Undoubtedly a neoplasm, this fatal condition still causes much discussion about whether it should or should not be regarded as a tumour of the reticuloendothelial system. Although its distribution is unusual and exceptionally extensive it does mimic most closely the distribution of multiple myeloma. It also has certain resemblances to chloroma. So far as our present knowledge goes it would seem reasonable therefore to continue to classify it among the reticuloendothelial tumours.

It is extremely difficult to decide whether the tumour is multicentric or unicentric. In a number of instances in Ibadan widespread involvement of bone-marrow has been found, although, in our experience, the disease never evolves into leukaemia. On the other hand, the association of ovarian and kidney deposits and the association of cardiac and mediastinal gland deposits would tend to favour metastatic spread. Our general impression is that in the early stages the tumour is unicentric. Burkitt (1962) has suggested that the altitude and temperature of the areas in Africa where the tumour has been recorded, and its age incidence, are factors which are suggestive of an arthropod-borne causal agent—possibly viral. The age incidence recorded in Ibadan is similar to that recorded in East Africa, and would once again, perhaps, favour an agent affecting young children to which immunity is gained later in childhood by the majority of the population. These remarks are, of course, at present purely speculative and much intensive research remains to be done on all aspects of this tumour, which is so distressingly frequent in many parts of Africa.

Summary

The crude and age-specific rates of the Burkitt tumour in Ibadan, Western Nigeria, have been assessed. When all age-

groups were considered the tumour was found to be second in incidence only to carcinoma of the cervix, and it was by far the most common malignancy seen in childhood, being many times more common than leukaemia in the American negro in comparable age-groups.

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Lessons Derived From Ten Years' Experience of the Special Baby-care Unit in a Maternity Hospital

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Special baby-care units have been established in a number of maternity hospitals, and their development is referred to in a report published by the Ministry of Health (1961). These units have been described as "everywhere a great success, as welcome to domiciliary midwifery as to the parent unit" (Pugh, 1962). As an integrated part of the hospital, a baby-care unit is subject to the influence of changes in general hospital policy; and administrative, clinical, and teaching aspects of the work of such a unit have to be adjusted from time to time. This paper reviews the lessons learned during the first 10 years of a special baby-care unit established in 1952.

The Unit

The accommodation consists of rooms adapted to provide three nurseries containing five, five, and six cots, and three cubicles each intended for a mother and her baby. For reasons given later, use of the cubicles has been reserved since 1958

for babies only, the total number of cots thus being increased to 24.

Authorized establishment consists of four trained midwives, including the departmental sister in charge. Each pupil midwife taking her Part I training in the hospital is attached to the special baby unit for a period of two weeks. The number of pupil midwives working in the unit at any one time has varied from two to six. Invaluable service has been given by non-resident sick children's trained nurses, enrolled nurses, and nursery nurses who have been members of the staff at different times. Medical supervision is provided by a resident senior house officer and by visiting paediatricians. Liaison with local health authorities is maintained along the lines previously described (Craig *et al.*, 1951). When requested by the obstetrician or labour-ward sister, the senior house officer and senior sister of the baby unit are present at the birth of a baby in the labour ward.

During the 10 years 4,412 babies were admitted to the unit, including 786 born outside the hospital. This article is concerned with the 3,626 infants born in hospital and transferred to the baby unit from the labour ward, the lying-in wards, or

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the isolation block. Transfers from the labour ward are decided upon by the obstetrician, the labour-ward sister, or a senior member of the baby unit staff in attendance, and transfers from the lying-in wards and isolation block are made on the recommendation of members of the paediatric staff after discussion with the obstetrician or ward sister.

The isolation block consists of a ward-cum-theatre unit reserved for cases of abortion and intrauterine death, and for mothers with infectious disease, infections, pyrexia after delivery, and secondary post-partum haemorrhage. Babies in the block are limited to those accompanying mothers admitted for these reasons.

Hospital Policy

Clinical usage of the special baby-care unit has throughout had to be adapted to influences arising from both within and outside the hospital. During the first four years there was a steady progressive increase in the number of babies admitted from the labour ward and lying-in wards, and of mothers admitted with their newly born infants. Thereafter annual admissions from these sources remained fairly steady. Within recent years the increased demands on available maternity beds have made the early discharge of many mothers inevitable. One direct result is that the special baby unit on occasions looks after a number of babies who, although not seriously ill, are not ready to accompany their mothers home and for whom the lying-in ward nurseries do not have accommodation. This tendency has coincided with an increase in the number of very small premature babies who survive and require special nursing care for a long period. Together these trends have necessitated the permanent use, for babies only, of the three cubicles originally intended for mothers and their babies.

Clinical Material

The total series of 3,626 babies includes 2,149 (60%) who were of birth weight over $5\frac{1}{2}$ lb. (2.5 kg.) and 1,477 (40%) of birth weight of $5\frac{1}{2}$ lb. (2.5 kg.) or less. Of the 3,626 infants, 2,943 (81%) were transferred from the labour ward, 441 (12%) from the lying-in wards, and 242 (7%) from the isolation block. There were 425 deaths (11.7%).

The principal reasons for transfer of babies to the special baby unit are summarized in Table I. Prematurity (25%), a need for observation after operative or difficult delivery (24%), post-natal stress (17%), and rhesus incompatibility (9%) were the commonest indications. Ninety babies (3%) were admitted because of difficulty in promoting and maintaining a satisfactory body temperature. The temperature of infants admitted on account of chilling was 92° F. (33° C.) or below. Other reasons for transfer from the lying-in wards included convulsions, vomiting, unexplained cyanosis, bleeding, feeding problems, failure to thrive, and infection (other than gastroenteritis).

Surviving Babies

A total of 3,201 (87%) babies survived, including 1,179 with a birth weight of $5\frac{1}{2}$ lb. (2.5 kg.) or less (Table II). Premature infants predominated in admissions from the isolation block, and infants born at term in those from the labour ward and lying-in wards. Eleven, 46, and 12% of all admissions were discharged from the unit within 14, 7, and 2 days respectively (Table III). The majority of the 573 babies retained for periods in excess of four weeks (Table III) were extremely small premature infants. More than half (56%) of the 3,201 infants were reunited with their mothers while the latter were still in the maternity hospital (Table IV).

Table V summarizes the eventual clinical diagnosis. A total of 477 (15%) babies showed no signs of disturbed health. The great majority of these 477 babies were infants transferred for

observation either after difficulties preceding or accompanying birth or after operative delivery. Post-natal stress and trauma (33%), prematurity (22%), and rhesus incompatibility (9%) constituted the three largest groups. Other conditions occurring much less commonly were severe trauma involving superficial

TABLE I.—*Surviving Babies (3,201): Reasons for Transfer to Special Baby Unit*

Major Indication for Transfer to Special Unit	Babies Admitted from							
	Labour Ward		Lying-in Wards		Isolation Block		All Sources	
	No.	%	No.	%	No.	%	No.	%
Prematurity: uncomplicated*	593	23	10	3	73	33	676	25
Prematurity: abnormal labour/delivery	116	4	4	1	15	7	135	
Post-natal stress†	488	19	26	7	33	15	547	17
Observation after difficult delivery	428	16	1	—	13	6	442	14
Observation after caesarean section	322	12	0	—	0	—	322	10
Rhesus incompatibility	274	10	12	3	11	5	297	9
Respiratory distress	100	4	9	3	12	5	121	10
Cyanosis	73	3	30	8	8	4	111	
Hypothermia	53	2	29	8	8	4	90	
Major congenital anomaly	37	5	7	61	6	15	50	12
Maternal diabetes mellitus	53		1		1		55	
Feeding problem	—		43		8		51	
Failure to thrive	—		38		2		40	
Vomiting	—		32		3		35	
Nerve palsy/fracture/	37	11	5	30	0	5	42	3
extensive bruising	—		—		—		—	
"Haemorrhage"	11		30		2		43	
Convulsions	—		25		5		30	
Infection	—		40		6		46	
Traumatic cyanosis	20	5	1	2	3	1	24	2
Generalized oedema	5		—		—		5	
Severe and/or prolonged jaundice	—		7		1		8	
Pyrexia	—		1		6		7	
Collapse	—		3		2		5	
Exsanguination	3	3	0	—	—	—	3	—
Poor condition of ill-defined character	5		—		—		5	
Lack of alternative accommodation	—	—	7	2	1	—	8	—
	2,618		363		220		3,201	

* Includes multiple pregnancies.

† Includes asphyxia, post-natal distress, intracranial disturbance.

TABLE II.—*Surviving Babies (3,201): Birth Weight and Source of Admission*

Birth Weight		Babies Admitted from							
		Labour Ward		Lying-in Wards		Isolation Block		All Sources	
		No.	%	No.	%	No.	%	No.	%
lb.	kg.								
>10	>4.5	27		4		2		33	
$7\frac{1}{2}$ to 10	3.4 to 4.5	685		119		38		842	
$>5\frac{1}{2}$ to $7\frac{1}{2}$	>2.5 to 3.4	926		162		59		1,147	
		1,638	62	285	78	99	45	2,022	64
5 to $5\frac{1}{2}$	2.3 to 2.5	283		49		23		355	
4 to 5	1.8 to 2.3	462		24		47		533	
3 to 4	1.4 to 1.8	173		5		33		211	
2 to 3	0.9 to 1.4	56		0		17		73	
$1\frac{1}{2}$ to 2	0.7 to 0.9	6		0		1		7	
		980	38	78	22	121	55	1,179	36
Total		2,618	100	363	100	220	100	3,201	100

TABLE III.—*Surviving Babies (3,201): Duration of Stay and Source of Admission*

Duration of Stay (Days)	Babies Admitted from							
	Labour Ward		Lying-in Wards		Isolation Block		All Sources	
	No.	%	No.	%	No.	%	No.	%
<2	349	13	21	6	12	5	382	12
2 to 7	1,255	48	150	41	60	28	1,465	46
7 to 14	218	8	95	26	25	11	338	11
14 to 21	128	5	36	10	15	5	179	6
21 to 28	209	8	30	8	25	11	264	8
28 to 56	405	16	29	8	56	27	490	15
>56	54	2	2	1	27	13	83	3
Total	2,618	100	363	100	220	100	3,201	100

anatomical structures (5%), congenital anomalies of serious significance (4%), chilling (4%), feeding disorders (4%), infection (3%), haemorrhage (2%), and metabolic disorders (2%).

TABLE IV.—Surviving Babies (3,201): Place to Which Discharged

Discharged to	Babies Admitted from							
	Labour Ward		Lying-in Wards		Isolation Block		All Sources	
	No.	%	No.	%	No.	%	No.	%
Mother at home	988	38	210	58	131	59	1,329	42
" in ward	1,589	61	140	38	79	36	1,808	56
Another hospital	41	1	13	4	10	5	64	2
Total ..	2,618	100	363	100	220	100	3,201	100

TABLE V.—Surviving Babies (3,201): Diagnosis

Diagnosis or Major Clinical Feature	Babies Admitted from							
	Labour Ward		Lying-in Wards		Isolation Block		All Sources	
	No.	%	No.	%	No.	%	No.	%
Trauma:								
Post-natal shock ..	116	5	3	1	4	2	123	4
Asphyxia ..	444	17	12	3	33	15	489	15
Intracranial disturbance/haemorrhage ..	183	8	44	12	18	8	245	8
Extensive bruising/nerve palsy/fractures ..	134	5	5	1	6	3	145	5
Traumatic cyanosis ..	25	1	1	—	4	2	30	1
Prematurity:								
Uncomplicated ..	542	21	34	9	54	25	630	20
Cardio-respiratory syndrome	60	2	1	—	3	1	64	2
Hyperbilirubinaemia ..	17	1	1	—	5	2	23	1
Healthy baby ..	446	17	23	6	8	4	477	15
Rhesus incompatibility ..	266	10	15	4	13	6	294	9
Congenital anomaly ..	98	4	30	8	9	4	137	4
Hypothermia ..	94	4	24	7	12	5	130	4
Feeding management ..	46	2	68	19	18	8	132	4
Infection:								
Acute respiratory ..	7	—	8	2	2	—	17	—
Other ..	3	—	50	14	20	9	73	3
"Bleeding":								
Coagulation defect ..	29	1	27	7	3	1	59	2
Swallowed maternal blood ..	9	—	—	—	—	—	9	—
Metabolic:								
Maternal diabetes mellitus ..	55	2	2	—	1	—	58	—
Hypocalcaemic tetany ..	4	—	—	—	2	—	6	—
? Hypoglycaemia ..	5	—	5	1	—	—	10	—
Galactosaemia ..	—	—	2	—	—	—	2	—
Mucoviscidosis ..	—	—	2	—	—	—	2	—
Atelectasis: extensive/prolonged	19	1	—	—	—	—	19	—
Exsanguination ..	3	—	—	—	—	—	3	—
Pyloric stenosis ..	—	—	3	—	—	—	3	—
Hiatus hernia ..	—	—	3	—	—	—	3	—
Recurrent apnoeic attacks ..	3	—	—	—	—	—	3	—
Lack of alternative accommodation ..	3	—	—	—	5	2	8	—
Not diagnosed ..	7	—	—	—	—	—	7	—
Total ..	2,618		363		220		3,201	

Fatal Cases

Of the 3,626 babies, 425 (12%) died: 298 (70%) of these infants weighed $5\frac{1}{2}$ lb. (2.5 kg.) or less at birth (Table VI). Among premature babies who died, death occurred within 24 hours in 212 (71%) and within 12 hours of birth in 156 (52%). The corresponding figures for the 127 infants born at term or after were 56 (44%) and 38 (30%) (Table VII). Of 269 necropsies performed, 175 were on prematurely born babies.

Table VIII summarizes the causes of death. The major contributory factor was prematurity in 148 (35%), developmental anomalies in 128 (30%), trauma in 81 (19%), infection

in 42 (10%), and haemorrhage in 20 (5%). Prematurity was extreme in 103 cases. As necropsies were carried out on only 269 of the 425 babies who died, the estimated relative incidence of anomalies, trauma, infection, and haemorrhage as primary causes of death is only approximate.

TABLE VII.—Deaths (425): Duration of Life According to Birth Weight

Duration of Life	Babies of Birth Weight					
	$\leq 5\frac{1}{2}$ lb. (2.5 kg.)		$> 5\frac{1}{2}$ lb. (2.5 kg.)		Total	
	No.	%	No.	%	No.	%
< 12 hours ..	156	52	38	30	194	46
$12 < 24$ hours ..	56	19	18	14	74	17
$24 < 48$ hours ..	44	14	26	20	70	16
48 hours < 1 week ..	31	< 11	28	22	59	14
$1 < 2$ weeks ..	8		7			
$2 < 3$ " ..	1	3	5	12	25	6
$3 < 4$ " ..	1		3			
$1 < 2$ months ..	1	< 1	1	2	3	1
≥ 2 " ..	—		1			
Total ..	298	100	127	100	425	100

TABLE VIII.—Deaths Among Babies Born in the Hospital: Birth Weights

Primary Factors Contributing to Death	No. of Babies of Birth Weight					
	$\leq 5\frac{1}{2}$ lb. (2.5 kg.)		$> 5\frac{1}{2}$ lb. (2.5 kg.)		Total	
	No.	%	No.	%	No.	%
Anomalies* ..	58 (36)	19	70 (49)	55	128	30
Multiple ..	21		18			
Alimentary ..	9		6			
Cardiac ..	5		11			
Urogenital ..	3		1			
Rhesus incompatibility†	8		12			
C.N.S. ..	12		22			
Trauma ..	50 (45)	17	31 (25)	24	81	19
Intracranial haemorrhage	35		25			
Asphyxia following difficult labour and/or delivery ..	15		6			
Infection ..	26 (23)	9	16 (12)	13	42	10
Septicaemia/meningitis ..	8		5			
Pneumonia ..	17		9			
Monilia ..	1		—			
Urinary ..	—		2			
Haemorrhage (including intraventricular and supranal) ..	13 (10)	4	7 (7)	6	20	5
Hypothermia ..	—		1		1	
Maternal diabetes ..	3	1	1		4	1
Pronounced/extreme prematurity ..	103 (18)	35	—		103	35
Prematurity—atelectasis/asphyxia ..	45 (43)	15	11 (1)		46	
Total ..	298 (175)		127 (94)		425	

The numbers of necropsies are indicated in parentheses.

* Includes babies who died post-operatively in another hospital.

† Included among anomalies for convenience.

‡ Not premature.

The cases of rhesus incompatibility include a number who were treated before the value of exchange transfusion had been fully recognized. In the septicaemia/meningitis group the infecting organism was *Escherichia coli* in eight babies, *Streptococcus viridans* in two, and *Staphylococcus aureus* in one baby. Culture was unsuccessful in two cases.

Staph. aureus was cultured from the lungs in four babies who died as a result of pneumonia. The examples of fatal haemorrhage include eight into the ventricles and five into the suprarenals.

Infections

Clinically severe infection was a feature of 243 (6.7%) babies in the total series of 3,626. As already stated, infection accounted for the death of 42 babies. The sources of admission of infants with infection prior or subsequent to transfer are analysed in Tables IX and X. Infection developed in 4% of the infants admitted from the labour ward, in 17.7% from the isolation block, and in 18.8% from the lying-in wards. Acute respiratory and septicaemic (including meningial) infections

TABLE VI.—Deaths (425): Source of Admission

Admissions		Babies Dying				Total	
Source	No.	B.W. $\leq 5\frac{1}{2}$ lb. (2.5 kg.)		B.W. $> 5\frac{1}{2}$ lb. (2.5 kg.)		No.	%
		No.	%	No.	%		
Labour ward ..	2,943	221	7	111	4	332	11
Lying-in " ..	441	9	2	7	2	16	4
Isolation block ..	242	68	28	9	4	77	32
All sources ..	3,626	298	8	127	4	425	12

were the most common in that order of frequency. Without exception skin infections responded rapidly to treatment. *Staph. aureus* was cultured in 155 cases—pneumonia (4), cellulitis (5), osteomyelitis (6), salivary glands (8), septicaemia (8), and extensive skin lesions (124). *E. coli* infection presented as pneumonia (2), pyelonephritis (6), cellulitis (2), and septicaemia (14). Other examples of septicaemia were attributable to *Str. pneumoniae* (2), *Proteus vulgaris* (2), β haemolytic streptococci (2), and *Neisseria meningitidis* (1). There were 14 examples of severe or generalized monilial infection, one of

TABLE IX.—Incidence of Infection—243 Babies—Surviving Babies and Fatal Cases: Source of Admission

Admissions		No. of Babies with Infection Confirmed						Incidence of Infection %	
Source	No.	Prior to Admission			Subsequent to Admission				All Infections
		Surv.	Died	Total	Surv.	Died	Total		
Labour ward	2,943	—	—	0	98	19	117	4.0	
Lying-in wards	441	40	10	50	27	6	33	18.8	
Isolation block	242	11	2	13	25	5	30	17.7	
All sources ..	3,626	51	12	63	150	30	180	6.7	

TABLE X.—Character of Infection and Source of Admission (201 Surviving Babies: 42 Fatal Cases)

Character of Infection	Babies with Infection Admitted from													
	Labour Ward (117)				Lying-in Wards (83)				Isolation Block (43)				Total	
	Surv.	Died	Total	%	Surv.	Died	Total	%	Surv.	Died	Total	%	No.	%
Meningitis and/or septicaemia ..	4	7	11	9	4	2	6	7	8	4	12	28	29	12
Acute respiratory { Staphylococcal ..	—	—	—	—	—	4	4	5	—	—	—	—	4	2
Acute respiratory { Other ..	4	11	15	13	7	10	17	21	3	1	4	9	36	15
Monilial: severe or generalized ..	6	0	6	5	4	0	4	5	3	1	4	9	14	6
Salivary gland(s) ..	4	—	4	3	2	—	2	2	2	—	2	7	8	3
Cellulitis ..	5	—	5	4	1	—	1	1	1	—	1	7	7	3
Pyelonephritis ..	1	1	2	2	2	0	2	2	2	1	3	7	7	3
Enterocolitis ?—viral ..	—	—	—	—	8	0	8	10	—	—	—	—	8	3
Osteomyelitis ..	1	0	1	1	4	0	4	5	1	0	1	>2	6	2
Superficial but extensive skin ..	73	0	73	63	35	0	35	42	16	0	16	>37	124	51
	98	19	117	100	67	16	83	100	36	7	43	100	243	100

which proved fatal. Cases listed as enterocolitis were characterized by frequent stools containing large amounts of mucus, and occurred in small groups at times when viral-type infections were prevalent among mothers and staff. Bacteriological and viral studies were negative and vomiting was absent.

Impressions in Retrospect

General Considerations

The question arises, "Were many babies transferred to the unit unnecessarily?" Any doubts on this score relate only to the 477 infants (15% of all admissions) listed as "healthy babies" in Table V. Most of these infants were admitted from the labour ward as a precautionary measure after difficult delivery or at the instance of the obstetrician after operative delivery. A large proportion of the babies who developed clinical signs of intracranial disturbance and/or intracranial haemorrhage were admitted to the unit in exactly similar circumstances. Admission of the babies who proved to be healthy constituted a form of insurance against delayed recognition of clinical signs in infants who did develop evidence of cerebral disturbance. Reviewed in retrospect, we consider that over the 10 years the policy of admitting babies for precautionary observation in the circumstances described has been fully justified. Policy has not been rigid. Thus, with experience, undoubted benefit has resulted from greater promptitude in transferring babies with a tendency to chilling and from the transfer as a routine of babies born to diabetic mothers. By way of contrast, experience has shown that traumatic cyanosis as an isolated finding is not to be regarded as an indication for transfer.

Findings concerning infection among babies admitted to the unit are of particular interest. The figures in Table IX relate

to selected babies; they are no measure of the exact incidence of infection among babies in the isolation block and lying-in wards, but provide a clear indication of the greater risk of infection in babies from the lying-in wards as compared with those transferred direct from the labour ward. The implications of the risk must not, however, be exaggerated. The overall incidence of 243 infections (6.7%) in the total of 3,626 admissions to the baby unit compares favourably with an approximate incidence of 8 to 10% among all live births in the hospital during the same period. Furthermore, infection was the major contributory cause of death in only 42 cases, and in almost every instance the baby had contracted infection prior to admission to the unit.

Mother and Baby

Separation of mother and baby imposes hardship on the mother. No matter how constantly, completely, and understandingly she is kept informed the mother is conscious of separation—conscious of her baby "not being near enough." A mother's difficulty in accepting reassurance concerning her

baby whom she may not have seen and who is being looked after elsewhere is very understandable, but her attitude changes when she herself is ambulant and can visit the baby nursery. The situation is different when a mother can be told that her baby will probably not be retained in the special nursery for more than 36 or 48 hours' observation, or when a baby who has been in the lying-in ward for some time is suddenly transferred to the unit on account of newly developed worrying signs. In the latter circumstances a mother derives confidence from the fact that the baby's illness, of which she herself has seen evidence, is being treated in a unit specially intended for the purpose. Mothers who, when they are themselves discharged from hospital, have to leave their babies behind know a similar confidence which is encouraged by allowing regular visiting. Instruction in mothercraft before discharge of the baby is the ultimate goal, including the establishment of the baby on the breast whenever possible.

Experience in the use of the cubicles intended for mother and baby proved particularly instructive. In the early years of the unit mothers were sometimes admitted with their babies from the labour ward. A rather more common practice was for mothers ready for discharge to be transferred to the unit, where they were reunited with their babies who were still in need of hospital care. In general this procedure was unsuccessful. The mothers were lonely and frustrated. Frustration arose from disappointment and at times a veiled sense of resentment at not returning home on the expected day. To meet the situation, trial was given in selected cases to readmission of the mother after her discharge home from the lying-in ward and after she had had a few days with her family. Readmission was to the baby unit, where mother and infant shared a cubicle. The response was gratifying, and mothers taking advantage of the arrangements appreciated the opportunity of returning at an early date to contribute personally to

the care of their newly born babies. As pressure on accommodation increased, it proved impossible to satisfy all requests by mothers to return. Alternative arrangements were made, enabling mothers living within a reasonable distance of the hospital to visit on one or more occasions daily in order to take an active part in the management of their babies until such time as the babies were ready to go home. These arrangements proved eminently satisfactory, but unfortunately had to be discontinued when all available space in the unit was reserved for babies.

The greatest benefit of the unit to the infants is the provision of *continuous* skilled nursing care. This care has the special advantage of being continuous in the case of most babies from the time of birth, and of not being subject to distraction by sudden or unexpected requirements of the mother. Moreover, the earliness with which special nursing begins encourages early recognition of signs of healthy progress as well as those of impaired health. More accurate appreciation of the signs of health, of minor departures from normal, and of serious disease is favoured. The careful and promptly reported observations of the experienced midwife are invaluable in assisting the doctor to speedier and more accurate diagnosis. As a result unnecessary treatment is avoided and delay of essential treatment prevented. Confident assessment of progress is assisted. Treatment further benefits from the practised skill of midwives accustomed to the special techniques involved in feeding, trans-fusing, rehydrating, collecting specimens, maintaining body temperature, and controlling environmental humidity in connexion with the newborn.

Arrangements whereby a resident obstetrical officer, the labour-ward sister, or a lying-in-ward sister can approach the paediatric senior house officer, or in his absence the sister in charge of the special unit, with a view to securing the transfer of a baby eliminates delay, and undoubtedly contributes to the saving of life.

Standards of Medical Care

An unquestionable result of the establishment of a special baby unit has been an improvement in the standards of medical and nursing care. Profitable clinical study is favoured by the concentration of selected babies in one nursing unit. A better sense of clinical perspective is developed.

Delay of some days in arriving at a diagnosis is not uncommon in the newborn. Where these infants are under continuous experienced nursing and medical supervision, the temptation to indulge in what might be termed "meddlesome" blind therapy does not arise. The circumstances of the unit permit full advantage being taken of the resilience and recuperative powers of small infants. On many occasions disturbing signs disappear suddenly or gradually with treatment limited to nursing care. By way of contrast, interpretation of signs which appear suddenly or which have undergone sudden aggravation is not hampered by the effects of previous empirical therapy. Confidence in the accuracy and promptitude of the observations made by the nursing staff justifies an attitude of reasonable restraint in the matter of therapy requiring that in general drugs are given in the presence of certain indications only.

In no clinical sphere has the benefit of the special baby unit been more evident than in the speedier recognition of signs indicative of an established or threatening acute emergency, whether medical or surgical. That this should have taken place is attributable to the cumulative experience gained *jointly* by nursing and medical staff over a period of years. Care of the premature baby has improved simultaneously. This is the result in part of extended but judicious use of incubators, but in the main of a greater ability to assess clinical progress enabling changes in nursing and feeding procedure to be effected without the necessity for repeated detailed medical

examination. Of equal importance are the lessons learned in the study of infants in whom unsatisfactory progress was eventually explained by a deeply situated congenital anomaly or unsuspected metabolic disturbance. Continuing medical supervision of these and other cases has benefited greatly from the liaison arrangements established with the local health authorities in conjunction with the family doctors. These same liaison arrangements have been invaluable also in enabling a confident decision to be arrived at concerning the time of discharge home of premature babies.

Nursing Staff

Quite apart from the benefits of a unit to the baby, the question arises regarding the effect of such a unit on the junior nursing staff. Experience has shown that pupil midwives transferred from a lying-in ward find the baby isolated. Emergencies are less frequent than they are accustomed to and sudden demands for x-ray and special investigations are only occasional. To the pupil midwife, babies without their mothers seem unresponsive, and 10 days or so elapse before she realizes that "although the babies do not talk to her, they are there to be talked to." A similar reaction is apparent in almost all newcomers to the baby unit, including house-physicians and ward orderlies.

Inevitably the mortality rate in a special baby nursery is high, and, unless she has the circumstances explained to her, the young pupil may only too easily become genuinely depressed. It must be remembered that transfer of a pupil involves leaving lying-in ward nurseries in which all babies are healthy to take up duties in a nursery in which most if not all of the neonatal morbidity is concentrated. In reality the mortality incidence in a modern special newborn baby unit approximates closely to that in a children's general medical ward of 30 years ago.

Although pupils gain general nursing experience in the special unit there is a danger that they may not have the same opportunities as formerly to practise resuscitation. To some extent this is explained by the attendance in the labour ward of staff from the special baby nursery, but it results also from the fact that shortage of labour-ward staff makes it impossible to allocate a particular individual to assume responsibility for the baby. During periods of acute shortage of staff it has been noted also that appeals, more especially by staff nurses, for transfer of babies from lying-in wards have been made rather more often than previously. This may reflect less confidence among those now assuming charge duties, or, alternatively, a changed outlook implying that the special baby nursery exists to care for any departure from normal no matter how slight. In drawing attention to this no suggestion of criticism is implied. The purpose is to forewarn concerning a possible trend to which a special baby unit could unintentionally give rise.

Teaching Aspects

Opportunities for learning are not limited to the medical student or pupil midwife. Not a day passes in a special baby-care unit without new knowledge being acquired by medical and nursing staff, senior and junior.

Among students and pupils there are usually some who are not attracted by work among babies. To them at first the constant detailed care required by the newborn lacks appeal in virtue of what appears to be a monotonous routine without drama. Patience and time are required if those who are inclined this way are to be persuaded into accepting that as they feed or attend to the toilet of small babies they have an opportunity to make clinical observations of inestimable value. In this way the medical student and pupil nurse are encouraged to appreciate how interpretation of their observations can help in differentiating the minor abnormality from normal health on

the one hand and from major disease on the other. The medical student has the advantage of carrying out detailed physical examination and discussing his findings.

Perspective in clinical appreciation is, whether by nurse or doctor, favoured by the presence in the same baby unit of premature infants with manifest signs of healthy progress, and newborn babies with demonstrable evidence of trauma, infection, or anomalous growth or rhesus incompatibility. Treatment and prognosis of the individual case can be considered against a background of normal physical and physiological development in the newborn. Instruction is incomplete which fails to point out the frequency with which precise diagnosis is not possible, and how recovery from an apparently serious condition can take place in the absence of a diagnosis. The registrar can be encouraged to acquire greater confidence in his clinical observations, and discouraged from succumbing to the urge to carry out disturbing investigations with the sole object of "doing something."

There is always the need to consider how much can confidently be conveyed to the mother. With registrars and post-graduates there is probably no more profitable discussion than one concerning progress and prognosis while precise diagnosis remains uncertain. One measure of a physician's skill is his ability to retain the confidence of the parents of a newborn baby whose illness he has not finally diagnosed but concerning whom he has given a carefully considered, honest provisional prognosis.

No opportunity is lost of having students present when parents are being interviewed and when letters are being dictated to family doctors. In this way consideration of a baby as being wholly isolated from his family circle is discouraged. With this same object in mind, recordings on the baby charts in regular use in the nursery include prominent references to relevant maternal factors, including the state of her breast secretion and whether she has gone home or is still in hospital. Constant reference to these and other considerations in the course of ward rounds promotes an attitude of mind which invariably asks, "Why is the baby not returned to his mother, and when will he be?" Promotion of this outlook is favoured by nursery rounds attended by small groups which include midwives, health visitors, doctors, pupil midwives, and medical students. Hospital and domiciliary care are seen in proper relationship to one another. The student is witness of team-work *in practice*. Illness is considered against the background of the antenatal and obstetrical history. It is possible to demonstrate the value of what might be described as "prophylactic observation" where there is a history of foetal distress followed by asphyxia, or where there is a tendency to chilling on the part of a baby. Progress of a premature baby and recovery of any baby from neonatal illness are considered in terms of the prospects of subsequent continued healthy progress.

Discussion of follow-up supervision deals with the need for any prophylactic therapy and for any clinical supervision over and above that usually provided by the family doctor and infant welfare services. While the baby is yet in hospital the medical student and pupil midwife are encouraged to reassess the infant's needs in terms of healthy growth and development in his home environment.

While there can be no doubt that a special baby-care unit is invaluable as an aid to instruction of the medical undergraduate and postgraduate, there is less certainty of constant benefit to the pupil midwife. Sister tutors vary in the relative importance they attach to theory and practice, and not all are alive to the practical importance of the instruction which is given in a special unit. Nor is there always, in all quarters, adequate appreciation of the exacting nature of the unceasing demands made throughout the 24 hours by well and premature newly born babies. A tendency exists to visualize care of these infants as no more than feeding. The joint nursery rounds are effective in impressing upon doctors, local authority nurses,

and students the intensity of sustained effort required of the staff of a special baby nursery. An unfortunate feature is that resident obstetric house officers probably benefit least from the instruction given in the unit. While they keep in touch with babies of mothers under the care of their obstetrical chief, their multifarious duties prevent them from taking part in the routine and teaching rounds in the unit.

Research

The unit provides facilities, not previously available, for study and research. Of special importance is the fact that it is possible to undertake prospective as distinct from retrospective investigations. These in turn give stimulus to the work of both medical and nursing staff and provide added interest to the technicians undertaking routine laboratory investigations. Over the years, particular attention has been paid to the careful, prompt recording of the integrated clinical and other observations by senior members of the medical *and* nursing staff. As a result a succession of enthusiastic senior house officers have been assiduously trained in the art of making and interpreting clinical observations, a training which has stood them in good stead in their subsequent careers and quest for higher qualifications.

A salutary experience has been the frequency with which study of clinical series has demonstrated the falsity of many personal (W.S.C.) impressions which had been long accepted without sufficient consideration.

Some Essentials

The particular unit, the subject of this article, is not unique or in any way exemplary. In many respects it is of a makeshift character, and efficiency and development remain short of desirable standards, but a 10-year review focuses attention on the main lessons learned.

First and foremost, team-work is fundamental to success. As professional colleagues, doctor and nurse must recognize that each has an essential contribution to make. There must be a mutual understanding, combined with a willingness to give as well as take, between the staff of the labour and lying-in wards on the one hand and that of the baby unit on the other. The baby unit should function as an integrated part of the maternity hospital, each infant being looked after on behalf of the senior obstetrician in attendance on the mother.

Secondly, a need exists to attach greater importance to perinatal considerations in the study of neonatal problems. The existence of this need is due in part to lack of foresight. It is, however, due also to a general inadequacy of medical staff of intermediate grade. Were this corrected, improved organized mutual collaboration between obstetric and paediatric colleagues would be possible. This in turn would encourage more detailed, reliable correlation of maternal with foetal and neonatal findings and would discourage the separate consideration of stillbirths on the one hand and of neonatal mortality and morbidity on the other.

A comprehensive pathological service is essential if the hospital is to derive the maximum benefit from a special baby-care unit. Lack of such a service can seriously impede clinical progress. Detailed necropsies should be carried out on all stillbirths and newly born babies dying in hospital, and should be the responsibility of a pathologist experienced in neonatal work. Routine microscopical examination of tissue from the lungs, liver, kidneys, and pancreas, and other tissues where necessary, is an essential part of all necropsies. Prompt reporting of microscopical findings is of major importance in enabling the clinician to correlate clinical with pathological findings while the clinical picture is still fresh in his mind.

Laboratory micro-techniques are essential, and provision must be made for the supervision of technicians and for the periodic check of technical control procedures.

The occasions when the need for radiodiagnosis is of immediate urgency are rare, but the arrangements made must be capable of dealing with sudden requirements at any hour of day or night.

The value of co-operation with surgical colleagues prepared to discuss at the cot-side the potentially serious no less than the unmistakable acute emergency cannot be overestimated.

Local experience suggests that the value of the co-operation with the environmental health authorities would have been enhanced had integration of the work of infant-welfare medical officers been extended to include participation in the follow-up clinics. Quite apart from the follow-up of selected babies, a strong case can be advanced for reliable routine interchange of information concerning babies who after discharge come under the surveillance of the maternity and child-welfare authorities.

Accommodation reserved for a special baby-care unit should include separate provision for isolation, a treatment-room, a mothercraft-room, and an open-air balcony. Desirably there should be two or three cubicles for mother and baby, and a day-room for mothers.

In assessing the work of a special baby-care unit account should be taken of the basic character of the obstetric work in the hospital of which it is an integral part. To arrive at reliable conclusions concerning the validity of our deductions the findings in the present study require to be compared with those in a non-teaching hospital, admissions to which are subject to a different policy.

Summary

Over a period of 10 years 2,943 newly born babies were transferred from the labour ward and 683 from the lying-in wards to the special baby-care unit of a maternity hospital. Of the infants 36% had a birth weight of $5\frac{1}{2}$ lb. (2.5 kg.) or under. Prematurity, post-natal stress, difficult delivery, rhesus incompatibility, respiratory distress, cyanosis, and chilling were the most common reasons for transfer, in that order of frequency. Trauma was the major clinical feature in 33% and prematurity in 22% of surviving babies. There were 425 deaths, the major contributory factors being prematurity, congenital anomalies, trauma, infection, and haemorrhage in 149 (35%), 128 (30%), 81 (19%), 42 (10%), and 20 (5%) respectively.

Use of the unit was subject to changes consequent upon alterations in general hospital policy, and the increased demands of babies necessitated reserving for their use three cubicles each of which was originally intended for a mother and baby.

Fifteen per cent. of the babies showed no evidence of disturbed health after admission as a precautionary measure following difficulties before or at birth. Other babies admitted in similar circumstances developed signs of intracranial disturbance which were detected with a minimum of delay. Of surviving babies 11, 46, and 12% were returned to their mothers within 14, 7, and 2 days respectively. Eighteen per cent., consisting almost entirely of very small premature infants, were retained for a period in excess of four weeks. The incidence of clinically severe infections in the 3,626 infants was 6.7%, being 4% in those admitted direct from the labour ward, 17.7% in those from the isolation block, and 18.8% in those from the lying-in wards.

Benefits of the unit to premature and ill babies born at term are considerable, and mothers accept and understand the reasons for temporary separation from their newly born infants. Continuous observations made by experienced midwives are fundamental to improved standards of medical care. Unnecessary empirical therapy is avoided, emergency situations are more speedily recognized, and factors contributing to failure to thrive are dealt with sooner and more effectively. Time is required for pupil midwives to adjust themselves to conditions in a baby unit, and if they are not to know discouragement the reasons for the relatively high mortality rate must be explained at the outset.

The advantages to teaching of a special baby unit are great. Senior no less than junior medical and nursing staff benefit. Perspective in clinical approach and confidence in clinical judgment are encouraged. The value of prophylactic observation, the importance of avoiding "meddlesome" investigations and needless therapy, and the benefits of continuing liaison with family doctors and health visitors are demonstrated in the course of routine clinical and teaching rounds which have as their main theme teamwork in practice. An unquestionable misfortune is that resident obstetrical house officers derive least benefit from the improved standards of clinical care and instruction. Research potentialities are greatly extended by the facilities for prospective in association with retrospective studies.

Essentials in the work of a special baby unit in a maternity hospital include association of a perinatal approach with study of neonatal problems; a comprehensive neonatal pathological service; access to laboratories employing micro-techniques subject to frequent checking as to accuracy; and radiodiagnostic facilities for routine and immediately urgent requirements.

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