

# **Nutritional and Medical Protocol**

## **New-borns and infants**

**MSF-B Niger - January 2008**



## Preface

This protocol is the result of a teamwork made by all the members of the Dakoro project in Niger. It capitalises their experience verified by the experts at OCB headquarters.

If you too have developed documents drawing on your experience which could be useful to others, please do not hesitate to contact us in order for us to publish them.

Your opinion is important to us, so please send us your remarks, comments or corrections to the following address: [sonia.peyrassol@msf.be](mailto:sonia.peyrassol@msf.be)

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## **ABREVIATIONS**

	<b>In Niger</b>	<b>At MSF</b>
CSI	Centre de Santé Intégré	= OPD : Health Centres
CRENI	Centre de Revalidation Nutritionnelle Intensif	= ITFC : Intensive Therapeutic Feeding Centre
CRENAS	Centre de Revalidation Nutritionnelle Ambulatoire pour les enfants souffrant de malnutrition aiguë sévère	= ATFC : Ambulatory Therapeutic Feeding Centre
CRENAM	Centre de Revalidation Nutritionnelle Ambulatoire pour les enfants souffrant de malnutrition aiguë modérée	= SFC : Supplementary Feeding Centre

NB	New-born
BM	Breast milk
SDTM	Specially Diluted Therapeutic Milk
NG tube	Naso-gastric tube

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# **1. NEW-BORNS (<1 month)**

## **1.1 Admission criteria for new-borns**

### **1.1.1 OPD**

- Weight between 1,5 kg and 2,5 kg
  - Clinically well
  - No breast-feeding problems or medical complications
- Children with a low birth weight should be followed once a week during their first month of life

### **1.1.2 ITFC (or paediatric ward if no ITFC)**

Weight between 1,5 kg - 2,5 kg

#### **AND**

Feeding problems (*verify if there are complications to the breast-feeding*) related to:

- Illness or absence of mother
- Absence or insufficiency of breast milk
- Insufficient suckle

#### **AND**

No medical complications

### **1.1.3 Paediatric ward**

New-borns with medical complications

#### **OR**

Weight <1,5 kg

- Observe for a minimum of three days in the paediatric ward in order to follow weight gain, breast-feeding and hypothermia.

## **1.2. Discharge criteria for new-borns**

### **1.2.1 Paediatric ward**

- Weight >1,5 kg
- No IV or IM treatment
- Clinically well

The discharge or referral is decided by the doctor.

- Refer all new-borns with no problems to the **OPD**  
→ Refer all new-borns with breast-feeding problems to the **ITFC**

### **1.2.2 ITFC**

- Resumption of exclusive breast-feeding for 5 days with weight gain
- BCG vaccination- national programmes. Check if the newborn has been vaccinated.
- Transfer criteria to the paediatric ward → see admission criteria to the paediatric ward

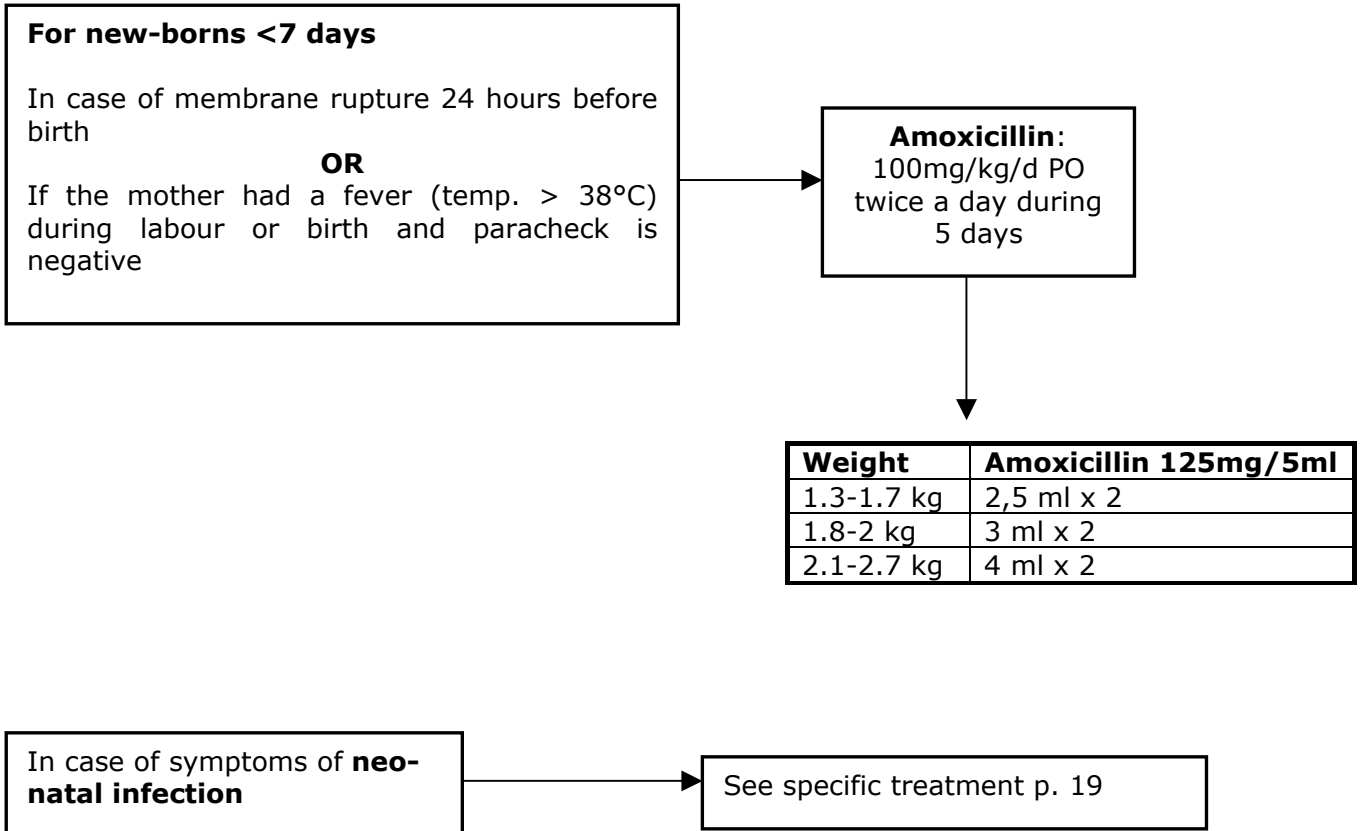
### **1.2.3 OPD**

- All new—borns (babies from 0 – 30 days of age) should be monitored weekly in the OPD.  
→ Over the age of 30 days see infant protocol.

## **1.3 Systematic protocol for new-borns**

### **1.3.1 The new-born**

- **Vitamin K 1 mg IM (single dose)** for the NB < 2 months if not administered at birth (*check health card*)
- **Preventive tetracycline eye ointment:** 1 tube for the NB < 8 days if not administered at birth (*check health card*)
- **Less than 7 days of life:** check the umbilical cord on admission
- **Routine health promotion**
- **Antibiotics:** DO NOT ADMINISTER SYSTEMATICALLY!



### **1.3.2 The lactating mother**

- **Vitamin A:** 1 capsule of 200.000 IU as a single dose on admission. Do not give if already administered at the maternity ward (*hospital or OPD*).
- **Ferrous sulphate + Folic acid:** 1 tab/ day during 2 months.
- If the mother is malnourished follow the corresponding protocol
- Surveillance and tracking of mastitis
- **Premix:** 2.1 kg per week
- Health promotion: danger signs, breast-feeding, importance of vaccination etc.

## **2. INFANTS (1 - 6 months)**

### **2.1. Admission criteria for infants**

There are no clear cut criteria to define infant malnutrition. The decision to admit and discharge an infant in a nutritional project depends on clinical criteria, verification of routine breast-feeding and/or an ascending weight curve for 1-2 weeks.

#### **2.1.1 SFC**

W/H < 80%

**AND**

No feeding problems

**AND**

No medical complications

**AND**

> 1 month old

#### **2.1.2 ATFC**

W/H < 70%

**AND**

No feeding problems

**AND**

No medical complications

#### **2.1.3 ITFC**

If H < 49 cm and W = 1,5 kg – 2,5 kg

**OR**

W/H < 80%

**OR**

Already in the program SFC/ATFC

**AND**

Feeding problems related to:

- Too weak to suckle
- Illness or absence of mother
- Insufficient breast milk
- Inappropriate feeding alternatives = eg. orphans, goat milk, etc

**OR**

Follow-up in SFC/ATFC with stagnant weight

### 2.1.4 Paediatric ward

Weight < 1,5 kg

**OR**

Medical complications



**New-borns and infants monitored in the OPD do not receive a special ration of food. The ration of food is given to the mothers to stimulate their production of breast milk.**

## **2.2 Discharge criteria for infants**

### 2.2.1 Paediatric ward

- Weight >1,5 kg or evaluation from case to case
  - No IM or IV treatment
  - Clinically well
- Transfers and follow-up, see admission criteria ITFC/ATFC/SFC
- **The doctor decides if child is discharged.**

### 2.2.2 ITFC

- Resumption of exclusive breast-feeding for 5 days with ascending weight curve
  - For orphans, no feeding problems or identified artificial feeding possibility
  - No IM or IV treatment
  - Clinically well
- Exceptional cases should always be discussed in the field between the doctors and the medco case by case to investigate local possibilities

### 2.2.3 ATFC

- W/H > 80% for two consecutive weighing (one week interval)
- Absence of associated pathologies or on-going antibiotic treatment

→ **All infants discharged from the ATFC should be admitted to the SFC.**

### 2.2.4 SFC

- W/H  $\geq$  85 % two consecutive weighings (one week interval), with a stable weight curve and age over 6 months



**All new-borns and infants in the programme should be followed till the age of 6 months.**



## **2.3 Systematic protocol for infants**

### **2.3.1 The infants**

#### **- Bacterial infections**

Broad-spectrum antibiotics should be administered routinely except in case of specific indications<sup>1</sup>.

Amoxicillin PO: 70 à 100 mg/kg/d twice daily for 5 days. Use oral suspension or syrup.

<b>Weight</b>	<b>Amoxicillin 250 mg</b>	<b>Amoxicillin 125 mg/5 ml</b>
1.3 – 1.7 kg	¼ tab	2.5 ml x 2
1.8 – 2.0 kg	¼ tab	3 ml x 2
2.1 – 2.7 kg	½ tab	4 ml x 2
2.8 – 3.5 kg	½ tab	5 ml x 2
3.6 – 3.9 kg	¾ tab	6 ml x 2
4.0 – 5.0 kg	¾ tab	7 ml x 2

#### **- Malaria**

Do Paracheck<sup>®</sup> (*rapid test*) systematically on admission on all severely malnourished children and if temperature >38°C also on the moderately malnourished (*except during periods of malaria peak do a Paracheck<sup>®</sup> systematically on all moderately malnourished*):

- If negative test, no treatment,
- If positive test or not available and suspected malaria, treat on admission.

### **Treatment of simple malaria**

#### **< 2,5 kg**

**New-borns and infants with a low birth weight with malaria are at high risk of developing severe malaria and should be admitted for supervised treatment (*hospital or ITFC*)**

**→ HOSPITALISATION**

Artemether IM during 7 days: 3.2 mg/kg/day 1<sup>st</sup> day  
1.6 mg/kg/day 2<sup>nd</sup> – 7<sup>th</sup> day

#### **Between 2,5 and 5 kg**

Artemether IM as start of treatment and afterwards if possible switch to ACT

Artesunate PO 4 mg/kg/day + Amodiaquine PO 10 mg/kg/day during 3 days

<sup>1</sup> If the clinical exam on admission shows clear symptoms of a specific infection, administer the appropriate antibiotal treatment (see Therapeutic and Clinical Guidelines, MSF)

<b>Dosage with tablets 50 mg Artesunate + Amodiaquine tablets (200 mg Amodiaquine Hydrochloride corresponding to 153 mg of Amodiaquine)</b>			
<b>Weight</b>	<b>Day 1</b>	<b>Day 2</b>	<b>Day 3</b>
2.5 – 5.0 kg	<b>AS</b> ¼ tab. + <b>AQ</b> ¼ tab.	<b>AS</b> ¼ tab. + <b>AQ</b> ¼ tab.	<b>AS</b> ¼ tab. + <b>AQ</b> ¼ tab.

*N.B. All severely malnourished infants in malaria endemic areas should sleep under an **impregnated bed net** to avoid transmission*

- **Vitamin deficiency**

- Do not give breast-feeding infants Retinol (vitamin A)
- If the infant is not breast-fed, give 50 000 IU vitamin A (2 drops)
- Administer systematically Folic acid on admission: 5 mg single dose

**2.3.2 The lactating mother**

- **Vitamin A:** 1 capsule of 200.000 IU as single dose on admission. Do not administer if already received at the maternity ward (*hospital or OPD*).
- **Ferrous sulphate + Folic acid:** 1 tab / day during 2 months.
- If the mother is admitted in the nutritional programme, follow corresponding protocol. Severely malnourished mothers should not start Ferrous sulphate+ Folic acid before the 15<sup>th</sup> day of admission
- **Surveillance and tracking of mastitis**
- **Premix:** 2.1 kg once a week
- **Health promotion:** danger signs, breast-feeding, importance of vaccinations etc.

### **3. HISTORY AND CLINICAL EXAM OF NEW-BORNS AND INFANTS**

#### **HISTORY**

- Investigate, especially with new-borns the duration of the pregnancy, potential illnesses of the mother during the pregnancy and get details of the birth (*caesarean or natural birth, at home or at the hospital, membrane rupture >24H, maternal fever the last days of pregnancy*).
- Birth weight
- Signs of asphyxiation during birth (*did the baby cry, what colour was the baby, how was the breathing the first minutes of life?*)
- Regarding feeding: does the baby suckle sufficiently?
- Health complaints before arriving at the hospital (*cough, respiratory distress, fever, diarrhoea, vomiting, convulsions*).

<b>NORMAL</b>	<b>ABNORMAL</b>
<b>FONTANEL</b>	
Soft	Dehydration: sunken* Meningitis: bulging* Microcephilitis: small diameter.
<b>EYES</b>	
Pupils even and bright Conjunctives pink	Cataract: opaque cornea Dehydration: dry, sunken, no tears when crying Conjunctives: red, pasted, secretion
<b>NOSE</b>	
No nasal flaring	Respiratory distress: nasal flaring*
<b>MOUTH</b>	
Pink and wet, suckle reflex	Candida: white deposit Cyanosis* Dehydration: dry tongue Malformation: cleft lip, etc Absence of sucking reflex*
<b>CLAVICULA</b>	
No malformation of the clavicle	Malformation, pain
<b>RESPIRATION</b>	
20-60/ min Clear lungs at auscultation No lower chest wall indrawing	Tachypnae $\geq$ 60/ min Bradypnae < 20 /min Crackles, rhonchi on auscultation Distress: lower chest wall indrawing, nasal flaring*, grunting* Head nodding Apnoea: respiratory arrests >20 secs * Obstruction: stridor*
<b>HEART</b>	
100-160/ min regular pulse	Tachycardia >160 or bradycardia <100/ min Heart murmer

<b>ABDOMEN</b>	
No enlarged liver or spleen ( <i>the liver is max. 2 cm palpable</i> ) Umbilical cord dry/clean  Soft	enlarged liver or spleen  Umbilical cord infected: pain, redness and secretion  Abdominal distension
<b>NEUROLOGICAL</b>	
Alert Good reflexes Symmetric movements Tonus: normal or little hypo tone	Asymmetric movements Hypo tone, hyper tone (= <i>rigid</i> ) Convulsions* Paralysed Lethargic, unconscious*
<b>LIMBS</b>	
Hot extremities	Shock: weak pulse + cold extremities*
<b>SKIN</b>	
Normal colour Small (hormonal) spots	Jaundice Infection: redness or pustules/furuncles in the skin Cyanosis* Anaemia Dehydration/ skin pinch

\* **Emergency signs = refer to hospital**

## **4. NUTRITIONAL PROTOCOL OF HOSPITALISED NEW-BORNS AND INFANTS**

### **4.1 Infants with the possibility to be breast-fed**

**Goal:** to maintain and stimulate exclusive breast-feeding.

#### **Specifically**

Under normal circumstances artificial milk is not recommended. The only circumstances are if the mother cannot breast-feed (*deceased/very ill mother or in absence of a wet nurse*) or insufficient quantity of breast milk (*this needs to be verified*). Verify the breast-feeding techniques: A correct position, B incorrect position



#### **Method**

##### **a. Using a naso-gastric tube at the breast**

This technique is used to stimulate the production of breast milk (*double suction method*).

The feeding tube is fixated on the mother's breast by the use of tape and the other end is placed in a cup of artificial milk (*breast milk or SDTM*). When the child sucks, it stimulates the breast and drinks the artificial milk. Adjust the intake of milk by lowering or raising the cup or by pinching the feeding tube. Remember to alternate the breasts between the meals. Alternatively use a spoon or a syringe. Feeding bottles are forbidden (*source of infections*).



**b. Naso-gastric tube** if suction is not possible

- **For the mother:**

Follow the meal protocol for caretakers + give 300 ml F100 two times a day (= 2891 kcal/day).

**Stimulate the mother to drink at least 2 L of water a day!!!**

Normal evolution → quick weight gain of the new-born + increased production of breast milk

## **4.2 Nutritional treatment in case of insufficient or absent breast milk**

Specially Diluted Therapeutic Milk or SDTM = diluted milk or F-80: Dilute 1 bag of F100 in 2.8 litres of water (instead of 2 litres) (= +/- 75 Kcal/100 ml).



→ **F75 is not adapted to new-borns (same value in calories as diluted F100 but not the same nutritional composition).**

### **4.2.1 First two weeks of a new-born**

The quantity of milk should be increased during the first days. **Always give priority to breast milk** (*extract the milk if necessary*).

Place the child at the breast instantly after birth.

If the birth weight is < 2,5 kg, make sure that the new-born suckles in the first three hours of life. If not, give SDTM.

#### **Quantity of milk necessary per kilo and per day**

<b>D1</b>	<b>D2</b>	<b>D3</b>	<b>D4</b>	<b>D5</b>	<b>D6 – D14</b>
60 ml/kg	80 ml/kg	90 ml/kg	100 ml/kg	110 ml/kg	120–180 ml/kg

*These quantities represent the total need of a newborn.*

#### **Quantity of BM or SDTM per feeding per kilo**

<b>Weight/ Kg</b>	<b>Nr feeds</b>	<b>D1</b>	<b>D2</b>	<b>D3</b>	<b>D4</b>	<b>D5</b>	<b>D6 – D14</b>
1000 – 1100 g	12	5 ml	7 ml	8 ml	9 ml	10 ml	11 – 16 ml
1100 – 1200 g	12	6 ml	8 ml	9 ml	10 ml	11 ml	12 – 17 ml
1200 - 1300 g	12	6 ml	8 ml	9 ml	10 ml	11 ml	13 – 18 ml
1300 - 1400 g	12	7 ml	9 ml	10 ml	11 ml	12 ml	14 – 20 ml
1400 - 1500 g	12	8 ml	10 ml	11 ml	12 ml	14 ml	15 – 22 ml
1600 – 1800 g	8	13 ml	17 ml	19 ml	21 ml	23 ml	25 – 40 ml
1900 – 2100 g	8	15 ml	20 ml	23 ml	25 ml	28 ml	30 – 45 ml
2200 – 2400 g	8	17 ml	23 ml	26 ml	30 ml	32 ml	35 – 50 ml

#### 4.2.2 Infants and new-borns >2 weeks < 1500 g

The goal of the nutritional treatment is to stimulate the production of breast milk and most importantly to make the child gain weight rapidly considering the important energetic needs of babies with low birth weight or premature children.

If possible, give 12 feeds per day. Place the baby at the breast every 2 hours to stimulate an increase in the breast milk. If the baby does not have the strength to suck, give breast milk via a feeding tube (**complement with SDTM only if the quantity of breast milk is insufficient**).

Feeding by NG tube: make sure that the naso-gastric tube is in place. Never force the milk down the tube but let it run by the force of gravity. Each meal should be given slowly.

There are two types of energy needs:

**Maintenance:** 50 Kcal/kg/d (= 67 ml/kg/d) (*if the environment is a neutral thermal one*).

**Growth:** 5-6 Kcal/gram of weight/d (e.g.: a gain of weight is 15g/kg/d, requires 75-90 Kcal/kg/d supplementary)

**Total:** 125-140 Kcal/kg/d (= 167-187 ml/kg/d) with a minimum of 95 Kcal (127ml/kg /d) and a maximum of 165 Kcal (=220 ml/kg/d)

**(100 - 135 Kcal =133 - 180 ml/ Kg / d in 12 feeds)**

Weight/ Kg	ml / d	ml / feed
1000 - 1100 g	140 - 195 ml	12 - 16 ml
1100 - 1200 g	153 - 214 ml	13 - 17 ml
1200 - 1300 g	166 - 232 ml	14 - 18 ml
1300 - 1400 g	180 - 251 ml	15 - 20 ml
1400 - 1500 g	193 - 270 ml	16 - 22 ml

The administered quantity depends on the tolerance and weight gain of the child. These quantities represent the total needs of the child. Using the double suction method the child will take a certain amount of breast milk which is difficult to evaluate. Therefore start with the minimal amount of complementary SDTM and observe the tolerance and weight gain. If the child tolerates the milk and there is no weight gain, increase the amount progressively.

In cases where the baby does not put on weight (*mothers with no milk, orphans, etc*) it is possible to give up to 200 ml/kg/d, after having ruled out all other reasons for the lack in weight gain: medical complications, rules of nursing not respected (*kangaroo, hat, etc.*), incorrect administration of feeds, etc.

### 4.2.3 Infants and new-borns > 2 weeks > 1500 g

Approach in 3 phases to gradually diminish the supplementary milk and increase the breast milk.

#### Summary of nutritional treatment

Phase	Duration	Feeding	SDTM Supplement
I	Normally 10 days (max. 15)	Place at breast every 3 hours	+ 130 ml/kg/d after breast-fed (100 kcal/kg/d)
II	2 – 5 days	Place at breast every 3 hours	+ 65 ml /kg/d after breast-fed (50 kcal/kg/d)
III	Min 5 d	Exclusive breast-feeding	

#### Quantity of milk according to weight and phase

Weight / Kg	ml / feeds	
	Phase 1	Phase 2
1.6 – 1.8 kg	30 ml	15 ml
1.9 – 2.1 kg	35 ml	17 ml
2.2 – 2.4 kg	40 ml	20 ml
2.5 – 2.7 kg	45 ml	22 ml
2.8 – 2.9 kg	50 ml	25 ml
3 - 3.4 kg	55 ml	28 ml
3.5 - 3.9 kg	65 ml	32 ml
4 – 4.4 kg	70 ml	35 ml
4.5 - 5 kg	80 ml	40 ml
5 – 5.5 kg	90 ml	45 ml
5.6 - 6.5 kg	100 ml	50 ml

**During the 1st phase**, the breast-feeding is continued and is a surplus in relation to the therapeutic milk which assures a sufficient amount of energy and nutrients.

**During the 2nd phase**, if the curve increases, half the quantity of SDTM → ½ SDTM + breast milk.

**During the 3rd phase**, if the weight curve continues to increase, stop SDTM.



#### **IF THE BABY LOSES WEIGHT NEVER HESITATE TO REGIVE SDTM**

Go back to the preceding phase if there is no weight gain after the change of phases.  
SDTM should never be given more than 20 days.



### **4.3 Infants without the possibility to be breast-fed**

For the rare cases where breast milk is impossible (*absence of mother or wet nurse*), see protocol below. If the mother is deceased always try to find a wet nurse.

Nutritional treatment for infants without the possibility of being breast-fed

<b>Phase</b>	<b>Duration</b>	<b>SDTM*</b>
<b>1</b>	D1 to D7 (MAX)	100 kcal/kg/day = 135 ml/kg/day in 8-12 feeds
<b>Obligatory TRANSITION</b>	MAX 3 DAYS	150 kcal/kg/day = 200 ml/kg/day in 8-12 feeds
<b>2</b>	14 DAYS	200 kcal/kg/day = 270 ml/kg/day in 8-12 feeds

Use the SDTM for a maximum of 3-4 weeks; then substitute it with artificial maternal milk until the age of 6 months (*see annexe 5.3, page 24*). Find a caregiver for the child who can be trained to use the milk, guarantee the feeding materials and calculate the right quantities for the child until the age of 6 months.

\*SDTM= Specially Diluted Therapeutic Milk/ F-80:

**Dilute 1 bag of F100 in 2.8 litres of water (instead of 2 litres)**

(= +/- 75 Kcal/100 ml)

## **5. ANNEX**

### **5.1 Tables of some severe complications**

#### **5.1.1 Hypoglycaemia**

Triage of hypoglycaemia

Capillary glycaemia:

- New-borns <1,5 kg:  
3 – 6 - 12 hours after birth  
From the 2<sup>nd</sup> day of life measure the capillary glycaemia if the temperature <36°C or if the baby shows symptoms of hypoglycaemia.
- Infants or new-borns >1,5 kg:  
Measure the capillary glycaemia if the temperature <36°C or if the baby shows symptoms of hypoglycaemia.

Suspect hypoglycaemia if the child is not fed regularly, if the child vomits, if the mother does not have any milk and the child is not fed as a consequence. **Given the vital danger for the child, it is essential to follow that the child is fed!**

A severe hypoglycaemia does not necessarily manifest clear clinical symptoms!

Signs and symptoms of hypoglycaemia

- Hypotone, somnolent, apathy → coma
- Agitation, irritability
- Abnormal eye movements, tremors, convulsions (*local, generalised*)
- Hypothermia with paleness
- Irregular breathing, apnoea
- Bradycardia or tachycardia

If the hypothermia persists → treat as hypoglycemia

Treatment

- If glycaemia < 40 mg/dl or persistent hypothermia without clinical manifestations:  
Glucose 10 % orally or with NG tube: 5ml/kg, repeat if necessary after 10 minutes.  
Give breast milk when possible.
- If glycaemia < 40 mg/dl with clinical manifestations:  
Glucose 10% 5ml/kg IV slow drip followed by a slow perfusion of glucose 10% 5ml/kg/h. Diminish the perfusion progressively and switch to glucose orally when the child is alert.  
Treat the convulsions: Diazepam intra-rectal 0.5 mg/kg  
Treat the hypothermia.

If the hypoglycaemia is severe or keeps repeating treat as a neonatal infection

### 5.1.2 Hypothermia

Babies are very susceptible to hypothermia, especially when they are below 2 kg. Always maintain the baby warm, use the kangaroo method, otherwise the baby will use all its energy to produce warmth rather than grow.

If possible, keep the low birth weight children in a separate room, which is calm, clean and with an elevated stable room temperature. This also protects them from getting infected by the other older children.

The body surface of the head is big in relation to the rest of the body. Hence the baby loses a lot of body heat from the head.

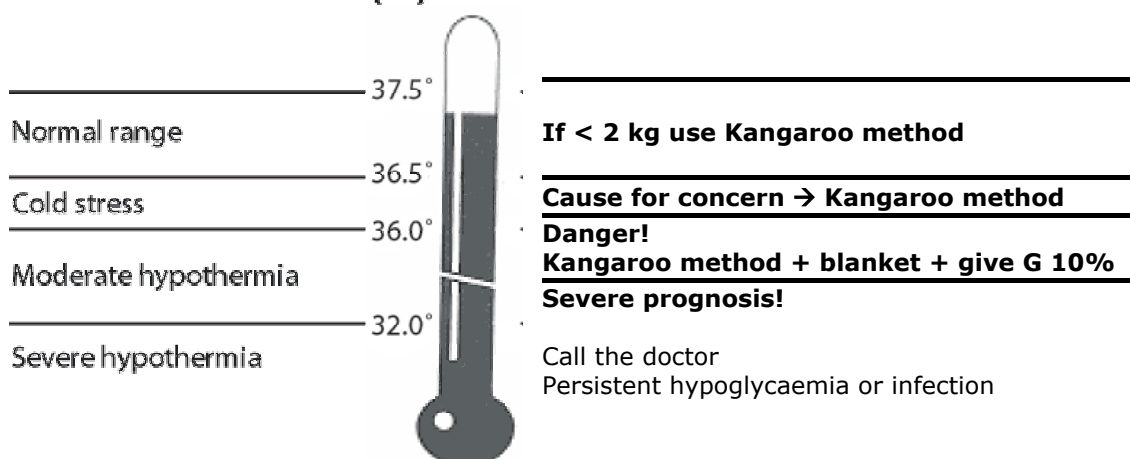
- Cover the head with a jersey/cotton hat.
- Use the **Kangaroo method** (= *natural incubator*): the child is placed naked against the stomach of the mother (*skin to skin contact*); place the child so that it has access to the breasts all the time (*As the child does not have strength to suck for a long time, he must be able to suck more frequently*). Attach the baby with a cloth and cover it with the clothes of the mother. Wrap a cover around the mother in a cold climate. For children < 2 kg use the Kangaroo method full time.
- **Avoid** that the child is wrapped in **wet clothes or covers** (make small nappies of cloth).
- Do not wash hypothermic children!
- Measure the axillaries temperature regularly, every 3 hours minimum. If necessary increase the frequency.



→ Pay attention to the close ties to hyperglycemias: these two phenomena are frequently both present

→ Treatment of hypothermia according to the schema below:

#### Body temperature in the newborn infant (°C)



### 5.1.3 Broncho-pneumonia

Considering babies' high risk of rapid degradation in general and specifically of their respiratory state it is essential to be vigilant and give injectable antibiotics immediately.

#### Gravity signs

- Irregular breathing, apnoea, bradypnoe or tachypnoe, bradycardia, dyspnoea, grunting.
- Incapable of drinking or sucking.

If the baby has dyspnoea feed him/her by NG tube (*with breast milk if possible*).

If the dyspnoea is too severe or the baby does not tolerate the feeding, a transitory intravenous supplement can be given (*calculate the intravenous supplement according to maintenance*).

#### Treatment

- Oxygen
- New-borns: Ampicillin + Gentamicin
- Infants: Ceftriaxone

<b>Ampicillin</b>	NB < 1 week	100 mg/kg/d IV/IM*	2 X d	7 days
	NB > 1 week	150 mg /kg/d IV/IM	3 X d	
<b>Gentamicin</b>	NB <1500 g	3,5 mg/kg/d IV/IM	1 X d	
	NB ≥ 1500g	5 mg/kg/d IV/IM	1 X d	
<b>Ceftriaxone</b>		100 mg/kg/d IV/IM	1 X d	

\* (if birth weight >2 kg and severe infection increase to 200 mg/kg/d in 4 takes).

### 5.1.4 Septicaemia

Insidious apparition with rapid evolution.

The first signs are often:

- digestive: refuse to suck  
vomiting  
diarrhoea  
abdominal distension
- respiration: irregular rhythm and apnoeas
- hypoglycaemia and/or hypothermia and/or hypo tone

Later signs include:

- Periphery collapse (*paleness, cold extremities, weak or non-palpable pulse*)
- Central collapse (*weak arterial pulse, tachycardia then bradycardia*)

Always consider septicaemia when faced with a dehydration that does not respond to a correctly administered rehydration.

Initial treatment when suspected septicaemia (*before referral, if possible*):

**New-borns: Ampicillin + Gentamicin**

**Infants: Ceftriaxone**

### 5.1.5 Meningitis

Non specific symptoms! The signs of meninges are generally absent.

- Fever not elevated or hypothermia.
- Possible bulging of the fontanel.
- Refuses to suck, hypotone, convulsions, somnolent, coma.
- Apnoeas, irregular breathing.
- Vomiting.
- High pitch cries, irritability.

Immediate treatment when suspected meningitis (*before referral, if possible*): treatment to be followed a minimum of 10 days.

#### Treatment

**- New-borns: Ampicillin + Gentamicin**

**- Infants: Ceftriaxone**

### 5.1.6 Dehydration

It is necessary to complete a thorough exam of the hydration condition before initialising this rehydration protocol!

#### **Determine the degree of dehydration**

**The most significant sign is the loss of weight** (*in the context of diarrhoea, vomiting or insufficient alimentary needs*).

<b>Dehydration</b>	<b>Light</b>	<b>Moderate</b>	<b>Severe</b>
Loss of weight	<5%	5-10 %	>10%

Also consult the table below (especially if the child has not been weighed e.g. New admission).

<b>SIGNS</b>	<b>D LIGHT</b>	<b>D MODERATE</b>	<b>D SEVERE</b>
Overall condition	Normal	Agitated, irritable	Lethargic Unconscious
Thirst	Normal	Thirsty, drinks with craving	Incapable of drinking
Mucus	Humid	Dry	Very dry
Tears	Present	Absent	Absent
Fontanel	Normal	Lightly sunken in	Very sunken in
Eyes*	Normal	Sunken in	Very sunken in
Diuresis	Normal	Reduced and urine concentrated	Absent for hours
Skin pinch	Rapidly withdrawn	Slow withdrawal	Very slow withdrawal

\* Ask the mother how long the eyes have been sunken in.

➤ **Rehydrate and reevaluate the hydration condition.**

Remember that breast milk is always the best liquid to rehydrate.

Do not stop breast-feeding during the rehydration.

LIGHT DEHYDRATION	PLAN A
MODERATE/SEVERE DEHYDRATION WITHOUT SHOCK*	PLAN B
SEVERE DEHYDRATION WITH SHOCK *	PLAN C

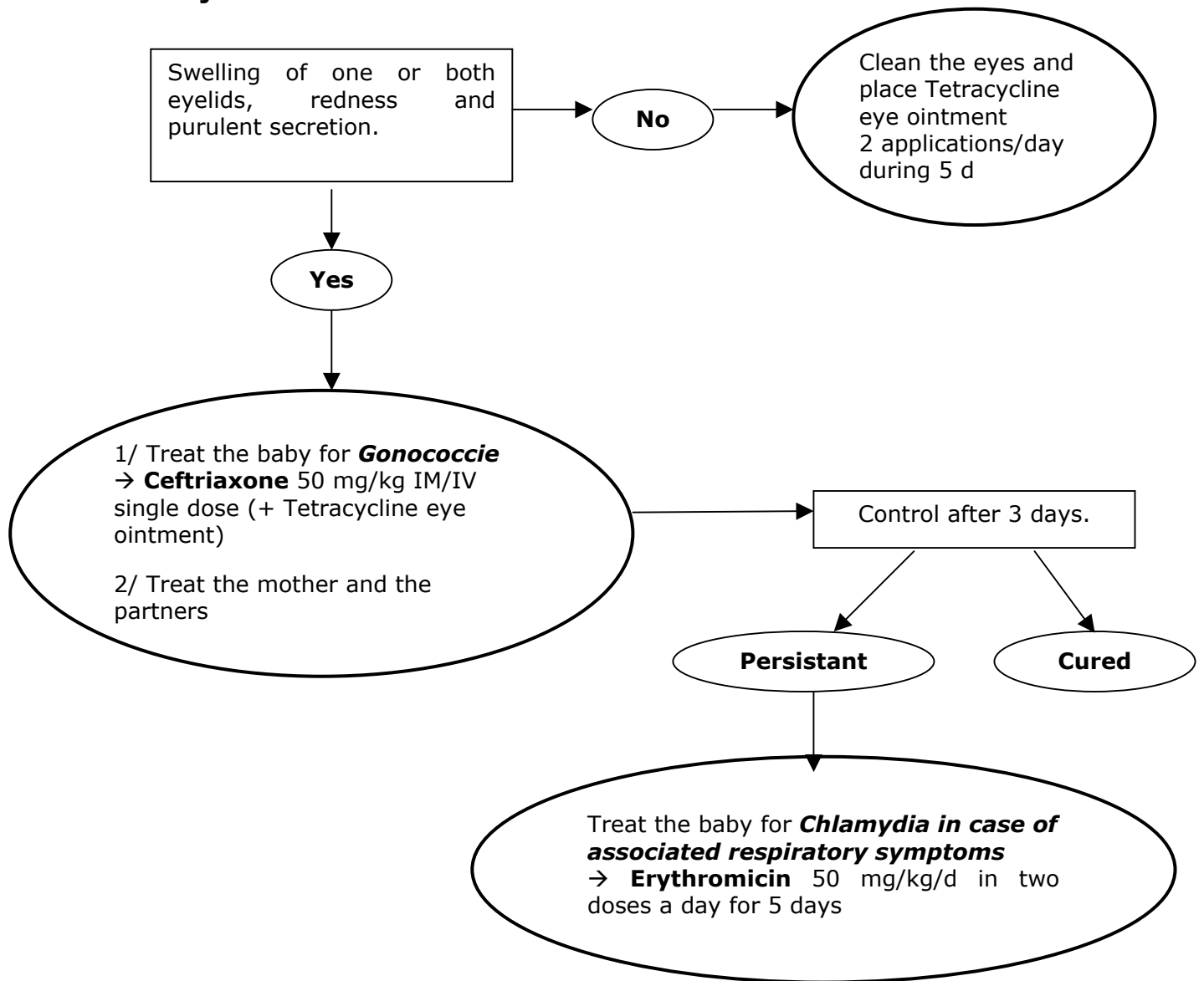
\**SHOCK: weak pulse, cold extremities, capillary refilling >3 secs*

<b>PLAN A</b>	<p>Make the child drink <b>ReSomal</b> after each liquid stool: 10 ml/kg Maximum once an hour.</p>
<b>PLAN B</b>	<p>Before start measure:</p> <ul style="list-style-type: none"> <li>- Weight</li> <li>- RR (respiratory rate) and pulse</li> <li>- Inferior limits of the liver</li> </ul> <p><b>Give ReSomal orally or if necessary use the NG tube under supervision +++.</b> <b>In case of vomiting, give drop by drop.</b></p> <ul style="list-style-type: none"> <li>→ The first hours: 5 ml/kg every half hour under strict surveillance.</li> <li>→ After: 5 ml/kg/h</li> </ul> <ul style="list-style-type: none"> <li>- Observe every hour (clinical condition; RR and pulse).</li> <li>- Reevaluation after 4 hours:</li> <li>- If the child gains weight and is clinically well, resume normal alimentation and Plan A</li> <li>- If the weight is stable or less and the clinical condition is satisfying: increase to 10 ml/kg/h</li> <li>- If the weight is stable or less and the clinical condition is bad go to plan C</li> </ul> <p><b>If the NG tube has been tried and it is impossible to rehydrate orally → switch to intravenous rehydration.</b></p>
<b>PLAN C</b>	<p><b>Only after prescription by doctor</b></p> <p>Before start measure:</p> <ul style="list-style-type: none"> <li>- Weight</li> <li>- RR et pulse</li> <li>- Inferior limits of the liver</li> </ul> <p><b><u>In case of shock:</u></b> use a solution of ½ Ringer lactate + ½ Glucose 5% : 15 ml/kg/h</p> <ul style="list-style-type: none"> <li>- Observe every half hour, surveillance ++ of RR and pulse → In case of signs of overload* stop the infusion and call the doctor immediately.</li> <li>- Reevaluation after one hour:</li> <li>- Improved clinical condition: go to plan B</li> <li>- No improvement and suspected septic shock: treat as septic shock</li> <li>- No improvement and no signs of shock: repeat 15 ml/kg/h. If at the end of an hour there is still no improvement, treat as septic shock.</li> </ul>

\* **Overload:**

- Increased RR and pulse (>10%)
- Signs of oedema
- Cardiac signs: gallop rhythm
- Pulmonary signs: crepitations, grunting expiratory wailing.

### 5.1.7 Conjunctivitis



## **5.2 Nursing care**

### **5.2.1 Surveillance**

- Control the weight every day. A specific scale should be used (*maternity scale precision 10g*).
- The weekly weight gain should be 70-100 g/ week; a loss of 10% of the weight is acceptable during the first week after birth.
- If the weight is stationary or diminishes during 3 consecutive days despite correct feeding:
  - The quantity of food offered is insufficient and should be increased
  - Or there is a medical/psychosocial problem which should be investigated.

### **5.2.2 Hygiene**

- Hygiene education for the **mothers**: wash the hands before each meal, after having used the toilet, before and after breast-feeding. Wash the breasts without soap as it dries out the natural fat of the nipple and skin and causes skin rupture and wounds.
- Washing the **baby** every day is NOT recommended especially with small children < 1500g. Washing is a cause of great loss of heat and consumes a great amount of energy. It suffices to clean the skin around the neck (*to clean out curdled milk*), the skin around the sex and buttocks every day. Babies with a weight > 1500 g., can be washed in a basin once or twice per week.
- The **staff** should wash their hands with soap between handling every child!
- Take care to rigorously clean **cups** and **feeding tubes** (*rinse after each feed with hot water and a syringe, place it in a bag for drugs and change regularly*)
- Cleaning the umbilical **cord** of the NB (*1 x /d for 3 days*):
  - Clean with chlorhexidine and dry properly
  - Leave the cord in open air or only covered with a light compress to let it dry (*avoid closed dressing or bandage which only causes maceration, slows down the cord's discharge and increases the risk of germs*).
  - In case of infection, inform the doctor.

## **5.3 Maternal milk for infants without the possibility to be breast-fed**

### **5.3.1. Artificial milk**

- Milk 1<sup>st</sup> age is targeted children between 0 to 6 months

#### Presentation of artificial milk

Most cans with artificial milk contain a measuring spoon where the content is specified (*normally 4,5g*). You need a full spoon of milk powder, either 4,5g for 30 ml of water, 2 spoons for 60 ml of water, 3 spoons for 90 ml of water, etc.



## Preparation of artificial milk

### Materiel

1. Milk
2. Casserole
3. Cup (250 ml )
4. Cut cup at 30 ml
5. tea spoon
6. Thermos
7. Soap

### Preparation

1. Properly wash the kitchen utensils (*casserole, cups, tea spoons*)
2. Wash hands with water and soap
3. Cook the water in the casserole (100 °c)
4. Place the necessary quantity of lukewarm water in the cup of 250 ml (*measure with the cut cup*). **Keep the rest of the hot water in the thermos for the following feeds.**
5. Add the corresponding measures of milk
6. Stir (*mix*) with the spoon to dissolve the milk
7. Let it cool
8. Give it to the child to drink
9. Do not keep the milk more than one hour after preparing it
10. With care, close the can after use.

### **DOSAGE CORRESPONDING TO THE AGE OF THE CHILD**

#### **Milk 1<sup>st</sup> age**

<b>AGE</b>	<b>weight in kg</b>	<b>Measurement of water in ml</b>	<b>Number of spoons</b>	<b>Number of feeds</b>
1 – 2 weeks	2.5 – 3	60	2	6 - 8 feeds
3 – 6 weeks	3 – 3,5	90	3	
2 months	4	120	4	
3 months	5	150	5	5 - 6 feeds
4 months	5 - 6	180	6	
5 – 6 months	6	210	7	4 - 5 feeds

**From the 4<sup>th</sup> month start introduction of light gruel/porridge (*see how to ease the breaking of breast-feeding*)**

### **Remarks**

- Most children are satisfied with 6 - 8 feeds per day in the first 3-4 months of life. Between 4 - 6 months they normally take 5 feeds and pass on to 4 feeds per day.
- Do not hesitate to increase the quantities and give the child more food if he/she asks for it. You can prepare a little more for each feed, in case the child wants more. This way, you avoid limiting involuntary the volume of food for the infant. It is the child and its weight gain that should dictate the amount of food. E.g. for a child that takes 60 ml you could prepare 90 ml or an extra measuring spoon.
- Do not keep the leftover of milk. Throw it out or give it to other, bigger, children.

**NB: If the child does not attain the weight for age, base your measurement on the weight rather than the age.**

### 5.3.2. The follow-up of the child

Discharged from the ITFC, the child should be consulted weekly at the OPD at least 4 weeks. If the child puts on weight (*follow the weight curve*) and has no medical complications, he/she can be followed twice a month or one a month.

#### Clinical surveillance of the child

- Weight (*reported at the weight curve*)
- Dehydration signs
- Diarrhoea, blood or mucus in the stools (*verify*)
- Vomiting
- Apathy, lethargic
- + general clinical exam

#### Diet surveillance

- Does the child take all the milk?
- Numbers of feeds/day
- How is the water treated used for the milk?
- Quantity of meals given (and actually taken: e.g. ¼, ½...) of milk/porridge
- What is the consistency of the porridge given? (When the child is > 4 months).
- How is the water treated given to the child?
- Number and quantity of supplementary water/day

### 5.3.3. Facilitating the breaking of breast-feeding

- 4<sup>th</sup> month: milk + light porridge made of local flour (*or give a light porridge of CSB*)
- 5<sup>th</sup> - 6<sup>th</sup> month: milk + porridge made of local flour enriched with eggs or kouli-kouli<sup>2</sup> or meat (*or give porridge of CSB*)
- 7<sup>th</sup> - 8<sup>th</sup> month: PPN + family meal pure or pasta (*sauce, vegetables*)
- From 9 months, the child can be nourished with family meals with a lot of sauce and no spices.

NB: It is important to introduce fruit and vegetables in the meals of the child to give a daily amount of vitamins and minerals.

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<sup>2</sup> Kind of pasta made up from residuals of oilseeds