The overall mortality rate was 92%, the duration of hospitalization was between one and 137 days.

**Conclusion** In our study, it has been seen that NCPAP may not be an effective ventilation strategy in premature infants who are at the limits of viability. The high proportion of chorioamnionitis in this group may affect the ventilation and the following problems. These babies are needed to be care at very special settings.

**Aim** To evaluate the clinical outcomes of very-low-birth-weight infants who received non-invasive ventilation at delivery room (DR) and NICU.

**Methods** This prospective cohort study included infants born before 29 weeks1, and infants born at 29–30 weeks1 who didn’t receive antenatal steroid (ANS) from January-2009 to December 2011. During resuscitation, stabilization and transport infants were ventilated with a T-piece. All received 100 mg/kg surfactant. If respiratory drive was present, infants were extubated to nasal CPAP(NCPAP). The need for MV within the first 3-days, neonatal morbidities, mortality, and duration of hospitalization were assessed.

**Results** Eighty infants were evaluated. Mean gestational age(GA) and the mean birth weight(BW) of infants were 27.0±2.1 weeks, and 936.5±299.1 g, respectively. ANS was given to 27.5% of the pregnancies. The presence of PPROM and chorioamnionitis were 57.5% and 34%, respectively. Twenty-three (28.7%) infants could not be extubated at the DR, and mean GA and BW were lower than the infants who could extubated. Ten(17.5%) of 57 infants who were on NCPAP initially needed MV during their first 3-days. There wasn’t any case with air leak. The incidence of pulmonary hemorrhage, FDA, NEC, IVH, BPD, ROP and mortality were 6.2%, 26.2%, 20%, 13.8%, 10%, 10% and 38.7%, respectively. The duration of respiratory support was 1–720 hours (median: 29 hours). Mean duration of hospitalization was 34.9±23.4 days.

**Conclusion** Our study demonstrated that NCPAP is an effective non-invasive ventilatory strategy. It didn’t increase the risk of air leak. The incidences of BPD and ROP in our series were lower than reported in ‘NICHD Neonatal Research Network’ data.

**Background** Synchronized noninvasive ventilation (sNIPPV) might be superior to fixed time-cycled modes. Several body-surface respiratory signals have been suggested for noninvasive synchronisation. However, the quality and utility of such signals have not been evaluated comprehensively.

**Methods** Respiratory signals in spontaneously breathing preterm infants (n=9) were recorded simultaneously (i) respiratory impedance plethysmography (RIPabd & RIPchest), (ii) Graseby Capsule (GC), (iii) a strapless piezo sensor (Piezo), and (iv) a fluid-filled esophageal pressure catheter (Pes). A total of 5813 breaths were evaluated. Subsequently, periods of good-quality signals on all recorded channels were analyzed with regard to signal availability, time lag relative to Pes, and variability of signals.

**Results** In all breaths studied 38 % of breaths showed valid signals in all channels without movement artefacts. Of all signals, RIPabd indicated the onset of inspiration earliest in time relative to the onset of inspiration detected by Pes (~52±160ms). RIPabd-signal was followed by GC-signal (+10±177ms). Both signals had a reasonable variability. The Piezo-signal was very sensitive and prone to large variations (+70±1372ms compared to Pes). RIPchest indicated inspiration later than RIPabd (+104±212ms).

**Conclusion** These data indicate that both RIPabd and Graseby Capsule are suitable surface sensors for non-invasive synchronisation of NIPPV whereas a Piezo sensor exhibited large variability. Signals from all studied sensors were only suitable for a limited amount of time.