylcholine for induction agent, Outcome 2 Acceptable versus suboptimal intubation conditions.

Review: Rocuronium versus succinylcholine for rapid sequence induction intubation

Comparison: 3 Rocuronium versus succinylcholine for induction agent

Outcome: 2 Acceptable versus suboptimal intubation conditions

Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Propofol					
Abdulatif 1996	17/24	24/24		1.5 %	0.71 [0.55, 0.93]
Andrews 1999	124/133	135/139		8.1 %	0.96 [0.91, 1.01]
Chiu 1999	15/15	15/15		0.0 %	0.0 [0.0, 0.0]
Giudice 1998	20/20	10/10		0.0 %	0.0 [0.0, 0.0]
Koroglu 2002	15/15	17/19		2.5 %	1.11 [0.92, 1.34]
Lam 2000	13/15	15/15		1.8 %	0.87 [0.69, 1.09]
Larsen 2005	98/102	100/107		7.5 %	1.03 [0.96, 1.10]
Latorre 1996	18/20	18/20		2.2 %	1.00 [0.81, 1.23]
Le Corre 1999	30/35	30/35		2.4 %	1.00 [0.83, 1.21]
Mitra 2001	20/20	20/20		0.0 %	0.0 [0.0, 0.0]
Naguib 1997	20/20	10/10		0.0 %	0.0 [0.0, 0.0]
Puhringer 1992	20/20	9/10		1.6 %	1.13 [0.89, 1.44]
Sluga 2005	78/90	83/90		5.4 %	0.94 [0.85, 1.04]
Stoddart 1998	30/30	30/30		0.0 %	0.0 [0.0, 0.0]
Vinik 1999	14/15	14/15		2.4 %	1.00 [0.83, 1.21]
Yorukoglu 2003	24/25	25/25		5.0 %	0.96 [0.86, 1.07]
Subtotal (95% CI)	**599**	**584**		**40.4 %**	**0.98 [0.94, 1.02]**
Total events: 556 (Rocuronium), 555 (Succinylcholine)					
Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 13.55$, df = 10 (P = 0.19); $I^2 = 26\%$					
Test for overall effect: Z = 0.97 (P = 0.33)					
2 Thiopental					
Alvarez Rios1997	20/20	20/20		0.0 %	0.0 [0.0, 0.0]
Cheng 2002	75/80	40/40		7.2 %	0.94 [0.88, 1.01]
Chung 2001	29/31	27/30		3.4 %	1.04 [0.89, 1.21]
Cooper 1992	39/40	40/40		7.2 %	0.98 [0.91, 1.04]
Dubois 1995	12/12	11/12		1.9 %	1.09 [0.87, 1.36]

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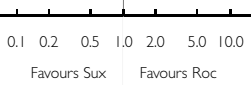
Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
Koroglu 2002	13/15	15/16		1.8 %	0.92 [0.73, 1.17]
Malik 2004	30/30	30/30		0.0 %	0.0 [0.0, 0.0]
Margorian 1993	30/30	10/10		0.0 %	0.0 [0.0, 0.0]
Mazurek 1998	12/13	12/13		1.9 %	1.00 [0.80, 1.25]
McCourt 1998	125/130	123/127		8.5 %	0.99 [0.95, 1.04]
Mencke 2006	45/76	66/74		2.2 %	0.66 [0.54, 0.81]
Naguib 1994a	20/20	10/10		0.0 %	0.0 [0.0, 0.0]
Nelson 1997	20/20	22/22		0.0 %	0.0 [0.0, 0.0]
Patel 1995	14/15	7/7		1.7 %	0.97 [0.76, 1.23]
Sparr 1996a	24/25	25/25		5.0 %	0.96 [0.86, 1.07]
Sparr 1996b	20/25	50/50		2.3 %	0.80 [0.65, 0.97]
Stevens 1996	29/30	10/10		3.4 %	1.00 [0.86, 1.16]
Tang 1996	27/27	47/48		7.1 %	1.01 [0.94, 1.09]
Tryba 1994	53/60	20/20		4.7 %	0.90 [0.80, 1.01]
Turan 1999	20/20	20/20		0.0 %	0.0 [0.0, 0.0]
Weiss 1997	21/31	13/14		1.3 %	0.73 [0.55, 0.97]
Subtotal (95% CI)	**750**	**638**		**59.6 %**	**0.94 [0.89, 1.00]**
Total events: 678 (Rocuronium), 618 (Succinylcholine)					
Heterogeneity: Tau^2 = 0.01; Chi^2 = 43.36, df = 14 (P = 0.00007); I^2 =68%					
Test for overall effect: Z = 2.05 (P = 0.040)					
Total (95% CI)	**1349**	**1222**		**100.0 %**	**0.96 [0.93, 0.99]**
Total events: 1234 (Rocuronium), 1173 (Succinylcholine)					
Heterogeneity: Tau^2 = 0.00; Chi^2 = 50.24, df = 25 (P = 0.002); I^2 =50%					
Test for overall effect: Z = 2.27 (P = 0.023)					



Review: Rocuronium versus succinylcholine for rapid sequence induction intubation

Comparison: 3 Rocuronium versus succinylcholine for induction agent

Outcome: 2 Acceptable versus suboptimal intubation conditions

Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Propofol					
Abdulatif 1996	17/24	24/24		1.5 %	0.71 [0.55, 0.93]
Andrews 1999	124/133	135/139		8.1 %	0.96 [0.91, 1.01]
Chiu 1999	15/15	15/15		0.0 %	0.0 [0.0, 0.0]
Giudice 1998	20/20	10/10		0.0 %	0.0 [0.0, 0.0]
Koroglu 2002	15/15	17/19		2.5 %	1.11 [0.92, 1.34]
Lam 2000	13/15	15/15		1.8 %	0.87 [0.69, 1.09]
Larsen 2005	98/102	100/107		7.5 %	1.03 [0.96, 1.10]
Latorre 1996	18/20	18/20		2.2 %	1.00 [0.81, 1.23]
Le Corre 1999	30/35	30/35		2.4 %	1.00 [0.83, 1.21]
Mitra 2001	20/20	20/20		0.0 %	0.0 [0.0, 0.0]
Naguib 1997	20/20	10/10		0.0 %	0.0 [0.0, 0.0]
Puhringer 1992	20/20	9/10		1.6 %	1.13 [0.89, 1.44]
Sluga 2005	78/90	83/90		5.4 %	0.94 [0.85, 1.04]
Stoddart 1998	30/30	30/30		0.0 %	0.0 [0.0, 0.0]
Vinik 1999	14/15	14/15		2.4 %	1.00 [0.83, 1.21]
Yorukoglu 2003	24/25	25/25		5.0 %	0.96 [0.86, 1.07]
Subtotal (95% CI)	**599**	**584**		**40.4 %**	**0.98 [0.94, 1.02]**
Total events: 556 (Rocuronium), 555 (Succinylcholine)					
Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 13.55$, df = 10 (P = 0.19); $I^2 = 26\%$					
Test for overall effect: Z = 0.97 (P = 0.33)					

Review: Rocuronium versus succinylcholine for rapid sequence induction intubation

Comparison: 3 Rocuronium versus succinylcholine for induction agent

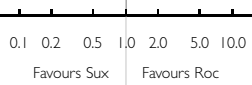
Outcome: 2 Acceptable versus suboptimal intubation conditions

Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
2 Thiopental					
Alvarez Rios1997	20/20	20/20		0.0 %	0.0 [0.0, 0.0]
Cheng 2002	75/80	40/40		7.2 %	0.94 [0.88, 1.01]
Chung 2001	29/31	27/30		3.4 %	1.04 [0.89, 1.21]
Cooper 1992	39/40	40/40		7.2 %	0.98 [0.91, 1.04]
Dubois 1995	12/12	11/12		1.9 %	1.09 [0.87, 1.36]
Koroglu 2002	13/15	15/16		1.8 %	0.92 [0.73, 1.17]
Malik 2004	30/30	30/30		0.0 %	0.0 [0.0, 0.0]
Margorian 1993	30/30	10/10		0.0 %	0.0 [0.0, 0.0]
Mazurek 1998	12/13	12/13		1.9 %	1.00 [0.80, 1.25]
McCourt 1998	125/130	123/127		8.5 %	0.99 [0.95, 1.04]
Mencke 2006	45/76	66/74		2.2 %	0.66 [0.54, 0.81]
Naguib 1994a	20/20	10/10		0.0 %	0.0 [0.0, 0.0]
Nelson 1997	20/20	22/22		0.0 %	0.0 [0.0, 0.0]
Patel 1995	14/15	7/7		1.7 %	0.97 [0.76, 1.23]
Sparr 1996a	24/25	25/25		5.0 %	0.96 [0.86, 1.07]
Sparr 1996b	20/25	50/50		2.3 %	0.80 [0.65, 0.97]
Stevens 1996	29/30	10/10		3.4 %	1.00 [0.86, 1.16]
Tang 1996	27/27	47/48		7.1 %	1.01 [0.94, 1.09]
Tryba 1994	53/60	20/20		4.7 %	0.90 [0.80, 1.01]
Turan 1999	20/20	20/20		0.0 %	0.0 [0.0, 0.0]
Weiss 1997	21/31	13/14		1.3 %	0.73 [0.55, 0.97]
Subtotal (95% CI)	**750**	**638**		**59.6 %**	**0.94 [0.89, 1.00]**

Total events: 678 (Rocuronium), 618 (Succinylcholine)

Heterogeneity: $Tau^2 = 0.01$; $Chi^2 = 43.36$, df = 14 (P = 0.00007); $I^2 = 68\%$

Test for overall effect: Z = 2.05 (P = 0.040)



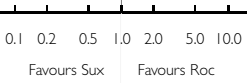
Analysis 4.1. Comparison 4 Rocuronium versus succinylcholine with narcotic, Outcome 1 Excellent versus other intubation outcomes.

Review: Rocuronium versus succinylcholine for rapid sequence induction intubation

Comparison: 4 Rocuronium versus succinylcholine with narcotic

Outcome: 1 Excellent versus other intubation outcomes

Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Propofol Induction					
Abdulatif 1996	6/24	15/24		1.0 %	0.40 [0.19, 0.85]
Chiu 1999	13/15	14/15		4.3 %	0.93 [0.73, 1.18]
Lam 2000	7/15	11/15		1.3 %	0.64 [0.34, 1.18]
Larsen 2005	52/102	67/107		4.3 %	0.81 [0.64, 1.04]
Latorre 1996	9/20	12/20		1.4 %	0.75 [0.41, 1.37]
Le Corre 1999	28/35	26/35		4.1 %	1.08 [0.83, 1.39]
Mitra 2001	18/20	20/20		5.3 %	0.90 [0.76, 1.07]
Naguib 1997	17/20	9/10		3.8 %	0.94 [0.72, 1.25]
Puhringer 1992	17/20	8/10		2.9 %	1.06 [0.74, 1.52]
Sluga 2005	50/90	69/90		4.6 %	0.72 [0.58, 0.90]
Vinik 1999	11/15	11/15		2.3 %	1.00 [0.65, 1.54]
Yorukoglu 2003	12/25	23/25		2.4 %	0.52 [0.34, 0.80]
Subtotal (95% CI)	**401**	**386**		**37.5 %**	**0.84 [0.74, 0.96]**
Total events: 240 (Rocuronium), 285 (Succinylcholine)					
Heterogeneity: $Tau^2 = 0.02$; $Chi^2 = 22.31$, df = 11 (P = 0.02); $I^2 = 51\%$					
Test for overall effect: Z = 2.56 (P = 0.011)					
2 Thiopental Induction					
Alanoglu 2006	29/30	29/29		6.3 %	0.97 [0.88, 1.06]
Cheng 2002	67/80	37/40		5.8 %	0.91 [0.79, 1.03]
Chung 2001	19/31	19/30		2.6 %	0.97 [0.65, 1.43]
Cooper 1992	30/40	39/40		5.0 %	0.77 [0.64, 0.93]
Dubois 1995	9/12	9/12		2.1 %	1.00 [0.63, 1.59]
Malik 2004	28/30	30/30		6.1 %	0.93 [0.83, 1.05]
Margorian 1993	25/30	8/10		3.0 %	1.04 [0.73, 1.48]
McCourt 1998	85/130	101/127		5.5 %	0.82 [0.71, 0.96]
Mencke 2006	16/76	42/74		2.0 %	0.37 [0.23, 0.60]



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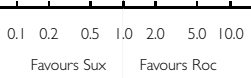
Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
Naguib 1994a	13/20	8/10		2.2 %	0.81 [0.52, 1.27]
Nelson 1997	18/20	22/22		5.3 %	0.90 [0.76, 1.07]
Patel 1995	11/15	7/7		2.9 %	0.77 [0.54, 1.09]
Stevens 1996	11/30	8/10		1.6 %	0.46 [0.26, 0.80]
Tang 1996	24/27	42/48		5.3 %	1.02 [0.86, 1.21]
Tryba 1994	48/60	16/20		4.1 %	1.00 [0.78, 1.29]
Weiss 1997	15/31	13/14		2.6 %	0.52 [0.35, 0.77]
Subtotal (95% CI)	**662**	**523**		**62.5 %**	**0.85 [0.77, 0.94]**
Total events: 448 (Rocuronium), 430 (Succinylcholine)					
Heterogeneity: $Tau^2 = 0.03$; $Chi^2 = 52.87$, df = 15 (P<0.00001); $I^2 = 72\%$					
Test for overall effect: Z = 3.13 (P = 0.0018)					
Total (95% CI)	**1063**	**909**		**100.0 %**	**0.85 [0.78, 0.92]**
Total events: 688 (Rocuronium), 715 (Succinylcholine)					
Heterogeneity: $Tau^2 = 0.02$; $Chi^2 = 77.75$, df = 27 (P<0.00001); $I^2 = 65\%$					
Test for overall effect: Z = 4.05 (P = 0.000051)					

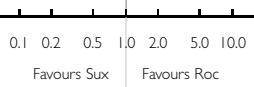


Review: Rocuronium versus succinylcholine for rapid sequence induction intubation

Comparison: 4 Rocuronium versus succinylcholine with narcotic

Outcome: 1 Excellent versus other intubation outcomes

Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Propofol Induction					
Abdulatif 1996	6/24	15/24		1.0 %	0.40 [0.19, 0.85]
Chiu 1999	13/15	14/15		4.3 %	0.93 [0.73, 1.18]
Lam 2000	7/15	11/15		1.3 %	0.64 [0.34, 1.18]
Larsen 2005	52/102	67/107		4.3 %	0.81 [0.64, 1.04]
Latorre 1996	9/20	12/20		1.4 %	0.75 [0.41, 1.37]
Le Corre 1999	28/35	26/35		4.1 %	1.08 [0.83, 1.39]
Mitra 2001	18/20	20/20		5.3 %	0.90 [0.76, 1.07]
Naguib 1997	17/20	9/10		3.8 %	0.94 [0.72, 1.25]
Puhringer 1992	17/20	8/10		2.9 %	1.06 [0.74, 1.52]
Sluga 2005	50/90	69/90		4.6 %	0.72 [0.58, 0.90]
Vinik 1999	11/15	11/15		2.3 %	1.00 [0.65, 1.54]
Yorukoglu 2003	12/25	23/25		2.4 %	0.52 [0.34, 0.80]
Subtotal (95% CI)	**401**	**386**		**37.5 %**	**0.84 [0.74, 0.96]**
Total events: 240 (Rocuronium), 285 (Succinylcholine)					
Heterogeneity: $Tau^2 = 0.02$; $Chi^2 = 22.31$, df = 11 (P = 0.02); $I^2 = 51\%$					
Test for overall effect: Z = 2.56 (P = 0.011)					

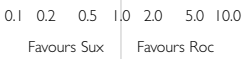


Review: Rocuronium versus succinylcholine for rapid sequence induction intubation

Comparison: 4 Rocuronium versus succinylcholine with narcotic

Outcome: 1 Excellent versus other intubation outcomes

Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
2 Thiopental Induction					
Alanoglu 2006	29/30	29/29		6.3 %	0.97 [0.88, 1.06]
Cheng 2002	67/80	37/40		5.8 %	0.91 [0.79, 1.03]
Chung 2001	19/31	19/30		2.6 %	0.97 [0.65, 1.43]
Cooper 1992	30/40	39/40		5.0 %	0.77 [0.64, 0.93]
Dubois 1995	9/12	9/12		2.1 %	1.00 [0.63, 1.59]
Malik 2004	28/30	30/30		6.1 %	0.93 [0.83, 1.05]
Margorian 1993	25/30	8/10		3.0 %	1.04 [0.73, 1.48]
McCourt 1998	85/130	101/127		5.5 %	0.82 [0.71, 0.96]
Mencke 2006	16/76	42/74		2.0 %	0.37 [0.23, 0.60]
Naguib 1994a	13/20	8/10		2.2 %	0.81 [0.52, 1.27]
Nelson 1997	18/20	22/22		5.3 %	0.90 [0.76, 1.07]
Patel 1995	11/15	7/7		2.9 %	0.77 [0.54, 1.09]
Stevens 1996	11/30	8/10		1.6 %	0.46 [0.26, 0.80]
Tang 1996	24/27	42/48		5.3 %	1.02 [0.86, 1.21]
Tryba 1994	48/60	16/20		4.1 %	1.00 [0.78, 1.29]
Weiss 1997	15/31	13/14		2.6 %	0.52 [0.35, 0.77]
Subtotal (95% CI)	**662**	**523**		**62.5 %**	**0.85 [0.77, 0.94]**
Total events: 448 (Rocuronium), 430 (Succinylcholine)					
Heterogeneity: $Tau^2 = 0.03$; $Chi^2 = 52.87$, df = 15 ($P<0.00001$); $I^2 = 72\%$					
Test for overall effect: Z = 3.13 (P = 0.0018)					



Analysis 4.2. Comparison 4 Rocuronium versus succinylcholine with narcotic, Outcome 2 Acceptable versus suboptimal intubation conditions.

Review: Rocuronium versus succinylcholine for rapid sequence induction intubation

Comparison: 4 Rocuronium versus succinylcholine with narcotic

Outcome: 2 Acceptable versus suboptimal intubation conditions

Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Propofol Induction					
Abdulatif 1996	17/24	24/24		2.1 %	0.71 [0.55, 0.93]
Chiu 1999	15/15	15/15		0.0 %	0.0 [0.0, 0.0]
Lam 2000	13/15	15/15		2.6 %	0.87 [0.69, 1.09]
Larsen 2005	98/102	100/107		9.0 %	1.03 [0.96, 1.10]
Latorre 1996	18/20	18/20		3.0 %	1.00 [0.81, 1.23]
Le Corre 1999	30/35	30/35		3.4 %	1.00 [0.83, 1.21]
Mitra 2001	20/20	20/20		0.0 %	0.0 [0.0, 0.0]
Naguib 1997	20/20	10/10		0.0 %	0.0 [0.0, 0.0]
Puhringer 1992	20/20	9/10		2.3 %	1.13 [0.89, 1.44]
Sluga 2005	78/90	83/90		6.8 %	0.94 [0.85, 1.04]
Vinik 1999	14/15	14/15		3.4 %	1.00 [0.83, 1.21]
Yorukoglu 2003	24/25	25/25		6.4 %	0.96 [0.86, 1.07]
Subtotal (95% CI)	**401**	**386**		**38.9 %**	**0.97 [0.92, 1.03]**
Total events: 367 (Rocuronium), 363 (Succinylcholine)					
Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 11.71$, df = 8 (P = 0.16); $I^2 = 32\%$					
Test for overall effect: Z = 0.91 (P = 0.36)					
2 Thiopental Induction					
Cheng 2002	75/80	40/40		8.7 %	0.94 [0.88, 1.01]
Chung 2001	29/31	27/30		4.6 %	1.04 [0.89, 1.21]
Cooper 1992	39/40	40/40		8.7 %	0.98 [0.91, 1.04]
Dubois 1995	12/12	11/12		2.7 %	1.09 [0.87, 1.36]
Malik 2004	30/30	30/30		0.0 %	0.0 [0.0, 0.0]
Margorian 1993	30/30	10/10		0.0 %	0.0 [0.0, 0.0]
McCourt 1998	125/130	123/127		10.0 %	0.99 [0.95, 1.04]
Mencke 2006	45/76	66/74		3.1 %	0.66 [0.54, 0.81]
Naguib 1994a	20/20	10/10		0.0 %	0.0 [0.0, 0.0]

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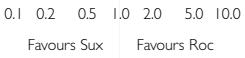
Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
Nelson 1997	20/20	22/22		0.0 %	0.0 [0.0, 0.0]
Patel 1995	14/15	7/7		2.4 %	0.97 [0.76, 1.23]
Stevens 1996	29/30	10/10		4.6 %	1.00 [0.86, 1.16]
Tang 1996	27/27	47/48		8.6 %	1.01 [0.94, 1.09]
Tryba 1994	53/60	20/20		6.1 %	0.90 [0.80, 1.01]
Weiss 1997	21/31	13/14		1.8 %	0.73 [0.55, 0.97]
Subtotal (95% CI)	**632**	**494**		**61.1 %**	**0.95 [0.89, 1.01]**
Total events: 569 (Rocuronium), 476 (Succinylcholine)					
Heterogeneity: Tau^2 = 0.01; Chi^2 = 37.40, df = 10 (P = 0.00005); I^2 =73%					
Test for overall effect: Z = 1.61 (P = 0.11)					
Total (95% CI)	**1033**	**880**		**100.0 %**	**0.96 [0.92, 1.00]**
Total events: 936 (Rocuronium), 839 (Succinylcholine)					
Heterogeneity: Tau^2 = 0.00; Chi^2 = 44.37, df = 19 (P = 0.00084); I^2 =57%					
Test for overall effect: Z = 1.91 (P = 0.056)					

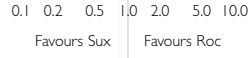


Review: Rocuronium versus succinylcholine for rapid sequence induction intubation

Comparison: 4 Rocuronium versus succinylcholine with narcotic

Outcome: 2 Acceptable versus suboptimal intubation conditions

Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Propofol Induction					
Abdulatif 1996	17/24	24/24		2.1 %	0.71 [0.55, 0.93]
Chiu 1999	15/15	15/15		0.0 %	0.0 [0.0, 0.0]
Lam 2000	13/15	15/15		2.6 %	0.87 [0.69, 1.09]
Larsen 2005	98/102	100/107		9.0 %	1.03 [0.96, 1.10]
Latorre 1996	18/20	18/20		3.0 %	1.00 [0.81, 1.23]
Le Corre 1999	30/35	30/35		3.4 %	1.00 [0.83, 1.21]
Mitra 2001	20/20	20/20		0.0 %	0.0 [0.0, 0.0]



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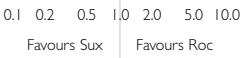
Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
Naguib 1997	20/20	10/10		0.0 %	0.0 [0.0, 0.0]
Puhringer 1992	20/20	9/10		2.3 %	1.13 [0.89, 1.44]
Sluga 2005	78/90	83/90		6.8 %	0.94 [0.85, 1.04]
Vinik 1999	14/15	14/15		3.4 %	1.00 [0.83, 1.21]
Yorukoglu 2003	24/25	25/25		6.4 %	0.96 [0.86, 1.07]
Subtotal (95% CI)	**401**	**386**		**38.9 %**	**0.97 [0.92, 1.03]**
Total events: 367 (Rocuronium), 363 (Succinylcholine)					
Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 11.71$, df = 8 (P = 0.16); $I^2 = 32\%$					
Test for overall effect: Z = 0.91 (P = 0.36)					



Review: Rocuronium versus succinylcholine for rapid sequence induction intubation

Comparison: 4 Rocuronium versus succinylcholine with narcotic

Outcome: 2 Acceptable versus suboptimal intubation conditions

Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
2 Thiopental Induction					
Cheng 2002	75/80	40/40		8.7 %	0.94 [0.88, 1.01]
Chung 2001	29/31	27/30		4.6 %	1.04 [0.89, 1.21]
Cooper 1992	39/40	40/40		8.7 %	0.98 [0.91, 1.04]
Dubois 1995	12/12	11/12		2.7 %	1.09 [0.87, 1.36]
Malik 2004	30/30	30/30		0.0 %	0.0 [0.0, 0.0]
Margorian 1993	30/30	10/10		0.0 %	0.0 [0.0, 0.0]
McCourt 1998	125/130	123/127		10.0 %	0.99 [0.95, 1.04]
Mencke 2006	45/76	66/74		3.1 %	0.66 [0.54, 0.81]
Naguib 1994a	20/20	10/10		0.0 %	0.0 [0.0, 0.0]
Nelson 1997	20/20	22/22		0.0 %	0.0 [0.0, 0.0]
Patel 1995	14/15	7/7		2.4 %	0.97 [0.76, 1.23]

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Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
Stevens 1996	29/30	10/10		4.6 %	1.00 [0.86, 1.16]
Tang 1996	27/27	47/48		8.6 %	1.01 [0.94, 1.09]
Tryba 1994	53/60	20/20		6.1 %	0.90 [0.80, 1.01]
Weiss 1997	21/31	13/14		1.8 %	0.73 [0.55, 0.97]
Subtotal (95% CI)	**632**	**494**		**61.1 %**	**0.95 [0.89, 1.01]**
Total events: 569 (Rocuronium), 476 (Succinylcholine)					
Heterogeneity: Tau^2 = 0.01; Chi^2 = 37.40, df = 10 (P = 0.00005); I^2 =73%					
Test for overall effect: Z = 1.61 (P = 0.11)					

Analysis 5.1. Comparison 5 Rocuronium versus succinylcholine without narcotic, Outcome 1 Excellent versus other intubation conditions.

Review: Rocuronium versus succinylcholine for rapid sequence induction intubation

Comparison: 5 Rocuronium versus succinylcholine without narcotic

Outcome: 1 Excellent versus other intubation conditions

Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Propofol Induction					
Andrews 1999	88/133	103/139		14.8 %	0.89 [0.76, 1.04]
Koroglu 2002	11/15	15/19		7.7 %	0.93 [0.63, 1.36]
Stoddart 1998	27/30	25/30		13.2 %	1.08 [0.88, 1.32]
Subtotal (95% CI)	**178**	**188**		**35.7 %**	**0.96 [0.84, 1.10]**
Total events: 126 (Rocuronium), 143 (Succinylcholine)					
Heterogeneity: Tau^2 = 0.00; Chi^2 = 2.42, df = 2 (P = 0.30); I^2 =17%					
Test for overall effect: Z = 0.58 (P = 0.56)					
2 Thiopental Induction					
Alanoglu 2006	28/30	25/30		13.7 %	1.12 [0.93, 1.35]
Alvarez Rios1997	18/20	19/20		14.0 %	0.95 [0.79, 1.13]
Koroglu 2002	10/15	13/16		6.7 %	0.82 [0.53, 1.26]
Mazurek 1998	7/13	10/13		4.3 %	0.70 [0.39, 1.26]

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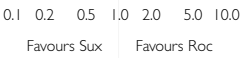
Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
Sparr 1996a	15/25	23/25		8.7 %	0.65 [0.46, 0.92]
Sparr 1996b	10/25	44/50		5.6 %	0.45 [0.28, 0.74]
Turan 1999	17/20	17/20		11.1 %	1.00 [0.77, 1.30]
Subtotal (95% CI)	**148**	**174**		**64.3 %**	**0.82 [0.65, 1.04]**
Total events: 105 (Rocuronium), 151 (Succinylcholine)					
Heterogeneity: Tau^2 = 0.07; Chi^2 = 25.59, df = 6 (P = 0.00026); I^2 =77%					
Test for overall effect: Z = 1.61 (P = 0.11)					
Total (95% CI)	**326**	**362**		**100.0 %**	**0.89 [0.78, 1.03]**
Total events: 231 (Rocuronium), 294 (Succinylcholine)					
Heterogeneity: Tau^2 = 0.03; Chi^2 = 24.38, df = 9 (P = 0.004); I^2 =63%					
Test for overall effect: Z = 1.61 (P = 0.11)					

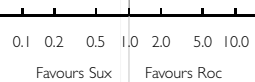


Review: Rocuronium versus succinylcholine for rapid sequence induction intubation

Comparison: 5 Rocuronium versus succinylcholine without narcotic

Outcome: 1 Excellent versus other intubation conditions

Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Propofol Induction					
Andrews 1999	88/133	103/139		14.8 %	0.89 [0.76, 1.04]
Koroglu 2002	11/15	15/19		7.7 %	0.93 [0.63, 1.36]
Stoddart 1998	27/30	25/30		13.2 %	1.08 [0.88, 1.32]
Subtotal (95% CI)	**178**	**188**		**35.7 %**	**0.96 [0.84, 1.10]**
Total events: 126 (Rocuronium), 143 (Succinylcholine)					
Heterogeneity: Tau^2 = 0.00; Chi^2 = 2.42, df = 2 (P = 0.30); I^2 =17%					
Test for overall effect: Z = 0.58 (P = 0.56)					

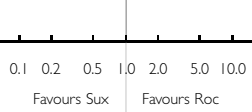


Review: Rocuronium versus succinylcholine for rapid sequence induction intubation

Comparison: 5 Rocuronium versus succinylcholine without narcotic

Outcome: 1 Excellent versus other intubation conditions

Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
2 Thiopental Induction					
Alanoglu 2006	28/30	25/30		13.7 %	1.12 [0.93, 1.35]
Alvarez Rios1997	18/20	19/20		14.0 %	0.95 [0.79, 1.13]
Koroglu 2002	10/15	13/16		6.7 %	0.82 [0.53, 1.26]
Mazurek 1998	7/13	10/13		4.3 %	0.70 [0.39, 1.26]
Sparr 1996a	15/25	23/25		8.7 %	0.65 [0.46, 0.92]
Sparr 1996b	10/25	44/50		5.6 %	0.45 [0.28, 0.74]
Turan 1999	17/20	17/20		11.1 %	1.00 [0.77, 1.30]
Subtotal (95% CI)	**148**	**174**		**64.3 %**	**0.82 [0.65, 1.04]**
Total events: 105 (Rocuronium), 151 (Succinylcholine)					
Heterogeneity: $Tau^2 = 0.07$; $Chi^2 = 25.59$, df = 6 (P = 0.00026); $I^2 = 77\%$					
Test for overall effect: Z = 1.61 (P = 0.11)					



Analysis 5.2. Comparison 5 Rocuronium versus succinylcholine without narcotic, Outcome 2 Acceptable versus suboptimal intubation conditions.

Review: Rocuronium versus succinylcholine for rapid sequence induction intubation

Comparison: 5 Rocuronium versus succinylcholine without narcotic

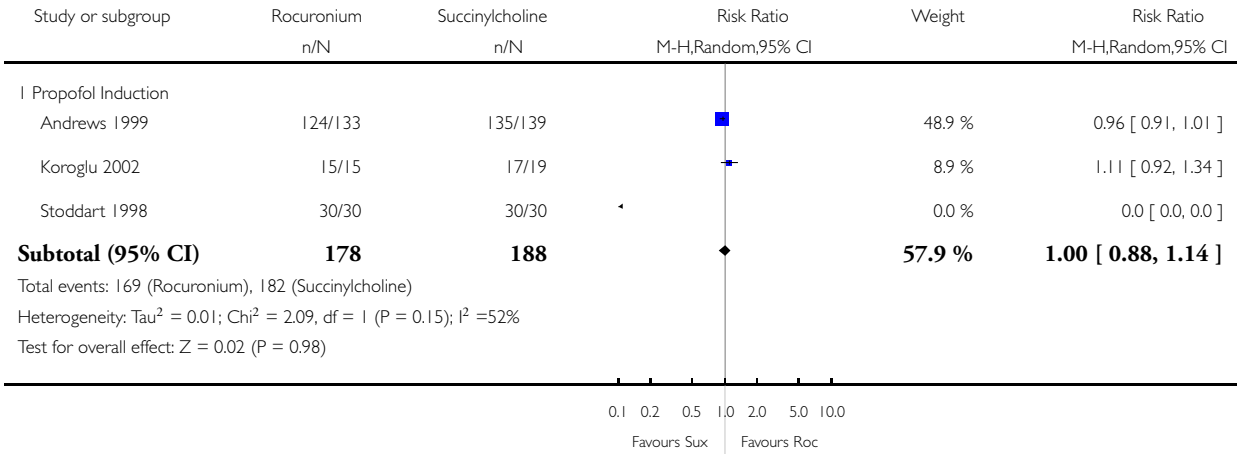
Outcome: 2 Acceptable versus suboptimal intubation conditions

Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Propofol Induction					
Andrews 1999	124/133	135/139		48.9 %	0.96 [0.91, 1.01]
Koroglu 2002	15/15	17/19		8.9 %	1.11 [0.92, 1.34]
Stoddart 1998	30/30	30/30		0.0 %	0.0 [0.0, 0.0]
Subtotal (95% CI)	**178**	**188**		**57.9 %**	**1.00 [0.88, 1.14]**
Total events: 169 (Rocuronium), 182 (Succinylcholine)					
Heterogeneity: $Tau^2 = 0.01$; $Chi^2 = 2.09$, df = 1 (P = 0.15); $I^2 = 52\%$					
Test for overall effect: Z = 0.02 (P = 0.98)					
2 Thiopental Induction					
Alvarez Rios1997	20/20	20/20		0.0 %	0.0 [0.0, 0.0]
Koroglu 2002	13/15	15/16		5.9 %	0.92 [0.73, 1.17]
Mazurek 1998	12/13	12/13		6.6 %	1.00 [0.80, 1.25]
Sparr 1996a	24/25	25/25		21.7 %	0.96 [0.86, 1.07]
Sparr 1996b	20/25	50/50		7.9 %	0.80 [0.65, 0.97]
Turan 1999	20/20	20/20		0.0 %	0.0 [0.0, 0.0]
Subtotal (95% CI)	**118**	**144**		**42.1 %**	**0.93 [0.84, 1.02]**
Total events: 109 (Rocuronium), 142 (Succinylcholine)					
Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 3.95$, df = 3 (P = 0.27); $I^2 = 24\%$					
Test for overall effect: Z = 1.49 (P = 0.14)					
Total (95% CI)	**296**	**332**		**100.0 %**	**0.96 [0.90, 1.02]**
Total events: 278 (Rocuronium), 324 (Succinylcholine)					
Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 6.17$, df = 5 (P = 0.29); $I^2 = 19\%$					
Test for overall effect: Z = 1.39 (P = 0.16)					

Review: Rocuronium versus succinylcholine for rapid sequence induction intubation

Comparison: 5 Rocuronium versus succinylcholine without narcotic

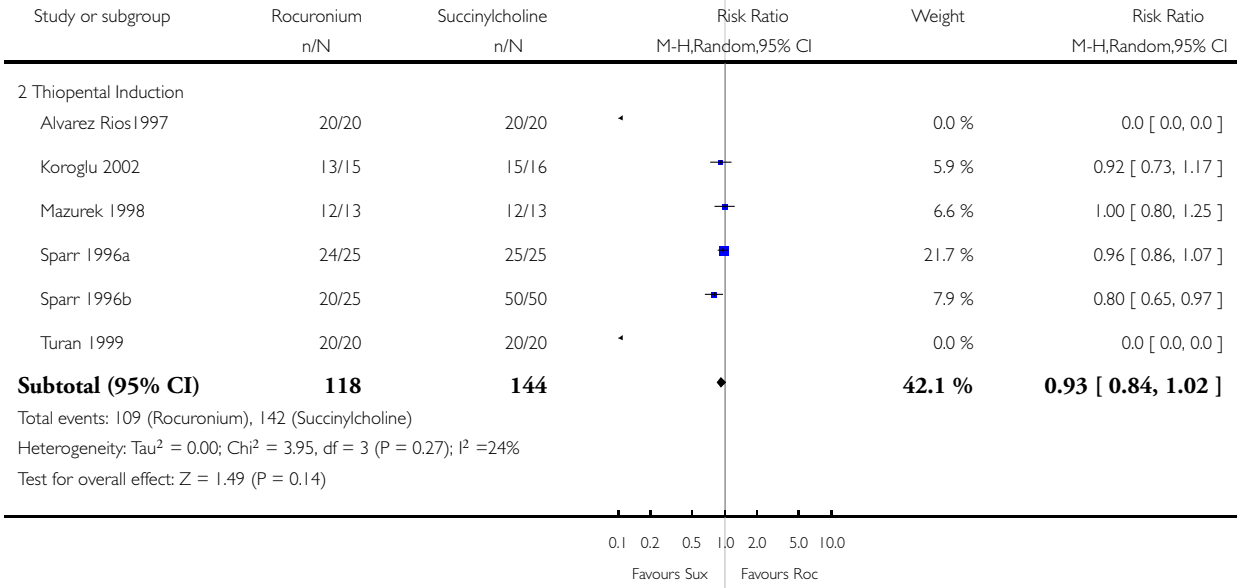
Outcome: 2 Acceptable versus suboptimal intubation conditions



Review: Rocuronium versus succinylcholine for rapid sequence induction intubation

Comparison: 5 Rocuronium versus succinylcholine without narcotic

Outcome: 2 Acceptable versus suboptimal intubation conditions



Analysis 6.1. Comparison 6 Comparison of children and adults, Outcome 1 Excellent versus other intubation conditions.

Review: Rocuronium versus succinylcholine for rapid sequence induction intubation

Comparison: 6 Comparison of children and adults

Outcome: 1 Excellent versus other intubation conditions

Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Adults					
Abdulatif 1996	6/24	15/24		0.8 %	0.40 [0.19, 0.85]
Alanoglu 2006	57/60	54/59		4.7 %	1.04 [0.94, 1.14]
Alvarez Rios1997	18/20	19/20		3.9 %	0.95 [0.79, 1.13]
Andrews 1999	88/133	103/139		4.1 %	0.89 [0.76, 1.04]
Chiu 1999	13/15	14/15		3.3 %	0.93 [0.73, 1.18]
Chung 2001	19/31	19/30		2.0 %	0.97 [0.65, 1.43]
Cooper 1992	30/40	39/40		3.8 %	0.77 [0.64, 0.93]
Dubois 1995	9/12	9/12		1.6 %	1.00 [0.63, 1.59]
Giudice 1998	13/20	6/10		1.1 %	1.08 [0.59, 1.97]
Koroglu 2002	21/30	28/35		2.8 %	0.88 [0.66, 1.17]
Lam 2000	7/15	11/15		1.1 %	0.64 [0.34, 1.18]
Larsen 2005	52/107	67/102		3.3 %	0.74 [0.58, 0.94]
Latorre 1996	9/20	12/20		1.1 %	0.75 [0.41, 1.37]
Le Corre 1999	28/35	26/35		3.1 %	1.08 [0.83, 1.39]
Malik 2004	28/30	30/30		4.6 %	0.93 [0.83, 1.05]
Margorian 1993	25/30	8/10		2.3 %	1.04 [0.73, 1.48]
McCourt 1998	85/130	101/127		4.2 %	0.82 [0.71, 0.96]
Mencke 2006	16/76	42/74		1.6 %	0.37 [0.23, 0.60]
Mitra 2001	18/20	20/20		4.0 %	0.90 [0.76, 1.07]
Naguib 1994a	13/20	8/10		1.7 %	0.81 [0.52, 1.27]
Nelson 1997	18/20	22/22		4.0 %	0.90 [0.76, 1.07]
Patel 1995	11/15	7/7		2.3 %	0.77 [0.54, 1.09]
Puhringer 1992	17/20	8/10		2.2 %	1.06 [0.74, 1.52]

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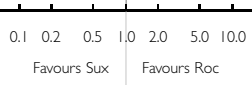
Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
Sluga 2005	50/90	69/90		3.5 %	0.72 [0.58, 0.90]
Sparr 1996a	15/25	23/25		2.4 %	0.65 [0.46, 0.92]
Sparr 1996b	10/25	44/50		1.5 %	0.45 [0.28, 0.74]
Stevens 1996	11/30	8/10		1.2 %	0.46 [0.26, 0.80]
Tang 1996	24/27	42/48		4.0 %	1.02 [0.86, 1.21]
Tryba 1994	48/60	16/20		3.1 %	1.00 [0.78, 1.29]
Turan 1999	17/20	17/20		3.1 %	1.00 [0.77, 1.30]
Vinik 1999	11/15	11/15		1.8 %	1.00 [0.65, 1.54]
Weiss 1997	15/31	13/14		2.0 %	0.52 [0.35, 0.77]
Yorukoglu 2003	12/25	23/25		1.8 %	0.52 [0.34, 0.80]
Subtotal (95% CI)	**1271**	**1183**		**87.9 %**	**0.84 [0.77, 0.91]**
Total events: 814 (Rocuronium), 934 (Succinylcholine)					
Heterogeneity: $Tau^2 = 0.03$; $Chi^2 = 100.05$, df = 32 (P<0.00001); $I^2 = 68\%$					
Test for overall effect: Z = 4.35 (P = 0.000013)					
2 Children					
Cheng 2002	67/80	37/40		4.4 %	0.91 [0.79, 1.03]
Mazurek 1998	7/13	10/13		1.2 %	0.70 [0.39, 1.26]
Naguib 1997	17/20	9/10		2.9 %	0.94 [0.72, 1.25]
Stoddart 1998	27/30	25/30		3.7 %	1.08 [0.88, 1.32]
Subtotal (95% CI)	**143**	**93**		**12.1 %**	**0.95 [0.85, 1.05]**
Total events: 118 (Rocuronium), 81 (Succinylcholine)					
Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 3.19$, df = 3 (P = 0.36); $I^2 = 6\%$					
Test for overall effect: Z = 1.01 (P = 0.31)					
Total (95% CI)	**1414**	**1276**		**100.0 %**	**0.85 [0.79, 0.92]**
Total events: 932 (Rocuronium), 1015 (Succinylcholine)					
Heterogeneity: $Tau^2 = 0.03$; $Chi^2 = 104.42$, df = 36 (P<0.00001); $I^2 = 66\%$					
Test for overall effect: Z = 4.39 (P = 0.000011)					

Review: Rocuronium versus succinylcholine for rapid sequence induction intubation

Comparison: 6 Comparison of children and adults

Outcome: 1 Excellent versus other intubation conditions

Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Adults					
Abdulatif 1996	6/24	15/24		0.8 %	0.40 [0.19, 0.85]
Alanoglu 2006	57/60	54/59		4.7 %	1.04 [0.94, 1.14]
Alvarez Rios1997	18/20	19/20		3.9 %	0.95 [0.79, 1.13]
Andrews 1999	88/133	103/139		4.1 %	0.89 [0.76, 1.04]
Chiu 1999	13/15	14/15		3.3 %	0.93 [0.73, 1.18]
Chung 2001	19/31	19/30		2.0 %	0.97 [0.65, 1.43]
Cooper 1992	30/40	39/40		3.8 %	0.77 [0.64, 0.93]
Dubois 1995	9/12	9/12		1.6 %	1.00 [0.63, 1.59]
Giudice 1998	13/20	6/10		1.1 %	1.08 [0.59, 1.97]
Koroglu 2002	21/30	28/35		2.8 %	0.88 [0.66, 1.17]
Lam 2000	7/15	11/15		1.1 %	0.64 [0.34, 1.18]
Larsen 2005	52/107	67/102		3.3 %	0.74 [0.58, 0.94]
Latorre 1996	9/20	12/20		1.1 %	0.75 [0.41, 1.37]
Le Corre 1999	28/35	26/35		3.1 %	1.08 [0.83, 1.39]
Malik 2004	28/30	30/30		4.6 %	0.93 [0.83, 1.05]
Margorian 1993	25/30	8/10		2.3 %	1.04 [0.73, 1.48]
McCourt 1998	85/130	101/127		4.2 %	0.82 [0.71, 0.96]
Mencke 2006	16/76	42/74		1.6 %	0.37 [0.23, 0.60]
Mitra 2001	18/20	20/20		4.0 %	0.90 [0.76, 1.07]
Naguib 1994a	13/20	8/10		1.7 %	0.81 [0.52, 1.27]
Nelson 1997	18/20	22/22		4.0 %	0.90 [0.76, 1.07]
Patel 1995	11/15	7/7		2.3 %	0.77 [0.54, 1.09]
Puhringer 1992	17/20	8/10		2.2 %	1.06 [0.74, 1.52]
Sluga 2005	50/90	69/90		3.5 %	0.72 [0.58, 0.90]
Sparr 1996a	15/25	23/25		2.4 %	0.65 [0.46, 0.92]



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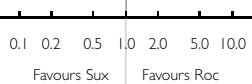
Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
Sparr 1996b	10/25	44/50		1.5 %	0.45 [0.28, 0.74]
Stevens 1996	11/30	8/10		1.2 %	0.46 [0.26, 0.80]
Tang 1996	24/27	42/48		4.0 %	1.02 [0.86, 1.21]
Tryba 1994	48/60	16/20		3.1 %	1.00 [0.78, 1.29]
Turan 1999	17/20	17/20		3.1 %	1.00 [0.77, 1.30]
Vinik 1999	11/15	11/15		1.8 %	1.00 [0.65, 1.54]
Weiss 1997	15/31	13/14		2.0 %	0.52 [0.35, 0.77]
Yorukoglu 2003	12/25	23/25		1.8 %	0.52 [0.34, 0.80]
Subtotal (95% CI)	**1271**	**1183**		**87.9 %**	**0.84 [0.77, 0.91]**
Total events: 814 (Rocuronium), 934 (Succinylcholine)					
Heterogeneity: $Tau^2 = 0.03$; $Chi^2 = 100.05$, df = 32 (P<0.00001); $I^2 = 68\%$					
Test for overall effect: Z = 4.35 (P = 0.000013)					

Review: Rocuronium versus succinylcholine for rapid sequence induction intubation

Comparison: 6 Comparison of children and adults

Outcome: 1 Excellent versus other intubation conditions

Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
2 Children					
Cheng 2002	67/80	37/40		4.4 %	0.91 [0.79, 1.03]
Mazurek 1998	7/13	10/13		1.2 %	0.70 [0.39, 1.26]
Naguib 1997	17/20	9/10		2.9 %	0.94 [0.72, 1.25]
Stoddart 1998	27/30	25/30		3.7 %	1.08 [0.88, 1.32]
Subtotal (95% CI)	**143**	**93**		**12.1 %**	**0.95 [0.85, 1.05]**
Total events: 118 (Rocuronium), 81 (Succinylcholine)					
Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 3.19$, df = 3 (P = 0.36); $I^2 = 6\%$					
Test for overall effect: Z = 1.01 (P = 0.31)					



Analysis 6.2. Comparison 6 Comparison of children and adults, Outcome 2 Acceptable versus suboptimal intubation conditions.

Review: Rocuronium versus succinylcholine for rapid sequence induction intubation

Comparison: 6 Comparison of children and adults

Outcome: 2 Acceptable versus suboptimal intubation conditions

Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Adults					
Abdulatif 1996	17/24	24/24		1.4 %	0.71 [0.55, 0.93]
Alvarez Rios1997	20/20	20/20		0.0 %	0.0 [0.0, 0.0]
Andrews 1999	124/133	135/139		8.2 %	0.96 [0.91, 1.01]
Chiu 1999	15/15	15/15		0.0 %	0.0 [0.0, 0.0]
Chung 2001	29/31	27/30		3.4 %	1.04 [0.89, 1.21]
Cooper 1992	39/40	40/40		7.3 %	0.98 [0.91, 1.04]
Dubois 1995	12/12	11/12		1.9 %	1.09 [0.87, 1.36]
Giudice 1998	20/20	10/10		0.0 %	0.0 [0.0, 0.0]
Koroglu 2002	28/30	32/35		3.8 %	1.02 [0.89, 1.17]
Lam 2000	13/15	15/15		1.8 %	0.87 [0.69, 1.09]
Larsen 2005	98/102	100/107		7.6 %	1.03 [0.96, 1.10]
Latorre 1996	18/20	18/20		2.2 %	1.00 [0.81, 1.23]
Le Corre 1999	30/35	30/35		2.4 %	1.00 [0.83, 1.21]
Malik 2004	30/30	30/30		0.0 %	0.0 [0.0, 0.0]
Margorian 1993	30/30	10/10		0.0 %	0.0 [0.0, 0.0]
McCourt 1998	125/130	123/127		8.6 %	0.99 [0.95, 1.04]
Mencke 2006	45/76	66/74		2.2 %	0.66 [0.54, 0.81]
Mitra 2001	20/20	20/20		0.0 %	0.0 [0.0, 0.0]
Naguib 1994a	20/20	10/10		0.0 %	0.0 [0.0, 0.0]
Nelson 1997	20/20	22/22		0.0 %	0.0 [0.0, 0.0]
Patel 1995	14/15	7/7		1.7 %	0.97 [0.76, 1.23]
Puhringer 1992	20/20	9/10		1.6 %	1.13 [0.89, 1.44]
Sluga 2005	78/90	83/90		5.4 %	0.94 [0.85, 1.04]
Sparr 1996a	24/25	25/25		5.0 %	0.96 [0.86, 1.07]

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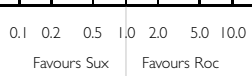
Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
Sparr 1996b	20/25	50/50		2.3 %	0.80 [0.65, 0.97]
Stevens 1996	29/30	10/10		3.4 %	1.00 [0.86, 1.16]
Tang 1996	27/27	47/48		7.1 %	1.01 [0.94, 1.09]
Tryba 1994	53/60	20/20		4.7 %	0.90 [0.80, 1.01]
Turan 1999	20/20	20/20		0.0 %	0.0 [0.0, 0.0]
Vinik 1999	14/15	14/15		2.4 %	1.00 [0.83, 1.21]
Weiss 1997	21/31	13/14		1.3 %	0.73 [0.55, 0.97]
Yorukoglu 2003	24/25	25/25		5.0 %	0.96 [0.86, 1.07]
Subtotal (95% CI)	**1206**	**1129**		**90.8 %**	**0.96 [0.92, 1.00]**
Total events: 1097 (Rocuronium), 1081 (Succinylcholine)					
Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 48.84$, df = 22 (P = 0.00084); $I^2 = 55\%$					
Test for overall effect: Z = 2.13 (P = 0.034)					
2 Children					
Cheng 2002	75/80	40/40		7.3 %	0.94 [0.88, 1.01]
Mazurek 1998	12/13	12/13		1.9 %	1.00 [0.80, 1.25]
Naguib 1997	20/20	10/10		0.0 %	0.0 [0.0, 0.0]
Stoddart 1998	30/30	30/30		0.0 %	0.0 [0.0, 0.0]
Subtotal (95% CI)	**143**	**93**		**9.2 %**	**0.95 [0.89, 1.01]**
Total events: 137 (Rocuronium), 92 (Succinylcholine)					
Heterogeneity: $Tau^2 = 0.0$; $Chi^2 = 0.27$, df = 1 (P = 0.60); $I^2 = 0.0\%$					
Test for overall effect: Z = 1.60 (P = 0.11)					
Total (95% CI)	**1349**	**1222**		**100.0 %**	**0.96 [0.93, 0.99]**
Total events: 1234 (Rocuronium), 1173 (Succinylcholine)					
Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 48.64$, df = 24 (P = 0.002); $I^2 = 51\%$					
Test for overall effect: Z = 2.30 (P = 0.021)					

Review: Rocuronium versus succinylcholine for rapid sequence induction intubation

Comparison: 6 Comparison of children and adults

Outcome: 2 Acceptable versus suboptimal intubation conditions

Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Adults					
Abdulatif 1996	17/24	24/24		1.4 %	0.71 [0.55, 0.93]
Alvarez Rios1997	20/20	20/20		0.0 %	0.0 [0.0, 0.0]
Andrews 1999	124/133	135/139		8.2 %	0.96 [0.91, 1.01]
Chiu 1999	15/15	15/15		0.0 %	0.0 [0.0, 0.0]
Chung 2001	29/31	27/30		3.4 %	1.04 [0.89, 1.21]
Cooper 1992	39/40	40/40		7.3 %	0.98 [0.91, 1.04]
Dubois 1995	12/12	11/12		1.9 %	1.09 [0.87, 1.36]
Giudice 1998	20/20	10/10		0.0 %	0.0 [0.0, 0.0]
Koroglu 2002	28/30	32/35		3.8 %	1.02 [0.89, 1.17]
Lam 2000	13/15	15/15		1.8 %	0.87 [0.69, 1.09]
Larsen 2005	98/102	100/107		7.6 %	1.03 [0.96, 1.10]
Latorre 1996	18/20	18/20		2.2 %	1.00 [0.81, 1.23]
Le Corre 1999	30/35	30/35		2.4 %	1.00 [0.83, 1.21]
Malik 2004	30/30	30/30		0.0 %	0.0 [0.0, 0.0]
Margorian 1993	30/30	10/10		0.0 %	0.0 [0.0, 0.0]
McCourt 1998	125/130	123/127		8.6 %	0.99 [0.95, 1.04]
Mencke 2006	45/76	66/74		2.2 %	0.66 [0.54, 0.81]
Mitra 2001	20/20	20/20		0.0 %	0.0 [0.0, 0.0]
Naguib 1994a	20/20	10/10		0.0 %	0.0 [0.0, 0.0]
Nelson 1997	20/20	22/22		0.0 %	0.0 [0.0, 0.0]
Patel 1995	14/15	7/7		1.7 %	0.97 [0.76, 1.23]
Puhringer 1992	20/20	9/10		1.6 %	1.13 [0.89, 1.44]
Sluga 2005	78/90	83/90		5.4 %	0.94 [0.85, 1.04]
Sparr 1996a	24/25	25/25		5.0 %	0.96 [0.86, 1.07]
Sparr 1996b	20/25	50/50		2.3 %	0.80 [0.65, 0.97]



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Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
Stevens 1996	29/30	10/10		3.4 %	1.00 [0.86, 1.16]
Tang 1996	27/27	47/48		7.1 %	1.01 [0.94, 1.09]
Tryba 1994	53/60	20/20		4.7 %	0.90 [0.80, 1.01]
Turan 1999	20/20	20/20		0.0 %	0.0 [0.0, 0.0]
Vinik 1999	14/15	14/15		2.4 %	1.00 [0.83, 1.21]
Weiss 1997	21/31	13/14		1.3 %	0.73 [0.55, 0.97]
Yorukoglu 2003	24/25	25/25		5.0 %	0.96 [0.86, 1.07]
Subtotal (95% CI)	**1206**	**1129**		**90.8 %**	**0.96 [0.92, 1.00]**

Total events: 1097 (Rocuronium), 1081 (Succinylcholine)

Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 48.84$, df = 22 (P = 0.00084); $I^2 = 55\%$

Test for overall effect: Z = 2.13 (P = 0.034)

0.1 0.2 0.5 1.0 2.0 5.0 10.0

Favours Sux Favours Roc

Review: Rocuronium versus succinylcholine for rapid sequence induction intubation

Comparison: 6 Comparison of children and adults

Outcome: 2 Acceptable versus suboptimal intubation conditions

Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
2 Children					
Cheng 2002	75/80	40/40		7.3 %	0.94 [0.88, 1.01]
Mazurek 1998	12/13	12/13		1.9 %	1.00 [0.80, 1.25]
Naguib 1997	20/20	10/10		0.0 %	0.0 [0.0, 0.0]
Stoddart 1998	30/30	30/30		0.0 %	0.0 [0.0, 0.0]
Subtotal (95% CI)	**143**	**93**		**9.2 %**	**0.95 [0.89, 1.01]**

Total events: 137 (Rocuronium), 92 (Succinylcholine)

Heterogeneity: $Tau^2 = 0.0$; $Chi^2 = 0.27$, df = 1 (P = 0.60); $I^2 = 0.0\%$

Test for overall effect: Z = 1.60 (P = 0.11)

0.1 0.2 0.5 1.0 2.0 5.0 10.0

Favours Sux Favours Roc

Analysis 7.1. Comparison 7 Rocuronium versus succinylcholine in emergency intubation, Outcome 1 Excellent versus other intubation conditions.

Review: Rocuronium versus succinylcholine for rapid sequence induction intubation

Comparison: 7 Rocuronium versus succinylcholine in emergency intubation

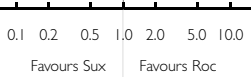
Outcome: 1 Excellent versus other intubation conditions

Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
Larsen 2005	52/102	67/107		20.6 %	0.81 [0.64, 1.04]
Mazurek 1998	7/13	10/13		3.5 %	0.70 [0.39, 1.26]
McCourt 1998	85/130	101/127		50.7 %	0.82 [0.71, 0.96]
Sluga 2005	50/90	69/90		25.2 %	0.72 [0.58, 0.90]
Total (95% CI)	**335**	**337**		**100.0 %**	**0.79 [0.71, 0.88]**

Total events: 194 (Rocuronium), 247 (Succinylcholine)

Heterogeneity: $Tau^2 = 0.0$; $Chi^2 = 1.10$, df = 3 (P = 0.78); $I^2 = 0.0\%$

Test for overall effect: Z = 4.23 (P = 0.000023)



Analysis 7.2. Comparison 7 Rocuronium versus succinylcholine in emergency intubation, Outcome 2 Acceptable versus suboptimal intubation conditions.

Review: Rocuronium versus succinylcholine for rapid sequence induction intubation

Comparison: 7 Rocuronium versus succinylcholine in emergency intubation

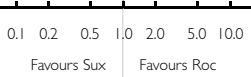
Outcome: 2 Acceptable versus suboptimal intubation conditions

Study or subgroup	Rocuronium n/N	Succinylcholine n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
Larsen 2005	98/102	100/107		29.8 %	1.03 [0.96, 1.10]
Mazurek 1998	12/13	12/13		2.5 %	1.00 [0.80, 1.25]
McCourt 1998	125/130	123/127		55.8 %	0.99 [0.95, 1.04]
Sluga 2005	78/90	83/90		11.9 %	0.94 [0.85, 1.04]
Total (95% CI)	**335**	**337**		**100.0 %**	**1.00 [0.96, 1.03]**

Total events: 313 (Rocuronium), 318 (Succinylcholine)

Heterogeneity: $Tau^2 = 0.0$; $Chi^2 = 2.39$, df = 3 (P = 0.49); $I^2 = 0.0\%$

Test for overall effect: Z = 0.18 (P = 0.86)



APPENDICES

Appendix 1. MEDLINE (via OVID) (1950 to week 3 2007 (June))

Search terms
#1 succinylcholine/
#2 succinylcholine.tw
#3 suxamethonium.tw
#4 succinyldicholine.tw
#5 anectine.tw
#6 quelicin.tw
#7 sucostrin.tw
#8 celocurine.tw
#9 deliclin.tw
#10 listenon.tw
#11 lysthenon.tw
#12 myorelaxin.tw
#13 succicuran.tw
#14 or/1-13
#15 rocuronium.tw
#16 zemuron.tw
#17 org 9426.tw
#18 or/15-17
#19 neuromuscular blocker/
#20 neuromuscular block$.tw
#21 rapid sequence induction.tw
#22 rsi.tw
#23 intubat$.tw
#24 anesthesia/
#25 anesthesia.tw
#26 or/19-25
#27 randomized controlled trials/
#28 randomized controlled trial.pt
#29 random allocation/
#30 double blind method/
#31 single blind method/
#32 exp clinical trials/
#33 clinical trial.pt
#34 or/27-33
#35 (clinic$ adj trial$1).tw
#36 ((singl$ or doubl$ or treb$ or trip$) adj (blind$3 or mask$3).tw
#37 placebos/
#38 placebo.tw
#39 randomly allocated.tw
#40 (allocat$ adj random$).tw
#41 or/35-40

(*Continued*)

#42 case report.tw
#43 letter.pt
#44 historical article.pt
#45 or/42-44
#46 #34 or #41
#47 #46 not #45
#48 #14 and #18 and #26 and #47

Appendix 2. EMBASE (via OVID) (1980 to 2007 week 26 (June))

Search terms

#1 succinylcholine/
#2 succinylcholine.tw
#3 suxamethonium.tw
#4 succinyldicholine.tw
#5 anectine.tw
#6 quelicin.tw
#7 sucostrin.tw
#8 suxamethonium iodide/
#9 celocurine.tw
#10 deliclin.tw
#11 listenon.tw
#12 lysthenon.tw
#13 myorelaxin.tw
#14 succicuran.tw
#15 or/1-14
#16 rocuronium/
#17 rocuronium.tw
#18 zemuron.tw
#19 org 9426.tw
#20 or/16-19
#21 neuromuscular blocking agent/
#22 neuromuscular block$.tw
#23 general anesthesia/
#24 intubation/
#25 endotracheal intubation/
#26 intubation.tw
#27 (intubation adj endotracheal).tw
#28 rapid sequence induction.tw
#29 rsi.tw
#30 or/21-29
#31 #15 and #20 and #30

(*Continued*)

#32 randomized controlled trial/
#33 clinical trial/
#34 randomization/
#35 single blind procedure/
#36 double blind procedure/
#37 crossover procedure/
#38 placebo/
#39 randomi?ed contorlled trial$.tw
#40 rct.tw
#41 (allocated adj2 random).tw
#42 single blind$.tw
#43 double blind$.tw
#44 ((treble or triple) adj blind$).tw
#45 placebo$.tw
#46 prospective study/
#47 or/32-46
#48 #31 and #47

WHAT'S NEW

Last assessed as up-to-date: 20 August 2007.

20 August 2007	New citation required and conclusions have changed	Substantive amendment. We reran our searches until June 2007. We found 18 new studies and included 11. The conclusions changed.
19 August 2007	New search has been performed	The review is substantially updated

HISTORY

Protocol first published: Issue 4, 2000

Review first published: Issue 1, 2003

CONTRIBUTIONS OF AUTHORS

Conceiving the review: Jeffrey J Perry (JJP)

Co-ordinating the review: JJP

Undertaking manual searches: JJP, Victoria Sillberg (VS)

Screening search results: JJP, Jaques Lee (JL), VS

Organizing retrieval of papers: JJP, VS

Screening retrieved papers against inclusion criteria: JJP, JL, VS

Appraising quality of papers: JJP, JL, VS

Abstracting data from papers: JJP, JL, VS

Data management for the review: JJP

Entering data into Review Manager: JJP, VS

Analysis of Data: JJP, JL, VS, George Wells (GW)

Interpretation of data: JJP, VS, GW

Statistical analysis: JJP, GW

Writing the review: JJP, JL, VS, GW

Securing funding for the review: JJP

Guarantor for the review (one author): JJP

Responsible for reading and checking review before submission: JJP

DECLARATIONS OF INTEREST

None known

SOURCES OF SUPPORT

Internal sources

- No sources of support supplied

External sources

- Canadian Association of Emergency Physicians, Canada.