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| Bogie 2007 | 46 patients, aged 2-17 years with moderate/severe asthma, failed standard acute asthma treatment with nebulisers and required admission to PICU.  
2 groups: IV terbutaline group (n=25) loading dose of 10mcg/kg/min 10-20mins then infusion at 1-4mcg/kg/min depending on response; placebo group (n=21)  
Outcomes: Primary Outcome - improvement in modified clinical asthma severity score (CASS) at any point.  
Secondary Outcomes - hours on continuous nebulised albuterol, duration of stay in the pediatric intensive care unit. | Clinical Severity Score: No significant difference observed. Mean improvement in CASS over 24 hours 6.5 points terbutaline compared with 4.8 points in the placebo group (95% CI, 0.2 – 3.5) (P=0.073)  
Lung Function: Not assessed  
Admission to PICU: N/A  
PICU length of stay; terbutaline 43.9 and placebo 56.85 hours respectively (P = 0.345; SD, 24.75 and 55.88)  
Adverse Effects: one patient receiving IV terbutaline developed a significant cardiac arrhythmia and was withdrawn from the study, 6 patients from the terbutaline group had elevated Troponin I values at 12 or 24 hours. | Risk of Bias: Low  
-RQ: L  
-AC: L  
-B: L  
-MD: L  
-SOR: L  
Precision: The CASS was a modified version of the Pulmonary Index score which has been correlated with measures of pulmonary function using spirometry.  
Sample Size: Did not recruit enough participants to meet calculated power requirement  
Adverse Effects: Some attempt to assess pre-specified adverse effects in a systematic way |
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| Browne 1997 | 29 patients with severe asthma, 1-12 years attending AED. | 2 groups; IV salbutamol 15 mcg/kg over 10 minutes (n=15); Placebo (n=14) | Outcomes: Primary Outcomes - Mean recovery time (time to no longer needing nebulised salbutamol of a given frequency); the odds of patients having moderate to severe asthma 2 h after randomisation (based on clinical severity score). Secondary Outcomes - odds of patients experiencing salbutamol-related side effects; mean respiratory rate, pulse rate, plasma potassium and glucose. | Risk of Bias: Low  
-RQ: L  
-AC: L  
-B: L  
-MD: L  
-SOR: L  
Precision: Clinical severity score based on descriptive table published in National Asthma Guideline. Not clear if systematically validated.  
Sample Size: Calculations completed but the study was terminated when an independent assessor calculated significant differences between the groups  
Adverse Effects: Some attempt to assess adverse effects in a systematic way |
|        |             |                              | Clinical severity score: At 2h; 5 (36%) of 14 patients in the IV salbutamol group had persistent moderate to severe asthma compared with 14 (93%) of 15 control patients (p<0.002).  
Lung function: Not reported  
Admission to PICU: not reported  
Time to discharge: Patients in the IV salbutamol group were discharged from the ED 9.7 h earlier than controls (p<0.05)  
Adverse Effects: Differences in side-effects were not statistically or clinically significant except higher proportion of tremor at 2 h in the IV salbutamol group (p<0.02). |
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| Browne 2002 | 55 patients, 1-14 yrs, attending ED with severe acute asthma 3 groups - single 15mcg/kg bolus of IV salbutamol + saline nebs (n=21, Group IS), IV saline and nebulised ipratropium bromide 250mcg/20 mins (n=19, Group IB), IV salbutamol and nebulised ipratropium (n=15, Group IS+IB) | Clinical Severity Scores: Results at 2 hours not published.  
Lung Function: Not assessed  
PICU Admission: Not recorded  
Time to discharge: Children in group IS were ready for discharge from the hospital 28.0 hrs earlier than those children in group IB (48.3 hrs vs. 76.3 hrs, p = .005). There were no other significant differences between groups  
Adverse Effects: None reported | Risk of Bias: Low  
-RQ: L  
-AC: L  
-B: L  
-MD: L  
-SOR: H, clinical severity score data not published  
Precision: Primary outcome measures related to recording of timings.  
Sample Size: No documentation regarding SS calculations  
Adverse Effects: Attempts made to record adverse effects systematically |