1420 INFANT WEIGHT AND CARBON DIOXIDE ACCUMULATION IN INCUBATORS. John T. Scharnberg, Joseph A. Garcia-Prats, William H. Hyde, Earl Hampton, Lazette Jackson, Arnold J. Rudolph. Baylor College of Medicine, Jefferson Davis Hospital, Department of Pediatrics, Houston, Texas.

Potentially excessive CO_2 accumulation in infant incubators has been reported by Gale, et al (Pediatrics 60:453, 1977). Because of the potential significance of this finding, we measured CO_2 concentrations (% $^V/_v$) with a Beckman LB2 infrared analyzer in Air-Shield model C-86 (AS) and Vickers model 79 (V) infant incubators. Measurements were made over 90 minute periods with all portholes closed. Samples were obtained near the infant's forehead, away from the stream of exhaled gas. Each infant served as his own control in the two incubators. 15 infants weighing <3000 gms (1964 gms ± 134†) and 15 infants weighing >3000 gms (2957 gms ± 153) were studied at 30, 60 and 90 minutes. [CO_2] was elevated above the nursery environmental level (0.03%) for all infants studied. Our findings are (mean ± SE†):

	<3000 gms		>3000 gms	
Mean [CO_2] AS (30')	0.10 (±0.01)	p<0.001	0.20 (±0.02)	p<0.001
V (30')	0.17 (±0.02)		0.31 (±0.04)	
Mean [CO_2] AS (60')	0.10 (±0.01)	p<0.001	0.21 (±0.03)	p<0.001
V (60')	0.18 (±0.02)		0.38 (±0.04)	
Mean [CO_2] AS (90')	0.10 (±0.01)	p<0.001	0.20 (±0.04)	p<0.01
V (90')	0.20 (±0.02)		0.32 (±0.04)	

Potentially significant CO_2 levels may accumulate when larger infants are placed in incubators. CO_2 levels were higher in the V incubator compared to the AS in both groups.

1421 CORTICOSTEROID RESPONSIVENESS IN CHRONIC LUNG DISEASE OF PREMATURITY. J.B. Schick, B.W. Goetzman, L.E. Smith, and R.P. Wennberg. Univ. of California, Davis School of Medicine, Depts. of Pediatrics and Radiology, Davis CA.

Corticosteroids (CS) have been anecdotally reported to improve chronic lung disease (CLD) in premature infants. Concern over equivocal results and long-term CNS effects prompted us to review our clinical experience. Between 01/78 and 11/80 we cared for 16 premature infants with clinical and X-ray diagnosis of CLD, O_2 requirement >30 days and A_aDO_2 >100 who received CS for >48 hrs (mean dose 4.04 ± 1.66 mg/kg/day prednisone equivalent). A positive response to CS was defined as a >30% drop in A_aDO_2 by days 4-6 post introduction of CS which was sustained for >7 days. Eight positive responses in 8 infants and 10 failures to respond in another 8 infants were found. Responders had lower birthweights ($p < 0.01$), gestational ages ($p < 0.05$) and gained more weight/day prior to CS ($p < 0.01$) as compared to nonresponders and decreased PCO_2 ($p < 0.05$) pre- and post CS. There was no difference between the two groups in mean A_aDO_2, weight at time of treatment, or the dose given, X-ray appearance, postnatal age, mortality and duration of O_2 therapy. Nine infants with CLD who did not receive CS were selected as a control group. Only one had a dramatic but transient decrease in O_2 requirement similar to the defined positive response. In conclusion, 50% of infants receiving CS had a dramatic improvement in their lung function. However, it is unclear whether this treatment altered their long-term outcome. CS responsiveness may be a function of some unrecognized etiologic difference or complication of CLD.

1422 EVALUATION OF THE MINOLTA BILIRUBIN METER SCREENING DEVICE IN WHITE AND BLACK INFANTS. Richard L. Schreiner, Robert E. Hannemann, David P. DeWitt, Steve Norris, Melvin Glick. (Spon. by Jerry Bergstein), Indiana University School of Medicine, Indiana University Hospitals, Department of Pediatrics, Indianapolis.

The purpose of this study was to evaluate the transcutaneous bilirubin meter in black and white infants. The data (see Table) demonstrate a good correlation between serum bilirubin and

Race	GA	PhotoRx	# Infs	# Msrmts	r
White	≥38	No	35	48	.90
White	34-37	No	22	25	.88
Black	≥34	No	42	64	.71
White	≥38	Yes	7	19	.86
White	34-37	Yes	23	65	.80
White	<34	Yes	25	123	.71
Black	<34	Yes	7	36	.86

skin reflectance for white term infants. In black infants ≥34 weeks GA the correlation is poor; incorporation of three wavelengths (420, 460 and 510) may provide a more accurate instrument. We suggest that further studies, and quite likely further modifications of the currently available instrument, should be carried out before it can be considered a clinically useful instrument for either screening or monitoring of serum bilirubin concentrations in the newborn.

● **1423** PLATELET DYSFUNCTION: AN ETIOLOGIC FACTOR IN INTRAVENTRICULAR HEMORRHAGE (IVH) IN THE PREMATURE. Emmalee S. Setzer, Iva B. Webb, John W. Wassenaar, John D. Reeder, Paulette S. Mehta, and Donald V. Eitzman. Univ of Fla Coll of Med, Depts of Pediatrics and Radiology, Gainesville.

Serial platelet counts, bleeding times, in vitro platelet aggregations, prothrombin times (PT), partial thromboplastin times (PTT), fibrinogens, and fibrin degradation products (FDP) were performed in 58 prematures ≤1500 grams to show the relationship of platelet and clotting disorders to IVH. IVH was detected by CT scan, real-time ultrasonography and/or autopsy. 17 had no intracranial hemorrhage (ICH), 11 had subarachnoid hemorrhage (SAH) only, and 30 had intraventricular hemorrhage (IVH). 12 died (2 SAH and 10 IVH). Mean Day 1 platelet counts were normal in all 3 groups. Initial platelet counts were ≥150,000/mm^3 in 26 of 30 infants who developed IVH, but by day 7 thrombocytopenia occurred in 14 (47%). Platelet dysfunction, however, was evident on day 1 in the group with IVH. Day 1 bleeding times were significantly longer ($p<.02$) in infants who developed IVH (6 min±0.6; $\bar{x}$ ± SEM) than in those without ICH (3.7±0.9). Maximum platelet aggregations to adenosine diphosphate (ADP) were significantly lower ($p<.025$) on day 1 in IVH infants (41.5%±4) than in those without ICH (55.4%±4). By day 3, bleeding times deteriorated ($p<.05$) in IVH infants while aggregations were similar to day 1. Initial PT's and/or PTT's were abnormal in 16/30 infants with IVH in contrast to 2/28 infants with SAH or no ICH ($p<.05$). Normal fibrinogens and negative FDP's ruled out DIC in all but 3 cases of IVH. These data suggest that platelet dysfunction as well as coagulation defects may predispose the premature infant to IVH.

● **1424** THE RELATIONSHIP BETWEEN TOTAL FLUID ADMINISTRATION AND INDOMETHACIN (I) DOSE NEEDED TO CLOSE THE DUCTUS ARTERIOSUS (DA). Laurence D. Shaw, Cynthia T. Barrett and William F. Friedman, Department of Pediatrics, UCLA Center for the Health Sciences, Los Angeles, California.

The effect of fluid administration upon pharmacological closure of the DA by intravenous I, was evaluated in a prospective randomized study of 23 preterm infants, less than age 7 days, whose birth weight varied between 600 and 1800 grams (average = 1255). All infants required assisted ventilation and had signs of significant left to right DA shunting with cardiomegaly, precordial hyperactivity, bounding peripheral pulses, and increased echo LA/Ao ratio. Total fluid administration to 14 infants in Group 1 was < 90 ml/kg during the 24 hours prior to administration of I. Group 2 consisted of 9 infants receiving > 90 ml/kg in this time period. One infant in each group required surgical ligation of the DA after two I doses (0.2 mg/kg/dose) failed. Twenty-one infants (91.3%) closed their DA with I. The number of doses of I required was related directly to the prior 24 hour fluid history.

	Doses of I		Total
FLUIDS	1	2	
< 90	9	4	13
> 90	0	8	8
TOTAL	9	12	21

$X^2 = 7.07$
$P < 0.01$

These results indicate that fluid restriction is a key component to successful pharmacological closure of the DA with I.

● **1425** NONSTEROIDAL ANTI-INFLAMMATORY DRUGS IMPROVE SURVIVAL IN GROUP B STREPTOCOCCAL SEPSIS. Billie L. Short and Marilea K. Miller (Spon. by Gordon B. Avery). George Washington University Medical Center, Children's Hospital National Medical Center, Department of Neonatology, Washington D.C.

The mortality for newborns with early onset group B beta hemolytic streptococcal sepsis (GBSS) remains high (50-80%) despite specific antibiotic and pressor therapy. The four-to-five day old newborn rat model was used to evaluate two nonsteroidal anti-inflammatory drugs in the therapy of GBSS. We compared intraperitoneal (IP) indomethacin 3 mg/kg (INDO) and ibuprofen 4 mg/kg (IBUP) to sterile water controls in rats that had been injected subcutaneously (SQ) with two strains (GBS 1,GBS 2) of Type III group B strep grown to log-phase in Todd-Hewitt broth. The therapies (0.05cc IP) and micro-organisms (0.05cc SQ) were injected simultaneously. Per cent survival (% S) at 24 hours was recorded and lethal doses (LD) for controls were calculated:

cfu/rat	INDOMETHACIN		IBUPROFEN		CONTROLS		LD	p
	n	% S	n	% S	n	% S		
GBS 1--3.5x10^3	45	89	--	--	45	67	33	<0.01
GBS 1-- 10^4	26	46	--	--	27	15	85	<0.01
GBS 2--3.5x10^3	60	10	42	24*	51	8	90	<0.03*

In the neonatal rat model, INDO significantly improved 24 hour survival in both the LD_{33} and LD_{85} groups. At an LD_{90}, INDO failed to improve survival while IBUP did. This data suggests that after further studies INDO and IBUP--both prostaglandin inhibitors and anti-inflammatory agents--may become useful adjuvants to present treatment of early onset GBSS.