

Table 1. Characteristics of included studies comparing standard medical treatment with supplementary CPAP or NIV

Study	Country	Intervention	Study design	Number of patients (N)	Crude mortality rates	Type of patients	Primary outcome <i>secondary outcome(s)</i>	Primary result <i>secondary result(s)</i>	Primary review outcomes
Cheskes et al. 2013 [16]	Canada	CPAP	Observational, before-and-after	214 Interventions 228 Controls	17/214 17/228	ARF of any cause	Mortality, in-hospital <i>intubation rate</i>	7.9% vs. 7.5% (p=0.85) 14.5% vs. 12.7% (p=0.59)	Mortality: → H-LOS: N/R ICU-LOS: N/R IR: →
Dib et al. 2012 [27]	USA	CPAP	Retrospective, controlled	149 Interventions 238 Controls	N/R N/R	Presumed ACPE	Prehospital treatment times <i>clinical variables</i> <i>intubation rate</i>	30 vs. 31 min (p > 0.01) improvement (p's <0.01) 2.6 % vs 4.6% (p<0.01)	Mortality: N/R H-LOS: N/R ICU-LOS: N/R IR: ↓
Ducros et al. 2011 [30]	France	CPAP	Randomized, controlled multicentre	107 Interventions 100 Controls	8/107 9/100	Presumed ACPE	Combined criteria (successful) Mortality, 48 hours <i>mortality, in hospital</i> <i>intensive care unit length-of-stay</i>	Odds ratio 2.1 (1.2-4.0) odds ratio 1.4 (0.4-5.2) odds ratio 0.9 (0.4-2.5) 2 vs. 2 days (p=0.67)	Mortality: → H-LOS: N/R ICU-LOS: → IR: N/R
Frontin et al. 2011 [28]	France	CPAP	Randomized, controlled	62 Interventions 62 Controls	6/60 7/62	Presumed ACPE	Treatment succes <i>intubation rate</i> <i>hospital length-of-stay</i> <i>intensive care unit length-of-stay</i> <i>mortality, 30 days</i>	Odds ratio 1.19 (0.56-2.53) odds ratio 1.47 (0.23-9.23) 6 vs. 6 days (p=0,5) 8,2 vs. 8 hours (p=0,27) odds ratio 1.14 (0.36-3.65)	Mortality: → H-LOS: → ICU-LOS: → IR: →
Gardtman et al. 2000 [22]	Sweden	CPAP	Observational, before-and-after	158 Interventions 158 Controls	18/158 18/158	Presumed ACPE	ACPE at admission <i>mortality, 1 year</i>	76% vs. 93% (p<0.0001) 22 % vs. 27 % (p=0.64)	Mortality: → H-LOS: → ICU-LOS: N/A IR: N/A
Garuti et al. 2010 [25]	Italy	CPAP	Prospective, observational with historical control group	35 Interventions 125 Controls	1/35 30/125	ARF of any cause	Mortality, adjusted <i>intubation rate</i> <i>hospital lenght-of-stay</i>	Odds ratio 0.06 (0.01-0.53) no intubations 12 vs. 18.8 days (p<0.0001)	Mortality: ↓ H-LOS: ↓ ICU-LOS: N/A IR: →
Hubble et al. 2006 [24]	USA	CPAP	Prospective, demographically controlled	120 Interventions 95 Controls	5.35 % 23.15 %	Presumed ACPE	Intubation rate <i>mortality, in hospital</i> <i>hospital length-of-stay</i>	Odds ratio 4.04 (1.64-9.95) odds ratio 7.48 (1.96-28.54) 5.58 vs. 7.66 days (p=0.755)	Mortality: ↓ H-LOS: → ICU-LOS: N/A IR: ↓
Thompson et al. 2008 [23]	Canada	CPAP	Randomized, controlled	35 Interventions 34 Controls	5/35 12/34	ARF of any cause	Intubation rate <i>mortality, in hospital</i> <i>intensive care unit length-of-stay</i> <i>hospital length-of-stay</i>	Odds ratio 0.16 (0.04-0.7) 0.3 (0.09-0.99) 6.5 vs. 3 days 9 vs. 3 days	Mortality: ↓ H-LOS: → ICU-LOS: → IR: ↓
Craven et al. 2000 [29]	USA	NIV	Prospective, demographically controlled	37 Interventions 25 Controls	6/37 2/24	Presumed ACPE	Out of hospital treatment time <i>improvement in SpO₂</i> <i>hospital length-of-stay</i> <i>mortality, in-hospital</i>	31.4 vs. 31.2 min (p=0.931) 13.71 % vs. 6.99 % (p=0.037) 6.34 vs. 7.63 (p=0.48) 6/37 vs. 2/24 (p=0.462)	Mortality: → H-LOS: → ICU-LOS: N/R IR: →
Roessler et al. 2011 [20]	Germany	NIV	Randomized, controlled	25 Interventions 26 Controls	1/24 2/25	ARF of any cause	Efficiency of treatment <i>survival, 28 days</i> <i>intensive care unit length-of-stay</i> <i>hospital length-of-stay</i> <i>intubation rate</i>	100% vs. 80% (p=0.05) 96% vs. 92% (p=1.0) 13.9 vs. 17.4 days (p=0,5) 1.3 vs. 3.7 days (p=0.03) 1 vs. 6 (p=0.66)	Mortality: → H-LOS: → ICU-LOS: ↓ IR: →
Schmidbauer et al. 2011 [21]	Germany	NIV	Randomized, controlled	18 Interventions 18 Controls	0/18 0/18	Presumed COPD	Dyspnea score <i>respiration rate</i> <i>other clinical variables</i> <i>intensive care unit length-of-stay</i>	Improvement (p<0.001) improvement (p=0.001) No diff in other clinical variables 59 vs. 185 (p=0.02)	Mortality: - H-LOS: → ICU-LOS: ↓ IR: →
Weitz et al. 2007 [26]	Germany	NIV	Randomized, controlled	10 Interventions 13 Controls	1/10 1/13	Presumed ACPE	SpO ₂ at hospital admission <i>clinical variables</i> <i>intensive care unit length-of-stay</i> <i>hospital length-of-stay</i>	97.3% vs. 89.5% (p=0.002) No diff clinical variables 1.7 ±0.5 vs. 2.3 ±0.6 days 8.2 ±2.3 vs. 12.5 ±1.8 days	Mortality: → H-LOS: → ICU-LOS: → IR: N/A

All comparisons are intervention vs. control. Arrows showing: no difference →, improvement/reduction ↓

(Continuous positive airway pressure, CPAP; Positive pressure ventilation, PPV; Acute respiratory failure, ARF; Acute cardiogenic pulmonary edema, ACPE; Chronic obstructive pulmonary disease, COPD; Intubation rate, IR; Mortality in-hospital, IHM; Oxygen saturation, SpO₂; Respiration rate, RR; Clinical variables, CV; Not Available, N/A; Not Reported, N/R; Hospital Length Of Stay, H-LOS; Intensive Care Length Of Stay, ICU-LOS