Introduction:
Spontaneous breathing trial (SBT), a routine procedure during ventilator weaning, entails cardiopulmonary distress, which is higher in patients failing the trial. An intense inflammatory response, expressed by increased levels of pro-inflammatory cytokines, is activated during SBT. Sepsis, a common condition in ICU patients, has been associated with increased levels of the pro-inflammatory cytokine IL-18. IL-18 produced among others by skeletal muscles, has been associated with severe muscle wasting and maybe by ICU acquired weakness. We hypothesised that IL-18 increases during SBT, more evidently in SBT failures. We anticipate this response to be more pronounced in formerly septic patients fulfilling the criteria for SBT.

Methods:
75 SBTs of 30-min duration were performed and classified as SBT failure or success. Blood samples were drawn before, at the end of the SBT and 24 hours later. Serum IL-18 levels and other inflammatory mediators, commonly associated with distress, were determined and correlated with SBT outcome. Subgroup analysis between septic and non-septic patients was performed.

Results:
SBT failure was significantly higher in septic patients compared to non-septic (41% vs 13%, OR=4.5 95% CI: 1.16-17.68, p 0.022). Septic patients had significantly elevated IL-18 levels at baseline compared to non-septic (p<0.05). A trend of increase in IL-18 at 30 min of SBT was observed in both groups. Serum levels of IL-18 were returned to baseline values after 24 h. These changes however, were not significantly different. Increased levels of IL-18 in septic patients were correlated with a rapid shallow breathing index >75 (p=0.028) and APACHE II score (p=0.05). No changes were observed in the remaining inflammatory mediators in both groups.

Conclusion:
Elevated IL-18 levels in septic patients were associated with cardiopulmonary distress and disease severity. IL-18 may have a potential role as a predictor of SBT failure in septic patients.