

THE NEWBORN FOLLOW-UP CLINIC: A preliminary report of ocular abnormalities*

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Abstract

The Newborn Follow-up Clinic (NFC) at The Royal Alexandra Hospital for Children follows the development of "high risk" infants. 132 infants were enrolled in the Clinic in July 1985.

Ninety five of the NFC infants have been assessed in the Orthoptic Clinic. Their gestation ages ranged from 23.5 weeks to 42 weeks and their birth weights from 570 grams to 4440 grams.

Visual impairment was present in four infants (4.21%). Fifteen infants were found to have strabismus (15.7%).

The NFC Clinic plans to continue with review assessments until the children reach the early school years.

Key words: Multidisciplinary team, retinopathy of prematurity, visual function, strabismus.

The radical changes in methods of management that have been introduced into the intensive care nursery in recent years, have resulted in a significant improvement in the survival rate of premature and sick infants.^{1,2} Technology has meant that the infant's progress can be monitored and problems detected and treated with far greater skill than was previously possible. In addition, the new attitude of the Neonatal Intensive Care Unit (NICU) recognizes the importance of close parental involvement with the sick neonate.

High levels of handicaps have been reported amongst the survivors in "high risk" groups in earlier studies.¹ However, more recent reviews suggest a more optimistic outlook for survival of these infants without handicap.^{3,4,5}

At the Royal Alexandra Hospital for Children (RAHC), as in many of the other major world units responsible for the care of high risk infants^{6,7,8,9,10} the need for a long-term follow-up of NICU "graduates" has been recognized. The task of the Newborn Follow-up Clinic

(NFC) is to monitor the developmental outcome of the most vulnerable graduates in order to identify specific medical and psychosocial needs of these children and their families, and to act as a medical audit for neonatal intensive care services. The current programme has been running since early 1982.

The criteria for selection of infants for the NFC includes those who display one or more of the following characteristics:—

- Less than 1500 g birthweight.
- Less than 34 weeks gestation.
- Significant neurological problems (seizures, meningitis, grade III & IV intracranial haemorrhage, perinatal asphyxia).
- Chronic oxygen dependancy.
- Prolonged hospitalization.

Excluded are:—

- Major congenital malformations.
- Babies enrolled in other specialist clinics.
- Babies being followed developmentally at other hospitals.

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TABLE 1
Newborn follow-up clinic, July 1985

Follow-up programme:		Assessments								
		Medical	Physiotherapy	O.T.	Audiology	Orthoptics	Speech	Psychometric	Educational	Social work
Corrected ages	4 months	X	X	X						X
	10 months				X	X				
	12 months	X	X	X						X
	2½ years	X	X	X		X	X			X
Chronological ages	3½ years	X	X	X	X	X				X
	4½ years	X	X	X				X??		X
	7½ years	X	?	X	?	X	?	X??	X	X

As the NICU graduate is known to be at a high risk for suffering an extensive range of disorders, a multidisciplinary team approach to follow-up is seen as most valuable.^{12,13} At present, assessment for the NFC is performed by Neonatologists, Paediatricians, Occupational Therapists, Physiotherapists, Audiologists, Orthoptists, Speech Pathologists and Social Workers. Each therapist involved performs an evaluation of the infant at the appropriate age, as indicated in Table 1. The information is correlated by the physician, following the medical examination, and the parents are advised of the infant's progress.

The involvement of the Ophthalmic Unit in the high risk infant's follow-up is essential. In particular, there is an early need for ocular examination of the premature baby, to determine the presence of Retinopathy of Prematurity (ROP). Despite the careful monitoring of arterial oxygen levels, ROP continues to be a major cause of blindness in the very low birth weight infant.^{12,13} Ophthalmic examination is performed on all infants who were considered to be at risk of developing ROP. This examination was usually conducted prior to the infant's discharge. There is also a higher incidence of strabismus, cataract and myopia in low birthweight infants.⁷

The Orthoptist's role in the NFC assists in assessment of the level of visual function and the status of binocularity.

Orthoptic Assessment:

All NFC infants are routinely screened at the corrected ages of ten months, 2½ or 3½ years, and 7½ years.

Determining visual function is regarded as a priority in the Orthoptic assessment. The Catford Drum, Stycar Balls and other clinical observations are the usual methods employed for testing vision in the ten month group. Although these methods do not give an accurate standard of acuity, they provide an evaluation of visual responses from each eye. The majority of 2½ and 3½ year olds have been able to perform vision tests using Sheridan Gardiner letters or Single Pictures. Confrontation visual fields are performed, where necessary.

Cover testing was used to diagnose strabismus at distances of ½ m and 3 m, where possible 6 m and where appropriate, far distance. Binocular co-ordination was assessed with a 15 Δ BO Prism, or preferably, the Lang's Stereo Test. Several of the older children co-operated to perform the TNO Stereo Test. Extraocular muscle movements were also examined.

Where defects were identified, the physician in charge of co-ordinating the child's care was informed and ophthalmic referral arranged.

Results and Discussion:

In July 1985, there were 132 infants and children enrolled in the NFC. Ninety five of these had been seen in the Orthoptic Clinic at a corrected age of ten months, 19 had been rechecked at 2½ or 3½ years. The following results relate only to those infants who have been orthoptically assessed.

The infant birth weights ranged from 570 g to 4440 g and their gestation ages from 23.5 weeks to 42 weeks. The distribution of birth weight compared to gestation is shown in Figure 1.

TABLE 2
Neonatal Conditions (N=95)

Condition	No. Affected	Condition	No. Affected
Respiratory Distress Syndrome	56	Patent Ductus Arteriosus	17
Apnoea	24	Persistent Transitional Circulation	5
Bradycardia	11	Anaemia	12
Chronic Oxygen Dependency	1	Hyperglycaemia	4
Chronic Lung Disease	8	Hypocalcaemia	3
Perinatal Asphyxia	23	Seizures/Convulsions	12
Pneumothoraces	9	Sepsis	23
Jaundice	31	Meningitis	2
Intracranial Haemorrhage		Pneumonia	2
— non specific	13	Necrotising Enterocolitis	12
— intraventricular	13		
— subarachnoid	21		
— subependymal	11		
— subaponeurotic	1		

Table 2 lists some of the problems encountered by the infants in the neonatal period, which placed them "at risk". This list is by no means complete.

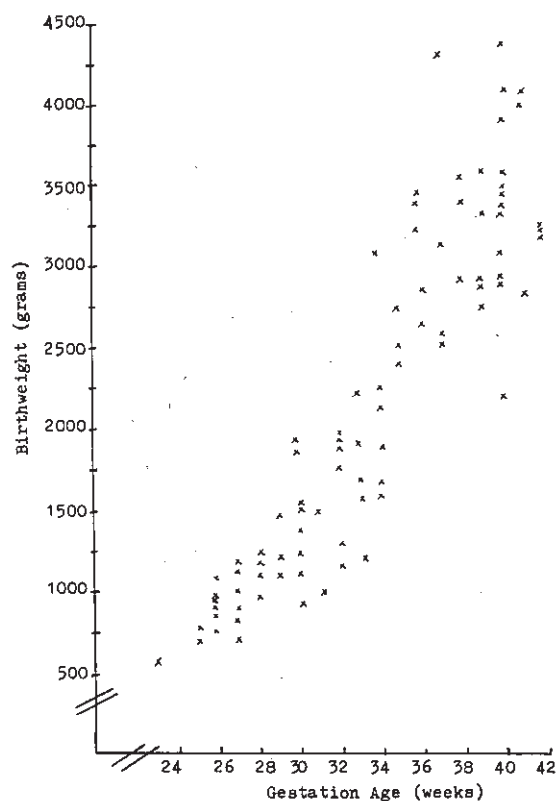


Figure 1: Birthweight vs Gestation Age of NFC Infant.

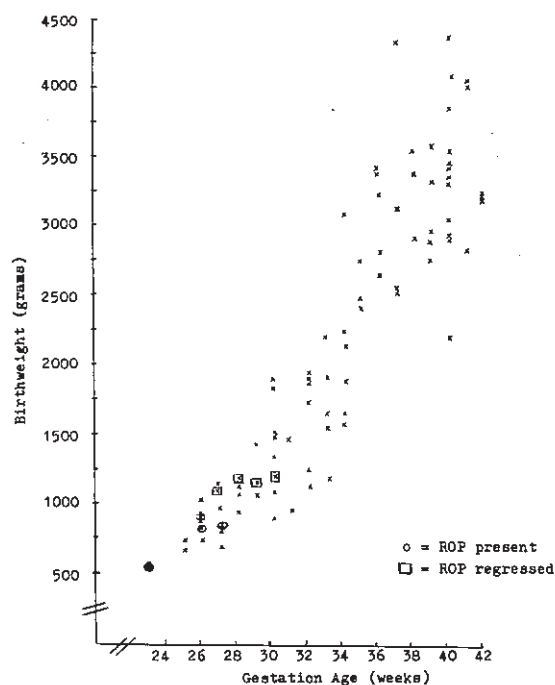


Figure 2: Incidence of Retinopathy of Prematurity.

Ophthalmic Examination:

Eighty one of the infants were checked for the presence of ROP. Of these, only three have been found to have severe visual impairment due to ROP. Five other infants on initial examination, showed some signs of retinal changes, consistent with early ROP, but this regressed at subsequent follow-up. In all three cases, ROP was present