Introduction:
It is not clear whether acute respiratory distress syndrome (ARDS) is independently associated with mortality after controlling for underlying risk factor and baseline severity of illness. We attempted to assess the attributable mortality of ARDS by performing a systematic review and meta-analysis.

Methods:
We systematically searched PubMed, EMBASE, Scopus and reference lists to identify observational studies reporting mortality rates of critically ill patients with and without ARDS. All included studies were matched for underlying risk factor. Primary outcomes were all-cause in-hospital mortality and short-term mortality (combined 28 day-mortality and intensive care unit-mortality). We calculated pooled risk ratios (RR) and 95% confidence intervals (CI) with a random-effects model. Our meta-analysis was registered with PROSPERO.

Results:
Of the 3119 initially retrieved articles, 41 studies (44 cohorts) involving 58408 patients were included. The underlying risk factor was sepsis, trauma and other in 15, 18 and 11 cohorts, respectively. In-hospital mortality was higher in patients with versus without ARDS (31 cohorts; 54101 patients; RR 2.63, 95% CI 2.01-3.44; P<0.001). We saw a numerically stronger association between ARDS and in-hospital mortality in trauma (RR 3.15, 95% CI 2.17-4.57; P<0.001) than sepsis (RR 1.80, 95% CI 1.24-2.63; P=0.002). Short-term mortality was higher in patients with versus without ARDS (14 cohorts; 8040 patients; RR 1.88, 95% CI 1.27-2.78; P=0.002). ARDS was independently associated with mortality in approximately half of the 11 cohorts which controlled for baseline severity of illness using a multivariable analysis.

Conclusion:
The accumulated evidence suggests that ARDS is independently associated with mortality after controlling for underlying risk factor; the association is stronger for trauma than septic patients. Evidence is mixed as to whether ARDS is independently associated with mortality after controlling for baseline severity of illness.