584 CYCLOSPORIN-INDUCED REMISSION IN SEVERE COLITIS UNRESPONSIVE TO CORTICOSTEROID THERAPY. Barbara S. Kirschner, Peter F. Whitington, Dennis D. Black, David Bostwick. Pritzker Sch of Med, Univ of Chicago, Wyler Children's Hosp, Dept of Peds, Chicago, IL.

Cyclosporin A (CyA) has induced clinical remission in Crohn's disease and one adult with ulc colitis. We have documented remission in disease activity and mucosal inflammation by sequential biopsies in two adolescents with severe pancolitis unresponsive to IV corticosteroids and TPN. Patient #1 has UC and pt #2 pancolitis (indeterminate type).

Patient #1 had persistent bleeding requiring 10 u of blood. After 4 wks of IV Solu-Medrol and TPN, IV CyA 160 mg BID (6 mg/kg/day) was begun. Plasma Cy by HPLC was 200 ng/ml. At one week, stools decreased and gross bleeding subsided. Biopsies on day 7 had reduced PMN infiltration. At day 14, no crypt abscesses were seen; PMN inflammation was minimal at 5-10 cm and normal at 15 cm. Pred was tapered to 20 mg QOD. After 5 mos of oral CyA rx, she is asymptomatic, with mild friability to 10 cm and normal from 10-25 cm. Patient #2 had severe abd pain, hematochezia and wt loss, non responsive to 4 wks of pred and 3 wks of IV Solu-Medrol. IV CyA, 130 mg BID, (6mg/kg/day) was followed by gradual improvement over 2 wks. A decrease in mucosal inflammation was noted at 3 wks and markedly improved at 6 wks. At 3 mos, she is asymptomatic on oral CyA and alt day pred with mild rectal edema. Conclusion: CyA reduces inflammation and induces clinical remission which lasts for at least 3-6 mos. A multicenter study of CyA in pediatric patients with severe colitis, unresponsive to corticosteroid therapy, should be established.

●585 CHOLESTATIC EFFECTS OF ALUMINUM IN RATS. Gordon L. Klein, Melvin B. Heyman, Thomas C. Lee, Allen C. Alfrey, City of Hope Med Ctr, Div Peds, Duarte, CA, U Calif Sch Med, Dept. Peds, San Francisco, VA Med Ctr, U Colorado Sch Med, Neph Sect, Denver.

Aluminum(Al) is found in parenteral nutrition (PN) solutions, accumulating in bone and liver of patients receiving PN therapy. Al is associated with low-turnover osteomalacia in PN patients but not with liver disease. PN patients may also develop cholestasis(CS). We studied whether Al could produce CS in rats (160-200g) given Al intravenously(IV) 5 mg/kg/d for 14d (Group I) (n=7) and 7d (Group II) (n=8) and 1 mg/kg/d for 14d (Group III) (n=6). Each group was pair-fed with littermate controls(C) given saline IV. Serum(S) total bile acids(BA), bile flow(BF), and Al in bile(B) and urine(U) were determined. Results:

	I	C	II	C	III	C	
SBA	92*	9	19*	8	48*	6	(mean ±
(μmol/L)	±52	±6	±8	±1	±29	±1	SD)
BF	83*	123	100*	118	129	127	*=p<.05
(μL/hr/g liver)	±24	±34	±8	±9	±40	±20	vs C
Liver Al	1305*	<1	1100*	<1	453*	<1	
(mg/kg dry wt)	±180		±301		±95		

Biliary BA excretion did not differ among the groups. Rats in Group I had higher SBA vs Group II ($p<.05$) but no different from Group III. BF in Group I was lower than in Group II ($p<.03$) and Group III ($p<.05$). In all groups BAl excretion was only 3-7% of UAl excretion. Thus, Al can produce CS in rats in both a dose and time-related manner and must be considered in the etiology of TPN-associated cholestasis.

586 TREATMENT OF DISTAL INTESTINAL OBSTRUCTION SYNDROME (DIOS) IN CYSTIC FIBROSIS (CF) WITH AN INTESTINAL LAVAGE SOLUTION Sibylle Koletzko, David A. Stringer, Geoff J. Cleghorn, Peter R. Durie, Hosp. for Sick Children, Dept. Pediatr., Toronto, Ont., M5G 1X8.

DIOS, a common cause of abdominal pain in CF patients, is due to impaction of muco-feculent material in distal ileum and cecum. Conventional therapy with mucolytics, laxatives and retention enemas is often unsatisfactory and may require hospitalization. We have extensive experience with the use of intestinal lavage with Colytely®. 22 CF patients (mean 21.8 yrs, range 13-34 yrs, 15 male) presented with abdominal pain and a mass in the right iliac fossa; 3 vomited and 13 had acute weight loss. In the first lavage 5.6±1.9 L (M±SD) of Colytely® were given p.o. (n=14) or via n-g tube (n=8) over a period of 5.6±2.4 hrs. Body weight and serum electrolytes did not change significantly. No serious side effects occurred. Minor symptoms included bloating (n=12), nausea (n=8), vomiting (n=1), increased urine output (n=7) and chills (n=3). All but one patient reported impressive relief of symptoms, and remained pain-free for an average of 3 months (range 1 - 19 months). We developed a score to assess DIOS with regard to pain (absent - acute obstruction; range 0-30) and radiological signs of impaction (absent - severe; range 0-30). Lavage led to a significant reduction of pain (20.5±4.9 vs. 1.4±4.7; $p<0.0001$) and of radiologic score (13.5±5.6 vs. 4.3±5.4; $p<0.0001$). During follow up of 1-22 months, 8 patients needed a total of 26 (range 1-7) further courses of Colytely®. 6 patients were treated at home, resulting in reduced hospitalization. In our experience intestinal lavage is a well accepted, safe and effective therapy for DIOS.

587 ALUMINUM CONTAMINATION OF INFANT FORMULAS. Winston W.K. Koo, Lawrence A. Kaplan. (Spon. by Dr. D. Schiff). Department of Pediatrics, University of Alberta, Edmonton, Alberta, Canada and Department of Laboratory Medicine, University of Cinncinnati, Cinncinnati, Ohio.

Tissue accumulation of aluminum (Al), a known toxin, has been reported in formula fed infants (Lancet 1985;2:527). This study aims to determine the extent of Al contamination in whole milk and infant formulas. Similar products from different manufacturers (M) and different lots (L) were measured for Al using electrothermal atomic absorption. Al measurements were made directly from the samples or after dilution with Al free water. Al content was lowest in human milk (27±6 μg/l, m±SE, n=6), whole cow milk (26±2 μg/l, n=3), bottled glucose water (13 and 17 μg/l, n=2), and sterile water (25±8 μg/l, n=3); highest in highly processed and modified formulas including soy formula (1102±163 μg/l n=14 from 3M/12L), "premature" formula (660±68 μg/l, n=13 from 2M/10L), special formulas with modified protein, carbohydrate or fat (983±134 μg/l, n=7 from 1M/7L and 3 products). Al content of humanized CM formulas was 203±16 μg/l, n=31 from 3M/26L and 14 products, and for bottled glucose-electrolyte solution was 73±6 μg/l, n=3. There were no significant differences in Al content of similar products from different manufacturers. Thus there are marked differences in Al loading depending on the type of formula used. We suggest that Al contamination of infant formulas may be lowered by altering manufacturing procedures and the use of low Al additives.

●588 INFLUENZA VIRUS ALTERS HEPATIC MITOCHONDRIAL LIPIDS IN A MOUSE MODEL OF REYE'S SYNDROME. Saroj Larroya, Kathleen B. Schwarz (Spon by T. Aceto, Jr.). St. Louis University Medical Center, Cardinal Glennon Children's Hospital, Department of Pediatrics, St. Louis, MO.

Administration of high titer Influenza B virus to young mice results in increased permeability in hepatic mitochondrial (HM) membranes (Biochem Med 28:109,1982). Since membrane functions are influenced by lipid composition (Can J Biochem 58:1091,1980), the possibility of virally-induced changes in HM lipids was studied. 4-6 week-old male Balb C mice were given 12,800 hemagglutination units of egg-adapted Influenza B Lee/40 virus or vehicle i.v., fasted, given ad lib access to water, and studied 36 hours later. HM lipids were extracted (Can J Biochem Phys 37:911 1959) and cyclohexane extracts were scanned from 220-280 nm at 5 nm intervals. O.D.'s were decreased across the entire spectrum-for example at 233 nm values were 1.18±0.21 for treated mice vs 0.67±0.06 for controls ($p<0.040$). The spectrum of total HM lipids is influenced by both neutral and polar lipids. Total HM cholesterol (C) was increased in treated mice:23±3 vs. 18±2μg C/mg protein ($p<0.001$). Phospholipid (PL)/C ratio was also increased in the treated mice 10.96±1.68 vs. 8.96±1.80 ($p<0.017$). HM sphingomyelin was decreased in treated animals - 2.06±1.80% of PL vs. 3.78±2.28($p<0.05$); other PL classes and HM triglycerides were unaffected by virus treatment. The virally induced increase in HM C may affect membrane ATPase (Am J Physiol 242:H254,1984) and respiratory function (J Biol Chem 259:9997,1986), and may render HM membranes more susceptible to the injurious effects of agents such as aspirin involved in the pathogenesis of Reye's Syndrome.

●589 EFFECTS OF ISCHEMIA AND VITAMIN E DEFICIENCY ON SMALL BOWEL LIPID PEROXIDATION AND MUCOSAL ENZYMES. John S. Latimer and Merrily Poth. (Spon. by R.E. Johnsonbaugh). USUHS, Dept. of Peds, Bethesda, MD.

Free radical mechanisms have been implicated in mediating tissue damage after ischemia in several different organ systems. Vitamin E serves as a major defense against free radical injury and vitamin E deficiency may be a contributing factor in the increased vulnerability of newborn and preterm infants to ischemic injury. Therefore we set up an ischemic gut model in the rat to study the effects of vitamin E deficiency and repletion on free radical propagation and on mucosal enzyme levels. Weanling Sprague-Dawley rats were placed on vitamin E deficient or replete diets for 13-15 wks and then subjected to a 45 min cranial mesenteric artery occlusion and 15 min reperfusion or timed laparotomy. Mucosal scrapings from jejunum and ileum were homogenized and assayed for in vitro lipid peroxidation using thiobarbituric acid assay of malondialdehyde. In addition, a mucosal enzyme, sucrase, was measured in jejunal homogenates. Increased lipid peroxidation was seen in vitamin E deficient small bowel and this was further increased after ischemia. Vitamin E added to the assay in vitro or given to the rats in vivo prevented this increased lipid peroxidation. A higher concentration of vitamin E was needed for inhibition of lipid peroxidation after ischemic insult. Ischemia resulted in a decrease in sucrase in jejunum of vitamin E deficient but not in vitamin E replete rats. Thus vitamin E deficiency potentiates the effect of ischemia on free radical formation, and enhances the acute functional gut damage, as measured by a decrement in mucosal enzyme activity.