1511 SHOULD PROPHYLACTIC INDOMETHACIN(PROPH INDO)BE USED IN VLBW INFANTS WITH HYALINE MEMBRANE DISEASE(HMD)? Augusto Sola,Cristina Lezama,Jorge Urman.University of Buenos Aires School of Medicine,Hospital de Clinicas,Depart - ment of Pediatrics.Buenos Aires,Argentina.(Spon.George A.Gregory)

Recent evidence suggests that Indo is more effective when used "early"to treat PDA in VLBW.We have cared for some VLBW infants who were given Proph Indo IV within the first 10 hours of life, before there were any signs of PDA.In order to evaluate the results of such practice,we reviewed the charts of the 76 infants ≤1500g who survived more than 24 hours during the past year.Twenty received Proph Indo(.2mg/kg q 8 h)and 56 did not(Non Proph Indo group).The mean birth weight,gest.age,sex ratio and Apgar scores were comparable.In Proph Indo group,17(85%) had HMD;only 1 (5%)had PDA and 6(30%)died.In the Non Proph Indo group,25(45%) had HMD,24(43%)developed PDA,and 14(25%)died.The results for infants with HMD are shown in the Table.

	Prophylactic Indo					Non Prophylactic Indo					
B.Wgt	n	PDA	Mort	IMV	BPD	n	PDA	Mort	IMV	BPD	Indo
≤ 1000	9	11%	33%	6.5d	11%	9	89%	67%	11.1d	11%	77%
1000-1500	8	0%	0%	10.1d	12%	16	69%	25%	15.2d	25%	63%
≤1500	17	6%	18%	8.4d	12%	25	75%	40%	14.1d	20%	68%

There were no significant complications with Proph Indo.In HMD Non Proph Indo,17(68%)received Indo for PDA,6(35%)requiered more than 1 series and 2 still had symptoms at death.Two had severe BPD and died.One underwent surgery after 3 series of Indo. We conclude that Proph Indo is effective in VLBW infants to prevent the occurrence of PDA.In VLBW infants with HMD the use of Proph Indo seems associated with less mortality and morbidity.

†1512 HIGH FREQUENCY OSCILLATION (HFO) VS. CONVENTIONAL MECHANICAL VENTILATION (CMV): BAROTRAUMA, SURFACTANT POOLS AND SURFACE TENSIONS IN PREMATURE LAMBS. Alfonso J. Solimano, A. Charles Bryan, Alan H. Jobe, Machiko Ikegami, Harris Jacobs, UCLA School of Medicine, Harbor-UCLA Medical Center, Dept. of Pediatrics, Torrance, CA and Hospital for Sick Children, Dept. of Pediatrics, Toronto, Ontario. Twelve premature twin lambs delivered by C-section at 133-136 days gestational age were supported for 3 hrs. on an F_IO_2= 1.0 on either HFO at 900 breaths/min. or CMV at 20 - 30 breaths/min. Average ± SE blood gas values were similar at sacrifice, but the HFO group required a higher MAP (16 ± 0.78 vs. 13.3 ± 1.43 on CMV). Both groups had similar degrees of epithelial necrosis, hyaline membrane formation and equal disruption of alveolar permeability as evidenced by bidirectional leak of labelled albumin and alveolar wash proteins. The HFO animals had a smaller alveolar pool of endogenous phosphatydyleholine (PC) and larger tissue associated exogenous H^3 natural surfactant tracer (H^3-NS) which may represent a decrease in initial secretion of surfactant and/or a stimulation of reuptake in this group. This study failed to prove the superiority of HFO over CMV suggested by our previous studies in a different animal model both in terms of decreasing barotrauma and improving gas exchange and raises important questions with regards to its effect on surfactant turnover.

1513 GASTRIC pH IN LOW BIRTH WEIGHT (LBW) INFANTS: EFFECT OF AGE AND FEEDINGS. Judith M. Sondheimer, David A. Clark(Spon by F. Oski). Dept. of Pediatrics, SUNY-Upstate Medical Center, Syracuse, New York.

Although maximal gastric secretory capacity of newborns is reduced, it is unclear whether gastric luminal pH is less acid. We therefore measured gastric pH in 2 groups of LBW infants assessing the impact of age and feeding type on gastric acidity. In Group I were 13 infants < 7 days BW 1716±41g. In Group II were 10 infants 7-15 days BW 1646±88g ($\bar{X}$±SE). None had had theophylline, mechanical ventilation, sepsis or GI bleed. Output from a flexible pH electrode in the gastric corpus was recorded continuously for 12 hrs. Infants were fed q3hrs - one pedialyte meal(pH 4.9) and 3 cow milk formula meals(pH 6.6-6.8) of equal volume. Mean gastric pH for Grs I&II was calculated q15min. RESULTS Young infants had higher fasting gastric pH than older infants (4.6±.2 vs 3.0±.2;p<.01). Mean gastric pH of young infants remained unchanged after a pedialyte meal while after formula pH rose significantly (p<.01) to a max of 5.8±.1 and returned to fasting pH by 75 min p.c. Mean gastric pH of older infants fed pedialyte did rise significantly above fasting (p<.01) for 75 min but max pH was only 4.0. After formula mean pH rose to 5.2±.4, fell to pH 4.0 by 75 min and to fasting by 135 min p.c. The % of time gastric pH was <4.0 was significantly greater (p<.01) in older infants after either pedialyte(61.9±7.3 vs 20.6±6.4%) or formula (42.7±8.0 vs 15.2±4.0%). Gastric pH was rarely <2.0 in either group(<2.5% monitored time). CONCLUSION Reduced gastric secretory capacity of newborns does depress fasting and post prandial gastric acidity of LBW infants during the first week of life. Thereafter adult pH patterns are found.

†1514 THE EFFECT OF SLOW LIPID INFUSION AND DOSAGE ON BILIRUBIN BINDING TO ALBUMIN IN THE PREMATURE INFANT - M.L. Spear, G.E. Stahl, M.H. Paul, J.M. Egler, G.R. Pereira, R.A. Polin. Div. of Neonatology, Children's Hosp. of Phila., and Dept. of Peds., Univ. of Pennsylvania Sch. of Med., Philadelphia, PA.

The effect of 15-hour lipid infusions at doses of 1, 2, and 3 g/kg, administered on successive days, on unbound bilirubin and the serum free fatty acid:albumin molar ratio (F/A) was studied in 20 AGA premature infants (BW mean ± SEM - 1.43 kg ± 0.09; EGA 30.7 wks ± 0.63) with physiologic hyperbilirubinemia (7.7 mg/dl ± 0.30). Albumin-bound bilirubin (B), reserve bilirubin binding capacity (R), and total unconjugated bilirubin were measured fluorometrically pre-infusion and 15-45 minutes before end-infusion. Serum free fatty acid levels were determined pre- and at end-infusion. Serum albumin was measured on day 1. The ratio B/R was used to estimate unbound bilirubin (Wells et al, Clin Chem 28:432,1982).

Infants <30 wks gest. demonstrated a significant (p<.05) rise in the F/A ratio with each increase in lipid dose while infants ≥30 wks did not. The concentration of unbound bilirubin (B/R) increased linearly with increasing F/A ratio (r=.65,p<.001). The largest increases in B/R were seen in infants with F/A> 4.0; the EGA of these infants (28.7 wks ± .47) was significantly less (p<.01) than those infants whose F/A ratio was< 4.0 (31.1 wks ± .40). In 10/58 infusions there was a fall in unbound bilirubin unrelated to BW, EGA or postnatal age. In all such instances, the end-infusion F/A was≤3.0.

No significant increase in unbound bilirubin was seen in any infant receiving 1 g/kg fat emulsion despite increases in F/A. At doses of 2 and 3 g/kg increases in F/A in the infants <30 wks resulted in increased unbound bilirubin. Monitoring of the F/A ratio may identify infants at risk for increased unbound bilirubin during lipid infusion.

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†1515 ASSOCIATION OF ACQUIRED CYTOMEGALOVIRUS INFECTION AND THE DEVELOPMENT OF BRONCHOPULMONARY DYSPLASIA IN PREMATURE INFANTS. Mark H. Sawyer, David K. Edwards, and Stephen A. Spector (Spon. James D. Connor) University of California, San Diego, Departments of Pediatrics and Radiology.

CMV infections are acquired by 15-30% of infants hospitalized in intensive care nurseries (ICNs) for greater than 3 weeks. This study assessed the association of bronchopulmonary dysplasia (BPD) and acquired CMV infection in 54 infants <33 wks gestation and <1600 grams in one nursery. All infants had weekly urine cultures for CMV. 27 CMV(+) babies were matched with 27 CMV(-) babies for mean gestational age (28.5 wks vs. 29.1 wks), mean birth wt (1073 g vs. 1115 g), mean apgar scores (4.1/6.5 vs. 3.6/6.3), incidence of PDA (20/27 vs. 20/27) and incidence of RDS (19/27 vs. 18/27). The 27 CMV(+) babies were a mean age of 46.6 days (range 21-128 days) when they began to excrete CMV. CMV(+) infants received a mean of 18.9 random donor blood tranfusions vs. 10.5 for CMV(-) babies (p = .016). X-ray evidence of BPD was seen in 22/27 CMV(+) infants vs. 8/27 CMV(-) infants (p <.0001). CMV(+) infants required increased inspiratory O_2 for a mean of 51.1 days vs. 21.6 days for controls (p = .006). These findings suggest that babies who acquire CMV while hospitalized in ICNs are more likely to have X-ray evidence of BPD and have increased O_2 requirements. The acquisition of CMV by premature infants may contribute to the development of bronchopulmonary dysplasia.

1516 HIGH FREQUENCY JET VENTILATION (HFJV) WITH INTERMITTENT MANDATORY VENTILATION (IMV): A ALTERNATIVE APPROACH TO SEVERE NEONATAL RESPIRATORY DISEASE. A.R. Spitzer, B. Bunnell, W.W. Fox. Div. of Neonatology, Children's Hospital of Philadelphia, Dept. of Peds., Univ. of Pa. Sch. of Med., Philadelphia, PA., and Bunnell Life Systems Inc., Salt Lake City, Utah.

High frequency jet ventilation (HFJV) represents a radically different management approach to severe neonatal respiratory disease. In order to determine if HFJV could be augmented by the use of intermittent mandatory ventilation (IMV), two groups of infants were prospectively evaluated. Both groups consisted of 3 infants, two with severe RDS, one with pulmonary hypertension. Mean BW was similar (2.0 ± .6 SEM kg vs. 2.1 ± .7 SEM kg) as were GA (32.7 ± 3.4 wks vs. 24 ± 3.1 SEM wks). One group (HFJV-IMV) received HFJV (Bunnell Life Systems Inc.) (rate 400-500 bpm) and IMV (5 bpm). The other group received HFJV alone (rate 400-600 bpm). The HFJV-IMV group was treated for a mean of 112 ± 40.6 SEM hrs., the HFJV group was treated for a mean of 24.3 ± 13.6 SEM hrs. The HFJV-IMV group demonstrated a 13.3 ± 2.3 SEM cmH_2O decrease in peak inspiratory pressure (PIP) and a 5.0 ± 1.1 SEM cmH_2O decrease in mean airway pressure (MAP). PaO_2 increased a mean of 66.0 ± 11.5 SEM torr, while $PaCO_2$ decreased 13.6 ± 7.1 SEM torr. In the HFJV group there was a 9.6 ± 4.9 cmH_2O decrease in PIP and a 3.3 ± 1.2 cmH_2O decrease in MAP. PaO_2 increased 31.3 ± 17.6 SEM torr, while CO_2 showed a 4.3 ± 11.6 SEM torr decrease. Infants in both groups took 2.2 ± 0.4 SEM hours to stabilize on HFJV. One infant in each group survived and is entirely well at present. These preliminary data suggest that HFJV may be an effective therapy in severe neonatal respiratory disease. Augmentation of HFJV by IMV may be a valuable approach in some infants.