1742 THE VALIDITY OF THE TRANSCUTANEOUS OXYGEN TENSION METHOD IN CHILDREN. Jacob Yahav, Catherine Mindorff, Henry Levison, The Res. Inst., Hosp. for Sick Children, Department of Respiratory Physiology, Toronto.

Although recent investigations have shown the clinical usefulness of the transcutaneous oxygen tension ($tcPO_2$) in newborn infants, there are very limited data available in the age group from 1-21 years. In order to assess the usefulness of $tcPO_2$ in the pediatric age group, $tcPO_2$ was continuously monitored and compared with simultaneous arterial oxygen tension (PaO_2) in 67 patients with cardiorespiratory problems. Patients were subdivided into two groups: (1) patients during cardiac catheterization (56) in whom the PaO_2 ranged between 34-98 mmHg (mean 72.4±17 mmHg) and (2) patients in the Intensive Care Unit (11) in whom the PaO_2 ranged between 71-158 mmHg (mean 119±31 mmHg). Ages ranged from 1.5 to 23 years (mean 7.7 years). Blood samples were drawn via an indwelling arterial catheter during periods in which the $tcPO_2$ recording showed stable values over 3 minutes. Studies lasted for 30-210 min. (mean 80±33.4 min). A total of 118 arterial blood samples were obtained simultaneous to the $tcPO_2$ recordings. The overall relationship between $tcPO_2$ and PaO_2 in the 67 patients studied was $r=0.96$ ($P < 0.001$), $tcPO_2$ slope 0.89, SEE = 6.8 and the intercept 3.0 mmHg. There was no difference in the correlation coefficient (r) between the two groups of patients. We conclude, therefore, that $tcPO_2$ measurement is a reliable method for assessing the arterial oxygen tension.

1743 REDUCTION IN SUDDEN INFANT DEATH SYNDROME (SIDS)AFTER SELECTIVE USE OF HOME MONITORING AMONG INFANTS THAT WEIGH LESS THAN 2 KILOGRAMS AT BIRTH John E. Yount (Spon. by John W. Reynolds) Univ. of Ore. Health Sci. Center,Dept. of Pediatrics, Portland, Oregon

Because of prenatal referral 20% of Oregon infants weighing 2.0 Kg. or less are born at one perinatal center(UHN). Beginning in late 1977 all infants approaching discharge were continually monitored. Any alarm within a week of discharge was followed continuous overnight polygraph monitoring of ECG, respiratory motion and T_cpO_2. Respiratory pauses longer than 20 seconds were considered criteria for delayed discharge and,if persistent for one week,for monitoring at home. Less than 6% were monitored at home. Following this program only one infant <2.0 Kg. died of SIDS. This child was transferred to another hospital three weeks before discharge. Total post neonatal mortality, SIDS incidence in the rest of the state and in infants >2.0 Kg. born at UHN show this to be a real and unique decline in SIDS rate. All UHN data from 1980 confirm and strengthen this trend.

	BIRTHS <2.0Kg.		BIRTHS >2.0Kg.		
LOCATION OF BIRTH	SIDS	NON-SIDS	SIDS	NON-SIDS	
		1975-77			
Non-UHN	7	1212	241	100,048	χ^2
UHN	6X	217	25	5,301	Significant
		1978-79			Chi Sq.
Non-UHN	8	839	190	75,969	$p<0.01$
UHN	1X	236	13	4,063	

This is consistent with the theory that infants with respiratory instability are susceptable to SIDS and that monitoring reduces SIDS.

1744 CONVERSION OF CHOLINE TO PHOSPHATIDYLCHOLINE(PC) IN THE ISOLATED-VENTILATED PERFUSED RABBIT LUNG. R.D. Zachman, P.W. Cotter, F.H.C. Tsao. Univ. of Wisc. Dept. of Ped., Madison, WI.

Isolated-ventilated perfused 10 day old rabbit lungs were pulse dosed with[methyl-^{14}C] choline chloride. After perfusion, the lung tissue was assayed for ^{14}C choline uptake and incorporation into PC. ^{14}C-choline incorporation into ^{14}C-PC was linear up to 30 minutes(0.9pmole PC/mg protein/min) and then was slower (0.33pmole/mg protein/min) for the next 30 minutes. ^{14}C-PC was also linearly dependent upon the pulse dose of ^{14}C-choline over a 10 fold range in concentration(20-200nMoles) at both 10 and 30 minutes. Total radioactivity in lung/mg protein(uptake of ^{14}C-choline) remained constant from 10-60 minutes of perfusion. The % of ^{14}C-PC of total ^{14}C uptake was 10, 46, 38 respectively at 10, 30 and 60 minutes. Uptake of ^{14}C-choline was 8-10% of the injected pulse dose. Free ^{14}C-choline from the pulse dose appeared immediately in the lung effluent but that contained negligible amounts of ^{14}C-PC. Tracheal wash was not analyzed. Absence of glucose in the perfusate decreased ^{14}C-PC synthesis 15-20% by 60 minutes. Perfusate glycerol(5-7.0mM) restored ^{14}C-PC synthesis in the absence of perfusate glucose. ^{14}C-Disaturated phosphatidylcholine(DSPC) accounted for about 20% of total ^{14}C-PC in lung, increased with perfusion time and decreased without glucose.

Perfusion with a constant influx of ^{14}C-choline was studied in 30 minute perfusion. There, ^{14}C-choline uptake and incorporation into PC plateaued at 10mM perfusate choline(0.8nmole PC/mg protein/min)without evidence of toxicity to the isolated lung.