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AIR LEAKS IN THE VERY LOW BIRTH WEIGHT INFANT

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Mortality and morbidity in the neonatal period are inversely proportional to birth weight and gestational age. Pneumothorax and pulmonary interstitial emphysema (P.I.E.) are major adverse factors affecting outcome of V.L.B.W. infants,.

A retrospective study over a 4 year period 1985-88 was performed on normally formed V.L.B.W. infants (500-1500 g B.W.) born at the Rotunda. 24 infants were excluded due to lethal congenital malformation or extreme previability. The charts of 198 infants were reviewed. Gestational age varied between 24 and 36 weeks. R.D.S. developed in 133 infants and 124 of these required intermittent positive pressure ventilation. No infants in the non ventilated group died. The mortality in ventilated infants was 34.6%. There was radiological evidence of P.I.E. in 46 infants – 26 died (56%). Pneumothorax developed in 28 infants and 57% died; 22 had P.I.E. as a predisposing factor. There was also an increased incidence of chronic lung disease and I.V.H. in infants with air leaks.

The charts of infants with pneumothorax were reviewed in detail. Significant diagnostic delays were noted to occur in some cases. Multiple chest drains were frequently required, suggesting that positioning of tubes might be improved.

Air leaks are a major cause of morbidity and mortality in the V.L.B.W. infant who survives the first few hours of life. Whilst prevention of pneumothorax is an ideal towards which neonatal ventilator management is directed, more attention should be paid to training house staff in management of this potentially fatal emergency.

PREGNANCY IN RENAL TRANSPLANT RECIPIENTS IN A DEVELOPING COUNTRY : EXPERIENCE IN OMAN

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Four Omani patients received non-related living donor kidney transplants in Bombay, India. They all became pregnant within two years of the transplant and were supervised by a joint nephrology/obstetric team. One patient had a rejection episode during pregnancy. The patients were seen at out-patients every two weeks and had renal function tests and serial ultrasound was performed on the fetus for growth parameters. The patients had combination anti-rejection therapy consisting of prednisone, azathioprine and the relatively new drug cyclosporin. Renal function remained good throughout pregnancy and two patients had moderate hypertension controlled by beta-blockade and hydralazine.

Of the four pregnancies, one was triplet and ended in the delivery of a growth retarded, stillborn infant at 31 weeks gestation, and two fetuses papyraceous. One was a twin pregnancy resulting in preterm delivery of one live born appropriately grown fetus and one stillborn growth retarded fetus. The other two pregnancies resulted in the preterm delivery of liveborn infants, one appropriately grown for gestation and one growth retarded infant delivered by caesarean section for fetal distress.

This small series cannot confirm some recent case reports that cyclosporin may be a cause of intrauterine growth retardation. Greater experience with this drug in pregnancy is obviously required.

It is suggested that the obstetric outcome would have been better with more patient compliance as it was known that both intrauterine deaths had not been growing normally.

DELIVERY AFTER A PROLONGED FIRST LABOUR

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Between 1984 and 1987 inclusive, 199 primigravidas were defined as having a prolonged labour because they had not delivered within 12 hours of admission to the delivery suite. The purpose of this study was to examine the delivery outcome in the 77 patients who subsequently had a second delivery at this hospital. The incidence of caesarean section was 11.7% (n=9): 4 elective and 5 emergency sections. Only two patients needed a caesarean section for dystocia. Four patients required a forceps delivery. Of the 73 patients allowed to labour, 2 (2.6%) had a second prolonged labour (>12 hrs), and 55 (71%) were delivered within 6 hours. Thirty-eight (49%) of the patients had a bigger baby second time around. Eight (10.4%) patients required oxytocin (3 for induction, 5 for augmentation) and all delivered vaginally. Of the 23 patients with a previous section, 17 (74%) delivered vaginally. Of the 54 patients who had a previous vaginal delivery, 51 (94%) again delivered vaginally. Of the 68 patients with prolonged labour in 1984, 40 (59%) have already had a second child.

These results indicate that prolonged labour is not a recurrent problem. The results are also reassuring for mothers contemplating another pregnancy after a prolonged first labour.

NEUROPATHOLOGY OF CONGENITAL AIDS

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Compared with adult series, there are few pathological studies in congenital AIDS. Good clinico-pathological correlation is especially lacking in "AIDS Encephalopathy". Three cases of AIDS encephalopathy in babies with congenital infection were studied, two born to intravenous drug abusers. All had diffuse neurological signs. One child had a normal CT scan. At autopsy, all had atrophy, microglial proliferation and delayed myelination; two had multinucleated giant cells, the histological hallmark of HIV infection in the CNS, and two had calcification of the basal ganglia. In only one case was HIV demonstrable by immunostaining. As well as these changes attributable to the presence of HIV in the brain, two babies also had diffuse cytomegalovirus encephalitis, a relatively uncommon finding. The need for combined virological and pathological studies is emphasised in congenital AIDS encephalopathy. The synergistic interaction between HIV and CMV enhancing replication of both viruses is also stressed.

A REVIEW OF NON-IMMUNE HYDROPS

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A retrospective study of Non-Immune Hydrops (NIH) was carried out at the National Maternity Hospital and The Rotunda Hospital for the 6 year period 1982-1988. During this time there were 98,320 births and 31 cases NIH, giving an incidence of 1/3171. The male : female ratio was 1 : 1.2. 16 were stillborn and 15 were liveborn. The majority of the latter (11) died in the neonatal period. There were only 4 survivors. 17 cases were detected antenatally by ultrasound.

The causes of NIH were multifactorial. We found that approximately one-third (10 cases) were due to cardiac anomaly or arrhythmia. The remainder were a heterogenous group and included chromosomal abnormalities, congenital infection, mucopolysaccharidosis, chylothorax, arteriovenous malformation, twin-to-twin transfusion, and cystic pulmonary adenoma. Seven cases remained "idiopathic".

Based on our findings, the investigation of NIH should proceed as follows : (i) full cardiological work-up, including chest X-ray, ECG and echocardiography, (ii) chromosomal analysis, (iii) congenital infection screening, (iv) urine for mucopolysaccharidosis, (v) haematological investigations.

INCREASED INCIDENCE OF RESPIRATORY DISTRESS SYNDROME IN BABIES BORN TO HYPERTENSIVE MOTHERS

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There is controversy over the effects of maternal hypertension on the incidence of neonatal respiratory distress syndrome (RDS). We investigated the relationship between maternal hypertension and the incidence of RDS in 268 very low birth-weight babies (BW <1500g) born at less than 34 weeks gestation, who had been admitted to the neonatal intensive care unit, Royal Maternity Hospital. Characteristics of the babies were as follows :

	Hypertensive (134)	Normotensive (134)
Birthweight (g)*	1140 (236)	1164 (253)
Gestation (wk)*	30.3 (2.0)	28.4 (2.4)
Males (N, %)	53 (40%)	65 (49%)
RDS (N, %)	87 (65%)	69 (51%)

* Mean (sd)++
+P < 0.001; ++P < 0.05

A lower incidence of RDS was associated with growth retardation, membrane rupture >24h, vaginal delivery and the occurrence of labour before delivery. Severity and time of onset of hypertension did not affect the incidence of RDS.

When the effects of birth weight, gestational age, growth retardation and membrane rupture >24h were controlled for by multiple logistic regression analysis, the risk of developing RDS remained significantly greater in babies of hypertensive mothers :

Adjusted for:	Relative odds of babies of hypertensive mothers developing RDS (95% confidence limits)
—	1.74 (1.06, 2.85)
Birthweight, gestation	3.72 (1.89, 7.31)
Birthweight, gestation SGA	3.78 (1.89, 7.58)
Birthweight, gestation, SGA, prom >24 hr	2.31 (1.10, 4.86)

PRE-ECLAMPSIA AND TRISOMY 13

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An association between pre-eclampsia and Trisomy 13 (Patau's Syndrome) has been reported. We reviewed the obstetric records of women delivered of babies with Trisomy 13 in the Coombe Lying-In Hospital over 10 years for evidence of pre-eclampsia. The records of 11 such deliveries after 28 weeks were found and details have been traced in all cases.

Three mothers were true primigravidae and one of these had proteinuric pre-eclampsia. Another had a single blood pressure reading of 140/90 without proteinuria. Of the eight multiparous women, six were normotensive without proteinuria and two had hypertension with proteinuria. In both cases the previous pregnancies had been recorded as normal and there was no record of change in paternity.

Our data suggests an association between proteinuric pre-eclampsia and fetal Trisomy 13 and that an unusual factor is operating. Our results combined with others suggests that further exploration of the association would be worthwhile.

CAN DOPPLER BLOOD FLOW ANALYSIS DIAGNOSE TWIN TO TWIN TRANSFUSION

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One of the causes of the increased mortality and morbidity in twin pregnancies is twin to twin transfusion. It has been suggested that in cases of discordant growth in twin fetuses equivalent Doppler blood flows indicate twin to twin transfusion rather than intra-uterine growth retardation in one twin (Giles, W. B., Trinler, B. J., Cook, C. M. Fetal umbilical artery flow velocity–time waveforms in twin pregnancies. B. J. Obstet. Gynaecol. 1985: 92, 490-497). Seventy-one sets of twins were serially assessed from 26 weeks until delivery with ultrasound and continuous wave Doppler. Analysis of the umbilical artery waveform in each twin was related to their respective growth patterns in utero and to birth weights and haemoglobin levels.

There were six cases of twin to twin transfusion. Only 2 of these were associated with the suggested diagnostic findings. Thus. while combined ultrasound and Doppler analysis was highly specific for twin to twin transfusion (100%) the sensitivity was only 33%, significantly limiting its clinical application in this situation. However, significant differences in the Doppler results between each twin was a good indicator of intra-uterine growth retardation in one twin, especially if discordant growth was present (sensitivity = 78%; specificity = 98%).

DETECTION OF RENAL ABNORMALITIES BY ANTENATAL UNTRASOUND

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The aim of this ongoing study is to assess the value of routine antenatal ultrasound in the detection of renal abnormalities. Over a 20 month period more than 5,000 pregnancies were scanned routinely at 18-20 weeks gestation. Assessment included a structural survey of the fetus. There were 27 pregnancies with suspected renal abnormalities resulting in 28 deliveries (1 set of twins). Six of these were non survivors, all of who had either oligohydramnios or other anomalies. Of the 22 survivors with suspected renal abnormalities a significant number had post natal diagnoses of P.U.J. obstruction or vesicoureteric reflux that required surgery as infants. This work indicates that antenatal routine ultrasound is of value in the detection or renal abnormalities that would otherwise be clinically undetectable postnatally.

AN UNUSUAL COMPLICATION OF CAESAREAN SECTION

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Two patients who developed spontaneous pneumoperitoneum after caesarean section which developed in both cases in the immediate post-operative period are presented. The first patient, a 37 year old Para 2 lady, had an elective repeat caesarean section at term. Within 48 hours of delivery, she developed marked abdominal distension diagnosed clinically and radiologically as a pneumoperitoneum. With no other clinical signs, conservative management was adopted. There was no other constitutional upset and oral intake of fluids was well tolerated. Seven days later with no improvement, a laparotomy was carried out and no intra-abdominal pathology was identified. Spontaneous pneumoperitoneum was diagnosed. Subsequent recovery was uneventful.

The second patient was a 31 year old Para 1 lady who had an emergency caesarean section for brow presentation in labour. Within 12 hours, she developed marked abdominal distension which was diagnosed clinically and radiologically as pneumoperitoneum. With the experience of the first case, a conservative approach was taken. She had no nausea or vomiting and bowel sounds were normal. Her appetite was diminished by the pain of the distension but fluids were tolerated. Within 48 hours of onset, her pneumoperitoneum became less evident and she was well enough to be discharged eight days post delivery.

While spontaneous pneumoperitoneum has previously been reported after surgical and gynaecological procedures, it does not appear to have been reported following caesarean section.

These patients are presented because they occurred in the maternity hospital setting where a surgical emergency can often necessitate transfer to a general hospital. Early recognition of this condition would obviate the need for such transfer. Use of a Verres needle under ultrasound control has been suggested for management.

RUPTURE OF THE GRAVID UTERUS

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R. O'Connor. University College Hospital, London, England.

Sixty-seven cases of rupture of the gravid uterus occurred at the Rotunda Hospital between January 1967 and December 1986, thirty-nine of which were classified as complete and 28 as incomplete. This important distinction, often not alluded to in previous reports, is emphasized to highlight the differences in predisposing factors, presentation and fetal outcome. In a case of rupture of the gravid uterus total abdominal hysterectomy is usually recommended as the treatment of choice. In this series 34 cases including 12 complete were treated by simple repair. We feel careful consideration should be given to this treatment in such an emergency situation when the full consequences of hysterectomy cannot be adequately explained to the patient. The main objection to simple repair without tubal ligation is the risk of recurrent rupture during a subsequent pregnancy. We report the managemnent of 17 successful pregnancies in 14 patients following simple repair of a gravid uterus, seven of which were complete. There was no case of recurrent rupture.

RUPTURE OF THE UTERUS – A TEN YEAR REVIEW

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The aim of this study was to examine the recent obstetric experience of rupture of the uterus in the National Maternity Hospital. In the ten years 1979-1988, 78,489 patients delivered at the hospital. There were 27 cases of uterine rupture. There was no case of uterine rupture in 27,829 primigravidae. In multigravidae, there were 19 cases in 2,842 patients with a previous caesarean section (0.7%). There were 8 cases in 48,718 patients without a previous caesarean hysterectomy. There were 12 perinatal deaths (44.5%). There were 8 cases of true uterine rupture associated with 4 perinatal deaths (50%). There were 4 cases of incomplete scar dehiscence associated with no perinatal deaths. There were 19 cases of complete scar dehiscence associated with 8 perinatal deaths (42%). This paper confirms that uterine rupture in a primigravid patient is a rare event despite the extensive use of oxytocin augmentation. The main aetiological factor in multigravid patients is the presence of a previous caesarean section scar.

RETINOPATHY OF PREMATURITY : INCIDENCE OVER A 6 YEAR PERIOD IN A LOW BIRTHWEIGHT POPULATION

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Severe retinopathy of prematurity is one of the most seriously handicapping conditions resulting from intensive care of the very low birthweight infant. It is important for neonatologists, ophthalmologists and health planners to be aware of the incidence and outcome of this disorder within their own population.

All infants weighing less than 1500 grams and all preterm infants > 1500 grams who received additional ozygen and who were born between January 1st, 1983 and December 31st, 1988 were included in the study population.

All infants who have received oxygen have an initial ophthalmologic examination by a consultant ophthalmologist at six weeks of age with further reviews at 2-4 week intervals, until the retina is fully vascularised.

Results : Between 1983 and 1988 there were 44,062 live births in the National Maternity hospital.

During this period 56 infants developed R.O.P. making the incidence 1.27 per 1,000 live births. 44 of the 56 cases of retinopathy occurred in infants weighing < 1500 gms giving an incidence of 14.8% for this population. Among the V.L.B.W. population those who developed retinopathy were sicker than those who did not develop same; with a greater requirement for oxygen, (M=27 days) and ventilation (87%) and a higher incidence of P.D.A. (45%), I.V.H. (48%) and apnoea of prematurity (77%), 4 preterm infants became blind; all were <1500 grams. The incidence of blindness from retinopathy for the whole population born over the 6 year period is 1 per 11,000 population.

If this figure is extrapolated to the country as a whole it would yield a figure of 4-5 infants annually with blindness from retinopathy. Health planners must be aware of this potential source of blindness among children.

"FAX IT THRU"

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Recent developments in Facsimile

technology have made it possible to allow existing office machines to be directly connected to produce a unique and dedicated system of communication between laboratory and intensive care unit.

In May 1979 it was decided to link the Biochemistry laboratory with the Special Care Baby Unit. Urgent test reports can be verified and transmitted to the unit in 30 seconds.

In response to a questionnaire, sent to medical and nursing staff in the S.C.B.U. and laboratory staff, over 90% of people found the operation of the machine simple and results legible. 97% of people preferred fax copies of reports to handwritten entries in a day book, and 90% of people preferred to use the fax rather than the telephone. 80% of people felt that the change in system did not increase their individual work load.

The Fax machine gives faster verified reporting. It is said that in some cases the speed of issuing the report is as important in patient management as the result (Valenstein, P.N, Emancipator, K. Sensitivity, specificity and reproducibility of four measures of laboratory turnaround time. A.J.C.P. , 91: 452-457, 1989). In our hospital it has been effective in reducing the turnaround time between receipt of specimen and delivery of an exact copy to the S.C.B.U.

EPIDURAL ANALGESIA IN LABOUR ANALYSED BY PARITY

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The use of epidural analgesia for pain relief in labour has been associated in previous studies with an increase in the incidence of obstetric intervention, particularly forceps delivery. Few studies, however, have examined the obstetric outcome following epidural analgesia by parity. The aim of this study was to analyse the results by parity in all the patients delivered in 1988 who used epidural analgesia. The study was confined to patients who went into labour after 37 weeks' gestation with a single live fetus and a cephalic presentation.

The incidence of epidurals in primigravida (n=2579) was 14% and in multigravida (n=4393) 3.4% ($p<0.05$). In primigravida, 73.5% received an epidural for maternal request and 26.5% for maternal distress; in multigravida 93% received an epidural for maternal request but only 6.1% for maternal distress. In primigravidas, 64% tried alternative forms of analgesia before the epidural compared with 21% of multigravidas. The epidural was inserted in primigravidas after a mean of 245 minutes in the delivery suite and in multigravidas after a mean of 148 minutes. The oxytocin augmentation rate was 74% in primigravidas and 18% in multigravidas and 39% of primigravida required a forceps delivery compared with 11% of mulitgravida. These results indicate that, as with other aspects of labour, there are significant differences in the outcome of labour following epidural analgesia when primigravida are compared with multigravida. These differences should be taken into account in the analysis and interpretation of clinical studies on epidural analgesia.

SUCCESSFUL OUTCOME OF A FULL TERM EXTRAUTERINE PREGNANCY

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A twenty-nine year old primigravida presented with abdominal pain at 15 weeks gestation. The patient had pelvic microsurgery some years previously. On examination the only abnormal finding was fullness in the Pouch of Douglas, and a healthy 15 week size fetus was noted at ultrasound. The pregnancy appeared to have immplanted low in the uterus, but above cervical level. The pain settled, but the patient presented with acute urinary retention two weeks later. By twenty weeks the pregnancy had grown well and the patient was asymptomatic.

At repeat antenatal visits, clinical and ultrasound findings were consistent with a healthy progressing pregnancy.

The patient presented in apparent labour at term. The head was deeply engaged but the cervix was not palpable. Laparotomy was performed and extrauterine pregnancy confirmed. A healthy female infant, 3.10 kgs was delivered. Due to failure to achieve adequate haemostasis, the placenta was dissected from its attachments to the uterus, adnexal tissue, Pouch of Douglas and bowel. Acriflavine soaked packs were used to control oozing pelvic blood vessels. At removal of packs during repeat laparotomy the next day, no bleeding was encountered.

The patient and her infant are well.

THE AETIOLOGY OF DYSTOCIA

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Obstetricians are resorting more frequently to caesarean section for dystocia. The importance of abnormalities of the passages and powers in the aetiology of dystocia has been stressed in the past but little attention has been paid to the physiological role of the passenger in the progress of labour. The aim of this study was to examine the hypothesis that dystocia is related to birth weight. This study was confined to the first 1,000 nulliparas in 1988 who laboured after 37 weeks' gestation with a single live fetus and cephalic presentation. The management of labour was standardised. Birth weights were stratified at 500g intervals. The results shown in Table I demonstrate that progress in labour is related directly to birth weight. This relationship was independent of gestation and oxytocin augmentation (data not shown). The results suggest that the fetus may have a key role in the development of dystocia. However, 90% of babies weighing ≥4.0 kgs in the study were delivered vaginally and, therefore, antepartum estimation of birth weight is unhelpful in predicting which mothers are likely to require a caesarean section for dystocia.

TABLE I

The effect of birth weight on labour variables

Birth Weight (g)	Mean Labour (hrs)	Oxytocin (per cent)	Caesarean for Dystocia (per cent)
< 2500g	3.9	22.8	–
2500 - 2999	4.4	31.5	–
3000 - 3499	5.3	47.7	1.8
3500 - 3999	5.8	48.0	4.0
4000 - 4499	7.0	57.5	8.3
> 4500g	7.1	68.5	13.6

OBSTETRICS OF THE TRAVELLING PEOPLE

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75 Travellers who delivered between 1st January 1985 and 30th June 1989 were compared to 63 non-traveller public patients who delivered during the same period.

Hypothesis : That travellers have a poorer uptake of antenatal care, a higher obstetrical intervention rate and higher perinatal mortality and morbidity rates.

Findings : (i) That travellers began to reproduce at a younger age (mean 19 years compared to 23 years) and had more pregnancies (6.4 compared to 3.4). (ii) The overall miscarriage rate in travellers was higher (11.6% compared to 9.9%) but there was no statistical difference in the rate of recurrent pregnancy loss. (iii) Assessment of antenatal care showed that travellers book later (median gestation at booking 20 weeks compared to 18 weeks) and have a higher proportion of unbooked pregnancies (1 : 10 Vs. 1 : 50). There was no difference between the two groups in terms of numbers of antenatal attendances. (iv) Mean haemoglobin levels at booking were similar in both groups. (v) Travellers had a high caesarean section rate. This was the case in both primigravidas and multigravidas. (vi) Mean birth weights were similar in both groups (3.597 kg compared to 3.564 kg). However, travellers had a higher proportion of babies with birth weights less than the 10th centile and greater than the 90th centile. (vii) There was no difference in perinatal outcome between the two groups.

Recommendations : The traditional view of travellers as a high risk group needs reappraisal. It is recommended that a national or multicentre study of their obstetrics be undertaken.

A REVIEW OF INFANTS TRANSPORTED POSTNATALLY TO DUBLIN MATERNITY HOSPITALS, JANUARY 1987 TO JUNE 1989

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The benefit of an organized neonatal transport system is well established. Despite numerous representations to the appropriate administrative bodies such a service has not yet been established in Dublin.

To review the present situation, the charts of all babies who were transported to Dublin Maternity Hospitals from January 1987 to June 1989 were reviewed. Over a 30 month period 172 babies were transported to the Dublin maternity hospitals. Birth weights ranged from 640 to 5.180 g; 62% were <37 weeks gestation. Indications for transport included R.D.S. (54), prematurity only (43), convulsions and/or neurologic dysfunction (23), jaundice (11) and apnoea (11). 168 were transferred by ambulance and 4 by helicopter. 20 travelled more than 100 miles. 40 (23%) received assisted ventilation during transport. On arrival 37 (21%) had temperature <36°C; 22 (13%) had blood sugar <2.2 mmol/l and 34 (20%) had arterial pH <7.25. 50% had "inadequate" referral letters. Treatment and care given en route was recorded in only 28. 24 patients (14%) died. Patients who died were more likely to have been low birth weight, travelled a long distance, been hypothermic, have poor arterial gases, have blood sugars <2.2 mmol/l, and have poor referral letters.

This review indicates that death and morbidity continue to be associated with the present system of postnatal transfer of newborn infants. The urgent need for an organized Neonatal Transport Service remains unmet.

PERINATAL SERVICES — FUTURE OBJECTIVES

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The national early neonatal mortality rate (ENMR) for birthweight ≥1000g excluding lethal malformation was 1.45/1000 births in 1987 (Clarke, T., Counahan R. Ir. J. Med. Sci. 1989). Comparison of ENMR for health boards and hospitals was made by calculating the 95% confidence limits of the national figure for different birth numbers.

The formula used was $P + 1.96\sqrt{\frac{P\ (1-P)}{n}}$

where P = ENMR as a proportion (=0.00145) and n = birth number.

Lowest health board ENMR was 0.26/1000 and highest 2.62/1000. Both lay within the 95% confidence limits and thus a statistically significant difference could not be detected. Two hospitals had ENMR's outside the upper limit. However, because of small numbers there should be caution in the acceptance of apparent statistical certainty.

The aims of those involved in perinatal care should be to:

1. Count accurately : discrepancies between data on neonatal mortality collected by Faculty of Paediatrics and Department of Health were noted.

2. Review obstetric practice in small units : referral of selected mothers to larger hospitals can have significant effect on perinatal mortality.

3. Train Nurse Practitioners : the technicalities of neonatal intensive care can readily be learned by nurses more efficiently than frequently changing house officers.

4. Analyse specific areas of practice on a national basis : e.g. preterm infants; nursing need and supply; transport.

5. Plan on the basis of information rather than opinion.