

**1231** BATH TUB NEAR-DROWNING AS A MANIFESTATION OF THE CHILD NEGLECT SYNDROME: CLINICAL, BIOCHEMICAL AND SOCIAL ASPECTS. Judy Palmer, Daniel V. Schidlow, and Nancy N. Huang, Temple Univ. School of Medicine, Dept. of Pediatrics, St. Christopher's Hosp. for Children, Phila., Pa.

Among 17 children with near-drowning seen in a 6 year period at an urban Pediatric center, 10 involved bath tub accidents (average age 1.2 yrs.). The most important determinant of outcome was their condition on admission. All of 6 children who were alert and breathing did well on minimal therapy (O<sub>2</sub> and NaHCO<sub>3</sub>) with an average of 2.8 hospital days. Four apneic comatose patients required in addition, steroids, blood transfusion, tracheal intubation and mechanical ventilation, and were hospitalized an average of 14 days; 3/4 died. Among those in whom studies were obtained less than 2 hours after the accident, findings were as follows: acidosis (mean pH 7.0) in 5 cases; hypercapnia (mean pCO<sub>2</sub> 62) in 4 cases; a-A gradient (mean pO<sub>2</sub> 91) in 3 cases (all receiving O<sub>2</sub>); and mild hyponatremia (mean Na 132) in 6 cases.

In 9/10 cases the child was unattended in the bath tub. Social Service was consulted in 7/10 cases, and formal child neglect forms were filed in 6 cases. Two cases had been previously reported for neglect. One mother was under psychiatric care. In 3 cases severe social disorganization was evident. In 5 cases the parents were unaware of the hazard of leaving infants unattended in the bath tub. Prevention of bath tub near-drowning will require a more active effort by health professionals to educate such high risk families about this danger.

**1232** EFFECT OF HYPERINFLATION AND ATELECTASIS ON FLUID ACCUMULATION IN THE PUPPY LUNG. Leila Mei Pang, Frank Rodriguez-Martinez, S. Alex Stalcup and Robert B. Mellins, College of Physicians and Surgeons, Columbia University, Departments of Pediatrics and Anesthesiology, New York

Pulmonary edema is accompanied by hyperinflation or atelectasis in a variety of neonatal respiratory diseases. We studied the effect of these disparate lung volumes on fluid accumulation in the lung in 12 anesthetized spontaneously breathing puppies. Pulmonary arterial, left atrial, plasma colloid osmotic and bilateral airway pressures were measured continuously following separate intubation of the main stem bronchi. Unilateral hyperinflation was produced by continuous positive airway pressure (CPAP) in 5 puppies and unilateral atelectasis was produced by bronchial occlusion in 7 other puppies; the contralateral lung served as control. Extravascular lung water (ELW) was determined by subtracting lung blood water from total lung water. In the presence of an intravascular gradient favoring pulmonary edema produced by saline infusion, hyperinflation enhanced and atelectasis opposed fluid accumulation (p < 0.05).

	Control	Hyperinflation	Control	Atelectasis
ELW (G/G dry lung)	7.5	9.7	8.5	7.2
(SD)	(2.0)	(2.0)	(2.6)	(1.9)

We conclude that water balance in the lung is a function of lung inflation. Because hyperinflation by CPAP enhances fluid accumulation in the lung but improves gas exchange, we also conclude that hyperinflation must enhance the sequestration of fluid in non gas exchanging areas.

**1233** CONTINUOUS USE OF ORAL ANTIBIOTICS IN THE MANAGEMENT OF PATIENTS WITH CYSTIC FIBROSIS Sungmin Park, Carroll A. Grece, and Carolyn R. Denning, Columbia University College of Physicians and Surgeons, Department of Pediatrics, New York City

This study was designed to determine the effectiveness of continuous oral antibiotics versus antibiotics used only during episodes of illness in patients with cystic fibrosis. Twenty-two patients with cystic fibrosis were divided into two groups according to age, sex, and pulmonary status, and in a double blind fashion one group (A) was given cloxiciillin (50 mg/kg/day) and the other group (B) a placebo for 12 months. All other parts of the basic C.F. treatment program remained unchanged. The patients were evaluated quarterly using the following parameters: sputum volume and color, cough, physical examination, CBC, ESR, chest radiograph, pulmonary function tests and blood gas analysis. Of the 11 patients in group A, 10 improved or remained stable and 1 showed deterioration, whereas, in group B, 6 improved or remained stable and 5 showed worsening. The data indicates that there is less progression of the pulmonary component of cystic fibrosis in patients who received continuous cloxiciillin.

**1234** A PREDICTIVE SCORE FOR THE MANAGEMENT OF THE RESPIRATORY DISTRESS SYNDROME (RDS). George J. Peckham, Joseph Schulman, Gilberto R. Pereira (Spon. by Jean A. Cortner) Univ. of Pa. Sch. of Med., Dept. of Peds. and The Children's Hospital of Phila., Philadelphia, PA.

A prognostic scoring system for infants with RDS was developed in an effort to better predict the need for the type of therapy that would be required. The differences of the means of 5 variables occurring in 100 infants treated from July 1974 to June 1975 were compared by the Student's "t" test for 3 treatment outcomes: 1) oxygen by hood (OBH); 2) continuous positive airway pressure (CPAP); 3) mechanical ventilation (MV). These 5 variables, 1) birthweight, 2) clinical RDS score, 3) FiO<sub>2</sub>, 4) pCO<sub>2</sub>, 5) pH were formatted into a multivariate scoring system with a score ranging from a value of zero for mild disease to a value of ten for the severest condition. This was applied to 159 infants treated for RDS from July 1975 to June 1976. The mean scores were significantly different when therapy by OBH or CPAP were compared to MV. There was less striking difference when OBH was compared with CPAP.

	Mean	SD	N	P Values
OBH	3.63	1.63	52	OBH vs. CPAP = 0.10
CPAP	4.24	1.83	50	OBH vs. MV = <0.001
MV	6.66	1.96	57	CPAP vs. MV = <0.001

When the various score levels were distributed according to the 3 therapeutic modalities it was seen that most of the patients with scores in the range of 0-2 did well with OBH or CPAP and only 8% required mechanical ventilation. On the other hand, of those infants scoring in the range of 7 or greater, 83% required MV and only 5% were treated with OBH only.

**1235** EFFECT OF VITAMIN E DEFICIENCY ON PULMONARY OXYGEN TOXICITY. R.L. Poland, R.O. Bollinger, M.E. Bozynski, P. Karna and E.V.D. Perrin, Depts. of Pediatrics and Pathology, Wayne State Univ. School of Medicine and Children's Hospital of Michigan, Detroit.

Adult female white mice were divided into two groups. One was fed a diet deficient in vitamin E (E-) and the other (E+) was fed the same mixture with D-a-tocopherol added (100 mg/kg chow). The following were evaluated: serum tocopherol concentrations, lung weight and sodium content, and the survival time of the animals in oxygen. Mean serum tocopherol concentrations were 2.1 ug/ml and 14.5 ug/ml (p < .005). Lung wet weight, sodium content and water content increased with time in 65% and 100% oxygen. E- mice had more sodium retention/gm lung than E+ mice (p < .05). Survival:

Group	N	Diet	FiO <sub>2</sub>	T <sub>1/2</sub> (days)	Mean survival times were compared using the student's t test (A vs B, C vs D, C vs E, D vs E). p < .005 in each case
A	16	E-/5wks	1.00	3.3±0.4	
B	16	E+/5 "	1.00	4.9±0.3	
C	15	E-/7wks	.65	5.5±0.9	
D	10	E-/7 "	.21	12.6±2.6	
E	17	E+/7 "	.65	25.3±2.5	

Electron microscope studies of lungs that were fixed with glutaraldehyde at 20 cmH<sub>2</sub>O pressure showed vitamin E related differences. Oxygen (65% x 3-6 days) caused disruption of pulmonary capillary endothelial junctions and of the structure of the mitochondrial cristae in E- mice but not in E+ mice. Edema and fibrin deposition were greater in the E- group. These changes were not observed in animals kept in room air.

These results indicate that vitamin E deficiency enhances the toxic effects of oxygen in mice.

**1236** STEROID-MEDIATED IMPROVEMENT IN NEONATAL BRONCHOPULMONARY DYSPLASIA (BPD). Jeffrey Pomerance, Rosa Sanchez, Christina Ukrainski, Ricardo Liberman, Cedars-Sinai Medical Center, Dept. of Ped. and UCLA Sch. Med., Los Angeles, (Spon. by B. M. Kagan).

In 3 infants with BPD, aged 35 to 90 days, dramatic ventilatory improvement began within the first 24 hours of I.M. dexamethasone, 0.8 mg every 8 hours. This improvement made it possible to decrease peak inspiratory pressure an average of 9.5 cm H<sub>2</sub>O (range 7-12) within 72 hours. In 2 infants an L/S ratio was performed on tracheal aspirate obtained prior to therapy and 24, and 72 hours post-medication. The values remained essentially unchanged. One infant regressed after dexamethasone was discontinued and again improved after therapy was restarted. Two infants were successfully extubated while on dexamethasone. All 3 infants eventually succumbed, 2 to their disease and 1 to complications of dexamethasone therapy.

Two additional infants with BPD also demonstrated significant improvement in ventilatory function associated with an episode of bacterial sepsis. It is hypothesized that an endogenous steroid surge may have been responsible. Both of these infants survived.

The mechanism of steroid action in BPD is unknown. Induction of enzymes, other than those involved in lecithin synthesis, or a shift in fluid compartments is a theoretical possibility. Steroid therapy may be considered as a final alternative in those infants with chronic BPD who show no natural trend toward improvement.