Audit Report

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Clinical Audit on Babies Admitted to Paediatrics Unit at Crosshouse Hospital Within 7 Days Of Birth

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AIMS
To identify risk factors predicting readmission of neonates within 7 days of birth and to implement guidelines to reduce this.

METHOD
All babies less than 1 week old either admitted to, or assessed at paediatric unit at Crosshouse hospital, Kilmarnock between July 2006 and December 2006 were included. Data was analysed on birth weight, gestation, age at discharge from maternity unit, age at admission to Crosshouse hospital, source of referral, problems necessitating referral, feeding, interventions, and length of stay.

RESULTS
We managed to obtain case notes for 50 babies out of the 55 who were admitted during this time. 44 babies (88%) were discharged from maternity unit within 48 hrs of birth and 23 babies (46%) were discharged from maternity unit within the first 24 hrs. Poor feeding/weight loss and physiological jaundice accounted for majority of admissions. Further poor feeding and weight loss were more common in first borns, in early discharges and in breast-fed babies.

RECOMMENDATIONS
Mothers deciding to breast-feed babies need proper support. It may be a good idea to delay discharge check until 24 hours after birth. First time mothers are especially naive when it comes to breast-feeding and it is important that they get properly supervised.
It may be a good idea to request mothers to fill in a questionnaire prior to discharge regarding how confident they feel about feeding their child, any feeding concerns, any other concerns etc.

ABBREVIATIONS
AMU: Ayrshire Maternity unit
CMW: Community mid wife

INTRODUCTION

The length of post partum stay in hospital has been steadily declining over the past 50 years.1,2 Reducing the number of days in the hospital after birth has several advantages like helping mother and infant recover in a familiar home environment; decreasing the risk of iatrogenic infections and cutting down on hospital costs. However, concerns have also been expressed about potential disadvantages of early discharge: For example breastfeeding is not established until the third or later postpartum day; a number of conditions do not manifest themselves until two or more days after the delivery.3 In a large study on neonatal mortality done in Washington (retrospective study looking at 47879 births between 1989 and 1990), it was found that neonates discharged before 30 hrs of age had a significantly higher mortality in the first month and first year of life than those neonates who were discharged later.4 In the United States, this has prompted the introduction of legislation making minimum 48 hour postpartum hospital stay mandatory. Through our audit, we aimed to identify risk factors predicting readmission and to implement local guidelines to reduce readmission rates.

METHOD

All babies less than 1 week old either admitted to, or assessed at paediatric unit at Crosshouse hospital, Kilmarnock between July 2006 and December 2006 were included. It was a retrospective study. List of patients was available from Medical records and paediatric case notes were obtained from medical records. The neonatal case notes were obtained from neonatal secretaries at AMU.

55 babies were admitted during this time out of which we managed to obtain paediatric and neonatal case notes for 50 babies. Data was analysed on birth weight, gestation, age at discharge from AMU, age at admission to Crosshouse hospital, source of referral, problems necessitating referral, feeding, interventions, and length of stay.

RESULTS

Most of the referrals were generated from community midwives who are often the first point of contact for neonates discharged from maternity unit (Table 1)

Source of referral (Table 1)

Source of referral	Number of babies
CMW	39
GP	5
A&E	4
Self	2
Total	50

We looked at the problems necessitating admission (Table 2). Please note that babies had more than one problem. Hence the higher numbers!

It is obvious looking at the numbers that most of the admissions are secondary to poor feeding and weight loss, majority of which could have been prevented.

Problems necessitating admission (Table 2)

Problems	Number of babies	No of babies in whom this problem was noted in AMU
Poor feeding	20	7
Wt loss >10%	18	0
Physiological jaundice Requiring phototherapy	14	1 (SBR was below treatment line)
Physiological jaundice Not requiring phototherapy	8	1
Choking episode	5	1
ABO incompatibility Requiring phototherapy	1	0 (No DCT done)
Pseudo menstruation	2	0
? Reflux (Blue episode)	1	1 (Not reported to staff)
Central posterior cleft palate	1	0 (Discharge check at 2 hrs)
? abnormal breathing (Normal baby on examination)	1	0
Mucous retention cyst under tongue	1	0
Not opened bowels for 48 hrs	1	0
Unable to abduct hip	1	0
Traumatic fat necrosis R side of face	1	0
CMW error in recording weight	1	NA
Fever? Viral illness	1	0

We also reviewed the age at readmission (Table 3). It is obvious that most readmissions were after the 3rd day of life. Most readmissions were related to poor feeding, weight loss > 10%, physiological jaundice and it is to be expected that most of the times; these problems would not become very obvious until around 3-4 days after birth.

Age at readmission (Table 3)

Age at admission	Number of babies
< 24 hrs	1
24-48 hrs	3
48-72 hrs	7
72-96 hrs	16
>96 hrs	23
Total	50

We also analysed the age when discharge check was done at the maternity unit

(Table 4). 44 babies (88%) were discharged from maternity unit within 48 hrs of birth and 23 babies (46%) were discharged from maternity unit within the first 24 hrs. Age at discharge check was important as there was an association found between early discharge from AMU and subsequent readmission with feeding difficulties especially among breast fed babies (Table 4). Also studies have shown that mothers with 1 day hospital stays post delivery are less satisfied with their length of stay.1

Age at which discharge check was done at AMU and subsequent admissions with poor feeding (Table 4)

Age at discharge check	Number of babies	Subsequent admissions with poor feeding	Breast fed
<12 hrs	11	3	2
12-24 hrs	12	8	7
24-36 hrs	15	3	3
36-48	6	3	2
48-60	6	2	2
>60 hrs	0	1	1
Total	50	20	17

Also an important association was noted between poor feeding and first time mums. Out of the 20 babies with poor feeding, 16 were born to first time mothers.

Also looking at the table below (Table 5), it is clear that feeding problems and wt loss were much more common in breast fed babies. The association between readmission and first born children, breast feeding has been shown in studies.5

Table 5

Mode of feeding	No of babies admitted with poor feeding and/or wt loss
Breast feeding	26
Bottle feeding	3 (One of whom had a cleft palate)

We also looked at relationship between birth weight and risk of readmission (Table 6) and also gestational age and risk of readmission (Table 7). There was no clear association between birth weight and readmission or between birth weight and feeding problems. Also there was no association noted between gestational age and risk of readmission in the first week of life. A likely explanation for these findings would be that infants with low birth weight or gestational age less than 37 weeks were probably less likely to be discharged early from the maternity unit.6

Birth weight and readmission (Table 6)

Birth weight as centile	Number of readmissions	Number with feeding problems
<3rd	0	0
3-10	12	5
10-50	12	5
50-90	16	8
90-97	8	2
>97th	2	0
Total	50	20

Gestational age and readmission (Table 7)

Gestational age	Readmission
<37 weeks	5
37-40 weeks	29
>40 weeks	16
Total	50

We also analysed data on length of admission in paediatric ward. 32 out of 50 admitted babies (64%) stayed less than 24 hrs (Table 8). 10 out of 50 admissions needed reassurance only (20%) but the remaining needed some form of intervention (Table 9)

Length of stay (Table 8)

Total length of stay	Number of babies
<12 hrs	13
12-24 hrs	19
24-36 hrs	7
36-48 hrs	7
48-60 hrs	4
Total	50

Interventions needed on readmission (Table 9)

Intervention	Number of babies
Help with feeding/ Change of feeding	22
Blood tests	35
Phototherapy	15
Reassurance only	10
Referral to other specialties	2
IV fluids	5
IV antibiotics	2
Folic acid supplements	1
ECG	3

Babies needing follow up and readmission (Table 10)

Readmission	2
Follow up in day unit	8
Follow up in clinic	4
Total	14

CONCLUSIONS:

1. Poor feeding and weight loss accounted for majority of the admissions. (Table 2)
2. The above problems occurred more commonly in breast fed babies. 90% of babies admitted with poor feeding and/or weight loss were breast-fed babies (Table 5).
3. Out of the 20 babies with poor feeding, 16 were born to first time mothers.
4. 44 out of 50 babies who were readmitted had been discharged from maternity unit within 48 hrs of birth. There was a clear association between early discharge from maternity unit and subsequent readmission with feeding problems especially in breast fed babies. (Table 4). 11 out of 20 babies admitted with feeding problems (55%) were passed fit for discharge from AMU within 24 hours of birth. Again 12 of them were babies whom their mothers wanted to breast-feed. This raises the question of whether breast-feeding mothers are receiving sufficient support and whether the babies were being discharged too early. Also when these babies were subsequently admitted, many mothers decided to bottle feed despite being offered help with breast feeding. A bottle fed baby in whom a cleft palate was missed had a discharge check done when she was 2 hrs old!! Clearly not sufficient time to establish that she was feeding well!
5. 7 out of 20 babies who were admitted with poor feeding were noted to have feeding difficulty while in AMU (Table 2). When these babies were passed fit for discharge, this would have probably given a false sense of reassurance to mothers especially the first time mums. These mums were less likely to report feeding problems to CMW leading to delayed referrals (Table 3) by which time the babies would have lost a lot of weight necessitating interventions like blood tests, IV fluids etc.

6. There was no association found between birth weight or gestational age and risk of subsequent readmission (Tables 6 and 7).
7. Physiological jaundice was the third most common problem necessitating admission (Table 2). Only 2 of the babies in this group were noted to be jaundiced in AMU.
8. Surprisingly parental pressure for early discharge from AMU was documented in only one neonatal notes suggesting that this might not have been an important factor causing early discharge.
9. For 10 of the admissions, reassurance was all that was needed but the remaining 40 needed some form of intervention (Table 9).

RECOMMENDATIONS:

1. Delay discharge check until 24 hours after birth: Mothers deciding to breast feed babies need proper support. It may be a good idea to delay discharge check until 24 hours after birth. This will not only give sufficient time for the mothers to familiarise with breast feeding but also provide staff the opportunity to detect any potential feeding problems.
2. First time mothers to be properly supervised: First time mothers are especially naive when it comes to breast-feeding and it is important that they get properly supervised.
3. Request mothers to fill in a questionnaire: It may be a good idea to request mothers to fill in a questionnaire prior to discharge regarding how confident they feel about feeding their child, any feeding concerns, any other concerns etc. The physical, psychological and social well being of mother and newborn must be assessed when discharge planning takes place.7
4. Policy to transfer babies back to AMU: For babies readmitted in whom the only problem identified on assessment in paediatric ward is poor feeding, there should be a policy to transfer babies back to AMU for breast feeding training and support. This will not only persuade mothers to persevere with breast feeding but will also have a direct impact on reducing early discharges from AMU.
5. Re audit: The above recommendations to be implemented after discussion with staff at AMU and the audit will be repeated to see if this has resulted in a decrease in neonatal readmissions.

COMPETTING INTERESTS
None Declared

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