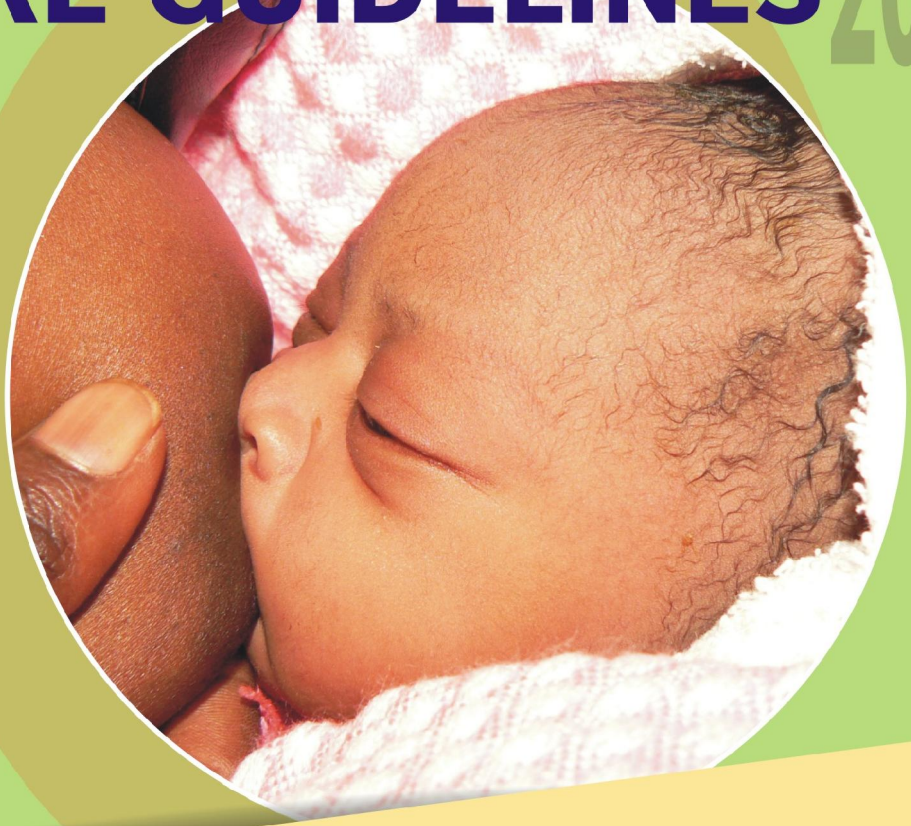
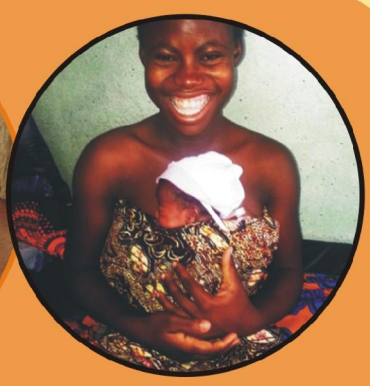
MINISTRY OF COMMUNITY DEVELOPMENT MOTHER AND CHILD HEALTH

ESSENTIAL NEWBORN CARE GUIDELINES 2014





MINISTRY OF COMMUNITY DEVELOPMENT, MOTHER and CHILD HEALTH

ESSENTIAL NEWBORN CARE GUIDELINES

July 2014

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Contents

Foreword

In order for Zambia to attain the MDG4 for child survival, a greater reduction in newborn mortality is needed. Over two thirds of all newborn deaths can be prevented through the use of evidence-based, cost effective, replicable, scalable and sustainable newborn health interventions.

The 2013 Zambia Newborn Health Care Framework and the 2013 Maternal Newborn and Child Health Road Map, form the basis for the Essential Newborn Care (ENC) Guidelines.

The Zambia ENC Guidelines will inform subsequent updates to ENC training materials and ENC protocols and apply to all levels of health care. These ENC guidelines encompass evidence-based, newborn interventions for essential and immediate care, which are designed to address the most important causes of newborn illness and death in Zambia.

The interventions include: care of low birth weight (LBW) newborns using kangaroo mother care, newborn resuscitation for management of asphyxia, prevention and treatment of newborn infections and other newborn conditions, use of chlorhexidine for cord care, support for breastfeeding, frequent assessment of newborn wellbeing, and detection of complications. The adequate coverage of appropriate interventions at all levels of care, will contribute significantly to the reduction in newborn deaths and while enable the attainment of MDG4.

Honourable Emerine Kabanshi, MP
Ministry of Community Development Mother and Child Health

Acknowledgements

The creation of these Essential Newborn Care Guidelines by the Ministry of Community Development Mother and Child Health (MCDMCH) would not have been possible without the support of the following stakeholders:

Ministry of Health (MOH) - University Teaching Hospital (UTH)
World Health Organisation (WHO)
United Nations Children's Fund (UNICEF)
Maternal and Child Health Integrated Programme (MCHIP)
Save the Children International (SCI)
Zambia Integrated Systems Strengthening Programme (ZISSP)
Midwives Association of Zambia (MAZ)
Zambia Paediatric Association
Programme for Appropriate Technology in Health (PATH)
Churches Health Association of Zambia (CHAZ)

My sincerest gratitude goes to all stakeholders who have ensured that health providers at all levels of health care will have access to the Guidelines on Essential Newborn Care. Undoubtedly, this guidance will assist all service providers in saving newborn lives.

Professor Elwyn Chomba
Permanent Secretary
Ministry of Community Development, Mother and Child Health

Acronyms

ACS	Antenatal Corticosteroids
ART	Antiretroviral Therapy
ARV	Antiretroviral drugs
BCG	Bacille Calmette-Guerin vaccine (for tuberculosis)
ENC	Essential Newborn Care
HIV	Human Immune Virus
KMC	Kangaroo Mother Care
LBW	Low Birth Weight
MDG4	Millenium Development Goal 4
NVP	p. 8-Not sure what this stands for.
OPV	Oral Polio Vaccine
PNC	Postnatal Care
RDS	Respiratory Distress Syndrome
VLBW	Very Low Birth Weight
WHO	World Health Organisation

1. Introduction

Globally, newborn deaths which occur within the first 28 days of life, account for 44 percent of the mortality in children under five years old. In 2012, 2.9 million newborn deaths occurred worldwide; Southern Asia and sub-Sahara Africa bore the heaviest burden, with both the largest number of annual births and the highest neonatal mortality rates.[1]

In recent decades, remarkable progress has been made to reduce the number of child death. This has been due largely to available interventions to lower child mortality after the first month of life. Even though the mortality rate among children under the age of five years has declined globally by almost 50% (from 90 deaths/1000 live births in 1990 to 48 deaths/1000 live births in 2012), the neonatal mortality rate decreased only 36%, from 33 deaths/1000 live births to 21 deaths/1000 live births, over the same period. As a result, the proportion of deaths in children under five years of age that occur in the neonatal period increased from 37% in 1990 to 44% in 2012. Deaths were mostly due to preventable causes[2]. A more rapid decline in neonatal mortality is critical to achieving Millennium Development Goal (MDG)4.

The majority of neonatal deaths, 35 percent, result from complications of preterm birth, while 23 percent occur from complications during birth[3], usually due to asphyxia. More than 1.1 million children annually due to complications of preterm birth, and many others experience a lifetime of disability. Approximately 80 percent of preterm births occur between 32 and 37 weeks of gestation, and most of these babies would survive if they received appropriate, essential newborn care; 75 percent of deaths of preterm babies can be prevented without intensive care[4].

In Zambia, the infant mortality rate is 34/1000 live births[5] and of these, newborn deaths constitute 30 percent. In 2011, the mortality rate was 10/1000 live births[6] during the first day of life. Of all newborn deaths, 37 percent are attributed to preterm birth complications; 26 percent result from newborn infections (tetanus, meningitis, sepsis, pneumonia and diarrhoea); and 28 percent are due to intrapartum causes and asphyxia[7]. The rate of reduction in under five mortality to 119/1000 live births over the years, has not been matched with a corresponding rate of reduction in newborn deaths. The opportunities for improving newborn health are unprecedented. More than a decade of analysis and research has generated information on the burden and causes of newborn mortality and demonstrated effective interventions and service delivery channels. Ways to accelerate progress in extending the coverage of interventions and to reduce that mortality have also been identified. The intrinsic link between the survival, health and nutrition of newborns and the survival, health and well-being of the mother has been corroborated. The period of greatest risk of morbidity and mortality for both mothers and children has been confirmed as the hours that precede and follow childbirth[8]. Compared to normal birth weight babies, low birth weight babies have a much greater risk of dying in the neonatal period as well as in infancy.

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[1] World Health Organization. Newborns: reducing mortality [fact sheet]. Geneva: WHO; 2012.
[2] WHO, UNICEF: Every newborn: a draft action plan to end preventable deaths.
[3] UNICEF. Committing to Child Survival: A Promise Renewed. New York: UNICEF; 2012.
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[5] Zambia Demographic and Health Survey 2007.
[6] WHO, Trends in maternal mortality: 1990 to 2010. WHO, UNICEF, UNFPA and the World Bank estimates. WHO 2012.
[7] Liu L Johnson HL Cousens S et al. Global, regional and national causes of child mortality: an updated systematic analysis for 2010 with time trends since 2000. Lancet. Jun 9 2012;379(9832):215T 216L
[8] WHO, UNICEF: Every newborn: a draft action plan to end preventable deaths.

The knowledge generated from research should be translated into every day practice by health workers who deliver babies at maternal and newborn health service delivery points at all health facility levels; from health centres to hospitals. All newborns need appropriate essential care, regardless of their place of birth.

These guidelines also take into consideration the 2013 WHO Guidelines on Recommendations for Newborn Health[9]. This document provides recommendations on the following evidence-based essential newborn care interventions:

- Clean delivery practices and infection prevention;
- Initiation of breathing and resuscitation;
- Thermal care and protection;
- Cord care;
- Eye care;
- Early initiation and exclusive breastfeeding;
- Management of preterm birth and the low birth weight newborn;
- Immunization;
- Management of newborn illness and appropriate referral; and
- Counselling on the care of every newborn.

2. ENC Comprises Basic Care and Special Care

A. Basic newborn care assures survival of all babies: term babies and newborns without severe malformations, and also offers a good start for preterm and small newborns. It is required in order for all newborns to meet their physiological needs through the: prevention of infections and unhygienic practices at birth; initiation of breathing, including resuscitation when needed; ensuring of warmth and the prevention of hypothermia; initiation of appropriate nutrition by early initiation, exclusive and frequent breastfeeding.

B. Special care: is required for those newborns who are born too soon, are too small, or have diseases acquired before, during or after birth. Management of sick newborns includes early recognition and management of newborn diseases, management of hypothermia and selected other conditions specific to the early newborn period. Preterm or low birth weight infants need more attention and care. Early detection of problems requires vigilance and skills for observing and assessing these newborns for appropriate care.

C. Recommendations for appropriate practices for newborn care are evidence-based and apply to all levels of newborn care - home, health centres and hospitals.

[9] *WHO: Guidelines on maternal, newborn, child and adolescent health, recommendations on newborn health.*

3. Requirements for Essential Newborn Care (ENC)

The following must be in place for optimum essential newborn care:

- **Skilled birth attendants;**
- **Antibiotics;**
- **Corticosteroids for preterm birth;**
- **Weighing scales;**
- **Thermometers;**
- **Timers;**
- **Sterile delivery pack;**
- **Warm and clean delivery room/area;**
- **Soap and water;**
- **Gloves;**
- **Clean warm dry towels/covers/cloths;**
- **Resuscitation equipment near the delivery bed (suction device, bag and mask); and**
- **Sterile cord clamps/ties.**

4. Basic care of the newborn immediately after birth

4.1. Initiation of breathing

It is important to ensure that the newborn is breathing. Do not perform suctioning of the mouth and nose in newborns who start breathing on their own after birth.

4.2. Temperature control

For newborns with no complications - dry the baby immediately and keep in skin-to-skin contact with the mother during the first hour postpartum in order to prevent hypothermia and promote breastfeeding. Deliver newborn onto the mother's abdomen.

4.3. Cord care

Clamp and cut the cord within 1-3 minutes after birth.

4.4. Early initiation and exclusive breastfeeding

Initiate breastfeeding within the first hour for all newborns, including low birth weight babies. Babies who are able to breastfeed should be put to the breast as soon as possible after birth, when they are clinically stable and the mother and baby are ready. Babies who are unable to breastfeed soon after birth, should be fed breast milk by cup or nasogastric tube, as appropriate.

4.5. Eye care

Apply tetracycline eye ointment to both eyes within 90 minutes of birth. If the ointment is not available, then wipe both eyes with a clean moist swab.

4.6. Immunization

Give BCG, OPV° at birth and any subsequent immunizations as per the national immunization schedule.

4.7 Birth weight

Weigh the baby within 90 minutes of birth. Use scales designed for weighing babies. Birth weight identifies babies who may need special care and may be necessary for calculating drug doses.

5. Postnatal Care (PNC)

5.1. Immediate postnatal care

Provide PNC for the mother and newborn within the first 24 hours after birth.

5.2. Exclusive Breastfeeding

Counsel and provide support to mothers for exclusive breastfeeding.

5.3. Cord care

Ensure that the cord is kept clean and dry for all babies born in health facilities and at home. Apply chlorhexidine (4%) to the umbilical cord stump daily during the first week of life for all newborns.

5.4. Keeping the baby warm

Delay bathing the newborn for 24 hours after birth. If this is not possible due to cultural practices, delay bathing babies for at least 6 hours after birth. The baby should be clothed appropriately, according to the prevailing surrounding temperature. The mother and baby should not be separated.

5.5. Subsequent Postnatal Care

Provide postnatal care for the mother and newborn on day 3 (48-72 hours after birth), day 7 and at 6 weeks after birth. Conduct postnatal home visits within the first week, after the mother and newborn are discharged from the health facility and also for newborns who are born at home. Provide counseling on exclusive breastfeeding and check for general danger signs.

6. Danger signs in the newborn

The newborn should be treated or referred for further evaluation if any of the following signs are present regardless of whether the newborn is in the health facility, or the mother and newborn are at home:

- Stopped feeding well or not sucking well;
- Crying excessively/irritable;
- History of convulsions;
- Fast breathing (more than 60 breaths per minute);
- Severe chest in-drawing;
- Temperature >37.5°C or < 35.5°C;
- No spontaneous movement/lethargy; or
- Jaundice in the first 24 hours of life, or yellow palms and soles at any age of the newborn.

Encourage the family to seek health care immediately if they identify any of the above danger signs while at home.

7. Special care of newborn with problems

7.1. Management of newborn asphyxia

- Thoroughly dry and stimulate the newborn by rubbing the baby's back 2–3 times to initiate breathing.
- Delay cord clamping until after one minute postpartum, but not later than three minutes.
- If the newborn is not breathing after the above action, then perform suction of the mouth and nose using the penguin suction bulb or suction catheter.
- If the amniotic fluid is meconium stained and the baby is not breathing, intrapartum suctioning of the mouth and nose upon delivery of the head should be done.
- Do not perform tracheal suctioning in newborns born when meconium-stained amniotic fluid is present, if they start breathing on their own.

7.2. Positive pressure ventilation

- Initiate positive-pressure ventilation within one minute after birth, in newborns who do not start breathing despite thorough drying and additional stimulation.
- Clamp and cut the cord one minute after birth in term or preterm babies who do not require positive-pressure ventilation.

- For babies born through clear amniotic fluid who do not start breathing after thorough drying and rubbing of the back 2–3 times, do not routinely perform suctioning of the mouth and nose before initiating positive-pressure ventilation. Perform suctioning only if the mouth or nose is full of secretions.

- In term or preterm newborns (>32 weeks gestation) requiring positive pressure ventilation, initiate ventilation with air.
- In newborns requiring positive-pressure ventilation, ventilate using a bag and mask.

- In newborns requiring positive-pressure ventilation, assess adequacy of ventilation by monitoring the heart rate with visible chest movements, after 60 seconds of ventilation.
- In newborns who do not start breathing within one minute after birth, it is important to provide adequate ventilation in order to ensure chest movement and then check if heart beat is present. (**Note:** Evidence shows that chest compressions and medications are only required in < 1% of all asphyxiated babies, so they should not be performed routinely.)
- In newborns with no detectable heart rate after 10 minutes of effective ventilation, stop resuscitation.

7.3. Management of preterm and low-birth-weight newborns

7.3.1. Use of antenatal corticosteroids to prevent respiratory distress syndrome

- When a baby is born preterm, the baby faces numerous challenges, including difficulty feeding and maintaining body temperature. As a result, the infant can develop serious complications, principally Respiratory Distress Syndrome (RDS), a condition in which the baby has difficulty breathing because the lungs are underdeveloped.
- Use antenatal corticosteroids (ACS) to reduce the severity and mortality of RDS. Administer corticosteroids to every pregnant woman who is less than 34 weeks pregnant and has a condition that increases the possibility of a preterm delivery (preterm labour, preterm pre-labour rupture of membranes, antepartum haemorrhage, severe pre-eclampsia)[10].
- Give Betamethasone 12 mg injections intramuscularly in two doses, 24 hours apart.

7.3.2. Prevention of hypothermia immediately after birth

- For low birth weight neonates weighing >1200g who do not have complications and are clinically stable, make sure you dry them thoroughly and keep them in prolonged, continuous skin-to-skin contact with their mother. This ensures that their body temperature stabilizes and prevents hypothermia.

7.3.3. Kangaroo Mother Care

- For low birth weight newborns weighing < 2000g who are clinically stable, provide Kangaroo Mother Care immediately.

[10] *Born Too Soon: The Global Action Report on Preterm Birth*, 2012. World Health Organization.

7.3.4. Prevention of bleeding

- Administer Vitamin K 0.5mg for babies <1500 grams, intramuscularly in the front, outside of the mid-thigh, within 90 minutes of birth or later during the day, to prevent bleeding

7.3.5. Feeding of preterm and low-birth-weight (LBW) newborns

- Ensure that LBW newborns, including those with Very Low Birth Weight (VLBW), are exclusively breastfed.
- Ensure that LBW infants, including those with VLBW, who cannot be fed with mother's breast milk, are fed standard infant formula.
- Give preterm infant formula to VLBW newborns that cannot be fed with mother's breast milk.
- Ensure that LBW newborns are exclusively breastfed until they are 6 months old.
- Feed LBW newborns who are not able to suck, by cup only, or by cup and spoon.
- Give the following supplements **(**if these supplements are available) to VLBW newborns that are fed breast milk:
    - Vitamin D (400 iu -1000 iu per day) until 6 months old;
    - Calcium (120-140mg/kg/day) for the first months of life;
    - Phosphorous (60-90mg/kg/day) for the first months of life; and
    - Iron (2-4 mg/kg/day) from 2 weeks to 6 months old.
- Give bolus intermittent feeds to VLBW newborns that require nasogastric tube feeding.
- Ensure that LBW infants who are fully or mostly fed by an alternative oral feeding method, are also fed breast milk every 2-3 hours, based on their daily requirements and body weight.

7.4. Management of neonatal sepsis

7.4.1. Use of antibiotics for suspected neonatal sepsis

- Provide antibiotic treatment for any newborn with risk factors for infection; i.e. their mother had any of the following:
    - ruptured membranes > 18 hours before delivery;
    - fever > 38 ºC before delivery or during labour ; and/or
    - foul smelling or purulent amniotic fluid.
- Treat with the prophylactic antibiotics (intramuscular or intravenous crystalline penicillin/ampicillin and gentamicin), for at least two days. After two days, reassess the newborn and continue with treatment only if there are signs of sepsis or a positive blood culture.[11]

[11] *Although this is a weak recommendation with very low quality evidence in the WHO guidelines, this intervention is common practice in the Zambia setting.*

- Treat newborns with signs of sepsis (refer to general danger signs) with ampicillin (or crystalline penicillin) and gentamicin as the first line antibiotic treatment for at least 10 days.
- Where possible, obtain blood cultures before starting antibiotics. If a newborn does not improve in 2-3 days, change the antibiotic treatment, or refer the newborn for further management.
- Give cloxacillin and gentamicin **instead of** penicillin and gentamicin to newborns with signs of sepsis who have a greater risk of staphylococcus infection. These newborns will have extensive skin pustules, abscess, or omphalitis (infection of the umbilical stump) in addition to signs of sepsis.
- Ensure continued feeding with breast milk.
- Encourage the family to seek health care promptly, if they identify any of the above danger signs while at home. Encourage continued feeding on the way to the referral facility.

Table 1: Doses of antibiotics

AGE or WEIGHT	CRYSTALLINE PENICILLIN	AMPICILLIN	GENTAMYCIN
		Dose: 50 mg/kg per day	**Dose:** 5 mg/ kg every 24 hours if term; 4 mg/ kg every 24 hours if preterm
Large doses which are given every 12 hours. **Small doses which are given every 6 hours.**	**Dose:** 50,000/kg to a vial of 600 mg (1,000,000 units). Add 2.1 ml of sterile water=2.5 ml at 400,000 units/ml.		
Up to 1 kg (per dose)	0.2 ml	25 mg	2mg
1 – 2 kg (per dose)	0.4 ml	50 mg	2mg - 4mg
2 – 4 kg (per dose)	0.8 ml	100 mg	5mg – 10mg

7.5. Care of the newborn of an HIV-infected mother[12]

Exclusive breastfeeding is recommended for babies of HIV positive women for the first six months of life.

7.6. Antiretroviral prophylaxis for newborns

- Start NVP prophylaxis from birth and continue throughout the breastfeeding duration for all HIV exposed breastfeeding newborns whose mothers were on ARV prophylaxis during the antenatal period.

- Start NVP prophylaxis at birth and continue throughout the breastfeeding duration for all HIV exposed breastfeeding newborns whose mothers did not receive any prophylaxis during the antenatal period.
- Start NVP prophylaxis at birth through 6 weeks of age for all HIV exposed breastfeeding newborns whose mothers are on ART.
- Start NVP prophylaxis at birth through 6 weeks of age (regardless of whether their mothers were on prophylaxis) for all HIV exposed non-breastfeeding newborns.
- Stop NVP one week after complete cessation of breastfeeding.
- Ensure that the mother is on option B+.

7.7. Management of other severe conditions

7.7.1. Seizures in the Newborn

- Treat clinically apparent seizures in the newborn if they last more than three minutes or are brief serial seizures.
- In all newborns with seizures, rule out hypoglycaemia and treat if it is present before giving anticonvulsant drug treatment.
- If facilities for measuring glucose are not available, administer glucose.
- If there are clinical signs suggestive of associated sepsis or meningitis, rule out central nervous system infection by doing a lumbar puncture, and treat if present with appropriate antibiotics.
- If facilities for lumbar puncture are not available, give antibiotic treatment for newborns with clinical signs of sepsis or meningitis.
- Use phenobarbital as the first-line of treatment for newborn seizures; ensure phenobarbital is readily available in all settings.
- In newborns who continue to have seizures despite the administration of the maximal tolerated dose of phenobarbital, use either diazepam or midazolam as the second-line of treatment to control seizures.
- In newborns with a normal neurological examination, consider stopping anti-convulsant drugs if newborn has been seizure-free for > 72 hours; re-institute the anticonvulsants if seizures reoccur.
- In newborns whose seizures are controlled with a single anticonvulsant drug, the drug can be discontinued immediately, without tapering off the doses for newborns that have clinically improved and have received the anticonvulsant drug for several days.
- In newborns requiring more than one antiepileptic drug for seizure control, the drugs may be stopped one by one, with phenobarbital being the last drug to be withdrawn.

[12] *Zambia PMTCT Guidelines 2010.*

- In the absence of clinical seizures, newborns with hypoxic-ischaemic encephalopathy (asphyxia) need **not** be given prophylactic treatment with phenobarbital.

Table 2: Dose of Phenobarbital

PHENOBARBITAL INJECTABLE	
Loading dose	20mg/kg by slow IV infusion over 20 minutes, **OR** IM
Maintenance dose	3-5mg/kg daily IV, IM **OR** orally 12-24 hours after loading dose

Table 3: Dose of Diazepam

WEIGHT	**DIAZEPAM GIVEN RECTALLY** **10 mg/ 2ml solution** **Dose 0.5 mg/kg**
Up to 1 kg	0.3 ml
1 – 2 kg	0.5 ml
2 - 4 kg	1 ml

7.8. Management of neonatal jaundice

7.8.1. Monitoring jaundice and serum bilirubin

Ensure that all newborns are routinely monitored for the development of jaundice and that serum bilirubin is measured in those at risk:

- All babies with jaundice appearing on day 1;
- Preterm babies (< 35 weeks) with jaundice appearing on day 2; and
- All babies with yellow palms and soles at any age.

7.8.2. Serum bilirubin cut-offs for phototherapy and exchange transfusion

For term and preterm newborns with hyperbilirubinaemia (high blood levels of bilirubin), provide phototherapy or perform an exchange transfusion guided by the following cut-off levels of serum hyperbilirubinaemia:

- 4mg/dl for phototherapy;
- 12mg/dl for exchange transfusion.

7.8.3. Stopping phototherapy

Stop phototherapy once serum bilirubin is 3 mg/dl (50 mmol/l) or the serum bilirubin is below the phototherapy threshold. Ensure continued breastfeeding.

7.8.4. Management of necrotizing enterocolitis

Necrotising enterocolitis is a condition primarily seen in premature newborns where parts of the bowel undergo tissue death (necrosis). Initial symptoms include feeding intolerance, swelling of the abdomen and bloody stools. The intestine can later perforate if the condition is not treated.

To treat newborns with necrotising enterocolitis, stop oral feedings and begin intravenous fluids (quarter strength Darrows solution or Ringers lactate at 50ml/kg every 8 hours).

7.8.5. Antibiotics for treatment of necrotizing enterocolitis

For newborns with suspected necrotizing enterocolitis, treat with IV or IM ampicillin (or crystalline penicillin) and gentamicin as the first line of antibiotic treatment for 10 days. Add injectable metronidazole to the treatment regimen (15mg/kg stat followed by 7.5mg/kg bd).

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