967 IMPACT OF NEONATAL COMMUNITY HOSPITAL NURSING EDUCATION ON TRANSPORT TIME RESPONSE, PICK-UP TEMP AND MORTALITY.

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Lack of NICU care & cold neonates add to increased mortality. 6 randomly chosen hospitals (study) and 4 control hospitals(1°care) were compared in similar pre and post education time periods(5/75-11/75 & 5/76-11/76)by NYC Infant Transport Service. Experimental groups (supervisory Ob-NB nurses)had 4 monthly day sessions at Bellevue NICU followed by 4 teaching days at hospital of origin. 249 sick neonates were sent from the study groups & 128 from controls. Neonates were matched by weight. Results:1-Significant increase in temp in post study group(1.5-2 Kg)with decrease in comparable study group. 2-Significant increase in temp in post study group in <1 Kg and 1.5-2 Kg weight groups. Temp in comparable controls showed a non-significant rise. 3-Post study period experimental group(<2 Kg) had a lower mortality (17%) compared to a control group (27%).

Pre-Post Mean Differences & t values

Wt. (gm)	Mean Time Δ Minutes Calling ITS		Mean Temp Δ C°
<1000	Exper. Δ = -13.6	t19= .16 NS	Δ=+.41;t17=5.58***
	Cont. Δ = - 5.2	t14= .29 NS	Δ=+.44;t13= .5 NS
1001-1500	Exper. Δ = + 2.7	t43= .4 NS	Δ=+.46;t42=4.41***
	Cont. Δ = + 1.8	t43= .08 NS	Δ=+.03;t43=2.38*
1501-2000	Exper. Δ = -44.11	t95= .0004NS	Δ=+.21;t95=2.52**
	Cont. Δ = +85.26	t34= 2.26*	Δ=+.40;t34=1.41NS
≥ 2001	Exper. Δ = +16.75	t89= .7 NS	Δ=+.07;t89= .78NS
	Cont. Δ = + 2.66	t54= 1.28 NS	Δ=+.29;t53=1.01NS

*P <.05 **P <.02 ***P <.001 NS-Non-Significant

968 LOW DOSE METHADONE MAINTENANCE FOR PREGNANT DRUG DEPENDENT WOMEN: EFFECTS ON THE NEWBORN.

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Substitute narcotic therapy for the treatment of drug dependence in pregnancy has been widely used over the past few years in this country. In order to study the effect of such therapy on the newborn, the Family Center Program has attempted to control the medical and drug abuse variables seen in pregnant drug dependent women. Data from 243 women enrolled demonstrate that with low dose methadone maintenance (aver.dose =31 mg/day) and adequate prenatal care (Group C-8.3 visits, N=154), the outcome of infants is significantly better than that of infants whose mothers received methadone maintenance and inadequate prenatal care (Group B-1.8 visits, N=89) in regard to: birth weight,gestational age, incidence of low birth weight and infant morbidity.The infant outcome could have been improved by adequate prenatal care and a longer period of methadone. To substantiate this statement, Groups B and C were compared to women who used heroin only throughout pregnancy and had no prenatal care (Group A, N=64). Groups A and B were not statistically different on the above variables but A and C were significantly different on all variables. It appears that short-term methadone maintenance at low doses and inadequate prenatal care do not significantly improve infant outcome, but that longer methadone maintenance during pregnancy and adequate prenatal care do. Further, the data suggest that low dose methadone maintenance is safe and effective for the pregnant drug dependent woman and her newborn.

969 APNEA IMMEDIATELY FOLLOWING APNEA IN PREMATURE INFANTS.

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There is an increased incidence of apnea in the period immediately following an apneic event. Time intervals were measured between successive apneic events (≥20 sec.) in 355 hrs. of impedance pneumographic recordings obtained from 8 premature infants, B.W. 800-1100gm, during the first week of life. 521 intervals were identified. A disproportionate number of apneas, 20% of all events, occurred within 2 min. of a preceding event. The incidence of repeat apneic events fell exponentially during the 2 min. following an event. The decrease after 2 min. was more gradual, but it also approximated an exponential. Logarithmic regression analysis was used to compare the data of the first 2 min. to the incidence data of the next 33 min. The regression equation for the first 2 min. predicted a peak apnea incidence (i.e., extrapolation to zero interval) 6 times that predicted by the equation for the next 33 min. ($r = 0.78$, for both equations). The high initial incidence of apnea immediately following an apnea, 6 times the expected rate, and its steep exponential disappearance suggest that the second event may be causally related to the first. The clinical relevance of this data is that a large number of "follow-on" events might be prevented by close surveillance of the infant during the critical first 2 min. after apnea.

970 STRENGTH OF THE HERING BREUER REFLEX IN THE FIRST WEEK OF LIFE IN PREMATURE AND FULL TERM INFANTS,

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Previous results indicate that the Hering Breuer reflex is active in newborn infants and increases the stability of their tidal volume when faced with elastic loads. However, no information is available in infants of less than 30 weeks GA during the first days of life. Inspiratory time before (ti) and during (ti occ) airway occlusion, as well as effective elastance (E'rs) were determined in 3 groups of infants. Group 1 consisted of 5 infants of 28.4 wks. gestation and 3.2 days of age, group 2 of 8 neonates of the same gestational age and 16 days of age and group 3 of 16 full term newborns of 2 days postnatal age.

Group	E'rs $\frac{cmH_2O}{ml}$ xkg	ti (sec)	ti occ (sec)	Weight (gms)
1	0.63±0.14	0.37±0.02	0.27±0.03	902±29
2	0.99±0.11	0.40±0.03	0.61±0.06	1015±30
3	1.26±0.08	0.45±0.03	0.83±0.07	3160±105

The results show absence of the Hering Breuer reflex in the very premature infant shortly after birth. After the second week of life the reflex is present but not as active as in the full term newborn. The increase in strength of the reflex with age is also reflected in the increase in E'rs if this value is related to body weight. It appears that the Hering Breuer Reflex matures with gestational age in utero as well as extra utero if the infant is born prematurely. The immaturity of the reflex in the very premature infant may be another factor related to the frequently observed respiratory failure in this age group.

971 EFFECTS OF AMINOPHYLLINE ON THE VENTILATION AND METABOLIC RATE IN PREMATURE INFANTS WITH APNEA.

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Eight premature infants (mean B.W. 1080 g, Gestational age 28 weeks) with severe idiopathic apnea (> 20 sec.) were treated with Aminophylline 2 mg/kg q. 6 hrs. iv during the first week of life. Minute ventilation ($\dot{V}_E$),ventilatory response to 4% CO_2, dynamic lung compliance (C_L), end tidal CO_2 (P_ACO_2), oxygen consumption ($\dot{V}O_2$) and arterial blood gases were determined before and 48 hrs. after treatment was started. All measurements were done during sleep, after feedings.

	$\dot{V}E$ ml/min	P_ACO_2 mmHg	CO_2 response ml/minxkgxmmHg	$\dot{V}O_2$ ml/minxkg	apneic spells in 24 hrs.
Before	322±99	52.6±8.1	20.9±17.2	7.0±1.5	23.6±2.7
After	420±94	37.5±6.8	16.8±16.8	8.5±2.1	3.16±1.5
P <	0.005	0.001	NS	0.01	0.001

Lung compliance and oxygen requirements did not change significantly after treatment. Alveolar ventilation ($\dot{V}_A$) was calculated assuming an RQ of 0.8. $\dot{V}_A$ increased from 88 ml/min to 149 ml/min, mainly because of a rise in tidal volume. This increase of 70% can only partially be explained by the 20% increase in metabolic rate, indicating an additional rise in respiratory center output. This rise was reflected in a significant shift of the CO_2 response curve to the left without change in its slope as reported in the adult. In conclusion, Aminophylline reduces the incidence of apneic spells in prematures by increasing their central ventilatory drive. This finding is consistent with the theory that idiopathic apnea is related to a respiratory center malfunction.

972 COMPLICATIONS OF CENTRAL ARTERIAL CATHETERS: ROLE OF FLUID OSMOLARITY AND CATHETER POSITION, RABBIT MODEL,

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5% dextrose (D), 10%D, or 20%D with casein hydrolysate was administered at 120 ml/Kg/day,with an infusion pump, to 30,1Kg rabbits via polyvinyl catheters placed into the aorta via a femoral artery. The catheter tip was located just above either the superior mesenteric artery(H) or the bifurcation(L). After 1-15 days the animals were sacrificed and examined. Complications found were aortic thrombosis or renal, hepatic, splenic, or GI infarction. 20 animals had catheters for ≥6 days(lg): all 11 with H catheters and 2 out of 9 with L catheters had complications ($P<.005$, all P values by Fisher's exact test). The major complication was renal infarction, occurring in 7 animals with H,lg catheters and in no animals with L,lg catheters($P=.005$).9 animals with H,lg catheters and 2 with L,lg catheters had aortic thrombosis($P=.021$), which was minimal in the L,lg group. In contrast to H,lg catheters, the 10(3H,7L)with catheters for ≤ 5 days had only minimal aortic thrombosis in 2(L),($P<.005$).Neither the osmolarity of the fluid infused nor the presence of septicemia were related to complications. 6/21 had positive blood cultures at sacrifice.

Our data indicate that in rabbits L catheters are safer than H ones, complications are time related in H catheters, and that osmolarity of infusate is not related to complications. If applied to the human neonate the data suggest umbilical artery catheters should be placed L, H catheters should be removed as soon as possible, and although caution is urged, it may be safe to give 20%D in L catheters.