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## Poster Abstracts

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### SURFACTANT APPLICATION INCREASES TIDAL VOLUME IN NEONATES AND CHILDREN WITH RESPIRATORY FAILURE TREATED WITH ECMO

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**Objective:** To determine whether surfactant application improves tidal volume, ECMO flow and chest radiographic findings in neonates and children with respiratory failure or after cardiac surgery treated with ECMO.

**Design and Setting:** Retrospective chart review study in a PICU of a University children's hospital.

**Patients and Methods:** Group S (n=7, surfactant group) received exogenous surfactant before starting the weaning procedure from ECMO. Group C (n=6, control group) was treated with ECMO but did not receive surfactant at any time during their hospital course. The following data were collected from the patient's records: demographic data, oxygen saturation, ventilator settings, and ECMO flow. Chest radiographs were scored using the respiratory distress syndrome severity scoring (RS score) 1.

**Results:** The groups were similar with regard to demographic data, diagnoses, duration of ECMO, PICU days, ventilator settings and hospital days. Upon surfactant application mean tidal volume (mL/kg BW) almost doubled with time in group S ( $4.8 \pm 2.7$  before and  $8.1 \pm 2.3$  at 10 hours after surfactant), compared to group C ( $9.0 \pm 3.2$  vs.  $9.0 \pm 3.0$ ;  $p=0.0027$ ). RS scores were decreased in group S 48h after surfactant treatment, but increased in group C. ECMO flow decreased in group S 10 hours after surfactant application but not in group C. These differences were not significant.

**Conclusion:** Surfactant application in children with respiratory failure treated with ECMO improves clinical parameters, but not overall outcome. Surfactant application therefore may be of benefit in neonates and children with respiratory failure treated with ECMO, but these findings need confirmation from prospective studies.

1 Edwards DK et al. Respiratory distress syndrome treated with human surfactant: radiographic findings. *Radiology* 1985;157:329-334.