193 INFECTIOUS COMPLICATIONS ARE NOT RELATED TO DURATION OF INTRACRANIAL PRESSURE MONITORING. Robert K.Kanter, Leonard B. Weiner, Ann M. Patti, Linda K. Robson, (Spon. by Frank A. Oski) SUNY, Upstate Medical Center, Department of Pediatrics, Syracuse, New York 13210

We retrospectively reviewed intracranial pressure (ICP) monitors to determine whether infectious complications occur most frequently at the time of monitor insertion, or increase with duration of monitoring. Seventy two ICP monitors in 65 children with acute brain injuries were reviewed. Monitoring was carried out for 7 days or longer in more than half the cases (range 1-28 days). Nine infections (positive monitor surveillance cultures) occurred on days 2-11. The risk of a subsequent infection rose from an initial 1.5 infections/100 subsequent monitor-days to a high of 1.9 infections/100 subsequent monitor-days on day 6, and progressively diminished after day 6. For monitors remaining in place and uninfected, the percent with a subsequent infection was highest in the first 2 days and diminished thereafter. If a distinction is made between monitor colonization (positive monitor surveillance culture, patient afebrile, no CSF pleocytosis) vs. patient infection (fever, CSF pleocytosis), only 8.3% of monitors overall, and only 4.9% of monitors in non-craniotomy patients caused infection. These observations suggest that introduction of infection occurs at the time of monitor insertion. Routine reinsertion of a new monitor might increase risk by re-exposing the patient to contamination at the time of insertion. An indwelling ICP monitor should be used as long as necessary with reinsertion of a new monitor only if a malfunction or positive surveillance culture occurs.

194 COMPARISON OF GLOMERULAR FILTRATION RATE (GFR), DERIVED FROM ENDOGENOUS CREATININE CLEARANCE OR DERIVED FROM BODY LENGTH AND PLASMA CREATININE CONCENTRATIONS IN INTENSIVE CARE PATIENTS. Mary B. L. Kwong, Timothy K. Tong, John J. Mickell, James C. M. Chan, Medical College of Virginia, Dept. of Pediatrics, Children's Medical Center, Virginia Commonwealth University, Richmond, VA.

Creatinine clearances (C_{Cr}) from 159 catheterized, timed urine collections in 56 children (32 male, 24 female; mean age of 6 years) admitted to the Intensive Care Unit between 1/1/80 to 4/1/84 were compared to simultaneous GFR derived (GFRd) from the formula of body length in cm x 0.55 ÷ plasma creatinine concentration in mg/dl. The timed urine collections were collected at hourly intervals, pooled and refrigerated until analyzed. The total volumes were measured by one of the authors. The patients were divided into three subgroups according to C_{Cr}:

C_{Cr} Subgroup ml/min/1.73 m^2	GFRd Mean (SE)	C_{Cr} Mean (SE)	GFRd/C_{Cr} Mean	r values
0-40 (n=73)	64.0 (3.4)	20.6 (1.4)	4.5	0.63
41-90 (n=59)	101.2 (3.7)	63.4 (2.0)	1.6	0.29
>90 (n=27)	124.2 (6.0)	133.8 (6.6)	0.95	0.48

Reliable estimations of GFR are crucial in intensive care patients, especially in guiding the dosage of nephrotoxic drugs. In view of the above data, we conclude that the GFRd is not a reliable method in estimating the GFR in intensive care patients, and the C_{Cr} from catheterized timed urine collections continue to provide reasonable estimations for clinical purposes.

195 EVALUATION OF NONINVASIVELY MEASURED HEMOGLOBIN-OXYGEN SATURATION IN NEONATES. Patrick K. Lewallen, Mark C. Mammel, Michael Coleman, Stephen J. Boros, Children's Hospital, St. Paul, and University of Minnesota, Minneapolis, MN

We compared hemoglobin-oxygen saturation measured noninvasively (NSO_2) to spectrophotometrically determined hemoglobin-oxygen saturations (SO_2) in 26 neonates. One-hundred forty-one paired measurements were made in patients ranging from 710 to 2890 gm. Noninvasive measurements were made using a Nelcor N-100 pulse oximeter. This microprocessor-controlled device provides a continuous display of NSO_2, determined by the absorption of two light wave lengths during arterial pulsation. The light sensor was placed over the wrist, foot, or ankle. Arterial oxygen saturations were obtained from umbilical arterial catheters or by post-ductal arterial sampling. SO_2 was determined with an IL282 co-oximeter. The range of NSO_2 was 63-100%; SO_2 values ranged from 8-100%. The average difference between NSO_2 and SO_2 was +3.23%. Twelve arterial specimens from 3 patients had SO_2 <60%; the average difference between NSO_2 and SO_2 was +30%. When all values were compared by linear regression analysis, r = 0.85.

We conclude that this noninvasive technique is reliable for measurement of hemoglobin-oxygenation saturation. At very low levels of SO_2, noninvasive measurements were always higher than actual arterial values. These differences are likely due to a combination of physiologic and measurement artifacts. Further study in cyanotic patients may resolve this problem.

196 PERCUTANEOUS PERIPHERAL ARTERIAL CANNULATION (PPAC) IN NEONATES. W.J. Lin, A. Baldomero, T.J. Wei, V. Kamtorn, S. Sun (Spon. by Richard Rapkin) UMD-NJ Med Sch. Children's Hosp. of NJ, Dept. of Neonatology, Newark, N.J.

Percutaneous peripheral arterial cannulation was performed in 66 neonates with birth weight ranging from 560 gm to 4500 gms (15 - <1500 gm, 9-<1000 gm). Forty patients (pts) were admitted because of RDS , 23 with congenital heart disease. Twenty-two gauge Medicut intravenous cannula was placed percutaneously in radial (62 cases) or posterior tibial arteries (4 cases) by neonatologists in 16 , by neonatal fellows in 27 and by surgeons in 23 pts. Cannula was connected to pressure transducer for continuous blood pressure and arterial wave form monitoring. Arterial lines were infused with 0.9% NaCl with 1 unit heparin/ml using continuous infusion pump. Average successful performance rate was one per 3 attempts (range 1 to 6 trials). Overall duration of cannulation ranged from 8 hours to 505 hrs (21 days). Cannulation was discontinued electively (no longer needed) in 38/63 (60.3%) , infiltrated in 21/63 (33.3%) and clotted in 4/63 (6.3%) cases. Mean duration of cannulation was 100 hours (13-505 hrs) in electively discontinued lines, 91.5 hrs (8-373 hrs) in infiltrated and 59.3 hrs 46.5-76 hrs) in clotted lines. Transient ischemia of fingers was noted in 3 and skin necrosis in 1 patient. No other complication of arterial line was experienced. PPAC results in less complications than does UA catheterization. It carries no thromboembolic risk to internal organs. It may be perferable to UA catheterization. With practice, the technique is not more difficult than UA catheterization.

† **197** NALOXONE INDUCED GUT ISCHEMIA DURING RESUSCITATION OF EXPERIMENTAL NEONATAL SEPTIC SHOCK. Thom E Lobe, Eric D. Dobkin, Jatinder Bhatia, Keith T. Oldham, Hugo A. Linares, Daniel T. Traber, (Spon. by David K. Rassin), University of Texas Medical Branch, Departments of Surgery and Pediatrics, Galveston, TX.

Naloxone has been recommended for use in neonatal septic shock. To evaluate its effectiveness in peritonitis-induced septic shock, anesthetized newborn pigs were monitored and peritonitis was induced by intraperitoneal injection of E.coli and sterile pig feces. All pigs received fluid resuscitation, gentamicin, and bicarbonate to correct acidemia. When shock was evident, the pigs either received an initial IV bolus of naloxone (2 mg/kg) followed by a 2 mg/kg.hr infusion (Group I, n=9), or received no additional pharmacological intervention (Group II, n=7). Hemodynamic parameters assessed included mean arterial, pulmonary arterial, and central venous pressures; cardiac, stroke volume, and left ventricular stroke work indices; and systemic and pulmonary vascular resistance indices. There were no significant differences in any of the parameters measured between Groups I and II, although peripheral vascular resistance in Group I was transiently elevated acutely after naloxone infusion began. Mean survival times in the two groups were similar. Five of 9 Group I animals (56%), demonstrated gross and histologically proved intestinal ischemia ($p<.02$) while none of the animals in Group II demonstrated any notable sequelae. The data demonstrate that naloxone resuscitation results in an increase in vascular resistance without concomitant improvement in cardiac performance. These changes are associated with significant intestinal ischemia in this model.

● **198** THE EFFECT OF NALOXONE (N) ON THE HEMODYNAMICS OF THE NEWBORN PIGLET WITH SEPTIC SHOCK. Randy Miller, James Menke, Nancy Hansen, Rex Bickers, Phil Nowicki. Spon. by Dwight Powell. Ohio State University, Columbus Children's Hospital, Department of Pediatrics, Columbus, Ohio.

To investigate the effect of N in the septic newborn, we instrumented 8 piglets (1-5 days old) for continuous measurement of mean arterial pressure (MAP), pulmonary artery pressure (PAP), central venous pressure, heart rate (HR), left ventricular (LV) pressure, LV contractility (dP/dt), cardiac output (CO), and O_2 content. O_2 consumption (VO_2), systemic vascular resistance (SVR), and pulmonary vascular resistance (PVR) were calculated. Following a stabilization period, Group B streptococci (GBBS), 3-9 x 10^{10} org/kg, were infused over 30 minutes. Following the infusion, N (1/mg/kg) was given followed by a continuous infusion of 1/mg/kg/hr (n=4). Control pigs (n=4) were given an equal volume of saline.

		Baseline 0"	End of GBBS infusion 30"	120"
MAP (mmHg)	C	59±10	76±18	30±9
	N	64±9	76±10	60±5*
CO ($ml \cdot min^{-1}$)	C	321±100	158±66	123±43
	N	345±148	178±59	203±91
dP/dt ($mmHg \cdot msec^{-1}$)	C	1.47±.26	1.6±.36	0.75±.15
	N	1.6 ±0.60	1.2±.41	1.2±.40*

M±SD ANOVA *p <.05 compared to C over time

Both groups developed significant increases in PAP, SVR, and PVR followed by a return toward baseline. VO_2, CO, and dP/dt declined in both groups throughout the study, but in the N treated animals the decreases in CO and dP/dt were ameliorated and the MAP was restored toward baseline. The N group had significantly improved survival ($p<.05$) with 3/4 N pigs and 0/4 C pigs alive > 4 hr. We speculate that naloxone may reverse the hemodynamic sequelae and improve survival in newborns with septic shock.