

**NHS Highland
Guidelines for
Prevention of Excessive Weight Loss
in the Breastfed Neonate**

Policy Reference: N002	Date of Issue: December 2010
Prepared by: Karen Mackay – Infant Feeding Advisor Public Health Directorate NHS Highland	Date of Review: December 2020
Lead Reviewer: Karen Mackay – Infant Feeding Advisor	Version: 4
Authorised by:	Date:
EQIA: Yes	EQIA completed: Yes

Distribution:

- Executive Directors
- All paediatric Medical Staff and Dieticians
- All GPs
- Clinical Directors
- General Managers
- Assistant General Managers
- CHP Lead Nurses/Nurse Managers
- Hospital Midwives
- Community Midwives
- Health Visitors
- Public Health Practitioners
- ANNP
- APNP
- Nursery Nurses

CD ROM

Email X

Paper X

Intranet X

Version: 4	Date of Issue: December 2010
Page 1	Date of Review: July 2020

CONTENTS

	Page no
1. Summary	3
2. Background	4
3. Breastfeeding Management Practices which Optimise Milk Production	7
4. Assessment of Neonatal Wellbeing	8
5. Equality and Diversity	9
6. Management Plan 1 – Guidelines	9
Management Plan 1	11
7. Management Plan 2 – Guidelines	12
Management Plan 2	13
8. Management Plan 3 – Guidelines	14
Management Plan 3	15
9. Management Plan 4 – Guidelines	16
Management Plan 4	18
10. References	19

Version: 4	Date of Issue: December 2010
Page 2	Date of Review: July 2020

PREVENTION OF EXCESSIVE WEIGHT LOSS IN THE BREASTFED NEONATE

Evidence to support management guidelines for weight loss

1. SUMMARY

Excessive weight loss in breastfed babies causes great anxiety to parents, carers, families and staff. It can lead to the cessation of breastfeeding and possible re-admission to hospital.

Contributing factors to excessive weight loss are:

- At-risk babies not being identified and commenced on the NHS Highland At-Risk Hypoglycaemic Policy.
- Mothers who have had a home birth or have been discharged prior to gaining appropriate skills and knowledge to successfully position and attach her baby effectively.
- Staff not having the essential skills and knowledge to teach and demonstrate positioning and attachment to mothers.
- Insufficient breastfeeding support when discharged home or after home birth.

Prevention and Treatment of excessive weight loss:

- Education of mother to optimise their milk production.
- Ensure the mother can effectively breastfeed prior to discharge home or after a home birth.
- Identify the neonate who is at-risk and closely monitor using the at-risk protocol.
- Unlike Keeping Childbirth Natural and Dynamic (NHS Q.I.S 2009) recommendations, in NHS Highland weigh all breastfed babies after a full 72 hours from birth.
- Or weigh prior to discharge, if less than 72 hours old, if there is a problem with positioning and attachment or urine/stool output.
- Ascertain likely cause of weight loss quickly.
- Plan management by the likely cause and severity of weight loss.
- Within 48 hours of discharge from hospital or home delivery, ensure the mother is offered telephone contact with a volunteer breastfeeding peer supporter.
- Ensure mothers who have had a home birth have details of how to contact their local health professional and labour suite.
- Where infant feeding support workers are based ensure mums are offered a visit or clinic appointment from the Infant Feeding Support Workers.
- Early identification of problem and referral to local key workers or acute breastfeeding clinic if mum lives within travelling distance of Raigmore.

Version: 4	Date of Issue: December 2010
Page 3	Date of Review: July 2020

AIMS

1. To support maternity staff in their ability to care for a baby who has had an excessive weight loss, giving them the knowledge and evidence base to be confident in their practice.
2. To enable staff to detect excessive weight loss early and plan proactive management with the mother and paediatric staff.
3. All staff will be aware that excessive weight loss may or may not be due to dehydration.
4. To support health visiting services in their ability to care for a baby who has faltering weight, giving them the knowledge and evidence base to be confident in their practice.

2. BACKGROUND

Neonatal weight loss in the first few days of life is part of a **normal** physiological process where excess extra-cellular fluid is excreted. This weight loss has been expected to be up to 10% of the birth weight, although this expectation was never evidence based. In fact this belief came from a time when breastfeeding practices were entirely different from today where feeds were timed and mothers were routinely separated from their babies. Recent studies have indicated that normal weight loss in the majority of babies is more likely to be between 5 and 7% of birth weight; however a small group of babies may be vulnerable to greater loss.

On average weight loss in neonates was found to be at 2.7 days with re-admission to hospital for feeding problems found between days 4 and 7. (Dewey et al 2005, Macdonald 2003).

Excessive weight loss occurs when:

- Ineffective milk transfer to the baby occurs, caused mainly by poor positioning and attachment. It can also be caused by infrequent feeds i.e. when a baby is given a complementary feed or a dummy, these are the most common causes of excessive weight loss and unless corrected, this problem will inevitably lead to a reduction in breastmilk production.
- Breastmilk production is reduced due to the feedback inhibitor of lactation (FIL). As the volumes of FIL increase in the breast due to poor milk transfer to the baby, future milk production is greatly compromised (Neifert 2004).
- The let down or milk ejection reflex may be delayed by factors such as stress or pain in the early period resulting in the baby being unable to effectively remove milk, resulting in a build up of milk within the breast and ultimately suppression of lactation.

Excessive weight loss may also be anticipated in specific instances such as:

- Some primigravid women especially those with a short postnatal stay or home birth, history of infertility, polycystic ovarian disease, nipple abnormalities.

Version: 4	Date of Issue: December 2010
Page 4	Date of Review: July 2020

- Following Caesarean section – especially in absence of a labour (Preer et al 2012).
- Large ante or post-natal haemorrhage.
- Retained placenta.
- Epidural.
- Long labour.
- Large volumes of intravenous fluids (I.V) in labour which causes a shift of fluid from mother to fetus – research has now identified this to be >2,500 mls (Chantry et al 2011).
- Severe illness of the mother or mental health illness.
- Congenital abnormalities.
- Babies born prior to 37 weeks gestation.
- Twins.
- Intra-uterine growth restriction.
- Infection in the neonate.
- Jaw/mouth abnormalities.
- Polycythaemia of the neonate.
- Higher birth weight (Regnault et al 2011).
- Overweight or obese mothers (Krause et al 2011).

In these cases it is important to reassure mothers regarding reasons behind an excessive weight loss and ensuring support and encouragement to increase milk supply and confidence in their abilities.

It is important to note that in cases of maternal gestational diabetes, women who are insulin dependant diabetics or women who have received high levels of I.V fluids (>2.5 litres) in labour that birth weight may be inflated by excessive fluid stores in the infant.

In rare situations insufficient milk supply is inevitable:

- Sheehan’s syndrome following massive post-partum haemorrhage
- Breast surgery which involves periareolar incision i.e. breast reduction
Hypoplasia of the breasts – where the breasts are an abnormal shape and underdeveloped. Women will often report no breast changes during pregnancy. (Arbour and Kessler 2013)

Evidence regarding the optimum frequency of weighing the neonate is scarce and varies dramatically across the country. The accuracy of the scales and the time of day in which the babies are weighed also raise concerns. (Sachs and Oddie 2002). Although midwives have frequently voiced concerns that weighing undermines the mother’s confidence, this has never been supported by research. (Panpanich and Garner 2002). Infant weight is a late indicator of poor breastfeeding and close monitoring of the following would indicate poor breast milk intake prior to a weight loss occurring:

- Observing for effective positioning and attachment.

Version: 4	Date of Issue: December 2010
Page 5	Date of Review: July 2020

- Observation of the suck/swallow pattern of the baby throughout a feed.
- Frequent assessment of urine output and stool frequency.

Hypernatraemia

There are increasing numbers of cases being published describing the phenomenon of excessive weight loss being associated with raised sodium levels indicating dehydration (hypernatraemia) and marked jaundice. The incidence is low, however the following factors together would indicate that the baby is already dehydrated and the necessity of a proactive management plan is crucial:

- Serum sodium level in excess of 150 mmols.
 - Weight loss in excess of 12%.
 - Diminished urine output and stools.
 - Jaundice.
- (Macdonald et al 2002 and Boskabadi 2010)

Management plans for babies with confirmed hypernatraemia will be based on individual clinical assessment by a paediatrician.

A careful rehydration plan will be made by the paediatrician ensuring that the sodium does not decrease too fast

Kudamala V et al 2009 found that initiating early and frequent weighing of babies, identifying at risk babies and supporting breastfeeding mothers in the community lowered both mean weight loss and hypernatraemic dehydration.

Iyer NP et al 2008 also found that introducing early weighing from 72 hours old found earlier recognition of problems, lower percentage of weight loss, smaller increases in sodium and higher rates of breastfeeding at discharge.

Both of these suggest that NHS Highland guidelines of weighing at 72 hours meet optimal care standards and weighing neonates later may not identify neonates who are at greater risk of weight loss.

Most babies will re-gain their birth weight within 2 weeks but 1 in 5 will not according to the RCPCH. Any baby who has not regained birth weight after 2 weeks should have a full breastfeeding assessment and weight loss calculated in percentage. In Line with the NICE Guidance NG75 it is good practice to allow 3 weeks for a neonate to regain its birth weight, however any loss of over 10% needs an appropriate management plan.

Version: 4	Date of Issue: December 2010
Page 6	Date of Review: July 2020

3. BREASTFEEDING MANAGEMENT PRACTICES WHICH OPTIMISE MILK PRODUCTION

- Skin to skin contact at birth.
- Help with a second breastfeed within 6 hours of birth. For home deliveries contact details of local labour suites or community midwifery units must be given to new mums to allow for continuity and advice. Clear communication between community and labour suite staff is paramount in ensuring breastfeeding is off to a good start.
- Ensuring the mother is taught the skills of positioning and attachment and has the help required to learn these skills – **PRIOR TO DISCHARGE HOME FROM HOSPITAL OR SHORTLY AFTER HOME DELIVERY.**
- Rooming-in.
- Baby led feeding and observation of feeding cues.
- Frequent access to the breast – again skin to skin contact to encourage breastfeeding.
- If baby is reluctant or sleepy – ensure breast milk is expressed and given by syringe or cup.
- Ensure babies are fed a minimum of 8 times in 24 hours. If the baby is not feeding well, staff should follow the NHS Highland hypoglycaemic Guidelines or guidance on management of the unsettled baby and reluctant feeder pathways.
- Expressing needs to be carried out, if necessary 8 times in 24 hours also. Expressing can be done to suit the mother i.e. after a feed, in-between feeds. – expressing should never be timed.
- Avoid use of formula feeds, teats and dummies. Clear documentation in maternal notes is vital if supplementary feeds are given, including method of administration.
- Cup feeding should be encouraged as the ideal route of supplementation if the baby is alert and responsive

Version: 4	Date of Issue: December 2010
Page 7	Date of Review: July 2020

4. ASSESSMENT OF NEONATAL WELLBEING

(Any of these would indicate further action is required)

BABY

- Jaundiced and sleepy.
- Sleepy babies who feed less than 8 times in 24 hours.
- Very frequent feeds i.e. feeding more than 12 times a day and not appearing settled between feeds.
- Feeds which regularly take longer than 45 minutes to an hour.
- Baby unsettled after feeding.

BREASTS

- Engorgement or mastitis.
- Trauma to nipples, misshapen, “pinched” nipples when the baby finished the feed.

BREASTFEEDING

- Difficulty with attachment.
- No change in sucking pattern.
- No pauses or audible swallows.
- Baby is “fussy” at the breast – on and off a lot during the feed.
- Breast refusal.

Nappies – the normal pattern – Please refer to page 46 – 47 in “off to a good start”
<http://www.healthscotland.com/uploads/documents/120-Off%20to%20a%20Good%20Start.pdf>

Day 1 to 2

- 1 or more wet nappies per day
- 1 or more meconium nappy

Day 3 to 4

- 3 or more wet nappies – feel heavier
- 2 or more – changing in colour and consistency – brown/green/yellow which are looser

Day 5 to 6

- 5 or more wet nappies
- At least 2 or more yellow stools which may be watery

Day 7 to 28

- 6 or more heavy, wet nappies
- 2 or more stools at least the size of a £2 coin, yellow/watery/seedy appearance

After Day 28 – baby will establish own pattern of stooling – may pass several a day or have several days’ gap between stool movements.

Version: 4	Date of Issue: December 2010
Page 8	Date of Review: July 2020

Urates

These are normal bladder discharges in the first few days but persistent urates may indicate insufficient milk intake.

5. EQUALITY AND DIVERSITY

It is the aim of this Policy to ensure that the individual needs of mothers and their babies are given due consideration. In order to understand individual need staff also need to be aware of the impact of any barriers that we may inadvertently have in place in how we provide services.

Staff are advised to:

- Check whether mothers require any kind of communication support including an interpreter to ensure that they understand any decisions being made.
- Ensure that they are aware of any concerns a mother may have about coping with breast feeding and any decisions made.
- Ensure that any mother who has a disability that may require individualised planning re breastfeeding practice is appropriately supported.

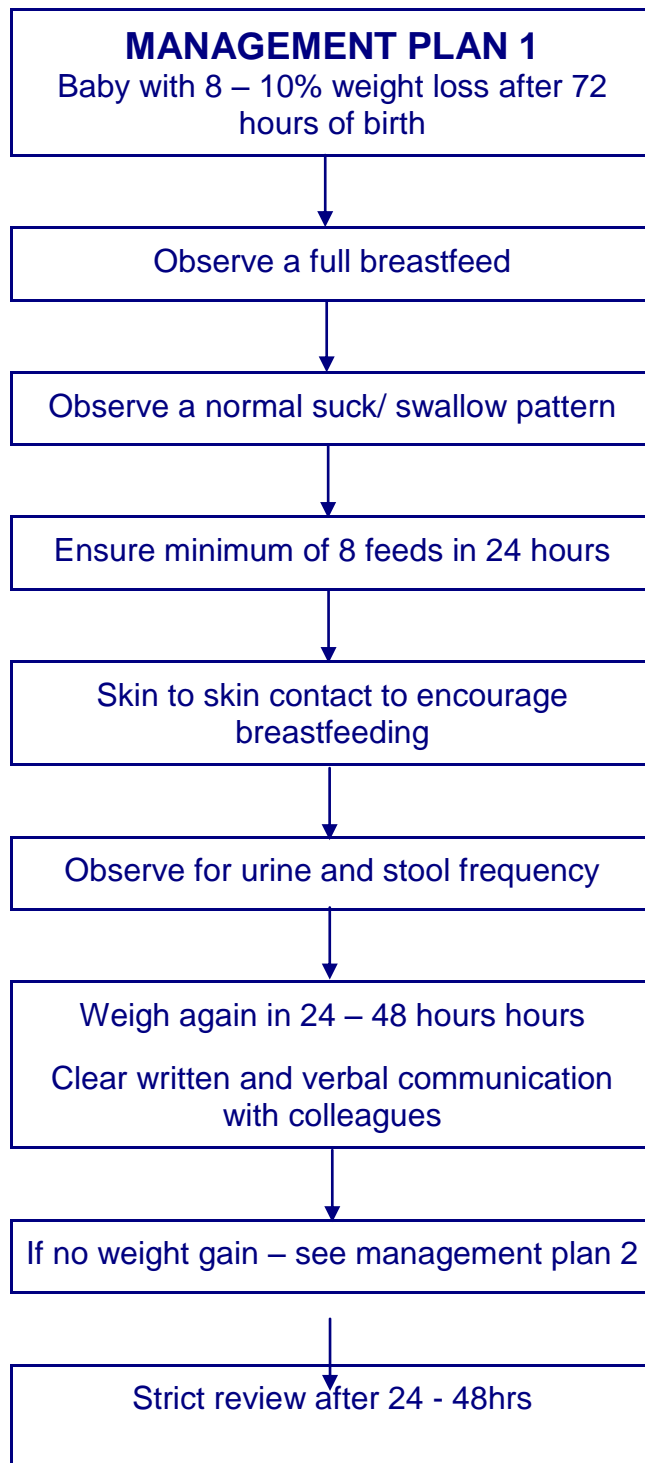
6. MANAGEMENT PLAN 1 GUIDELINES

- Observe a full breastfeed. If the wards are very busy the main priority should be to ensure that the baby is effectively positioned and attached to the breast.
- Use of the NHS Highland Postnatal breastfeeding leaflet.
- Observe suck/ swallow pattern – short initial sucks followed by deep slow rhythmic sucks with pauses and audible swallows. Ratio of sucks to swallows should be one or two sucks then swallow. Again if the wards are too busy, education of the mother regarding normal sucking pattern will ensure that she is aware of what to look for during a feed, thus being able to inform staff of patterns out with the normal.
- Ensure minimum of 8 feeds in 24 hours.
- Skin to skin contact to encourage breastfeeding.
- Observe for urine and stool frequency.
- Weigh again in 24 – 48 hours to ensure no more weight has been lost. Clear instruction to colleagues written in notes to inform of importance of re-weighing.
- If no weight gain – see management plan 2.
- This baby would be reviewed after 24 - 48 hours. Women should be encouraged to stay in hospital for the extra support and encouragement to enable them to effectively position and attach their babies. If at home peer support contact should be encouraged. If infant feeding support worker available in area then a visit is advisable.

Version: 4	Date of Issue: December 2010
Page 9	Date of Review: July 2020

- **ENSURE THAT COMMUNICATION SUPPORT IS AVAILABLE IF REQUIRED_-**
This can be accessed via Interpretation and Translation Guidance for NHS Highland staff.
- Reassurance is vital. Ensure that verbal and non-verbal communication is positive and non-judgemental at all times – remember that this is usually a very stressful and anxious time for all concerned. Women wrongly cite “having not enough milk” as the main reason for early cessation of breastfeeding.
- Involve everyone when implementing the appropriate management plan. This includes parents, wider family and staff.
- Ensure that you are aware of any issues specific to the individual mother and have considered any potential impact on that individual situation.
- For home births these guidelines should be adhered to also – referral to the infant feeding advisors, peers, infant feeding advisors and/or labour suite would ensure that effective measures are in place during out of hours.

Version: 4	Date of Issue: December 2010
Page 10	Date of Review: July 2020



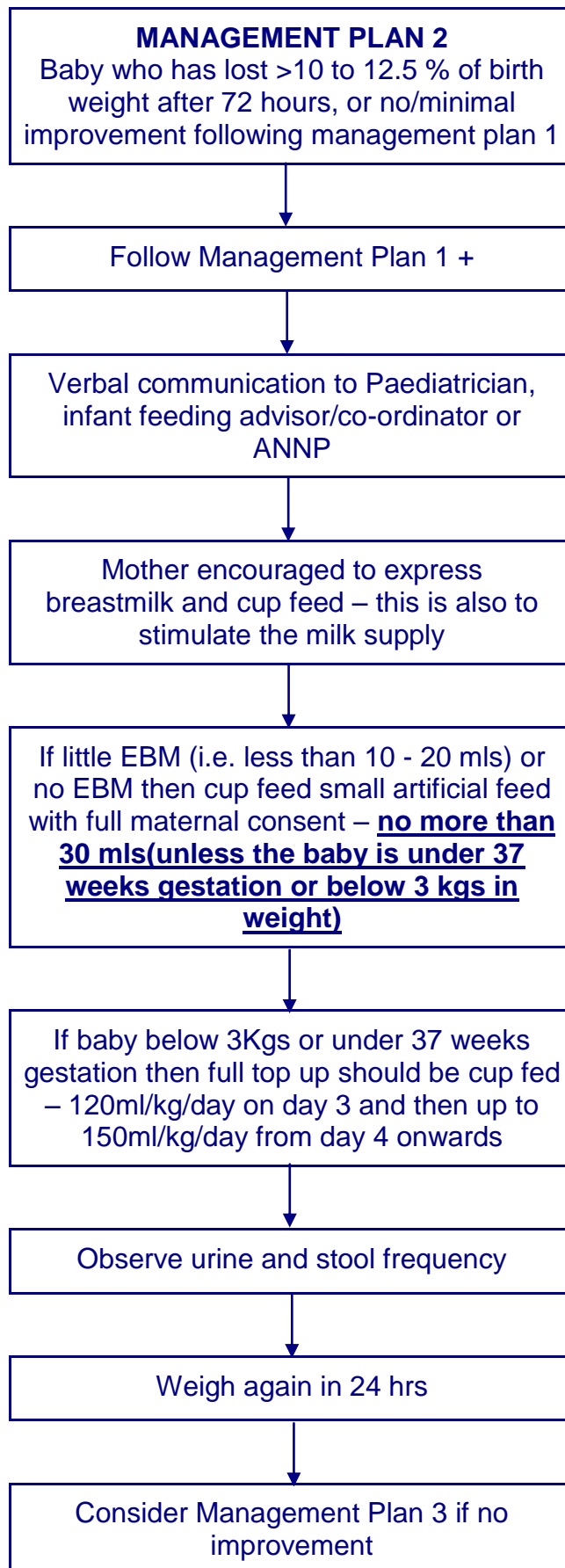
Version: 4	Date of Issue: December 2010
Page 11	Date of Review: July 2020

7. MANAGEMENT PLAN 2 GUIDELINES

Baby who has lost >10 to 12.5 % of birth weigh at 72 hours or for older babies, or no/minimal improvement following management plan 1

- Follow management plan 1 plus
- Inform paediatricians, infant feeding advisor/co-ordinator or ANNP Neonatal Nurse Practitioner with a view to following the guidance of this plan if no signs of infection or dehydration noted and the baby is clinically well.
- Mother encouraged to express breast milk (E.B.M) after each feed and the baby should be cup fed in addition to breastfeeds. Use of the NHS Highland postnatal breastfeeding leaflet will highlight the potential problems of introducing teats and dummies to a breast fed baby and will enable the mother to make a fully informed choice re method of feeding.
- If little or no milk is expressed, then it would be medically indicated due to the excessive weight loss, to cup feed **a small** artificial milk feed with full maternal consent.
- A small artificial milk feed for a healthy, term neonate should be **no more** than 30 mls unless the baby is under 37 weeks gestation or 3kg in weight. This does not mean that 30 mls is the required amount, lesser amounts are acceptable when establishing exclusive breastfeeding.
- Observe urine and stool frequency
- Weigh again in 24 hours – consider management plan 3 if no improvement
- Communication with the paediatric staff would be strongly recommended here.
- Ensure that you are aware of any issues specific to the individual mother and have considered any potential impact on that individual situation.
 - For small babies, < 3.0 Kg, or premature babies, < 37 weeks, then a full top-up feed should be given if little is expressed
- Full feed if required will be calculated using the following formula – 150mls/per kg/per day – please remember that at birth supplements will be calculated at 60ml/kg/day and increase by 30ml/kg/day per after – a baby with a weight loss for example on day 3 would have supplements based on 120ml/kg/day
- **Always remember to deduct the amount of expressed breast milk obtained from the amount required of formula**

Version: 4	Date of Issue: December 2010
Page 12	Date of Review: July 2020



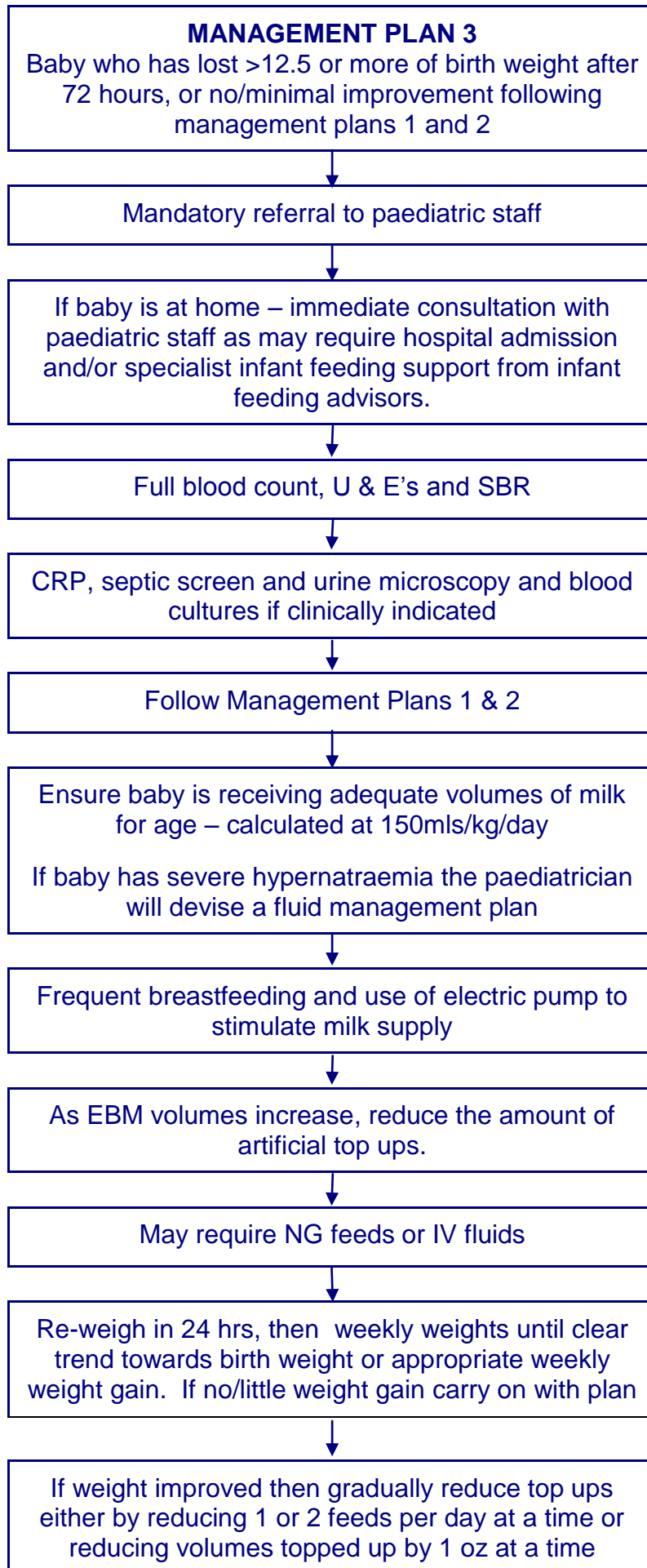
Version: 4	Date of Issue: December 2010
Page 13	Date of Review: July 2020

8. MANAGEMENT PLAN 3 GUIDELINES

Baby who has lost >12.5 – 15% of birth weight at 72 hours or for older babies, or no/minimal improvement following management plans 1 and 2

- Refer immediately to paediatric staff – **this is mandatory**
- Blood tests for FBC, U&E' and SBR.
- CRP, septic screen, urine microscopy and blood cultures if clinically indicated.
- Breastfeeding management as per plans 1 and 2.
- Supplement with formula via cup **only if** breast feeds are ineffective and EBM volumes poor.
- If EBM volumes are good give EBM via cup. Top-ups may be instructed by paediatric staff for all feeds.
- Ensure this baby is receiving adequate volumes of milk intake for age.
- Frequent breastfeeding and use of electric pump to further increase milk supply. As the breastmilk supply increases; decrease the volume of artificial milk. Use of the y-connector on the pump will enable double pumping
- May require naso gastric feeds or I.V fluids (NG is the preferred route unless the baby is shocked), but continue frequent breastfeeds and expressing even when baby is in SCBU or children's ward
- Observe urine and stool frequency.
- Re-weigh in 24 hours, then weekly weights, until clear trend towards birth weight is demonstrated.
- Ensure that you are aware of any issues specific to the individual mother and have considered any potential impact on that individual situation.

Version: 4	Date of Issue: December 2010
Page 14	Date of Review: July 2020



Version: 4	Date of Issue: December 2010
Page 15	Date of Review: July 2020

9. MANAGEMENT PLAN 4 GUIDELINES

Faltering Growth

In 2017, The NICE guideline NG75 was launched offering flowcharts to support the recognition and management of faltering growth in babies.

<https://pathways.nice.org.uk/pathways/faltering-growth#content=view-node%3Anodes-recognition>

Within this guidance were included thresholds for concern relating to faltering growth. These thresholds looked at centile spaces between adjacent centile lines on the UK WHO growth charts <https://www.rcpch.ac.uk/resources/growth-charts>

Thresholds for concern would be:

- A fall across 1 or more weight centile space, if birthweight was below the 9th centile.
- A fall across 2 or more weight centile spaces if birthweight was between the 9th and 91st centiles.
- A fall across 3 or more weight centile spaces, if birthweight was above the 91st centile.
- When current weight is below the 2nd centile for age, whatever the birthweight.

If there is concern about faltering growth the following should be carried out:

- A weight of the infant.
- Measurement of length if under 2 years old.
- Ensure all the measurements and available previous measurements are plotted accurately on the UK WHO Growth Chart to assess weight change and linear growth (increase in length over time).
- If concerns over infant's length try to obtain the biological parents' height and work out the mid parental height centile. If the child's length is below the range predicted from parental heights i.e. more than 2 centile spaces below the mid-parental centile this could suggest under nutrition or a primary growth disorder.

If there is concern about faltering growth:

- A clinical, developmental and social assessment should be carried out.
- A breastfeeding or feeding assessment should be carried out by a suitably trained person.
- Observation of a breastfeed should take place.
- Consider investigating for a Urinary Tract Infection or celiac disease if a diet has included gluten-containing foods.
- Perform further investigations only if they are indicated based on clinical assessment.

Be aware that the following factors may be associated with faltering growth:

- Preterm birth.
- Neurodevelopmental concerns.
- Maternal post-natal depression or anxiety.

Following the breastfeeding /feeding assessment consider whether the following may account for faltering growth:

Version: 4	Date of Issue: December 2010
Page 16	Date of Review: July 2020

- Ineffective attachment in breastfed babies.
- Ineffective bottle feeding.
- Use of feeding regimes i.e. timed feeds/routines.
- The feeding environment.
- Feeding aversion.
- Parent/carer interactions.
- Responsiveness to feeding cues i.e. use of dummy.

Monitoring of weight

If there are issues about faltering growth using the thresholds above, measure the weight at appropriate intervals but not more than:

- Daily if less than a month old.
- Weekly between 1 – 6 months.
- Fortnightly between 6 and 12 months.
- Monthly from 1 year old.

Monitor weight only if there is a concern about faltering growth, but be aware that weighing can increase anxiety and unnecessary concern for parents.

If there are concerns about faltering growth monitor length and height at intervals but no more often than every 3 months

Feeding support should be offered to any mother/baby dyad where concerns about growth are made.

Version: 4	Date of Issue: December 2010
Page 17	Date of Review: July 2020

MANAGEMENT PLAN 4

- A fall across 1 or more weight centile space, if birthweight was below the 9th centile
- A fall across 2 or more weight centile spaces if birthweight was between the 9th and 91st centiles
- A fall across 3 or more weight centile spaces, if birthweight was above the 91st centile
- When current weight is below the 2nd centile for age, whatever the birthweight

Observe a breastfeed in particular observation of a normal suck/swallow pattern

Ensure minimum of 8 feeds in 24 hours

Skin to skin contact to encourage breastfeeding

Observe for urine and stool frequency

Encourage mum to express breastmilk and top up following normal breastfeeds

Re-weigh at a suitable time based on:

- Daily if less than a month old
- Weekly between 1 – 6 months
- Fortnightly between 6 and 12 months
- Monthly from 1 year old

If no change in weight gain then introduce top ups of 150ml/kg/day – this should preferably be expressed breast milk but if using formula ensure that any expressed breast milk is used first and then the volume required made up by formula

Re-weigh at a suitable time based on:

- Daily if less than a month old
- Weekly between 1 – 6 months
- Fortnightly between 6 and 12 months
- Monthly from 1 year old

If weight increased then gradually reduce top ups and re-weigh as per guidance

Version: 4

Date of Issue: December 2010

Page 18

Date of Review: July 2020

10 REFERENCES

American Academy of Paediatrics Practice guidelines. Subcommittee on hyperbilirubinemia: Management of hyperbilirubinemia in the newborn infant 35 weeks or more of gestation. Pediatrics 2004, 114:297-316.

Arbour MW, Kessler JL (2013) Mammary hypoplasia: Not every breast can produce sufficient milk:58(4) pp 457 – 461

Boskabadi H. Maamouri G. Et al. Neonatal hypernatremia and dehydration in infants receiving inadequate breastfeeding Asia Pacific Journal of Clinical Nutrition. 19(3):301-7, 2010.

Chantry CJ et al (2010) Delayed onset of lactogenesis among first time mothers is related to maternal obesity and factors associated with ineffective breastfeeding. The American Journal of Clinical Nutrition. Vol 92, No 3 pp 574 - 584

Dewey KG, Nommsen-Rivers LA, Heinig J et al. (2005) Risk factors for suboptimal Infant breastfeeding Behaviour, Delayed Onset of Lactation, and excess Neonatal Weight Loss, Pediatrics: 112, 607 – 619

Iyer NP et al. (2008) Impact of early weighing policy on neonatal hypernatraemic dehydration and Arch. Dis. Child; 93: 297 – 299

Krause et al (2011) Predictors of breastfeeding in overweight and obese women. Maternal and Child Health Journal: 15(3):367-75

Kudumala V, Asokkumar A, Akinsoji O et al (2009) Breastfeeding malnutrition in neonates : a step to solve the problem. Arch Dis Child; 94:246; doi:10.1136/adc.2008.148510

Macdonald PD, Ross SR, Grant L et al. (2003) Neonatal weight loss in breast and formula fed infants. Arch Dis Child Fetal Neonatal Ed: 88; F472-F476

Neifert MR. (2004) Breastmilk transfer: Positioning, Latching on, and screening for problems in milk transfer. Clinical Obstetrics and Gynaecology: 47; 656 – 675

NHS Quality Improvement Scotland (2009) Pathways for Maternity Care. <http://nhshrmwebapp01.nhsh.scot.nhs.uk/cgi-bin/patience.cgi?id=fa83dc12-f4c2-406e-88b9-3f91cf9e2201>

Oddie S, Craven V, Deakin K, Westman J, Scally A (2013) Severe Neonatal Hypernatraemia; a population based study. Archives of Disease in Childhood:98(5):384-7

Oddy S, Richmond S, Coulthard M. (2001) Hypernatraemic dehydration and breastfeeding, a population study. Archives of Disease in Childhood: 85; 318 – 20

Preer et al (2012) Weight Loss in exclusively breastfed infants delivered by caesarean birth. Journal of Human Lactation: 28(2): 153-8

Version: 4	Date of Issue: December 2010
Page 19	Date of Review: July 2020

Regnault N et al (2011) Determinants of neonatal weight loss in term infants. Archives of Disease in Childhood:96(3):217-22

Sachs M, Oddy S. (2002) Breastfeeding – weighing in the balance – reappraising the role of weighing babies in the early days. MIDIRS: 12; 296 – 300

Salas A, Salazar J, Burgoa CV, De-Villegas CA, Quevedo V, Soliz A (2010) Significant weight loss in breastfed term infants readmitted for hyperbilirubinemia. Neonatal Intensive Care: 23(3):48-51

Watson et al (2012) A randomised control trial of the effect of intrapartum intravenous fluid management on breastfed newborn weight loss. Journal of Obstetric, Gynaecologic and Neonatal Nursing:41(1): 24-32

Version: 4	Date of Issue: December 2010
Page 20	Date of Review: July 2020