KMC Routine Care and Clinical Ward Rounds

1. **Calculate the age of the baby** in days and note it down daily. (When a baby is born between 24h00 and 12h00 it is counted as day 1 of life. If born after 12h00 noon it is counted as day 0 of life.)
2. **Daily examination**: Check for jaundice, respiratory and cardiac systems, skin, abdomen, muscle tone and whether infant is warm enough. In baby boys make sure that there is not an inguinal hernia developing, hypospadias and undescended testes (this can be checked once a week.) Cardiac murmurs may appear suddenly when the pressure differences between the left and right heart become prominent. If a heart murmur is heard refer for cardiac sonar investigation.
3. Ask mother about passing of urine, stools and vomiting.
   i. A baby should have about 7 wet nappies a day. If they do not and there is poor weight gain it could be due to too little breastmilk or baby is not finishing cup feeds.
   ii. Stools – a breastfed baby could have 7 stools per day or one stool in 7 days. Reassure mother if baby skips daily stools. Check the abdomen, if abdomen is distended consider intestinal obstruction or Hirschsprung's disease.
   iii. Vomiting – a baby may bring up milk after breaking a wind. This is called posseting. If a baby is vomiting one should always give attention to this. Discuss with a senior person.
4. **Weight gain:** Infants are weighed daily in KMC and weight is written in the KMC weight book. There is a separate weight book in ward 4A. Ideal weight gain is 20 g/day for preterms and 30 g/day for term infants. However, babies may have days when they do not gain as much as other days. If weight jumps or decreases too much consider reweighing the infant. It is important to see how the weight gain looks on a centile chart. A daily weight growth chart for preterms is available for the first 50 days of life. Plot weight gain on the growth chart at least 3x / week. Unfortunately, term infants' weights can only be plotted once a week as the daily weight growth chart does not cater for term infants. The following are causes and actions to be taken if an infant's growth curve is flattening and does not follow the curve for a period of 3 or more days:
   i. **Breast milk supply**. Ask the following questions
      a) Does mother have enough breast milk?
      b) Is she able to express the required amount of expressed milk?
      When mother has too little milk it is the custom to prescribe either of the following galactogogues (a substance that promotes lactation in humans):
      - Solian (amisulpride) 100 mg **2x** daily for 7 days. *(Currently used most often. Does not affect mom's BP)*
      - Eglonyl (sulpiride) 100 mg 3x daily for 7 days (May increase blood pressure, avoid in PET) or
      - Another drug (not very effective) is Maxolon (metoclopramide) 10 mg 3x daily for 7 days
      - Provide the mother with multivitamins and encourage mother to drink enough fluids, about 3 litres per day.
      - If mother has so little milk that the baby might dehydrate, consider formula top-up or donor breast milk. (Donor breast milk is a scarce resource and is considered mainly in premature infants. Only consultants together with the dietitian in charge of the milk bank may make the choice to initiate donor breastmilk.)

      c) Does the infant suckle well from breast (Latch well, suckle long enough –about 20 – 30 minutes for term infant)
      d) Does infant complete the expressed breast milk (EBM) feeds.
      If poor feeding technique, especially suckling from breast or still on tube feeds - refer to speech therapist. If not completing cup feeds or spilling a lot consider reinsertion of oro-gastric tube. If poor breastfeeding, consider increasing volume of EBM.
   ii. **Expressed breast milk volume:** Sometimes very small babies (<1,3 kg) struggle with the large milk volumes offered per feed when feeding 3hrly X 8. If this is the case change to 10 feeds per day by advising the mother to give 2 hly feeds between 06h00 to 18h00 and 3hly feeds between 18h00 to 06h00. The total feed volume should then be divided by 10 instead of 8. This is often a good solution to the problem.
   iii. **Cold stress / hypothermia** result in poor weight gain. Check whether baby is warm by comparing the warmth of the baby's feet with his/her own abdomen or with the mother's chest skin. If there is a temperature difference the baby is cold and need immediate warming by doing skin-to-skin care. A baby with cold stress or hypothermia has poor weight gain. Make sure mother is doing KMC!
   iv. **Fortification of breast milk.** If still poor weight gain – consider fortifying breast milk with a human milk fortifier. Contact the dietitian to arrange this. (HMF dilution: 1 gram (scoop) diluted in 25 ml breast milk.) Fortification of breast milk is done automatically in all LBW infants less than 2,00 kg birth weight or less than 36 weeks gestation. It can be considered in babies with higher birth weights with poor weight gain and especially in twin infants.
   v. Exclude possible infection (especially UTI) If poor weight gain continues in spite of all other issues addressed, exclude infection by doing a FBC & diff & retics, CRP, Urine MCS. Also, discuss with registrar, dietitian and or consultant for advice. Consider starting infant on Augmentin empirically for possible UTI after all investigations have been done.
5. **Infant Feeding**

Calculation of feeds	Volume/kg/day						
Day of Life:	**Day 1**	**Day 2**	**Day 3**	**Day 4**	**Day 5**	**Day 6**	**Day 7**
Term infants	60 ml	90 ml	120ml	150ml	150ml	150ml	150ml
Late preterm infants (>34 weeks / > 1,5 kg)	60 ml	90 ml	120ml	150ml	180ml	180ml	180ml
Preterm infants (<34 weeks or < 1,5 kg)	60ml	80ml	100ml	120ml	140ml	160ml	180ml
Extremely Preterm infants (<30 weeks < 1kg)	80ml	100ml	120ml	140ml	160ml	180ml	180ml
Formula feeds in term infants	60ml	90ml	120ml	150ml	150ml	150ml	150ml

1. Babies are weighed daily and their feeds should be adjusted according to their weight gain.
2. Use birth weight if baby has not regained birth weight, to calculate feeds.
3. To calculate single feed volume divide total volume by 8
4. Most infants on formula only need 150-160ml/kg/day as formula is more calorie dense than breast milk.
5. Feeds of preterm infants with chronic lung disease of prematurity (BPD) receiving oxygen or a large PDA (> 4mm) are restricted to 160ml/kg/day 3hly x 8 feeds

i. **Establish breastfeeding using supplementary cup feeding**. The smaller and more immature the baby is, the more expressed milk volume should be prescribed, sometimes 100% or 80% of the calculated milk volume. These infants tire quickly and struggle to suckle large enough volumes of milk for good weight gain. Older and more mature infants may receive less expressed milk about 50% or even 30% of the calculated milk volume per feed. These infants are stronger and able to suckle better and longer from the breast. The ultimate goal is to get the infant to breastfeed independently by the time it reaches either 2,5 kg or 40 weeks gestation. Baby should receive cup feeding with mother holding baby in the breastfeeding position – supported by mothers body and arm.

ii. **Infants on tube feeds**. If infant is still on tube feeds consult speech therapist to evaluate suckling and feeding ability before removing feeding tubes. Speech therapist will give mothers stimulation exercises to stimulate feeding action. Do not discharge if breastfeeding has not been established. Make sure that mother is using the correct feeding technique. Baby must be in the KMC position when mother is tube feeding.

iii. **Term infants with feeding problems**. May include infants with Neonatal encephalopathy (NNE), congenital heart defects and syndromes such as Down's syndrome. These infants should also be seen by the speech therapists for consultation and evaluation of feeding ability from the breast. They may sometimes need large volumes of expressed breast milk via a cup or tube until breastfeeding is successfully established.

iv. Human Breast milk bank

- There is a breast milk bank available at the hospital. Mothers donate milk to the bank if they have more milk than their infant will use. Only mothers who are HIV negative are allowed to donate breast milk. When a mother is identified as a breast milk donor the following special investigations have to be done – HIV Elisa and a Hepatitis B serology. The milk handlers or dietitians will request you to do these bloods for them. Provide them with a sticker to enable them to access the laboratory results.
- Donor breast milk is occasionally used in ward 4 if a mother does not have enough milk or if the mother is very ill and cannot supply her own milk to the baby. The donor milk is especially important for preterm infants younger than 14 days of life to prevent the life-threatening complication of necrotising enterocolitis (NEC).
- Donor breast milk is a scarce commodity and cannot be used for any baby where the mother is struggling with milk production. Prescribing donor breast milk can only occur with the input from a consultant and or dietitian.

6. KMC practice

- It is important that the concept and the benefits of KMC should be explained to the mother as soon as possible after admission to the unit. She must understand that for her infant to benefit from KMC, the infant should be tied in the KMC position as much as possible. All low birth weight and preterm babies should receive continuous KMC where possible.
- Continuous KMC should be implemented as soon as an infant is well, stable and off oxygen therapy. Weight is not a deciding factor and even babies of 800g can receive KMC, but then the mother should strictly adhere to skin-to-skin contact throughout the day and night. The baby may only be removed when feeding or when the mother has a shower.
- It is beneficial to the infant if the mother moves around with the infant in the KMC position. Mothers should be informed of this fact and they should be encouraged to have the infant in the KMC position when they move about in the ward. On discharge this practice should continue at home.
- The infants should be tied in the KMC position with special wraps (thari) that should be provided (sold) to the mother on admission. It is important to check that the baby is positioned correctly – the baby should be placed on the chest in a flexed position, the feet should not hang out, the edge of the wrap should be on the level of the baby's head just above the ear so

that the baby's head is supported in an upright position and the wrap should not be too tight over the stomach of the infant in order to give the baby enough space to breathe with ease.

- Intermittent KMC should be done as much as possible by all mothers whose babies are still receiving oxygen therapy. It is important that the mothers should sleep with their babies in the KMC position.

KMC Benefits (KMC has many benefits apart from keeping the baby warm)

A. Benefits to the baby:

a. The baby breathes better, is calmer and gains weight better.
b. The baby needs the mother to move around, walk, turn around and sit down. This stimulates the baby's neurodevelopment, balance with walking, and later hand-eye co-ordination for writing and catching a ball etc.
c. The baby's sleep quality improves, sleep cycles of quiet and active sleep occurs about every 60 minutes since 28 weeks gestation. Sleep cycles are important in the development of all the sensory systems and to keep the plasticity of the brain intact. Thus, KMC is neuro-protective.
d. The neuroprotective qualities of KMC leads to advanced neurodevelopment which allows babies to establish breastfeeding at an earlier age than previously believed and breastfeeding is possible in gestational ages much less than 34 weeks gestation.
e. The skin-to-skin contact stimulates the parasympathetic nervous system via release of oxytocin. This stimulation reduces stress, improves absorption of food, and stabilizes the cardiovascular and respiratory systems.
f. Oxytocin reduces the experience of painful stimuli by working directly on the morphine receptors in the brain.
g. Oxytocin also has a direct anti-inflammatory effect. This is one reason why babies in KMC have a reduced infection rate. Breast milk also protects infants against infections.

B. Benefits to the mother:

a. Babies cry less and have longer periods of quiet alert periods. During these times, mothers can interact with their infants, resulting in better bonding and attachment.
b. Oxytocin is also secreted in the mother while doing KMC. This result in better breast milk production, reduces depression and stimulates involution of the uterus with less uterine bleeding.
c. Oxytocin is also responsible for an increase of blood supply to the breast skin causing the skin to be warmer than other areas. This is important in the regulation of the baby's temperature.
d. The mother's skin is colonized by commensal bacteria that are protective against invasive bacteria which colonizes the baby in the hospital. This is protective against nosocomial infections. The mother's skin is also a biological membrane that keeps the baby's skin well hydrated and this also is protective against invasion of bacteria through the skin.

Use of Incubator and bassinets in KMC ward:

- Bassinets should only be available for infants without mothers or in the case of twins, triplets or for phototherapy.
- Very small infants on oxygen therapy, receiving intermittent KMC may lose body heat when they are not receiving skin-to-skin care. Thus, infants who receive oxygen, weigh less than 1300g and have poor weight gain should be cared for in an incubator when not receiving skin-to-skin care. As soon as a baby weighs more than 1400g an incubator should not be necessary. It is also advisable for them to wear caps.
- The unit should be heated during winter to maintain a temperature of 25ºC to prevent weight loss in the infants. The unit is very hot during summer and if the temperature reaches 28ºC, the windows can be opened to reduce the temperature and reduce the discomfort of working in such a hot environment.
- All infants who are not on oxygen should receive continuous KMC. Wraps (thari's) to tie infants securely are available for sale. Make sure that the nursing staff issue a wrap to the mother on admission.

7. How to assess a newborn's temperature clinically (without using a thermometer)

- The newborns temperature can be estimated by comparing the warmth of the baby's feet with the abdomen (figure 9). This is a method that can be practiced in clinics or even at home once the mother is educated on the method. If baby is cold, she must immediately place the baby skin-to-skin and if the baby does not warm within two hours, it may be that the baby is ill and need medical attention.

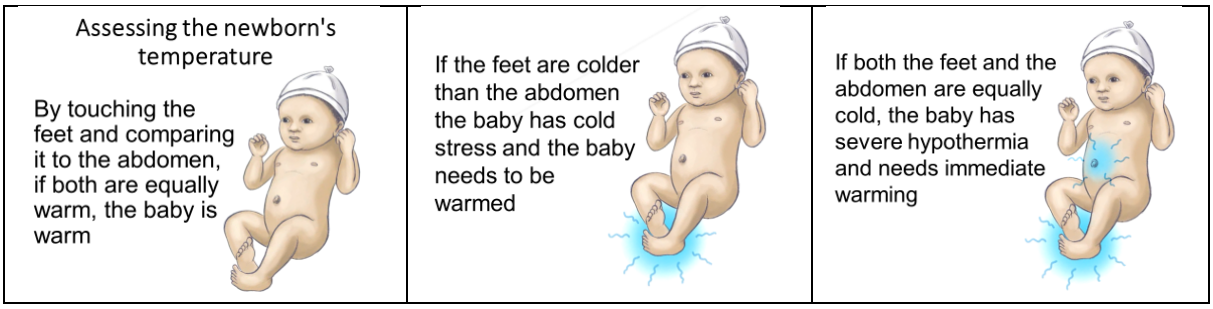

Figure 9. Estimation of a baby's temperature without a thermometer.[13]

8. Prevention of Hypothermia

- It is important that mothers should practice continuous KMC in order to prevent hypothermia or cold stress in infants. Infants with hypothermia or cold stress will not have satisfactory weight gain. Hypothermia - <36ºC. Cold stress - <36.5ºC
- If an infant that is hypothermic, does not regain normal body temperature in the KMC position within 4-6 hours, neonatal sepsis should be considered and septic screening should be done.

9. Investigations

Try doing the blood investigations especially s-bilirubin first in the morning before starting ward rounds.

A. Routine Screening investigations – (record results on W4 stats form!)
   a. Screening sonar: All infants: BW ≤ 1500 g, twins, Down's syndrome, infants of diabetic mothers. Genetic abnormalities. Write result on stats form!
   b. Heart sonar: Infants with audible heart murmurs should have heart sonars
   c. Hip sonar: All infants born in the breech position must have a hip sonar. If the hip is dislocated (classified as Harcke 4 or 5) the infant must be referred to the Orthopaedic Paediatric clinic on a Friday for management.
   d. Kidney sonar: Any infant who develops a urinary tract infection need to undergo a kidney sonar to exclude congenital abnormalities.

B. Routine Special investigations in KMC unit
   a. s-Phosphate levels: All infants with a BW < 1301g should have a s-Phosphate level done at 3-4 weeks of age or at discharge. Normal value for preterm infants is ≥ 1,9 mmol/l. If the s-phosphate level is ≤1,8 the infant should receive extra phosphate orally. (See D Common treatment modalities for dosages)
   b. Repeat HB and reticulocytes - Infants that had a birth weight of 1300g or less should have HB and reticulocyte investigations at 10 –14 days intervals depending on the Hb value of the infant.
   c. Serum ferritin concentration at discharge can help guide post-discharge iron therapy. If baby's **ferritin** concentration is < 60 μg/l the iron dose should be increased to the treatment dose. If ferritin concentration is >300μg/l, iron supplementation should be delayed. (Often due to multiple blood transfusions)
   d. Check urea and bicarbonate in all small babies <1500 g or babies who have poor weight gain. Urea <1,8 indicates too little protein in diet. Consider increase of milk volume or fortify feeds. If baby is acidotic (HCO less than 18) consider oral bicarbonate of soda treatment. (Soda bicarbonate 8,5% 0,5 – 1ml/feed)
   e. Bilirubin levels: Jaundiced infants should have daily bilirubin levels checked and results should be verified as soon as available. If not available inform the on-call team about the outstanding results. If a term infant is jaundiced for >14 days and a preterm infant >21 days, investigations for prolonged jaundice should be done. (Blood groups, G6PD in boys, LFT, Thyroid functions, Urine for MCS to exclude UTI. If LFT's are very abnormal arrange a liver sonar)
   f. Suspected cases of sepsis: Do the following: FBC & diff, platelets & reticulocyte count, CRP, and **urine for MCS**. Blood culture should be done in infants with fevers but if only problem with weight gain one can wait to do the blood culture until initial tests are back. If CRP is very high (>30) or if clear signs of infection or severe apnoea always consider doing a lumbar puncture, but if infant is unstable, it is better to transfer infant to the HCU where it can be performed and if infant collapses, nCPAP or ventilation is available.

10. Management of clinical problems

i. Babies who develop a problem must be transferred to the High Care Unit if they are at all seriously ill; i.e. apnoea attacks, respiratory distress, aspiration of feeds, bloody stools & distended abdomens or signs of septicaemia (shock, lethargy, cyanosis, acidosis, etc.).

ii. For less severe problems the babies can be transferred to the 4A cubicle for antibiotic therapy. Oral antibiotics can be given in KMC but check every day that the infant is receiving the therapy.

iii. Jaundiced babies may receive phototherapy in the KMC unit. The infant should receive phototherapy according to the bilirubin management guidelines.

A. Blood transfusion

i. Premature infants, >3 weeks of age, only need blood transfusions for anaemia if it is very severe (Hb 5,5-7 g%). Even if the Hb is low, it is not necessary to transfuse the infant if there is a good reticulocyte response (>3%) indicating an active bone marrow, except if the infant has other complications such as a persistent tachycardia or apnoeas.

ii. A blood transfusion will **not** wean infants with BPD faster from their oxygen dependency.

iii. Infants with severe anaemia (Hb in the range 5,5 - 7g%) may receive a blood transfusion in the unit after discussion with the consultant in charge. The infant should preferably receive packed cells. (Maximum volume of 15ml/kg)

iv. When ordering the blood please request **leukocyte depleted packed** cells. The reason why leukocyte depleted blood is requested is to prevent a possible CMV infection in the infant. The CMV organisms are situated in the leucocytes and if the leucocytes are filtered out, the chance that the infant may contract an infection via the blood is unlikely.

v. The blood must be given via a blood set and administered over 4-5 hours at an approximate rate (6 -7 ml/hour)

vi. Never order blood before discussing it with a consultant / senior registrar. If the consensus is that blood should be given, arrangements should be made for it to be given during the day. It should be ordered for the next day. If the blood has been ordered during the day, but it was delayed being issued by the blood bank the infant may receive the blood during the night. The infant can receive the blood in the KMC unit and does not have to be transferred to another ward.

11. Common Treatments in KMC

The foetus receives most of the iron and vitamin supply during the last trimester of pregnancy. Preterm infants, growth restricted infants and term infants who have been very ill all need supplementation of vitamins and iron.

A. Routine medication

i. Vidaylin vitamin drops 0,6 ml daily (concentrated multivitamin preparation) (Start when preterm infant is on full oral feeds and continue until age 6 - 12 months.)

ii. Ferrous supplementation:

a. **Ferrous sulphate** (150mg in 5 ml = 30mg elemental iron ⇨6mg/1ml). **Prophylaxis:** 2-3mg eFe^{+}/kg/day (0,3-0,5ml/kg/day). **Treatment dose:** 3-6mg elemental iron/kg/day (0.5 – 1ml/kg/day)

b. **Ferrous gluconate** (350mg in 5 ml = 42mg elemental Fe^{+} ⇨8,4mg/1ml) **Prophylaxis**: 2-3mg eFe^{+}/kg/d (0,2-0,4ml/kg/day) **Treatment dose**: 3-6 eFe^{+}/kg/d (0,4-0,7ml/kg/day)

c. If baby's **ferritin** concentration is < 60 μg/l the iron dose should be increased to the treatment dose. If ferritin concentration is >300μg/l, iron supplementation should be delayed. (Often due to multiple blood transfusions)

iii. Vitamin D 400 IU (2 drops) /day (Preterms need 800 IU/d vitamin D to prevent rickets. Vidaylin only contains 400IU/0,6ml)

B. Low phosphate level. (<1.80 mmol/l) Infants who are very preterm <30 weeks gestation or <1300g, lose phosphate through their immature kidneys. This results in hypophosphatemic rickets. Infant should receive:

a. Fleet enema 0,2ml with each feed x 8 = 1,6 ml/day for 7- 10 days. (Large volumes orally cause vomiting)

b. If available - Diabetic Phosphate Solution 0,5ml with every second feed = total of 2 ml/day for 5-7 days.

c. Repeat blood test after 5-7 days. If s-phosphate level is above 1,90 mmol/l, supplementation can be stopped.

d. Too much and too high a dosage of phosphate may cause hypocalcaemia with tetany as a complication.

C. Infants on nasal oxygen – The infants receive oxygen that is not humidified and they may develop crusts in the nasal passage with obstruction. If flow is too high the nose mucosa may also dry out and form crusts and obstruction. Flow must <u>not</u> be more than 0.5 litre flow.

Term neonates are obligate nasal breathers until they are at least two months old and if the nose becomes obstructed, they may develop respiratory distress and collapse with apnoea. Preterm infants are obligate nasal breathers for a longer period than term infants. To prevent crusts forming and obstruction the following treatment methods are suggested:

a. Saline nasal drops 03-05ml squirted into each nostril 3 hly, before each feed by mother, or

b. Foremilk 0,3- 0,5ml squirted into each nostril 3hly before each feed. Breastmilk is also very effective as it contains bioactive factors such as macrophage cells against infection, immunoglobulins with pathogen binding inhibition, agglutination, compliment activation and anti-inflammatory functions (IgA, sIgA IgG, IgM), cytokine inhibitors, antimicrobial factors (lactoferrin and lactadherin), anti-infective glycosaminoglycans and mucins. (**NB** Mothers with RVD who have high viral loads should not use foremilk as nose drops!)

D. Infants receiving Oxygen therapy – management and weaning

a. In KMC ward 12 hly saturation measurements of all the babies are done and 6hly in ward 4A.

b. Keep O2 saturation levels preferably between 90 to 95%. If higher wean the O2 flow meter at the wall. When flow metre is basically closed consider disconnecting the O2-supply tube from flow meter and do regular observations starting every 15 minutes at first. (When weaning the infant from the oxygen please read the oxygen weaning procedure described in the standing order regarding oxygen weaning.)

c. Medication to help with weaning infants off oxygen: Oral steroids - prednisone 1mg/kg/day (Prelone 0.33ml = 1mg) can be prescribed if an infant is oxygen dependent and cannot be weaned from oxygen. This should only be prescribed when

infant has been in ward 4 for 5-7 days, after discussion with consultant or senior registrar. Prescribe a daily dosage of **Prelone 0.33ml/kg/day for 5 days and then alternate days** till infant is weaned off oxygen

d. Infants with bronchopulmonary dysplasia (BPD) who have successfully been weaned from oxygen may only be discharged from the unit when they have been off oxygen for 3 whole days. Term infants weaned from oxygen need to be off oxygen for 24 hours before discharge.

e. Apnoea of prematurity: Caffeine 5-10mg/kg per os daily is given to prevent apnoea. Apnoea occurs commonly in infants with gestational ages < 34 weeks but may continue until 40 weeks gestation in very preterm infants born <28 weeks gestation.

E. Oral NVP dosage for babies <2000g birth weight

Birthweight 1800-1900g			**Birthweight <1800g**		
Age	Dose (mg)	Dose (ml)	Age	Dose (mg)	Dose (ml)
Day 0 - 14	5mg 1x/day	0.5ml 1x/d	Day 0 - 14	2mg/kg/d	0.2ml/kg/d
Day 15 - 42	10mg 1x/day	1ml 1x/d	Day 15 to discharge	4mg/kg/d	0.4ml/kg/d
6 weeks to 6 months	20mg 1x/day	2ml 1x/d	**At discharge**		
NVP Syrup (10mg/ml)			<14 days	5 mg daily	0.5ml/day
Administered orally with a 1 ml syringe			>14 days	10 mg daily	1ml/day

Age or weight	**Nevirapine in mg**	**Nevirapine in ml**
Birth – 6 weeks 2.0-2.5kg	10mg/day	1ml
≥2.5kg	15mg/day	1.5ml
>6weeks – 6 months	20mg/day	2ml

Oral Dose of AZT	Birthweight / gestational age	Doses
Syrup (10mg/ml)	>2kg	1.2 ml (12mg) every 12 hours
	<2kg	0.4ml/kg (4mg/kg) every 12 hours
	If gestational Age <35 weeks	0.2 ml/kg (2mg/kg) every 12 hours

Common social problems for social work consultation

1. Teenage mothers – Make sure there is someone at home who can supervise the mother in caring for her infant. Find out whether mom is going back to school, feeding and care taking arrangements. Arrange that a family member come in to talk about arrangements before mom and baby are discharged. Consider referral to social worker if problem is complex or if statutory rape is a possibility.
2. Mothers with psychiatric problems – depression, schizophrenia, mental retardation. Infants of mothers with psychiatric problems may not receive good or safe care at home. It is important that there is someone to supervise the mother in her caretaking tasks.
3. Mothers with substance abuse – drugs, alcohol. Mothers who have a substance abuse problem may also neglect the care of the infant and in my experience, it is not safe to send a baby home in the care of such a mother as they are not trustworthy. Another solution is usually needed – either care by a family member or foster care for the infant.
4. Mothers with a physical abnormality that may interfere with the care taking of her infant. Make sure these mothers have support to take care of the infant before discharge.
5. Grant application forms: Where applicable assist mothers to obtain grant application forms to receive the child care grant by referring them to the social worker. The birth certificate is necessary to apply for a grant.
6. Mothers who have other small children at home and no one to care for them – social worker consultation
7. Infants for adoption – consider discharge to place of safety (New Beginningz and Tshwane Place of Safety)
8. If a mother refuses hospital treatment and threatens to take her infant home against our wishes and advice she should not be allowed to take the infant. Security should prevent her from leaving with the infant. This situation needs to be reported to the registrar, consultant and the superintendent if the mother does not want to listen to reason. A court order is not necessary if we are convinced that it is not in the infant's best interest to be taken home by the mother.

Speech Therapy and Audiology

- Fourth year Speech and Language students, as well as Audiology students are involved with practical work in ward 4 on Tuesdays. They also see patients on Tuesdays together with the OT. They concentrate on early communication between mother and baby, they help where patients have poor feeding efforts and co-ordination and the audiology students evaluate the patients' hearing. The group of students are supervised by a qualified speech and language therapist.

Occupational therapists

- All babies with NNE should be seen by the OT

- All babies with ERB's paralysis should be referred to the OT.

Other organisational considerations

1. Immunisations
   a. Ensure that infants who have prolonged hospitalisation receive their follow up (6 wks) immunisations in the ward.
   b. Provide mother with the next immunisation date
1. Birth certificate for the infant: Mothers can register their babies at Kalafong as soon as they have received the Road to Health Chart. There is an office for the Department of Home Affairs where they can do the registration. They must have their ID document or birth certificate for the process of registration. Birth registration should be done within 30 days after birth.
2. Contraceptives: Discuss family planning choices with the mother and refer where necessary.

Patient Discharge Procedure by doctors

- The registrar/MO together with the consultant makes the decision whether a patient is ready for discharge.
- The doctor informs the sister in charge who is for discharge on that specific day
- The doctor **always** informs the dietitian of **all** infants that are for discharge. The dietitian will provide a Synapi cup and FM 85 when appropriate.
- Mothers can buy a thari (wrap) to secure the baby in the KMC position at home for a price of R20.00.
- The doctor writes a prescription (TTO) at the back of the prescription sheet (KH79/01E) which should be placed in the wire tray at the entrance of the ward before 11h30 in the morning.

Documentation of import on Discharge:

1. Sign the TPH3 forms for the baby and mother (Discharge date, time and diagnosis)
2. Sign the mother's lodger form (TPH100)
3. Complete the (coloured) W4/KMC statistics form.
   - Enter the discharge date, discharge weight and the follow up date on the stats form. If follow up is not required, tick that no follow up is necessary.
   - Any special investigations outstanding – write the bar code or apply the bar code sticker on the form and in the Road to Health chart (RTHC).
   - Any appointments that are made for sonars, follow up clinics at SBAH must also be written on the statistics form and the RTHC.
   - Staple the daily growth chart onto the statistics form. (Where applicable, all premmies).
   - File the statistics form in the appropriate admission month envelope stored in the black suitcase in the doctor's room.
4. Complete the (RTHC) on page 38. Summarise the problem list on page 38.
   - NB! Enter the admission & discharge date and weight on page 38.
   - Write feeding details such as – breast feeding plus EBM 30ml plus FM85 1 scoop 3hly x8
   - Write the date, time and location of the follow-up clinic on the bottom of page 38.
   - Complete page 38 by marking the appropriate information with regards to the HIV status of the mother and whether the baby is receiving Nevirapine treatment, viral load, birth PCR results
   - Make sure that the infant received all the immunisations and that it has been completed correctly.
   - Write the date for the 6 weeks immunisation at local clinic in RTHC either on page 1 or 27.
5. Write a discharge summary. If there is already a discharge summary from ward 28, add to the existing summary. Staple the original copy of the summary onto page 38 of the RTHC.
6. Book follow-up appointment in the diary.
   - All new and premature infants to be booked on Thursdays. If the number in the clinic exceeds 40 patients, book on the closest Tuesday. (up to 30 patients)
   - Information to be written in the diary when booking a patient is as follows: Name, file number, sex, new or follow-up patient, admission month to ward 4. (NB in order to find the statistic forms we need the month of admission to ward 4 as the forms are filed in envelopes under the month of admission. Not the birth month)
   - Also, book sonars, CT scans, MRI's etc. in the diary, even if the appointment occurs on a non-clinic day.

7. Transfer Procedure

- The doctor makes arrangements for transfers of patients into the ward or out of the ward. This is usually done telephonically but it may be necessary for the doctor to go and see the patients before they are transferred in order to receive proper orientation with regards to the details and management of the patients. The doctor must get as much information as possible about the patient that will be transferred.

- All non-emergency transfers should take place as early as possible before 16h00. After 16h00 the patients will not be accepted in ward 4, especially not on a Friday afternoon.

Transfer in

a) As soon as the transfer arrangement has been confirmed between the doctors, the nursing staff should be informed about the number of patients that will be transferred into the ward.
b) The nursing staff should contact the nursing staff in the ward from which patients are coming and inform them that the patients can be transferred.
c) If beds are not available, the nursing staff should inform the transferring ward as soon as beds become available.
d) Remind the staff that patients should arrive in the ward before 16h00.
e) Preferably the patients should be seen by the receiving doctors on arrival in the ward.

Transfer out

a) In the case where a patient is to be transferred out of ward 4 the nurses should be informed of the transfer arrangements as soon as the doctor has made these arrangements with the receiving ward.
b) The nursing staff should contact the receiving ward and make sure that they are ready to receive the patient.
c) For transfers to Pretoria West the patient should be discharged, the dietician should be informed to provide the mother with a cup to feed the baby and if necessary HMF. Allow the mother to obtain a KMC wrap to secure the baby in the KMC position in Pretoria West hospital.

Patient Discharge Procedure by doctors

- The registrar/MO together with the consultant makes the decision whether a patient is ready for discharge.
- The doctor informs the sister in charge who is for discharge on that specific day
- The doctor **always** informs the dietitian of **all** infants that are for discharge. The dietitian will provide a Synapi cup and FM 85 when appropriate.
- Mothers can buy a thari (wrap) to secure the baby in the KMC position at home for a price of R20.00.
- The doctor writes a prescription (TTO) at the back of the prescription sheet (KH79/01E) which should be placed in the wire tray at the entrance of the ward before 11h30 in the morning.
- Write a discharge summary and complete the RTHC page 38. Write the discharge date and weight, RVD status, HIV PCR result, feeding instructions for mother and follow up clinic date and time.

Discharge: Criteria for discharge of a baby is dependent on establishment of breastfeeding, good weight gain (20g/day in preterm infants and 30g/day in term infants), regaining of birthweight and a maturity of at least 34 to 36 weeks gestation. Discuss all discharges with a consultant. The mother must be competent in caring for the baby.

- A LBW and or preterm baby should have regained birthweight before discharge and will be considered if birthweight was above 1600g. The baby should have had good average weight gain of 20g/day over 3 days.
- VLBW infants may be discharged when they reach at least 1600g and if they are mature enough (>34-36 weeks gestation) and have been off gastric tube feeds for 3 days.
- ELBW infants who were very premature (<28weeks gestation) may be discharged when they are off tube feeds, gaining weight at 20g/day and have reached a gestational age of 36 weeks.
- Twin infants take longer to establish good weight gain and take longer to be weaned from gastric tube feeds. The mother often struggles with milk supply and taking care of the twins. Therefore, twin infants are usually kept a little longer before discharge to ensure that they will thrive after discharge. Discharge weight considerations include a weight above 1650g -1700g for the smaller of the twins; they should both have regained birthweight they should have a good daily weight gain.
- Mothers with social problems such as teenage mothers and those with postpartum depression, or drug or alcohol dependence should only be discharged after consultation with social services or having a consultation with the family.
- Mothers with breastmilk supply problems should only be discharged after the problems have been resolved or addressed.
- Baby must be well established on breast and cup feeding before discharge and gain weight well. Preferably all preterm infants, Down's syndrome and NNE babies should regain birthweight before discharge.
- Make sure the mother realises that she should practice KMC at home and continue with the feeding schedule as she was doing in the ward. Explain the importance of keeping baby warm and how to test whether baby is cold by comparing the temperature of the baby's foot with the abdomen or mother's chest skin.
- An infant who has been on O_2 therapy for BPD has to be off oxygen for at least 3 days before the infant can be considered for discharge.

TTO Medication

a) Vidaylin 0,6 ml/day orally. (All LBW and preterm infants - continues until the infants are 6 - 12 months old.)
b) Vitamin D 400 IU /day orally. (All preterm infants should get 800IU vit D per day. Vidaylin only has 400IU)
c) Ferrous supplementation:

- Ferrous sulphate (150mg in 5 ml = 30mg elemental iron ⇨6mg/1ml). **Prophylaxis:** 2-3mg eFe+/kg/day (0,3-0,5ml/kg/day). **Treatment dose:** 3-6mg elemental iron/kg/day (0.5 – 1ml/kg/day)
- Ferrous gluconate (350mg in 5 ml = 42mg elemental Fe+ ⇨8,4mg/1ml) **Prophylaxis**: 2-3mg eFe+/kg/d (0,2-0,4ml/kg/day) **Treatment dose**: 3-6 eFe+/kg/d (0,4-0,7ml/kg/day)
- If baby's **ferritin** concentration is < 60 μg/l the iron dose should be increased to the treatment dose. If ferritin concentration is >300μg/l, iron supplementation should be delayed. (Often due to multiple blood transfusions)

d) Infants with a low serum phosphate should be discharged on Diabetic phosphate solution 0,5ml/feed x 4 (2 ml/day) or Fleet enema 0,2 ml with each feed x 5-7 days. Check the phosphate levels at the follow-up clinic.

e) RVD exposed infants should receive Nevirapine prophylaxis for 6 weeks. If mother is on HAART with viral load <1000, the nevirapine can be stopped after 6 weeks. Make sure mother takes her HIV medication
- If mother has viral load >1000 the baby should get NVP prophylaxis for 12 weeks together with AZT for 6 weeks.
- Exposed infants need Cotrimoxazole prophylaxis when NVP is stopped and while the mother is breastfeeding the infant.
- A baby who is HIV PCR positive should be sent home on full ARV therapy and followed up at the Immunology POPD

Make sure that all mothers are aware of the **danger signs** and that they should get medical help as quickly as possible if the baby shows any of these danger signs.

- Poor feeding or not sucking*
- Hypothermia in spite of efforts to re-warm
- Fever
- Breathing problems: apnoea, retractions, grunting, flaring, cyanosis
- Jaundice***
- Lethargy (excessive sleepiness, reduced activity)**
- Convulsions
- Redness, swelling and discharge from the eyes, cord and skin

KMC Follow-up Clinics (8h00 to 12h00)

General

- The follow-up clinics take place in a building opposite The Regional Training centre (RTC) and mothers do not have to obtain any patient files but they must bring their RTHC booklets with them.
- The patients are seen by using the ward 4 statistic forms together with the RTHC. Notes are written in both the statistic form as well as the RTHC.
- If a baby is ill, the mother must fetch the baby's file first. The mother should not wait for the clinic appointment date if baby is ill. They must take the baby to the local clinic or bring the baby to casualties or Paeds OPD.
- Babies who have to undergo a special investigation such as a sonar,
  - The mother must come to hospital at 7h00 in the morning, obtain the baby's file and go directly to the sonar department. Afterwards the mother comes to ward 4 with the sonar results. The results should be written into the RTHC and if possible, also on the KMC stats form.

Tuesday clinics

- KMC follow-up clinic on Tuesdays are set aside for older infants usually >46 weeks gestational age. A maximum of 40 patients can be booked for this clinic.
- The registrar/ MO should help in the clinic as soon as any urgent work in ward 4 has been seen to. Priority is to complete the clinic as soon as possible. One of the interns from ward 10 or W4 helps in the clinic.
- A dietitian and occupational therapist assist in this clinic. Infants with poor weight gain or feeding problems are seen by the dietician for advice as well is information on introduction of solids on all babies close to 6 months chronological age. Babies of 6 weeks adjusted age and older are seen by the occupational therapist for neuro-developmental evaluation.
- Audiology and Speech-language students evaluate the children for hearing and speech development

Thursday clinics (9h00 – 12h00)

- This clinic is for newly discharged infants from KMC or 4A, do not book more than 40 patients for this clinic. One intern from ward 10 or ward 4 and the registrar from ward 4 should help with this clinic
- A dietician is available to weigh and measure the infants in preparation of the clinic, provide advice and fortifications where needed.
- Infants who are seen at the ROP clinic later in the morning have eye drops instilled into the eyes during this clinic.

Ward 10 or 26 : Teenage mothers, LBW babies & mothers with milk production problems (diabetes, >40 years)

- All teenage mothers who give birth at Kalafong hospital but whose babies were **not admitted** to a neonatal ward, are followed up at the clinic on Thursdays as well as LBW (<2.5kg) infants that were not admitted)

- Mothers having diabetes and mothers 40 years and older who have **milk production problems** may also be referred to this clinic. The dietitian will evaluate these mothers before discharge and decide who should be followed up.
- The doctor doing ward rounds in ward 10 / 26 must identify these patients, discuss them with the consultants/ ward 4 MO and book them in the diary for the Thursday clinic (diary is in ward 4). Note down that the baby is a ward 10 or 26 follow up and write the appointment in the baby's Road to Health Chart on page 38.
- During the week please call the ward 10 dietitian and inform her which patients you are booking for the clinic. She would like to see the infants and council the mothers before they are discharged from ward 10. Make sure mothers are given cups for cup feeding in babies with LBW's.
- **Booking of patients for this clinic should also take place over weekends**. The names are booked in the ward 4 diary at the Thursday clinic.

ROP clinic

All preterm infants with a birth weight of <1301g and <32 weeks gestation should attend this clinic.
This clinic takes place every Thursday at 11h30. Cyclomydral eye drops should be instilled 3x, 15 minutes apart to dilate the pupils. These eye drops may cause apnoea in the very preterm infants.
Medical treatment in case of severe manifestations of toxicity is to give Neostigmine (0,5 mg/ml) 0,1ml IM or IV in infants weighing less than 2,5kg. The drops are administered to babies that attend the KMC clinic by the doctors working in the KMC clinic and the nurses administer the drops to infants in the KMC ward.