was measured using standardised echo techniques. The NICaS monitor uses fluctuations in WBEB to calculate SV at 20-second intervals using a proprietary algorithm. The median of 15 minutes of NICaS data prior to the start of the echo for each baby was used in the analysis, since babies were more likely to become distressed during the echo, reducing the quality of the NICaS data through movement artefact. Extreme, non-physiological outlier values when babies were unsettled were excluded from NICaS SV data. R (R Core Team, 2019) software was used for data analysis, including descriptive statistics, Bland-Altman analysis and Pearson correlation.

Results 35 neonates were recruited (20 females), with a median (range) gestational age of 39^{+1} weeks (35^{+6} – 42^{+2}) and birth weight of 3.34kg (2.2–4.4kg). Monitoring was performed on day one for all babies, and additionally on day two for four babies who remained in the hospital. Five babies did not have NICaS data immediately prior to the echo due to the need to feed: therefore, we included 34/39 paired measurements in the final analysis. The mean (SD) echo LSVV was higher than that of NICaS SV (1.90 ± 0.44 vs 1.52 ± 0.38 ml/kg; 95% CI: -0.57 to -0.29; $p < 0.0001$). Bland-Altman bias was 0.43 ml/kg, with limits of agreement from -0.36 to 1.21 ml/kg. Mean percentage error was 40%, but when corrected for the percentage error of echo, the true precision was 27%. The Pearson correlation between the two measures was $r=0.54$ ($p=0.001$; 95% CI: 0.24 to 0.74).

Conclusions We postulate that the higher echo LSVV compared to NICaS may be because echo LSVV measurements were made pre-ductus arteriosus (patent in 28/34 measurements), while NICaS calculates SV from peripheral signals (post-ductus arteriosus). The NICaS' true precision was 27%, which is within the clinically acceptable percentage error for new devices (30%), and there was a significant correlation between the NICaS SV and echo LSVV measurements. These results indicate that the NICaS monitor may be reliable for SV monitoring in healthy term and late-preterm neonates. If validity is confirmed in term and preterm infants, we envisage that WBEB could be used as a complementary clinical tool for continuous haemodynamic monitoring in neonatal intensive care, resulting in a step-change in clinical practice.

British Association of Perinatal Medicine and Neonatal Society

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LESS INVASIVE SURFACTANT ADMINISTRATION (LISA) – OUTCOMES AND PROGNOSTIC FACTORS AT A LEVEL 3 NICU

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Background Less invasive surfactant administration (LISA) is delivered to neonates via a thin catheter, while the function of the glottis is maintained. There remains some debate as to which babies will benefit most from LISA, and the best threshold for undertaking this procedure.

Objectives We aimed to review the LISA procedures undertaken at our centre, analyse patient and procedure characteristics, and evaluate outcomes, prognostic factors and procedure complications.

Methods We reviewed all LISA procedures at our level 3 NICU from May 2018 (when LISA was introduced) until September 2020. Patients were identified on BadgerNet as having received surfactant, and case notes were reviewed to identify LISA patients. An audit proforma was completed retrospectively. Data were analysed using one-sample and two-sample Student's *t*-tests where appropriate.

Results LISA procedures were undertaken 86 times, including 7 repeat procedures. Median gestational age was 32 ± 1 weeks [range: 24 ± 5 to 41 ± 1]; birth weight 1.72 kg [0.66 kg to 4.29 kg]; time from birth to first LISA procedure 5.7 hours [1.1 hours to 45.0 hours]; and FiO₂ prior to LISA 0.35 [0.24 to 1.00]. Pre-medication included fentanyl [76 patients, 88%], atropine [14, 16%] and sucrose [7, 8%]. LISA was successful with a single procedure in 52 patients [66%], while 7 [9%] required repeat LISA and 20 [25%] required later intubation. Of the repeat LISA procedures, 5 [71%] were successful and 2 [29%] required later intubation. When successful LISA procedures were compared with those who required intubation, there was no difference in gestational age [$p=0.94$], birth weight [$p=0.49$], or time to first LISA [$p=0.53$]. FiO₂ prior to LISA was lower in the successful group [mean 0.35 vs. 0.42, $p=0.05$]. To assess for a specific cut off in FiO₂ than may predict treatment success, a ROC curve was analysed. The area under the ROC curve was small [0.64] and no specific cut off was possible. 72% had a documented desaturation or bradycardia during LISA. The vast majority responded to simple measures (pause, stimulation, chin lift, increased FiO₂). Atropine rescue was required in 5 patients [5.8%]; naloxone in 2 [2.3%]; and an artificial airway (LMA or intubation) in 3 [3.5%]. Bronchopulmonary dysplasia was present in 27.5% of the patients born at < 32 weeks gestation in our unit, compared with 20.5% of LISA patients.

Conclusions LISA was performed in a range of neonates from a gestational age of 24 ± 5 to post-dates babies. Most were pre-medicated with fentanyl, although a proportion were managed with sucrose alone – as is becoming increasingly common internationally. LISA was successful in around two-thirds of our patients, and success rates were similar in our second LISA procedures. FiO₂ prior to LISA was lower in the successful group, although no specific cut-off was possible. This suggests that a range of factors (such as antenatal steroids, gender, work of breathing) might also be important in determining likely response to LISA. Desaturation or bradycardia requiring significant intervention was rare. Bronchopulmonary dysplasia was less common in the LISA group than in our overall population, although this may be related to differences in baseline characteristics.

British Association of General Paediatrics

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PERCEPTION OF PPE (PERSONAL PROTECTIVE EQUIPMENT) AMONGST PAEDIATRICIANS

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Background PPE (Personal Protective equipment) use has been mandatory due to the current pandemic with Covid-19 and has been in use for the past 1 year. Use of PPE in paediatrics comes with its own challenges but is likely to be used more