SAVING NEWBORN LIVES

Care of the Newborn

Reference Manual

Diana Beck, Frances Ganges, Susan Goldman, Phyllis Long

Save the Children®

SAVING NEWBORN LIVES is a 10-15 year global initiative of Save the Children to improve the health and survival of newborns in the developing world. Supported by the Bill & Melinda Gates Foundation, the initiative works with governments, local communities, and partner agencies at the community and national levels to make progress toward real and lasting change in newborn health.

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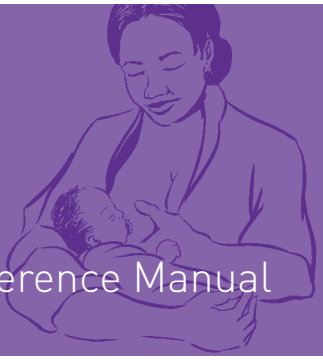
Saving Newborn Lives



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Contents

CHAPTER 3: SUCCESSFUL BREASTFEEDING

List of Charts and Figures

CHAPTER 5

CHAPTER 6

APPENDICES

FIGURES

CHAPTER 2

CHAPTER 3

CHAPTER 4

CHAPTER 5

CHAPTER 6

APPENDICES

About This Manual

The *Care of the Newborn Reference Manual* was written to guide the training of all health care workers in the best practices for the health and survival of newborn infants, particularly in developing countries. The information and skills provided in the pages that follow are essential for those caring for all newborns in the first 28 days of life, whether community-based health workers, nurses, midwives, or physicians.

Training curricula and courses in many developing countries often do not adequately address the specific knowledge and skills needed to care for newborns, and as a consequence, millions of babies die needlessly each year. This manual provides up-to-date, comprehensive, evidence-based information, and defines and illustrates the skills needed to keep newborns healthy, including routine and preventive care as well as early detection and management of life-threatening problems.

The *Care of the Newborn Reference Manual* also addresses the information that the mother and family must understand to care for their newborn 24 hours a day, for they are the ones who attend to their newborn's daily needs and problems that occur. Like the health worker, they need to recognize and respond appropriately to danger signs if they arise. In addition to caring for the newborn, health workers have an important role in communicating and demonstrating accurately with mothers and families to ensure that they too know these best practices. Building communication skills—how to listen to mothers and share information with them—is thus another important function of this manual.

Health worker training is only one component of successful newborn and maternal health care. Without the other components—responsible supervision, equipment, a reliable source of supplies, and a system for referring complications—even the best-trained health workers may fail to provide lifesaving care. And even with all these components in place, the demand for services must exist. Health workers must reach out to people in their communities and build relations of trust from the household to local and district-level facilities to create a "continuum of care."

The authors designed this manual to meet many different needs. It is a technical resource for trainers, tutors, and facilitators and a useful resource for health providers and those who develop or manage comprehensive maternal and child health programs. It can be used in its entirety or adapted to suit a particular audience, need, or country setting. Essential newborn care can be integrated into existing efforts, such as child health, reproductive health, and safe motherhood, or adapted to enhance the newborn component of training programs, to introduce special topics to short in-service programs, or to update a health care provider's pre-service curriculum.

Above all, this manual should not function as an exclusive resource. By addressing the very special needs of the newborn, *Care of the Newborn* complements other available guides, such as: WHO's Integrated Management of Pregnancy and Childbirth (IMPAC) guide *Managing Newborn Problems: A Guide for Doctors, Nurses and Midwives*, and *MNH/JHPIEGO's Basic Maternal and Newborn Care: A Guide for Skilled Providers*.

The authors and staff of the Saving Newborn Lives initiative of Save the Children US hope that the *Care of the Newborn Reference Manual* will enable health providers, program managers, and decision-makers to give every newborn the best possible chance of survival and support the many mothers and families who depend on their guidance to raise healthy babies.

Acknowledgments

The authors have many people to thank for their help in developing the *Care of the Newborn Reference Manual*. Our thanks go first and foremost to the Bill & Melinda Gates Foundation. Their support for Save the Children's Saving Newborn Lives initiative has been critical to the growth of the global commitment to newborn health care.

We are grateful to Betty Sweet, whose original manuscript helped inform the development of this manual. Getting past that first hurdle set many of our colleagues on the long road of reviewing, testing, evaluating, and modifying every detail of what, for us, was a collaborative and collegial project. Deborah Armbruster, Gabrielle Beasley, Mary Kroeger, Judith Moore, and Katherine Perry were primary contributors, working tirelessly through countless drafts. They provided research, writing, and editing as the manual evolved, section by section. We thank these women for their thoughtfulness in making this a seamless and thorough manual.

The process of reviewing the material drew on people with years of experience as teachers, trainers, and community health providers, while others tested and gave us feedback from on-going community-based programs. For these invaluable contributions we have many to thank, including: Frank Anderson, University of Michigan; Claudette Bardin, Society of Obstetricians and Gynecologists of Canada; Sandra T. Buffington, American College of Nurse-Midwives; Patricia Gomez, MNH/JHPIEGO; Miriam Labbok, UNICEF; Gloria Metcalfe, JHPIEGO; Asmuyeni Muchtar, JHPIEGO/Indonesia; Altrena Mukuria, ORC/MACRO; Robert Parker, Johns Hopkins University; Petra ten Hoope Bender, Partnership for Safe Motherhood and Newborn Health; Miriam Sangare, training consultant, Mali; Gulnara Semenov, ORC/MACRO; Della R. Sherratt, WHO; Nancy Terreri, UNICEF; and David Woods, University of Cape Town, South Africa. In addition, many of Save the Children's staff lent their experience to this manual, including Stella Abwao, SC Malawi; Asma Akber and Nabeela Ali, SC Pakistan; Houleymata Diarra and Thiero Fatoumata, SC Mali; Saikhul Islam Helal and Uzma Syed, SC Bangladesh; Neena Khadka and Meena Sharma, SC Nepal; Gonzalo Mansilla and Bertha Pooley, SC Bolivia.

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As we share the credit with the many people who helped us, we also acknowledge that we alone are responsible for any errors in the presentation of information and skills in this manual.

Abbreviations

AFASS	Acceptable, feasible, affordable, sustainable, and safe
AIDS	Acquired immune deficiency syndrome
ANC	Antenatal care
AZT	Zidovudine
BCG	Bacillus Calmette-Guerin
DPT	Diphtheria-Pertussis-Tetanus
ENC	Essential newborn care
Fe/FA	Iron/folate
GI	Gastrointestinal
Hep B	Hepatitis B
HIV	Human immunodeficiency virus
HLD	High-level disinfection
IM	Intramuscular
IPT	Intermittent preventive treatment
IV	Intravenous
KMC	Kangaroo mother care
LAM	Lactational Amenorrhea Method
LBW	Low birth weight
MTCT	Mother-to-child transmission
OPV	Oral polio vaccine
PMTCT	Prevention of mother-to-child transmission
RPR	Rapid plasma reagin
SC	Subcutaneous
SGA	Small for gestational age
SNL	Saving Newborn Lives initiative of Save the Children US
SP	Sulfadoxine-pyrimethamine
STI	Sexually transmitted infection
TB	Tuberculosis
TT	Tetanus toxoid
UNAIDS	Joint United Nations Program on AIDS
UNICEF	United Nations Children's Fund
VCT	Voluntary counseling and testing
VDRL	Venereal Disease Research Laboratory
WHO	World Health Organization

The Forgotten Newborn

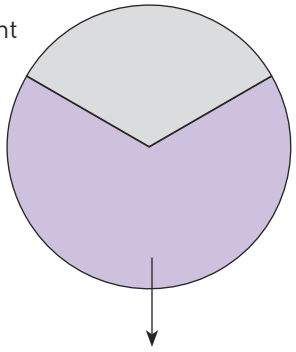
In recent years child survival activities (such as childhood immunization and diarrhea control programs) have led to a dramatic decrease in mortality among children under five. Despite this success, however, the newborn mortality rate in developing nations is still alarming—over 40 percent of all deaths of children under five occur in the first month—even though there are proven, cost-effective ways to prevent newborn mortality.[1]

It is estimated that 34 out of every 1,000 babies born in developing countries die before they reach the age of one month, most of them at home. For the most part, the child survival revolution has bypassed the newborn.

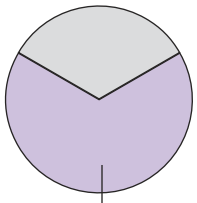
One reason for the continued high newborn death rates is the gap between safe motherhood and child survival efforts. Safe motherhood programs typically focus on the survival of the mother, and child survival strategies usually address the problems of children over one month. There has been little international effort to develop a maternal-child health approach that includes care during the first month of life. Ideally, maternal-child programs would target the care of mothers, newborns, and children up to the age of five.

CHART 1 **"THE TWO-THIRDS RULE"**

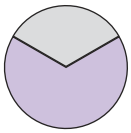
About two-thirds of infant deaths occur in the first month of life.



Of those, about two-thirds die in the first week of life.



Of those, two-thirds die in the first 24 hours of life.



As a newborn care provider, you may be involved in helping others learn why it is important to focus on newborn health. In addition to understanding the global problem, you may also want to get information on the newborn situation in your own country or region. When providers, tutors, programmers, and policymakers understand the situation and have the correct information, they can advocate for improved newborn care and survival.

Newborn Mortality

Health statistics show that worldwide:

- About 4 million babies die each year.
- Another 4 million babies each year are stillborn; most die in late pregnancy or labor.
- Most newborn deaths occur in developing countries.

The Two-Thirds Rule

Health statistics also show that:

- About two-thirds of infant deaths* occur in the first month of life.**
- Of those who die in the first month, about two-thirds die in the first week of life.
- Of those who die in the first week, two-thirds die in the first 24 hours of life.

*Deaths in the first year of life
**In the newborn period

Main Causes of Newborn Deaths

Research from around the world has identified the main causes of newborn deaths. As shown in chart 1, about 85 percent of newborn deaths are from three main causes: infections, birth asphyxia, and complications of prematurity. Low birth weight (LBW) is an important contributing factor in many neonatal deaths.

In addition to the direct causes of death, many newborns die because of their mother's poor health or because of lack of access to essential care. Sometimes the family may live hours away from a referral facility or there may not be a skilled provider in their community.

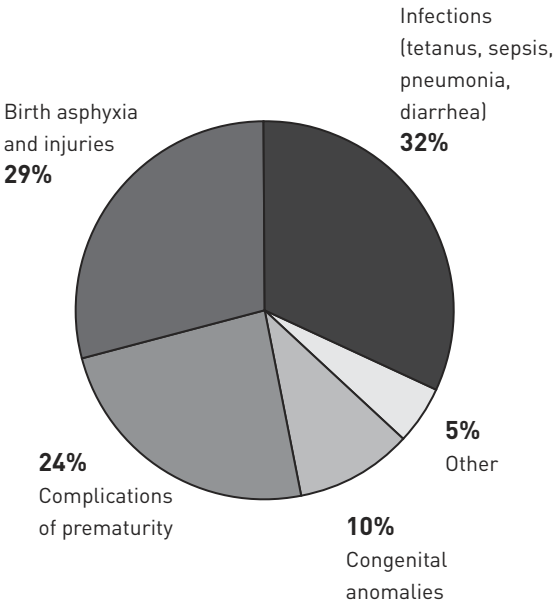
The newborn child is extremely vulnerable unless she receives appropriate basic care, also called essential newborn care. When normal babies do not receive this essential care, they quickly fall sick—and too often they die. For premature or low birth weight babies, the danger is even greater.

Newborn Survival

Most newborn deaths are entirely preventable, thanks to a number of simple, low-cost actions that can be taken by health care workers, mothers, and families. But many health care providers have not been trained in essential newborn care, and many mothers do not know how to protect their newborns.

This manual explains the fundamentals of essential newborn care for all babies and what to do in the event of a problem or complication. Armed with this knowledge, health care providers can play a crucial role in helping mothers, family members, and the community take better care of newborns and put them on the road to a healthy life.

CHART 2 **DIRECT CAUSES OF NEONATAL DEATHS**



WHO 2001 estimates (based on data collected around 1991). Source: Save the Children. (2001). *The State of the World's Newborns.: A Report from Saving Newborn Lives*. Washington, DC: Saving Newborn Lives/Save the Children Federation.

OVERVIEW OF THE *CARE OF THE NEWBORN REFERENCE MANUAL*

The *Care of the Newborn Reference Manual* provides the information and describes the skills that health workers, mothers, and families need to deliver the basic but critical care that must be given to all newborns, including:

- Drying and warming the baby just after birth
- Rapid assessment at birth
- Breastfeeding within the first hour of birth
- Umbilical cord care
- Eye care
- Exclusive breastfeeding
- Preventing infection
- Immunizing the newborn
- Recognizing and caring for common newborn problems
- Newborn resuscitation to help babies who have breathing problems at birth
- Newborn examination to determine if the baby is healthy or if he needs to be referred to a higher-level health facility
- Special care to meet the extra needs of low birth weight newborns

All babies need the same essential care, whether they are born at home or in a health facility. In addition to the information on essential care of the newborn, the manual identifies newborn danger signs, how to recognize and manage common problems, and how to refer the sick newborn for proper care, when necessary. *Care of the very sick newborn, other than emergency stabilization and referral, is **not** a part of this reference manual.*

The Reference Manual has six chapters:

1. Newborn Care Starts Before Birth
2. Essential Care for Every Newborn
3. Successful Breastfeeding
4. Newborn Resuscitation
5. Care of Low Birth Weight Babies
6. Common Newborn Problems

Each chapter begins with an outline of the information that is covered and what the reader will learn to do. In each chapter, decision-making charts present the steps for identifying and managing the most common newborn problems. Each chapter ends with a table listing the tasks that can be done by all newborn health providers, including community health workers.

This manual is primarily about newborn care; accordingly, it gives only a brief overview (chapter 1) of certain aspects of antenatal and maternal care. It is well-known, of course, that the health and care of the mother during pregnancy, labor, birth, and the postpartum period are critical for the well-being of the newborn. We expect and encourage the users of this manual to obtain information and skills from the safe motherhood training programs that are available in most countries.

This manual presents recommendations for newborn care that are based on the latest scientific evidence or, where there is no evidence, on expert opinion.

Note to readers

The manual will use the terms newborn, neonate, infant, and baby to describe the newborn, and the pronouns "she" or "he" (in alternating chapters) rather than the impersonal and inaccurate "it."

AN INTRODUCTION TO THE DECISION-MAKING APPROACH

This manual makes extensive use of a step-by-step process of identifying and caring for newborn needs that we have called the decision-making approach. This approach will help health care providers use their knowledge and skills to make decisions about the care of a newborn. Some health workers know this concept through use of SOAP (Subjective, Objective, Assessment, and Plan) notes, clinical decision-making, or a variation. This step-by-step approach involves an organized thinking process which leads to purposeful, safe, and effective care.[2,3]

Solving problems in a step-by-step process has three advantages:

1. It helps the health worker collect information in an organized way.
2. It helps the health worker use information so a problem or need can be correctly identified.
3. It helps the caregiver provide only the care or treatments that are needed.

Because so much of the information in the following chapters is organized around and presented in the form of the decision-making steps, we are providing here a detailed explanation of this approach, along with an illustration.

The steps in the decision-making approach are as follows:

Step 1: Take a history.
Step 2: Do a physical examination.
Step 3: Identify any needs or problems.
Step 4: Make a plan of care for the needs and problems.
Step 5: Follow-up to evaluate the plan of care.

Baby Cara: An Illustration of the Decision-Making Approach

The following example—baby Cara—illustrates the five steps of the decision-making approach.

BABY CARA STEP 1: TAKE A HISTORY

Mother Dora brings her baby Cara to see the health worker.

The mother says: "I am worried because Cara has a skin rash."

The health worker asks to see any home-based maternal or newborn records the mother may have brought and checks whether there are any records available in the facility. The mother has not brought any records. The clinic records show that the mother had four antenatal check-ups and a normal delivery, with no particular problems. The health worker takes a history by asking these questions about the baby:

- When and where was Cara born?
- How much did she weigh at birth?
- Tell me about Cara's birth and what treatments were given.
- When did the skin rash start?
- Has the rash gotten worse?
- Have you tried anything to treat the baby's rash?
- Is Cara feeding well?
- Does Cara sleep between feeds and wake up to feed?
- Is Cara fussy?
- Tell me about how often Cara passes urine and stools.
- Is there anything else about the baby that worries you?

The health worker writes these findings in the chart:

"One-week-old infant, born at the district hospital, with a skin rash which the mother noticed three days ago; she has not used any treatment. The baby is feeding and sleeping well, passing urine and stool normally, and is not fussy."

Step 1: Take a History

In this step the caregiver asks the woman about her baby's health or problem (or her problem) and listens to her answers. The caregiver also asks her about her pregnancy and labor and the baby's birth. This step is called taking a history because the purpose is to find out the whole story about the baby's and the mother's health.

Tips for taking a good history

When taking a history, the health worker should:

- Make the mother and family feel welcome.
- Help them feel comfortable by explaining why the questions are necessary.
- Talk to them in a private area.
- Ask questions in a respectful, kind, and interested way.
- Listen carefully to all the answers.
- Check the mother's clinic-based records, if available, and ask to see her home-based records, if she has brought any.
- Ask all the questions about the signs and symptoms to decide what the needs or problem are.

If a mother or baby has an obvious emergency, the health worker may ask very few questions before starting to give care because rapid action is needed. Once the emergency is under control, the complete history of the problem should be explored. If the mother is very sick, another family member may have to give the history.

The answers the client gives about the problem are called history findings. These findings help the health worker decide what to check in Step 2: Examination and should be recorded in writing, either now or immediately after the mother's visit.

Step 2: Do a Physical Examination

The information the mother gave in Step 1 helps determine what to examine and suggests what the needs and problems may be. Examination of the baby means to look, feel, listen, and smell. Laboratory tests may also be part of the examination, if appropriate and available.

Complete examination

Soon after birth, the health worker does a complete physical examination of the newborn (see chapter 2 for details). A complete examination of the body may reveal problems that the mother has not recognized.

Focused examination

After the first complete physical examination, a follow-up examination of the healthy baby focuses on special areas, determined by the baby's age (see chart 2.7 in chapter 2) and/or specific concerns.

For example, when a mother brings her baby with a problem, a short physical exam may be done instead of the complete exam. In that case, the physical examination focuses on the particular problem, called the "presenting problem."

After examining the baby, the health worker encourages the mother to breastfeed and observes the breastfeeding while discussing the examination findings with her.

The things a health worker observes (sees, feels, and hears) when examining the mother or baby are called physical examination findings. Just as with the history findings in Step 1, you should also record the examination findings.

Laboratory tests or other investigations

Do laboratory tests and other examinations that are needed (if available).

BABY CARA STEP 2: DO A PHYSICAL EXAMINATION

The health worker thinks about the history findings for baby Cara. She washes her hands carefully and examines the baby as follows.

She:

- takes the baby's temperature or feels the chest for warmth.
- weighs the baby, if possible.
- looks at the baby's color to see if she is pink, blue, pale, or yellow.
- looks at the skin for pustules, opens the diaper to look at the buttocks, and separates the skin folds (neck, armpits, inguinal area) to look for pustules in there.
- looks at the skin and clothing for cleanliness.
- looks at the cord for redness or discharge.
- looks at the baby's eyes for redness, swelling, or discharge.
- notes the baby's activity and alertness during the examination.

After the exam, the health worker again washes her hands and observes the baby, who is now breastfeeding. She then records these findings in the baby's record:

"Baby is alert and active, feeding well. Axillary temp = 36.2 °C, weight = 2.950 kg (equal to birth weight). Eyes are clear, cord is off, umbilicus is clean and dry, color is pink. There are five small pustules inside the inguinal skin folds and two very small ones on the left buttock. The skin and clothing are not clean."

BABY CARA STEP 3: IDENTIFY ANY NEEDS OR PROBLEMS

The health worker reviews the history and the physical exam findings for baby Cara. The important findings are:

- The mother's worry about the skin rash
- The small number of pustules on the skin, with no other abnormal physical exam findings
- The skin and clothing are not clean (indicating the need for protection from infection may not be met)

The health worker records baby Cara's needs and problems in her chart:

"Localized skin infection noticed; also poor hygiene. Mother needs to know how to tell a mild skin infection from a serious infection. Mother needs to know newborn danger signs and what to do if baby has one."

Step 3: Identify Any Needs or Problems

The health worker identifies needs and problems by thinking about the history findings and the physical exam findings. The findings should be compared with the health worker's knowledge about healthy babies and the information in this manual.

A problem may be an illness or a sign of illness. A history finding or a physical exam finding that is not normal may be a sign of illness.

Every newborn has needs for essential care. These needs include warmth, protection from infection, and nutrition. The health worker will sometimes see that parents need instruction about how to meet their baby's normal needs. Unmet needs result in problems; if the newborn's need for warmth is not met, for example, hypothermia can result.

What to do with the findings

If the findings are all normal, the health worker should tell the mother that all is well.

If the findings show a problem, the caregiver can compare the abnormal findings with information in this manual. Be sure to explain the needs and problems to the mother before proceeding with any care. Any findings related to needs or problems should be recorded.

Sometimes it is difficult to decide what the problem is. Many newborn illnesses have the same symptoms; feeding difficulties, for example, can be caused by many different problems: respiratory infections, sepsis, breast engorgement, and prematurity. All these problems can be written in Step 3. Then by getting more information (history, physical examination, and/or laboratory tests) the health worker can decide what the real problem is.

If the health worker's knowledge or equipment is not adequate to identify the problem, she should refer the woman and baby to someone who can help them.

It is important that all the mother's or baby's problems and needs are cared for. A mother may come with a complaint about breast pain, for example, but she also needs information about family planning, good nutrition, and where to go for immunizations for her other small children, all in one visit.

Many newborn illnesses have the same symptoms. Feeding difficulties, for example, can be caused by respiratory infections, sepsis, breast engorgement, and prematurity.

BABY CARA STEP 4: MAKE A PLAN OF CARE FOR THE NEEDS AND PROBLEMS

The health worker makes a plan to meet baby Cara's needs and records it in the chart. In this case only education, counseling, and skin treatment are needed; baby Cara does not need to take medication or be referred.

Plan of care:

- Reassure the mother that the skin infection is not serious and can be treated at home.
- Teach the mother how to wash the rash and treat it with gentian violet solution (see chart 6.7 in chapter 6).
  - Show her how to do it.
  - Have the mother do it to show that she has learned to do it properly.
- Teach the mother to bring baby Cara back right away if she develops many more pustules (more than 10).
- Teach the mother why and how to bathe her baby regularly and to keep her clothing clean.
- Teach the mother the newborn danger signs and what to do if Cara has one.
- Schedule a return visit in 2-3 days to follow up on skin rash and baby's hygiene.

Step 4: Make a Plan of Care for the Needs and Problems

The health worker should make a plan of care to treat each problem and to meet each need. Each plan of care may include some or all of the actions below; as in the other three steps, the plan of care should be recorded in writing.

Education

- Help families learn to care for themselves.
- Teach mothers danger signs for themselves and their babies.
- Teach mothers how to respond appropriately to danger signs.

Counseling

- Find out what the mother thinks about her or her baby's problem and the actions you recommend.
- Help her understand the problem or needs.
- Find out if the mother can do what you advise.
- Help her find ways to do what you are advising or find alternatives that she and her family can do.
- Give her an opportunity to discuss her questions and concerns.

Medical treatment

- Choose the correct medicine or treatment.

Referral

- If necessary, send the mother and baby to a higher-level facility to get help. Skilled or specialized care by midwives, doctors, and hospitals may help save the baby's or mother's life.
- Sometimes the mother may need other, nonmedical help. Education programs, social services, women's groups, or charity groups may help her meet her needs, if available.

Follow-up

Before the visit ends, schedule a follow-up visit with the mother to see if the plan of care is working. In planning for this visit:

- Thank the mother for coming.
- Explain why she and her baby need to be seen again, if needed.
- Make sure she knows the newborn danger signs.
- Make sure she knows what to do if she sees a danger sign. Teach her that she needs to seek health care immediately for the baby.
- Schedule the follow-up visit for the time recommended in the decision-making chart.

Step 5: Follow-up to Evaluate the Plan of Care

The decision-making steps should be repeated when the mother and the baby come back for a follow-up visit. This will show whether the problem or need is solved, is the same, or is worse. It will also show if there are new problems or needs.

The baby may now need a new plan of care, such as a different medicine or treatment, or the mother may have questions. The health worker may have to do more health education. The baby may need to be referred to a higher-level facility. And of course the follow-up assessment (new history and new physical findings) and the new plan of care must be recorded in the baby's records.

Documenting the Steps

As we have noted throughout, all findings and plans of care should be written up in a report that becomes part of the mother's and/or baby's record; this record will help you and others give quality care. You may compile this report as you execute each step, after the visit has ended, or complete different parts at different times. Along with the date and time of the visit, the report should include:

1. History: History findings
2. Exam: Physical examination findings
   Laboratory test results, if done
3. Problems: Problems and unmet needs
   (If it is not clear what the problem is, then symptoms should be listed here.)
4. Plan of Care: For each problem or unmet need, the plan should include:
   - Counseling and education given
   - Treatments done
   - Medicines given or ordered
   - Other laboratory tests or examinations ordered
   - Referrals made
5. Follow-up: The date for the next follow-up visit

BABY CARA STEP 5: FOLLOW-UP TO EVALUATE THE PLAN OF CARE

The health worker plans for baby Cara's follow-up visit with the mother and records the date for the scheduled follow-up visit in the baby's record. Because baby Cara has a localized infection, the follow-up visit should be in 2-3 days. The health worker praises the mother for bringing in the baby when she was concerned and advises her to:

- Bring the baby back to be checked again in 2-3 days
- Bring the baby for care immediately if she has any danger signs
- Remind the mother to come with her baby for routine integrated postnatal visits, immunization, and growth monitoring, at the scheduled time
- Seek family planning services, as appropriate

CHART 3	DECISION-MAKING CHART
History	Questions that should be asked for this particular problem
Examination	■ The parts of the body that should be examined ■ Laboratory investigations or screening tests
Problems/needs	■ Normal and abnormal findings for each body part ■ Common newborn needs

Plan of care	■ The plan for each problem, including education, counseling, medical treatment, lab tests, referral, and follow-up
	■ The plan for each need:
	  ■ Advice to give the mother on care for the baby
	  ■ Danger signs to watch for and what to do
	  ■ Follow-up appointment

Follow-up	Suggestions for the follow-up appointment

The Decision-Making Chart

For most of the newborn problems discussed in this manual, the recommended newborn care will be presented in the form of the decision-making steps just described. There will be a chart for each problem or condition, and the chart will contain the five steps of the decision-making approach and the actions that should be taken with each step. Chart 3 shows what a decision-making chart will look like.

Notes

1 The statistics on pages 1-3 are from Saving Newborn Lives. (2001). *The State of the World's Newborns*. Washington, DC: Saving Newborn Lives/Save the Children Federation.

2 Buffington ST and Marshall MA. (1998). Using the problem-solving method to give maternity care. In *Life Saving Skills Manual for Midwives* 3d ed. Module 1, pp.1.22-1.31. Washington DC: ACNM.

3 Ghana Ministry of Health & PRIME II. (2001). Problem-solving for quality care. In *Ghana MOH and PRIME II Safe Motherhood Clinical Skills: A Self-Paced Learning Intervention in Six Units*. Module 3. Accra: Ghana MOH and PRIME II.

1

Newborn Care Starts Before Birth

1

Newborn Care Starts Before Birth

Health workers need knowledge and skills to give essential newborn care and to recognize and manage common newborn problems. But it is also essential for them to understand that good newborn health depends on good maternal health and nutrition, especially during pregnancy, labor, and postpartum. Comprehensive, high-quality care for mothers during pregnancy and childbirth is just as important as care for the baby after birth to ensure that every newborn starts out life with the best possible chance of reaching adulthood.

In this chapter you will find information about:

- Key components of pregnancy care, including counseling, birth plans, recognition of danger signs, and complication readiness
- Antenatal care activities to prevent newborn problems
- Care of the mother during labor and delivery
  - Use of the partograph
  - Fetal distress
  - Prevention of mother-to-child transmission of HIV

In this chapter you will learn to do the following:

- Start newborn care before birth:
  - Teach women and families why maternal health and antenatal care are important for newborn health
  - Teach women and families about danger signs in pregnancy, labor, delivery, and postpartum
  - Help women and families make birth plans
  - Promote access to and use of skilled providers for labor and delivery care
  - Monitor the fetal condition during labor by listening to the fetal heart rate, observing the color of the amniotic fluid, and taking action when there is a problem
  - Promote child spacing

NEWBORN CARE STARTS BEFORE BIRTH

Newborn health care starts long before birth. It starts with caring for pregnant mothers. During pregnancy a mother needs to be adequately nourished, free from infections, and monitored for complications. Pregnant mothers should also have access to preventive measures, treatment when needed, and health counseling/advice, including education about danger signs. During labor and delivery, emergency obstetric care is particularly critical to treat life-threatening complications. Good care during pregnancy, labor, and birth is the first step in good newborn care.

Antenatal Care

A healthy mother is most likely to have a healthy full-term baby who will survive. A mother who is not healthy during pregnancy may not be able to meet all her baby's needs. The goals of antenatal care are to keep the mother healthy, help prevent problems like low birth weight and newborn infections, and have a normal delivery. Current recommendations include a minimum of four visits starting no later than the fourth month of pregnancy.

Certain antenatal activities can help prevent specific newborn problems (see examples in chart 1.1).

Counseling

Individualized counseling and health advice are two important components of care in the antenatal period. Pregnant mothers need health information on several topics, including nutrition, prevention of sexually transmitted infections (STIs), breastfeeding, planning for birth, including possible complications, and family planning for after the birth.

CHART 1.1 **ANTENATAL CARE TO PREVENT NEWBORN PROBLEMS**

ANTENATAL CARE ACTION	NEWBORN PROBLEM IT MAY PREVENT
■ Maternal immunization with tetanus toxoid (see Appendix A)	■ Neonatal tetanus
■ Syphilis screening (with RPR or VDRL) and treatment if positive (see Appendix B)	■ Abortion, stillbirth, congenital syphilis
■ Screening and treatment for other sexually transmitted infections	■ Newborn gonococcal or chlamydia eye infections, sepsis
■ Malaria prevention: ■ Intermittent preventive treatment (IPT) for malaria (see Appendix B) ■ Use of insecticide-treated bed nets	■ Abortion, prematurity, low birth weight
■ Screening for HIV and antiretroviral therapy in pregnancy, labor, and postpartum if positive (see section on mother-to-child transmission of HIV)	■ HIV transmission to the fetus or newborn
■ Screening and treatment for anemia and hookworm	■ Low birth weight
■ Micronutrient supplementation (vitamin A, iron, folate, iodine)	■ Low birth weight, prematurity, spinal cord defects, cretinism

Advise the woman and her family to seek care immediately, day or night, if she has any danger sign.

Birth Plan

A birth plan is an action plan that is developed by the woman and her family members. It is sometimes called a "birth preparedness plan" or a "birth and complications plan." It is not usually a written document. Rather, it is an ongoing discussion with the woman and her family to ensure that she and her baby will receive appropriate care promptly at the time of birth and if complications arise before or after the birth. Having a birth plan can minimize chaos at the time of birth and increase the likelihood that the woman and her baby will receive appropriate, timely care. The idea of a birth plan should be introduced at the woman's first antenatal visit and reviewed/updated with her during return visits.

Danger Signs and Complication Readiness

Though most pregnancies are normal, it is essential that the woman and the family recognize when something is wrong. They also need to be prepared to take quick and appropriate action if there is a complication or an emergency. During her antenatal visits, the health worker can work with the woman and her family to plan for possible complications. When a mother develops a complication during pregnancy, both her life and the baby's life may be in danger. Danger signs indicate serious or life-threatening problems and the urgent need for medical care, and they should be introduced at the first visit and reinforced throughout the pregnancy. Advise the woman and her family to seek care immediately, day or night, if she has any danger sign. Remember: there are different danger signs for pregnancy, labor, delivery, and the postnatal period.

The danger signs to look for in pregnancy are:

- Bleeding from the vagina
- Severe headaches/blurred vision
- Convulsions/loss of consciousness
- Severe abdominal pain
- Fever
- Ruptured membranes without onset of labor within 18 hours
- Foul-smelling or yellowish/green/brown vaginal discharge
- Loss of fetal movement

CHART 1.2 **BIRTH PLAN**

MAKE PLANS FOR	WHAT TO INCLUDE
Appropriate place of birth and referral	Depending on the woman's condition and situation, the health worker may need to recommend birth in a specific level of health care facility, or simply support the woman in giving birth where she chooses. The mother also needs help in identifying an appropriate facility to go to if danger signs arise.
Skilled attendant	The health worker should discuss the need for a skilled birth attendant, if possible; someone trained to ensure that labor and delivery progress normally and to manage complications if they arise. The woman also needs to know how to contact the skilled attendant or facility when needed.
Transportation	The health worker should help the family plan how to have transportation available even at odd hours and in bad weather. They may need to make advance arrangements with a vehicle owner.
Needed items	**For the mother**: sanitary pads/cloths, soap, clean clothes. **For the newborn**: new razor blade, cord ties, blankets, diapers, clothes. Explain why it is important to keep items clean and together for easy retrieval.
Family and community support	The family needs to discuss and arrange in advance for: ■ A companion of the mother's choice to support her during birth ■ Someone to care for the family and household in the mother's absence ■ How to make decisions if the main family decision-maker is absent in an emergency ■ An appropriate blood donor who will be available in case of an emergency ■ How to access community resources and support
Costs	The health worker should discuss the need to have money available (and how much) for such things as: ■ Transportation, if needed ■ Paying for the birth attendant and/or facility services

Labor and Delivery Care

Ideally every birth should be attended by a skilled provider, trained and equipped to handle complications. Unfortunately, this is far from possible at the present time. Many countries suffer from severe shortages of trained maternal-newborn care professionals. The few midwives, nurses, obstetricians, and pediatricians that are available are usually assigned to referral centers to make the best use of their skills. These skilled providers usually care for women and babies with complications or problems. The majority of normal births and newborn care take place at home without trained providers and in primary care centers. Regardless of the place of birth, all personnel who attend births and care for newborns should use clean delivery practices and have the knowledge and skills to provide essential care to every baby, including recognition and referral of problem cases.

Partograph

The partograph is a simple chart used to monitor labor and the condition of mother and baby during labor and delivery. It includes a graph for recording the progress of labor over time. "Alert" and "Action" lines printed on the graph enable the birth attendant to easily identify when labor is not progressing normally. If a woman's progress crosses one of these lines, it means that something is wrong and that she needs prompt attention and, in some cases, lifesaving action. Birth attendants at all levels should be taught to use the partograph to make decisions about the management of labor and birth, especially when transport to a referral center may be long or costly.

Mother-to-Child Transmission of HIV

Mother-to-child transmission (MTCT) is the biggest source of HIV infection in young children. In resource-limited countries, it is estimated that approximately 600,000 HIV-infected infants are born each year (at least 1,600 every day). Fortunately, research has begun to show us ways to prevent this infection.

Mother-to-child transmission can happen in three ways:

- During pregnancy
- During childbirth
- Through breastfeeding

Without preventive actions, about 35 out of 100 infants born to HIV-positive mothers will contract the virus through MTCT. About 15 of these 35 are infected through breastfeeding. For information on how to reduce the risk of MTCT through breastfeeding, see chapter 3.

Certain care practices can diminish the risk of MTCT during pregnancy, labor, delivery, and the immediate newborn period. UNAIDS, WHO, and UNICEF have been the leaders in developing guidelines for MTCT intervention programs. Their recommendations emphasize voluntary counseling and testing (VCT) during antenatal care, safe delivery practices, counseling on breastfeeding options for HIV-positive women, and where available, short-course antiretroviral drug therapy for HIV-positive mothers and/or their newborns.

Voluntary counseling and testing is an internationally accepted course of action for a person who wants to find out his or her HIV status. Voluntary means that the mother, not the health provider, decides whether or not to have the test. Support the mother in whatever decision she makes. If tested, the mother will have the chance to discuss the test with a trained counselor before and after the results. Mothers who test positive will also need additional counseling on breastfeeding options and drug therapy.

Safe delivery practices which protect the baby involve avoiding invasive procedures whenever possible and include:

- No artificial rupture of membranes to shorten labor
- No routine episiotomies
- No use of vacuum extraction and forceps for delivery, unless absolutely necessary
- No routine suctioning of the newborn

Safe delivery practices designed to protect health workers, mothers, family members, and also babies include:

- Use of standard precautions (handwashing and wearing of gloves, eye protection, and protective aprons) at every delivery
- Preventing blood spraying from the umbilical cord during cutting
- Safe handling and disposal of the placenta
- Stringent application of infection prevention guidelines in the birth setting: proper decontamination, cleaning, and high-level disinfection or sterilization of equipment; safe disposal of wastes

A woman can be infected for several months before her HIV test turns positive. It is impossible to know for certain that someone does not carry the virus. Therefore, use safe delivery practices at *every* birth.

In addition, women who are known to be HIV positive should receive antiretroviral (ARV) therapy (if available and indicated) during pregnancy, labor, and postpartum. Their newborns should also receive ARV drugs during the first days of life. Follow your country protocols. Because this is such a new area of concern, specific antiretroviral treatment guidelines change rapidly as new research unfolds. For the most current recommendations, see a listing of websites in the general references at the end of this chapter.

Voluntary counseling and testing is an internationally accepted course of action for a person who wants to find out his or her HIV status.

Danger Signs During Labor and Delivery

Certain complications of the labor and birth process can threaten the life of the mother or the unborn baby. All pregnant woman and families should be taught to recognize the following danger signs and to seek health care immediately if any of these signs appear.

The danger signs in labor and delivery are:

- Prolonged labor over 12 hours
- Labor before the completion of the eighth month of pregnancy (37 weeks)
- Baby in an abnormal position (breech, transverse)
- Vaginal bleeding
- Severe headache/visual disturbances/ convulsions (fits)
- Fever and/or foul-smelling vaginal discharge

CHART 1.3 **SIGNS OF FETAL DISTRESS**

SIGN OF FETAL DISTRESS	ACTION TO TAKE
Fetal heart rate below 120 or above 160 when the woman is not in labor	*Identify and treat possible maternal causes as quickly as possible.* If the heart rate does not return to normal, facilitate immediate referral.
Fetal heart rate below 100 or above 180	*Immediately increase oxygen to the baby:* ■ Help the woman change her position (she should not lie on her back). ■ Give her oxygen if available (4-6 L per minute). ■ Give the woman fluids by mouth and/or IV. ■ Discontinue oxytocin drip, if applicable. *Quickly identify and treat the underlying cause of fetal distress, if possible.* *Check fetal heart rate again; if still not normal:* ■ Refer immediately to a higher-level of care. ■ If referral is not feasible, deliver the baby as quickly as possible and, at the same time, prepare to resuscitate.
Thick meconium-stained fluid	*If fetal heart rate is abnormal, proceed as above.* If heart rate is normal: ■ Monitor closely. ■ Prepare to suction the baby as soon as the head is delivered. ■ Prepare for possible resuscitation (see chapter 4).

Fetal Distress During Labor

Birth attendants should monitor the condition of the baby during labor by counting the fetal heart rate (see Appendix D) at frequent regular intervals (every 15-30 minutes) during labor and delivery, and by observing the color of the amniotic fluid.

A normal fetal heart rate is about 120-160 beats per minute, but may vary from 100-180, especially during contractions. A normal fetal heart rate may slow during a contraction but returns to normal when the contraction is over. Listen to the fetal heart rate through at least three contractions (or for one full minute if the woman is not in labor) to determine if the rate is normal.

A fetal heart rate below 100 or above 180 is a sign that the baby is in distress. Fetal distress is an emergency and needs to be treated quickly or the baby will die or suffer brain damage.

Signs of fetal distress include:

- Fetal heart rate less than 120 or above 160 before labor begins
- Fetal heart rate below 100
- Fetal heart rate above 180
- Thick meconium-stained amniotic fluid

Maternal Danger Signs in the Postpartum Period

After the birth, the baby continues to depend on her mother for care, nourishment, and protection from infection in order to survive. Certain postpartum complications threaten the life of the mother. In fact, most maternal mortality occurs during the postpartum period. If the mother should die, the baby's risk of dying increases significantly, to about 10 times the risk for a baby whose mother did not die. To help prevent this teach mothers and families to recognize postpartum danger signs and, as always, to seek care immediately if a danger sign develops.

Maternal danger signs to look for in the postpartum period

- Heavy vaginal bleeding
- Abdominal pain, fever, and/or foul-smelling vaginal discharge
- Severe headache, visual disturbances, convulsions (fits)
- Hot, red, painful area or lump in breast and fever

Child Spacing

Research has shown that when women space their pregnancies at least 3-5 years apart, the survival of their newborns and children increases dramatically. Mothers who space their pregnancies improve their own health and nutritional status as well as the health of their children. Good maternal nutrition increases the chances that subsequent babies will be healthy. Counseling about nutrition, family planning methods, and birth spacing is therefore an important part of maternal care after delivery.

TASKS FOR ALL HEALTH WORKERS: NEWBORN CARE STARTS BEFORE BIRTH

Start newborn care before birth:

1 Prevent newborn problems by providing antenatal care:
   - Maternal tetanus immunization
   - Malaria prevention (IPT, bed nets)
   - Screening and treatment for STIs
   - Screening for HIV and prevention of mother-to-child transmission of HIV with antiretroviral therapy
   - Screening and treatment for anemia, hookworm
   - Micronutrient supplementation in pregnancy (vitamin A, iron, folate, iodine)
2 Teach women and families about danger signs in pregnancy, labor and delivery, postpartum, and in the newborn.
3 Help women and families make birth plans.
4 Promote access to and use of skilled providers for delivery care.
5 Use partographs to monitor labor and to identify women and babies who need prompt intervention to save their lives.
6 Monitor fetal condition during labor by listening to the fetal heart rate and by observing the color of the amniotic fluid, and act when there is a problem.
7 Promote child spacing.

General References

Kinzie B and Gomez P. (2004). *Basic Maternal and Newborn Care: A Guide for Skilled Providers*. Baltimore, MD: MNH Program/JHPIEGO.

World Health Organization. (1996). Perinatal Mortality: a listing of available information. Geneva: WHO. (WHO/FRH/MSM/96.7)

World Health Organization. (2000). *Managing Complications in Pregnancy and Childbirth: A guide for midwives and doctors*. Geneva: WHO. (WHO/RHR/00.7)

World Health Organization. (2001). *Antenatal Care Randomized Trial: Manual for the Implementation of the New Model.* Geneva: WHO. (WHO/RHR/01.30)

World Health Organization. (2004). *Scaling up antiretroviral therapy in resource limited settings—2003 Revision.* Geneva: WHO.

World Health Organization. (2004). *Antiretroviral drugs and the prevention of mother-to-child transmission of HIV infection in resource-constrained settings*. Recommendations for use, 2004 Revision (DRAFT): 7 January 2004. Geneva:WHO

Internet References

For the most current recommendations on antiretroviral treatment and MTCT, regularly visit the following websites:

www.who.int/reproductive-health/rtis/mtct

www.unaids.org

www.unicef.org/aids

www.who.int/reproductive-health/rtis/nevirapine.htm
(for information on use of nevirapine)

www.aidsinfo.nih.gov/guidelines
(for information on use of zidovudine [AZT])

2

Essential Care For Every Newborn

2

Essential Care For Every Newborn

At birth the newborn must adapt quickly to life outside the uterus. The newborn's body must make many changes, which begin at birth and continue throughout the newborn period. The first and most important change is to start breathing. Other changes are: regulating his own body temperature, feeding, and developing the ability to fight infections (immune system).

The first week and month of the newborn's life are a time of risk. More than half of all newborn deaths happen in the first seven days, and although the risk of death decreases as time passes, every newborn needs careful attention during the first month of life.

When the newborn has recovered from birth and is warm and breathing normally, the mother and family start to take over the baby's care. If the place of birth was the home, make sure the mother is able to care for and feed the baby before you leave them. If birth took place in a health care facility, do the same teaching and counseling before the mother and baby go home.

Newborn care takes place in homes, health care facilities (health centers or hospitals), and in the community. As a health worker who attends births and cares for newborns, you will be able to save newborn lives, assess the baby's health, and provide care to meet the baby's needs. You will also help mothers and families learn to care for their newborns, recognize problems, and get appropriate care.

In this chapter you will find information about:

- Essential newborn care (what it includes, purpose, when and where to give care)
- Preparations for a birth (infection prevention, environment, resuscitation equipment, supplies including medicines)
- Immediate care of a newborn (dry, assess, warm, breastfeed, cord care, eye care)
- Assessments and care of a newborn during the first 28 days
- Normal and abnormal baby examination findings
- What parents need to know about essential newborn care:
  - Needs of babies from birth to 28 days
  - How to keep the baby warm
  - How to protect the baby from infection
  - How to bathe the newborn
  - How to care for the cord and umbilicus
  - What immunizations the newborn needs and when
  - How and why to practice exclusive breastfeeding
  - The breastfeeding mother's need for vitamin A
  - How to recognize newborn danger signs

In this chapter you will learn to do the following:

- Prepare the room for clean birth
- Gather the equipment, supplies, and medicines needed for immediate newborn care
- Give immediate care at birth:
  - Dry and stimulate the newborn
  - Assess the baby's breathing and color
  - Put the newborn in skin-to-skin contact with the mother and keep the baby warm
  - Help the mother start breastfeeding within the first hour
  - Tie and cut the cord
  - Give eye care
- Assess and care for a newborn during the first day
- Do the first newborn physical examination
- Assess and care for the newborn during the first 28 days (at 2-3 days, 7 days, and 28 days)
- Teach and counsel the mother and family about care of the newborn and danger signs
- Support and teach the mother and family about breastfeeding
- Teach and counsel the mother and family about care of a baby with abnormal examination findings

ESSENTIAL NEWBORN CARE OVERVIEW

Most babies are born healthy and at term. The care they receive during the first hours, days, and weeks of life can determine whether they remain healthy. Although some babies may require special attention (for example, those who are sick or premature), all babies need basic care to help ensure their survival and well-being. This basic care is called essential newborn care (ENC) and includes:

- Immediate care at birth
- Care during the first day
- Care up to 28 days

The main purpose of essential newborn care is to keep every baby healthy. This means:

- Helping the mother meet the baby's basic needs (warmth, normal breathing, feeding, infection prevention)
- Making sure the baby breastfeeds within the first hour
- Advising/encouraging the mother to breastfeed exclusively
- Detecting signs of problems so that early action can be taken
- Advising the mother and family about baby care and danger signs
- Making plans for continuing care (immunizations, growth monitoring)

The same level and quality of essential newborn care can be given almost anywhere, by families and by health workers.

PREPARE FOR A BABY'S BIRTH

If you are the health provider who cares for a woman in labor, you need to prepare for the birth. Whether you are in a home or in a health care facility, the preparations are almost the same.

It is important to prepare the environment, equipment, and supplies that are needed for the care of a newborn at birth. Then you will be ready to prevent problems such as infections and low temperature (hypothermia) and you will be ready to act quickly to treat problems such as asphyxia (trouble breathing or getting enough oxygen). Your preparation should include the following actions.

Prevent Infection

According to the World Health Organization, about 32 percent of newborn deaths are caused by infection. Where hygiene is poor, newborns may become infected with bacteria or other organisms which can cause serious infections in the skin, umbilical cord, lungs, gastrointestinal tract, brain, or blood. Therefore, preventing infection is essential to newborn care.[1,2]

Infection prevention practices help prevent transmission of infection to or from the baby, mother, or health worker. They reduce the risk of passing diseases such as hepatitis B and HIV/AIDS. Use the following infection prevention practices for every contact with a mother or baby.

- Wash your hands often. Handwashing is the easiest and most effective way to prevent passing germs.
- Consider every person as possibly infectious.
- Use these three infection prevention steps to prepare equipment, supplies, linens, and surfaces before the baby is born:
  - Decontamination
  - Cleaning
  - High-level disinfection or sterilization
- Wear gloves when touching anything wet: broken skin, mucous membranes, blood, or other body fluids.
- Protect yourself from splashes or spills of blood and amniotic fluid; wear eye protection, shoes, a facemask, and an apron.
- Dispose of wastes safely (placentas, blood, needles, and other sharp equipment such as blades or broken glass).

Infection prevention practices are explained in detail in Appendix C.

Prepare the Birth Room

Prepare the room for birth in the home or the health facility. Make sure the room is:

Clean: Use the three infection prevention steps (described in Appendix C) to prepare the room, equipment, and supplies.

Warm: The temperature of the room should be warm; heat the room, if it is cold, and close doors or windows to prevent drafts.

Light: The health worker must be able to see the newborn to check color and breathing. If there is not enough natural light, use candles, a lamp, or another light source.

Private: In the home let the mother decide who will be present for the birth. Provide as much privacy as possible by using curtains and/or closing doors and windows as needed. In a health facility use a curtain or screen to give the mother privacy. If possible, allow her to have the support of the person of her choice during the facility birth.

Keep Records

Have a pen and the following forms ready for recording information when you care for the mother and baby:

- Newborn record card
- Immunization cards
- Mother's records of antenatal care, labor, and delivery

Every birth should be recorded. This includes stillbirths and babies who die in the early newborn period, whether at home or in a facility.

Collect the Equipment, Supplies, and Medicines

Prepare the equipment and supplies for the birth room and immediate postnatal care listed in chart 2.1 on the next page.

CHART 2.1 EQUIPMENT AND SUPPLIES FOR THE BIRTH ROOM AND IMMEDIATE POSTNATAL CARE

Furniture
- ☐ Bed or mat for the mother
- ☐ Clean surface or place for the equipment
- ☐ Clock or watch with second hand
- ☐ Light source

Linens for mother
- ☐ Bed linen and warm blankets
- ☐ Macintosh or plastic sheet to put under the mother
- ☐ Extra cloths to use as perineal pads
- ☐ Clean clothes for after the birth

Linens for baby
- ☐ A cloth or towel for drying the newborn
- ☐ Warm cloths for covering the newborn
- ☐ Clean baby clothes

Infection prevention equipment and supplies
- ☐ Clean running water (from a tap or pitcher), soap, and hand towel
- ☐ Cleaning cloths
- ☐ 0.5% chlorine solution, for decontamination (see Appendix C)
- ☐ Covered container for waste disposal
- ☐ Puncture-resistant container for sharps disposal
- ☐ One or two buckets for housekeeping
- ☐ A small brush for cleaning instruments
- ☐ Gloves
- ☐ Stove and fuel
- ☐ Pot for boiling water

Birthing equipment and supplies
- ☐ Protective clothing: gloves (can be clean or sterile), apron, eye protection
- ☐ Equipment and supplies to do newborn resuscitation (see chapter 4)
- ☐ Delivery kit containing cord ties, two cord clamping instruments (if available), and new or clean (boiled) razor blade or sterile scissors for cutting the cord
- ☐ Fetal stethoscope
- ☐ Container for the placenta
- ☐ Scale to weigh the newborn if available
- ☐ Gauze pads
- ☐ Eye drops or ointment
- ☐ Oxytocin (if available)

CHART 2.2 **STEPS FOR IMMEDIATE NEWBORN CARE**

Step 1 Dry and stimulate the baby.
Step 2 Assess the baby's breathing and color.
Step 3 Decide if the baby needs resuscitation.

Steps 1–3 all happen at almost the same time

Step 4 Tie and cut the cord.
Step 5 Place the baby in skin-to-skin contact with the mother
Step 6 Have the mother start breastfeeding.
Step 7 Give eye care.

Prepare to Prevent Heat Loss

Newborns lose heat rapidly after birth. Leaving the warmth of the uterus, the wet newborn loses heat immediately as he adjusts to much colder surroundings. Heat loss may lead to hypothermia and the risk of death. The birth attendant must be prepared to keep the newborn warm at birth and to prevent heat loss. This is important in warm climates as well as cool climates.

Newborns have immature temperature-regulating systems. They cannot regulate their temperature like adults can. Therefore, they often have difficulty maintaining a normal body temperature. They lose body heat quickly if they are wet, uncovered, exposed to drafts, or if they are placed on or near a cool surface.[3] Think about this and plan for it before the birth so you can prevent it from happening.

The Warm Chain[4]

- Keep the birthplace warm, at least 25 °C (77 °F), and avoid drafts. Warm the room before the baby is born.
- Immediately after the birth, dry the baby with a warm towel. Most cooling happens in the first minutes after birth. In the first 1-2 minutes, the newborn may lose enough heat for his body temperature to fall 2 °C, which is very dangerous.
- Keep the baby lying on the mother's abdomen or chest for all care. If this is not possible, put the baby on a warm surface and keep the baby covered.
- Put the baby in skin-to-skin contact with the mother for at least 2 hours after birth. Cover both with a warm cloth.
- Help the mother breastfeed the baby as soon as possible, but at least within one hour of birth.
- Wait for at least 6 hours and preferably 24, to bathe the baby. Wait longer if: 1) the baby feels cold or the axillary temperature is below 36 °C (96.8 °F), 2) the environment is cold, 3) the newborn is low birth weight, or 4) the baby is unwell.
- Dress the baby in light, loose, warm clothing. A baby needs at least 1-2 more layers than an adult in the same climate. The number of layers depends on room warmth. About 25 percent of the baby's heat loss can come from the head, so cover the baby's head with a hat or cloth. Lastly, cover the baby with a light, warm cover or blanket.

- It is important that an infant stays warm throughout the newborn period. Keep the mother and baby together in a warm room and encourage breastfeeding on demand.
- Keep the baby warm during transportation, if referred. Put the baby skin-to-skin with the mother or another adult and cover both warmly. The baby's temperature should be checked during the referral, if possible.
- Teach both health workers and families about the risks of low temperature/hypothermia and how to prevent it.

IMMEDIATE CARE AT BIRTH

Most babies breathe and cry at birth with no help. The care you give immediately after birth is simple but important. Remember that the baby has just come from the mother's uterus. It was warm and quiet in the uterus, and the amniotic fluid and walls of the uterus gently touched the baby. You too should be gentle with the baby and keep the baby warm. Skin-to-skin contact with the mother keeps the baby at the perfect temperature.

In the following pages you will find the steps of immediate care which should be given to all babies at birth. Steps 3 and 4 will be interrupted by resuscitation if the baby needs help to start breathing. Immediate care for the mother includes delivery of the placenta as soon as possible after tying and cutting the cord. Monitor the mother's condition closely in the minutes and hours after the birth.

Step 1. Dry and Stimulate the Baby

Dry the baby, including the head, immediately. Rub up and down the baby's back, using a clean, warm cloth. Do your best not to remove the vernix (the creamy, white substance which may be on the skin) as it protects the skin and may help prevent infection.

Step 2. Assess the Baby's Breathing and Color

As you dry the baby, check to see if the baby is: 1) breathing, 2) having trouble breathing, or 3) not breathing. Look at the baby's color. The face and chest

FIGURE 2.1 **DRYING THE NEWBORN**

1. Dry the baby's body
2. Dry the baby's head well
3. Discard the wet cloth
4. Wrap the baby in a clean, dry cloth, covering head

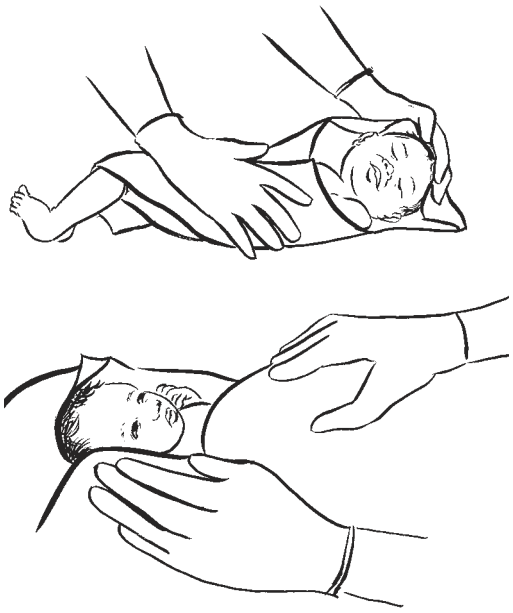


FIGURE 2.2 **CUTTING THE CORD**

should be pink, not gray or blue. In darker-skinned babies, you can assess the color of the tongue, lips, and mucous membranes; they should be pink, not gray or blue. A baby's pink skin color is a good sign of adequate breathing and circulation. A blue color of the tongue, lips, and trunk is a sign of a lack of oxygen in the blood. A bluish color of only the hands and feet may be present for 1-2 days after birth and usually does not indicate a lack of oxygen.

Step 3. Decide if the Baby Needs Resuscitation

If the baby is not breathing, is breathing less than 30 breaths per minute, or is gasping, he needs resuscitation. In that case, quickly clamp or tie and cut the cord, leaving a stump at least 10 cm long for now. Put the baby on a flat, warm surface and start resuscitation quickly. Call for help because a second person is needed to care for the mother (see chapter 4, Newborn Resuscitation).

If the baby does not need resuscitation, go on to the next steps.

Step 4. Tie and Cut the Cord

1. Tie (or clamp) the cord securely in two places:
   - Tie the first one two fingers away from the baby's abdomen.
   - Tie the second one four fingers away from the baby's abdomen.
2. Cut the cord between the ties.
   - Use a new razor blade, or a boiled one if it has been used before, or sterile scissors.
   - Use a small piece of cloth or gauze to cover the part of the cord you are cutting so no blood splashes on you or on others.
   - Be careful not to cut or injure the baby. Either cut away from the baby or place your hand between the cutting instrument and the baby.
3. Do not put anything on the cord stump.

Step 5. Place the Baby in Skin-to-Skin Contact with the Mother

The warmth of the mother passes easily to the baby and helps stabilize the baby's temperature.

1. Put the baby on the mother's chest for skin-to-skin warmth.
2. Cover both mother and baby together with a warm cloth or blanket.
3. Cover the baby's head.

The advantages of skin-to-skin contact are as follows:

- The mother keeps the baby warm. Her body is the perfect temperature.
- The closeness between the mother and the baby helps the mother become attached to her baby.
- The contact helps make early breastfeeding successful.[5,6,7]

If the mother does not want direct skin-to-skin contact, dry and wrap the baby. Make sure the head is covered and put the baby next to the mother.

It is important to delay or defer the first bath. The baby should not be bathed at birth because a bath can cool him dangerously. After a minimum of 6 hours, preferably 24 hours, he can have his first sponge bath, if his temperature has stabilized. (See chart 2.13 and Bathing the Newborn on page 52.)

Step 6. Have the Mother Start Breastfeeding

If everything is normal:

1. Do not separate the mother and baby for weighing until after the baby has breastfed.
2. Help the mother begin breastfeeding within the first hour of birth.[8,9] A study of early breastfeeding found that most newborns were ready to feed between 15 and 55 minutes after birth.[10]
3. Help the mother at the first feed (see chapter 3). Make sure the baby has a good position, attachment, and suck. Do not limit the time the baby feeds; early and unlimited breastfeeding gives the newborn energy to stay warm, nutrition to grow, and antibodies to fight infection.

Step 7. Give Eye Care

Shortly after breastfeeding and within 1 hour after birth, give the newborn eye care with an antimicrobial medication (see chart 2.3 on page 32). Eye care protects the baby from serious eye infection.

FIGURE 2.3 **EARLY INITIATION OF BREASTFEEDING**

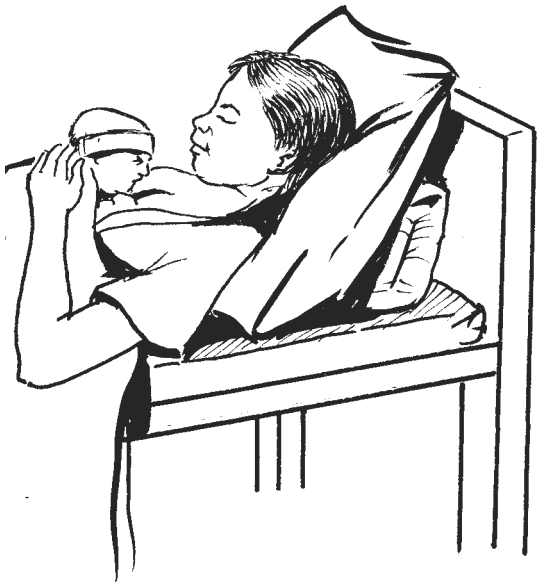
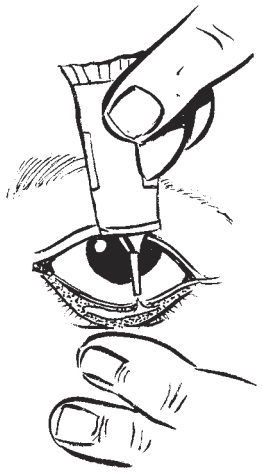


CHART 2.3 **STEPS FOR GIVING EYE CARE**

1. Wash your hands.
2. Use one of these eye care medications:
   - Silver nitrate solution 1%, or
   - Polyvidone-iodine solution 2.5%, or
   - Tetracycline 1% eye ointment.
3. Hold one eye open and allow one drop of medication to fall into the eye. If you are using ointment, put a ribbon of ointment along the inside of the lower eyelid. Make sure not to let the medicine dropper or tube touch the baby's eye or anything else.
4. Repeat this step to put medication into the other eye.
5. Do not rinse out the eye medication.

FIGURE 2.4 **PUTTING OINTMENT IN THE EYE**



NEWBORN CARE DURING THE FIRST DAY

The first day of life is a time of many changes inside the baby's body. For that reason careful observation and care are important.

Assess the Baby

Assess every 30 minutes to 1 hour for at least 6 hours or until the newborn is stable and stays warm and pink. Check the baby during the first day for the following:

Breathing: The normal baby breathes 30-60 times a minute with no gasping, grunting, or indrawing of the chest.

Warmth: Check if the baby is warm:

- Use a thermometer to take an axillary temperature or
- Feel the baby's abdomen or back with your hand and compare his temperature to that of a well person.

Color: Check that the tongue, lips, and mucous membranes (inside the mouth) are pink.

Bleeding: Check the cord for bleeding. As the cord dries, the tie may become loose. If the tie is loose, put on gloves and tie the cord again tightly.

Assessment of the baby on the first day also includes a complete history and physical, which are described on the next page.

Give Normal Newborn Care

Keep the baby warm:

- Continue to keep the baby in skin-to-skin contact with the mother.
- Cover both mother and baby with a blanket.
- Cover the baby's head with a cloth or hat.

Support breastfeeding:

- Continue to support and teach the mother how to breastfeed.

Teach the mother and the family:

- How to check the baby's breathing, warmth, and color
- How to look for any bleeding from the cord
- How to care for the cord
- How to keep the baby warm

Give Other Care for Any Problems or Needs

See:

- Newborn Physical Examination: Abnormal Findings and Plan of Action (chart 2.6, page 38)
- Teach and Counsel a Mother and Family about Newborn Care (page 50)
- Common Newborn Problems (chapter 6, page 125)

Give Vitamin K, the First Immunizations, and Complete the Baby's and the Mother's Records

On the day of birth, give vitamin K, 1 mg IM. Give the first immunizations according to your country's immunization schedule and protocols. Recommended newborn immunizations include:

- BCG
- Polio
- Hepatitis B

These can all be given on the day of birth or as soon as possible. See Appendix A for Infant Immunization Schedule and a list of websites for up-to-date information.

Make sure the birth is recorded and a birth certificate is prepared. Record all findings and treatments, and record all stillbirths and early newborn deaths.

NEWBORN HISTORY AND PHYSICAL EXAMINATION

Take a History

A healthy mother is very important for optimal growth development and birth of the infant. The care a woman receives in pregnancy, labor, and birth will affect the health of the newborn. Therefore be sure to check the mother's records (if available). It is important to collect information on the mother's and baby's history to know if the baby needs special attention and to help determine what care to give the newborn (see chart 2.4).

Do a Physical Examination

The purpose of the physical exam is to find out if the baby is healthy and if the baby has any health needs or problems. Wait until the baby is able to keep a normal body temperature (the baby feels warm or has an axillary temperature of 36-37 °C (96.8-98.6 °F) before doing a newborn examination. You can wait up to 6 hours.

Before starting the exam, prepare the following equipment:

- Thermometer
- Watch or clock with a second hand
- Scale for weighing, if available
- Clean clothes
- Gloves, if available

CHART 2.4 HISTORY OF THE PREGNANCY, BIRTH, AND IMMEDIATE NEWBORN PERIOD

Ask the mother and read the mother's and baby's records (if available) to find the following information:

1. Any maternal health problems that may affect the baby. Did the mother receive treatment for the problem during pregnancy? The baby may need laboratory tests or treatment. Look for:
   - Tuberculosis
   - Fever during labor
   - Bag of waters broken more than 18 hours before delivery
   - Malaria
   - Any other infections such as hepatitis B or C
   - Syphilis or other sexually transmitted infections
   - HIV/AIDS

2. The method, time, and place of delivery.
   - Record the time and place of delivery.
   - If you suspect the delivery did not occur in clean conditions, look for signs of infection.
   - If the baby did not have a normal vaginal delivery in a cephalic presentation, look for effects of birth trauma.
   - In case of cesarean or instrumental delivery, look for the effects of the procedure or anesthetic medications.

3. Was the amniotic fluid yellow, brown, or green?
   - If the amniotic fluid was yellow, brown or green, the baby may have aspirated meconium-stained fluid during the birth.
   - Look for signs of respiratory difficulty, which can be caused by meconium aspiration.

4. Was newborn resuscitation done?
   - If yes, the baby is at risk for respiratory problems, hypothermia, low blood sugar, sepsis, and other problems in the first hours and days. The baby needs to be carefully watched during this time.

5. Has the baby passed stool or urine?
   - The baby should pass urine and meconium (the first dark, sticky stool) within the first 24 hours.
   - If there is no stool or no urine, look for abdominal distention and signs of dehydration, and check to see whether the baby is sucking properly on the breast.

6. How many times has the baby breastfed?
   - The baby should feed at the breast at least eight times in 24 hours (at least every 3 hours).
   - A low birth weight baby needs to feed more often, at least every 2-2 1/2 hours.

7. Does the baby take the breast well and suck vigorously?
   - Poor sucking is a newborn danger sign; it is one of the first signs of newborn sepsis.
   - The mother may need help learning how to position the baby and give her breast so that he can attach and suck well.

8. Do you think your baby is well?
   - Listen carefully to each woman. A mother usually looks closely at her baby and often observes things that we might miss.

9. Are you (the mother and the family) worried about anything?
   - Listen to what they all say.
   - The family has been observing the mother and baby together and may have noticed a problem.
   - Answer their questions. This is a good opportunity to help the mother and family learn about caring for their baby.

Before you start the exam, wash your hands carefully with soap and water. Dry them with a clean dry cloth or air-dry them (if the cloth is used or not clean). Handwashing is the best way to prevent infection when touching a baby or having contact with the baby. You should wear gloves when you are in contact with blood or body fluids (for example, retying the cord or feeling the inside of the baby's mouth).

Explain to the mother and family what you are going to do and ask if they have any questions. Then explain what you are looking for and answer any questions the mother and family ask.

Do the exam with the baby in the mother's arms to keep the baby warm. Keep the baby uncovered for only a short time to reduce heat loss. There is no need to uncover the baby completely during every part of the exam. Uncover only those areas that you need to assess. If you examine the baby on a table or bed, make sure the cloth covering the surface is clean and warm.

Chart 2.5 tells you what to check in a newborn physical examination. As you come across normal findings, be sure to give positive feedback to the mother. Be sure to handle the baby gently and keep the baby warm.

Identify Needs or Problems

Are all the findings normal? If yes, tell the mother her baby is healthy and normal. The baby needs normal care. See chart 2.5 for normal findings.

Are any of the findings abnormal? If yes, see chart 2.6. Look at the "Abnormal Findings" column and consider what the baby's problem may be. Look at the "Plan" column for that problem and gently explain to the mother what abnormal findings may mean and what action is needed.

FIGURE 2.5 **WASHING HANDS**

CHART 2.5 NEWBORN PHYSICAL EXAMINATION: NORMAL FINDINGS

WHAT TO CHECK	NORMAL FINDINGS
Color	■ Face, chest, tongue, and lips are pink. ■ Hands and feet may be bluish during the first 48 hours.
Breathing	■ Quiet breathing. ■ There should be no indrawing of the chest or flaring of the nostrils. ■ Chest and abdomen move with each breath.
Rate of breathing	Count the baby's breathing for 1 full minute: ■ 30-60 breaths in 1 minute (when the baby is not crying). ■ May be irregular, i.e., hard breathing, then up to 20 seconds without a breath.
Posture and tone	■ Arms and legs are bent (flexed). ■ Preterm babies have less flexion.
Heart rate	Count the baby's heart beats for 1 full minute: ■ 100-160 beats in 1 minute. ■ Short periods of change in heart rate are normal (such as with sleeping, crying, or breastfeeding).
Warmth	■ Baby's abdomen or back feels warm. (If the baby's temperature is low, do the examination later after rewarming.)
Activity	■ The baby moves both legs and arms equally. ■ The baby opens his mouth and turns his head to search for the nipple when his cheek is stroked gently.
Skin	■ There may be tiny white bumps on the face (milia). ■ There may be a bluish area over the lower back. ■ There may be some peeling of the skin.
Head	■ Elongated or uneven (asymmetrical) shape due to molding from pressure of the birth canal is normal. It usually goes away by 2-3 days after birth (see figure 2.6) . ■ *Caput succedaneum*, a soft swelling over the part of the head that came out first through the birth canal, may be present at birth. It goes away by 48 hours. ■ The anterior fontanelle (a diamond-shaped soft spot just above the forehead) is flat and may swell when the baby cries (see figure 2.7).
Eyes	■ No discharge and the eyes are not sticky.

CHART 2.5 **NEWBORN PHYSICAL EXAMINATION: NORMAL FINDINGS**

WHAT TO CHECK	NORMAL FINDINGS
Mouth	When the baby cries look into his mouth and put one gloved finger into the mouth and feel the palate for any opening. ■ Lips, gums, and palate are intact and the same on both sides. ■ The baby sucks vigorously on your finger.
Chest	■ The chest moves equally with breathing. ■ The abdomen pushes out with each breath. ■ Breast nodules may be enlarged. ■ Both girls and boys may have swollen breasts at birth.
Abdomen	■ Rounded, soft. ■ Umbilical cord is tied tightly, dry, not bleeding. ■ A small umbilical hernia is normal during the first year.
Back and spine	■ The skin over the spine has no openings. ■ The spine has no defects.
Anus	Do not insert instruments or finger to inspect the anus. ■ The newborn passes stool by 24 hours.
Girl's external genital organs	Gently separate the legs. ■ A white vaginal discharge is normal. ■ A bloody vaginal discharge that starts on day 2-3 and continues up to day 7 is normal.
Boy's external genital organs	■ The foreskin can be retracted easily (unless circumcision has been performed). ■ The urethra opens at the end of the penis. ■ One or two testes are felt in the scrotum. ■ If the baby has been circumcised, there is no sign of infection or bleeding.
Temperature	■ 36-37 ºC (96.8-98.6 ºF) axillary (under the baby's arm). ■ If a thermometer is not available: feel the chest or back with the back of your hand; the temperature should feel the same as that of a healthy person.
Weight	■ 2.5 up to 3.99 kg is the normal range for birth weight. Newborns normally lose 5% to 10% of their birth weight in the first few days of life, and then begin to gain weight. By the 14th day, a baby should have regained his birth weight.

CHART 2.6 **NEWBORN PHYSICAL EXAMINATION: ABNORMAL FINDINGS AND PLAN OF ACTION**

WHAT TO CHECK	ABNORMAL FINDINGS	PLAN
Color	■ Yellow or jaundiced skin or eyes *Cause: Possible infection or a blood problem*	See chapter 6, chart 6.12, pages 148-49.
	■ Paleness (pallor) *Cause: Bleeding, poor circulation of blood, baby is cold, low blood sugar, or not enough oxygen*	■ Make sure the cord tie is tight and check for other sources of bleeding. ■ Warm the baby. ■ Check the respiratory and heart rates. ■ Give oxygen, if available, by nasal prongs or mask at a low flow rate. ■ Make sure the baby is breastfeeding every 2-3 hours. ■ If baby does not become pink after 1 hour, REFER (see Referral Guidelines on page 129).
	■ Blue tongue and lips (cyanosis) *Cause: Baby may not be getting enough oxygen.*	■ REFER (see Referral Guidelines). ■ Give oxygen, if available, at high flow rate (see Appendix B).
Breathing	■ Grunting (sound made with breathing out) ■ More than 60 breaths in 1 minute ■ Flaring nostrils ■ Indrawing of chest between ribs *Causes: Air tubes may be blocked, infection or fluid in the lungs, low blood sugar*	See chapter 6, chart 6.4, page 132.
	Observe and count for 1 full minute: ■ Less than 30 breaths in 1 minute ■ Periods of no breathing (apnea) for more than 20 seconds ■ Gasping *Causes: Asphyxia, lung infection, fluid in the lungs, premature baby, abnormal temperature, low blood sugar, blood infection*	■ Resuscitate (see chapter 4). ■ Follow resuscitation guidelines for follow-up care.

CHART 2.6 **NEWBORN PHYSICAL EXAMINATION: ABNORMAL FINDINGS AND PLAN OF ACTION**

WHAT TO CHECK	ABNORMAL FINDINGS	PLAN
Posture and tone	■ Lack of flexion, limp, floppy *Causes: Prematurity, birth injury, asphyxia*	■ Keep the baby warm. ■ Check if the baby is breathing well. ■ REFER if this continues after 2 hours (see Referral Guidelines).
	■ Rigid, stiffness, or arching of back, clenched jaw ■ Rhythmic movements of one limb *Causes: Tetanus, birth injury, meningitis, convulsions*	REFER (see Referral Guidelines).
Heart rate	Count the heart rate for 1 full minute: ■ Heart rate below 100 *Causes: May not be getting enough oxygen, heart problems, breathing problems*	■ Warm the baby. ■ Check breathing rate. ■ Give oxygen, if available, by nasal prongs or mask at 1 L/minute. ■ REFER if this continues after above actions or if baby is pale or blue (see Referral Guidelines).
	■ Heart rate above 180 *Causes: Infection, baby may be too hot, dehydration, crying, congenital heart problem*	■ Check if the baby has on too many clothes or other reason for being hot. ■ Encourage more frequent breastfeeds. ■ Cup feed if not sucking well (see chapter 3). ■ REFER if this continues after above actions or if baby is pale or blue (see Referral Guidelines).
Activity and movement	■ Seizures or convulsions of body ■ Moves only one arm or leg or unequal movement of one arm or leg *Causes: May be due to nerve injury during birth, tetanus, or infection*	REFER (see Referral Guidelines).
	■ Lethargic, drowsy, sluggish ■ Excessive and high-pitched cry; irritable ■ Not sucking ■ Vomiting *Causes: May be bleeding or swelling in the brain, low blood sugar, asphyxia, infection*	REFER (see Referral Guidelines). ■ Cup feed expressed breast milk (see chapter 3)

CHART 2.6 **NEWBORN PHYSICAL EXAMINATION: ABNORMAL FINDINGS AND PLAN OF ACTION**

WHAT TO CHECK	ABNORMAL FINDINGS	PLAN
Skin	■ Pustules, blisters, red or purple spots *Cause: Possible infection while in the uterus*	See chapter 6, chart 6.7, pages 136-37.
Head	■ Firm swelling on only one side of the skull (cephalhematoma) *Cause: Blood between the skull bone and skin due to a blood vessel breaking during birth. It starts a few hours after birth and increases in size.*	■ No action needed. The blood is slowly absorbed and the swelling disappears by 1-2 months.
	■ Anterior fontanelle swollen or bulging outward when the baby is not crying *Cause: Increased pressure in the head*	REFER (see Referral Guidelines).
Eyes	■ Discharging pus ■ Sticky eyes ■ Swollen eyelids *Cause: Eye infection, especially from gonorrhea or chlamydia*	See chapter 6, chart 6.8, page 139.
Mouth	■ Cleft or opening in the lip ■ Cleft or hole in the soft or hard palate *Cause: Congenital abnormality*	■ Provide reassurance to the mother. ■ Encourage the mother to breastfeed. ■ REFER (see Referral Guidelines). ■ If the baby cannot suck, show the mother how to feed the baby expressed breast milk by cup.
Abdomen	■ Very swollen and hard abdomen *Cause: Possible blockage of intestines*	REFER (see Referral Guidelines).
	■ Sunken-in abdomen with rapid breathing *Cause: Possible hernia of the diaphragm*	REFER (see Referral Guidelines).
	■ Bleeding from the umbilical cord *Cause: The cord tie may have loosened.*	■ Retie the cord tightly See chapter 6, chart 6.13, page 150.

CHART 2.6 **NEWBORN PHYSICAL EXAMINATION: ABNORMAL FINDINGS AND PLAN OF ACTION**

WHAT TO CHECK	ABNORMAL FINDINGS	PLAN
Back and spine	■ Defects of the spine include small to large holes in the skin with a bubble of tissue on the outside (open neural tube defect).	■ Cover with a sterile dressing and ■ REFER (see Referral Guidelines).
Anus	■ No passage of stool by 24 hours and a swollen abdomen *Cause: May be blockage in the baby's intestines or anus, or absence of an anal opening*	REFER (see Referral Guidelines).
External genital organs	■ Unable to identify gender ■ No urine or wet diaper by 24 hours	REFER (see Referral Guidelines).
Boy's external genital organs	■ Urethra does not open at the end of the penis, but in some other place, such as under the penis; foreskin is not retractable	REFER (See Referral Guidelines). (Do not do circumcision if the urethra does not open at the end of the penis, as skin is needed for repair.)
	■ Scrotum is empty (no testes can be felt)	■ Explain to the parents that the testes may descend. ■ Examine the baby again at 6 months. ■ REFER if the testes have not come down by that time.
Temperature	■ Axillary temperature below 36 °C (96.8 °F) or above 37 °C (98.6 °F) or ■ Baby's chest or back feels cooler or hotter than the skin of a healthy person	See chapter 6, charts 6.10 (page 143) and 6.11 (pages 144-45).
Weight	■ Weight less than 2.5 kg *Cause: Low birth weight can be due to preterm birth (before 37th week) or poor growth in the womb. Risk of low blood sugar.*	■ All low birth weight babies need special care (see chapter 5).
	■ Weight 4 kg or more *Cause: Mother may be diabetic. Risk of low blood sugar.*	■ If the baby is large, feed him as soon as possible after birth.

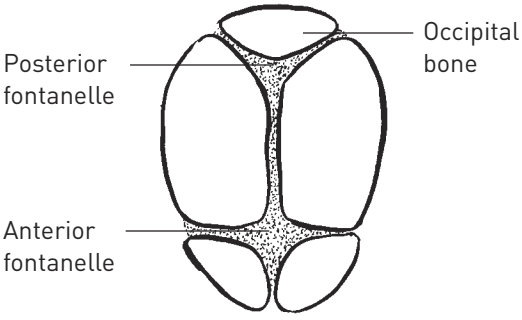
FIGURE 2.6 **HEAD MOLDING**

Molding

Normal

FIGURE 2.7 **FONTANELLES**

View of baby's skull from above



CARE OF THE NEWBORN DURING THE FIRST 28 DAYS

Why Is Follow-up Newborn Care So Important?

Globally over 4 million babies die every year before they reach the age of one month.[11] Many of these deaths can be prevented. You do not need much technical training or equipment to save the lives of most of these babies.

One important thing you can do is conduct follow-up newborn care visits. See the baby at 2-3 days, 7 days, and 28 days after birth. If a mother and family are worried about their baby or there is a problem, you may see them more often. During these visits you will:

- Assess the baby and the mother for problems.
- Praise the family for the good care they give.
- Continue to educate and counsel the mother and family on baby care.

To make it easy for the mother and family, the mother should receive her follow-up postpartum exams when the baby is checked. Review the mother's antenatal record to be sure to follow up on any problems (e.g., tuberculosis, syphilis, or HIV). Listen to the mother and take care of any health problems she may have. A healthy mother is key to a newborn's survival. The mother should be checked for:

- Bleeding heavier than her normal menses. Postpartum hemorrhage is the main cause of maternal deaths.
- Successful breastfeeding. Watch the mother breastfeed the baby and check her breasts for any problems.
- Signs of infection: fever, tender uterus, or foul-smelling discharge.
- Continue to educate and counsel the mother on recognizing danger signs for herself and her baby and the need for good nutrition, extra rest, and child spacing.

Special Focus for Each Follow-up Visit

At certain ages babies are at higher risk for certain problems. You need to know what these problems are and when they may happen. Chart 2.7 explains what you should focus on at each follow-up visit.

Prepare for Follow-up Care Visits

Room, equipment, and supplies

Make sure the room is:

Clean: Use the three infection prevention steps to prepare the room, equipment, and supplies. (See Appendix C for details.)

Warm: The temperature of the room should be warm; heat the room if it is cold, and close doors or windows to prevent drafts.

Light: The health worker must be able to see the newborn to check color and breathing. If there is not enough natural light, use candles, a lamp, or another light source.

Prepare a clean surface for supplies and equipment and a warm cot or surface for the newborn (not needed if the exam is done on the mother's lap).

Have the following equipment and supplies ready:

- A scale to weigh the newborn, if available
- A watch or clock with a second hand
- An axillary thermometer, if available
- Clean, running water, soap, and towel
- If immunizations are to be given:
  - Syringes and needles
  - Wipes and clean water for cleaning injection site
  - Gauze
- Medications:
  - **Baby:** Vitamin K, Vaccines: BCG, polio, hepatitis B (depending on your local health authority's policies and availability)
  - **Mother:** Vitamin A 200,000 IU capsule
- Records:
  - Newborn record card and immunization card

Give Follow-up Care

Each time you see a newborn for a follow-up visit, use the decision-making steps to guide the visit (as described in the introduction to the manual). Chart 2.8 describes these steps for care of the newborn during the first 28 days.

CHART 2.7 **SPECIAL FOCUS FOR EACH FOLLOW-UP VISIT**

AGE AT VISIT	ASK AND LOOK	EXPLANATION
First day	Breathing Skin color Temperature Breastfeeding Umbilical cord Urination Stools	■ During this time the newborn is still adjusting to life outside the uterus and needs to breastfeed very frequently. No other feeding or fluid should be given. ■ Make sure the cord is tied tightly and that there is no blood seeping from it. ■ A baby with jaundice (yellow skin or eyes) may be very sick. Jaundice is serious if it appears in the first 24 hours, after 2 weeks, or at any time with another danger sign.
	Vitamin K and immunizations	■ Vitamin K must be given on the day of birth or as soon as possible thereafter to be effective. This is especially important for premature babies. ■ For newborn immunizations, follow the guidelines in your country.
2-3 days	Breastfeeding	■ The mother and newborn are still adjusting to breastfeeding. Engorged breasts happen around this time and can make breastfeeding difficult.
	Signs of infection (redness or pustules on the skin, discharge from the umbilicus or eyes, baby too hot or too cold, feeding problems, breathing problems, fits)	Babies who get infected during labor may have signs of infection at birth or not until later.
	Weight	A weight loss of 5-7% during the first few days of life is normal. One reason for this weight loss is that babies are born with excess fluids, which they lose in the early days. Weight loss should not exceed 10% of the birth weight.

CHART 2.7 **SPECIAL FOCUS FOR EACH FOLLOW-UP VISIT**

AGE AT VISIT	ASK AND LOOK	EXPLANATION
7 days	Breastfeeding Weight	A mother and baby are still adjusting to breastfeeding. The baby should start to gain weight by this time and should regain his birth weight by 14 days.
	Signs of infection (see section on 2-3 days above)	Newborns who get infections after birth may have signs of infection at this visit.
	Skin color	A newborn who has jaundice (yellow skin or eyes) may be very sick (see first day above).
	Immunizations	If the newborn has not received the first immunizations, give them now or send the baby to the health facility to get them.
28 days	Breastfeeding Weight Signs of infection (see section on 2-3 days above) Immunizations	■ At 28 days a baby should be fully adjusted to life outside the uterus. Monitoring for infection should continue. Remind the mother that the next immunizations are needed at 6 weeks. ■ Make sure the baby is gaining enough weight (25-30 grams per day).

CHART 2.8 CARE OF THE NEWBORN DURING THE FIRST 28 DAYS: DECISION-MAKING CHART

History

Ask to see the newborn's birth card and any other newborn care records.
Then ask the following questions about the newborn:

- What have you noticed about your baby? The mother's answer may give you an idea about how she is caring for her baby.
- Have you seen anything in the baby that worries you? A mother is often the first person to notice something that may be a sign of a problem. Some babies, for example, spit up a little milk after almost every feed, which may worry the mother, but this is generally normal. However, persistent vomiting of large quantities should be investigated.
- Is the baby sucking well? A poor suck could be a sign of infection.
- How often does the baby feed during the day and at night? Normal is 8-12 times in 24 hours. A low birth weight baby will feed more often because his stomach is smaller.
- Does your baby wake up to breastfeed at least every 2-3 hours, or do you need to wake the baby up? Not waking for feeds is a sign of infection or other problem.
- How many times does the baby urinate in 1 day? A newborn that is getting enough breast milk will urinate at least 6 times in 24 hours.
- Does the baby seem very sleepy? Is the baby hard to wake up? A baby that is too sleepy may have an infection or another problem.
- How do the baby's stools look? In the first day or two, the stool may be black or greenish and sticky. After the first few days the stools should be soft, yellow, and "seedy." Watery stool is abnormal.
- Has the baby received any immunizations? If so, what?
- Did the baby receive eye medication at the time of birth?

Ask the mother:

- How many meals do you eat a day? How much and what food is in each meal? To stay healthy, a breastfeeding mother needs to eat at least one large extra serving of her staple food every day.
- How much fluid are you drinking in one day? To make enough breast milk, a mother needs at least 3-4 liters of fluid a day. The mother should drink something every time her baby breastfeeds.
- Have you taken a vitamin A capsule? If a breastfeeding mother takes one 200,000 IU vitamin A capsule anytime after delivery up to eight weeks postpartum, her breast milk should have enough of the vitamin for the baby's needs.
- Are you getting enough rest? If a breastfeeding mother does not get enough rest, it can reduce the amount of breast milk she makes.

CHART 2.8 CARE OF THE NEWBORN DURING THE FIRST 28 DAYS: DECISION-MAKING CHART

Examination

Without touching the baby, observe and teach the mother to observe the baby's:

- Breathing:
  Normal: Regular and 30-60 breaths in 1 minute.
  Abnormal: Breathing less than 30 or more than 60 breaths per minute and chest indrawing can be signs of infection or breathing problems.
- Umbilicus:
  Redness of skin, swelling, pus, and a foul smell around the umbilicus are all signs of infection.
- Skin color:
  Normal: Chest, face, lips, and mucous membranes should be pink.
  Abnormal: Skin pale, blue, or yellow (jaundice).
- Posture and activity:
  Normal: Arms and legs are bent. The baby moves, cries, and sucks well when awake.
  Abnormal: The baby is limp or does not move or sucks poorly when awake.

Touching the baby gently, check the following:

- Temperature:
  Feel the newborn's abdomen or back. If his skin feels too hot or too cold, take his temperature with an axillary thermometer (if available) at the end of the examination.
  Normal: Under arm: 36-37 °C (96.8-98.6 °F)
  Abnormal: If the temperature is lower than 36 °C or higher than 37 °C, there may be an infection or other problem.
  Some babies have a slight fever for 24 hours after receiving an immunization for hepatitis B (which may be given at birth).
- Skin:
  Look for rashes or pustules.
  If the baby has received a BCG immunization, look at the site. A small pustule should form in a few weeks, then a scar.
- Eyes:
  Look for discharge.
  Sticky or pus-like discharge from the eyes is a sign of infection.

Watching the baby breastfeed:

- Look at the baby's position, sucking, and attachment.
  Normal: See chapter 3.
- Mother-baby interaction:
  Normal: The mother 1) has eye contact with her newborn, 2) uses her full hand (not just her finger tips) when touching her baby, and 3) the mother and baby are turned towards each other when breastfeeding.

continued, next page

CHART 2.8 CARE OF THE NEWBORN DURING THE FIRST 28 DAYS: DECISION-MAKING CHART

Examination (Continued)

Weigh the baby:

Age	**Weight**
First 7 Days	May lose 5-10% of birth weight
Days 7-10	Begins to gain weight
Day 14	Should have regained birth weight
After Day 14	Gains an average of 25-30 grams (1 ounce) per day for first 4 months
4-5 months	Doubles birth weight

Problems/needs

List problems and needs.
If any findings are abnormal, refer to chapter 6.
Think about the baby's needs: warmth, protection from infection, feeding, safety, love, and sleep.

Plan of care

Make a plan of care for each problem or need you find. Include education, counseling, medical treatment, lab tests, referral, and follow-up.

Continue to advise the mother on care for the baby and herself:

- Keep the baby warm.
- Protect the baby from infection.
- Breastfeed the baby on demand and exclusively.
- Talk to and comfort the baby.
- Keep the baby safe.
- Mother continues to get postpartum care.

Give first immunizations if the baby has not received them.
Review newborn danger signs and what to do.
Plan for the next visit (see below).
Schedule or refer the mother for family planning services.

Follow-up

Timing for follow-up depends on problems found.
If everything is normal, use the normal follow-up visit schedule (at 2-3 days, 7 days, 28 days, 6 weeks).

Document the Steps

Make sure all records on the newborn care are completed after each visit.

Checklist for Follow-up Newborn Care Visits

At the end of a visit, use the checklist in chart 2.9 to remember all the important findings. If your findings match all those in the list, the newborn is doing well. Tell the mother when the next planned visit will be and remind her to get health care if she sees a danger sign or has a concern or question about the baby.

CHART 2.9 **CHECKLIST: THE NEWBORN IS HEALTHY AND SAFE IF...**

The mother

- ☐ Has no worries about the baby's behavior
- ☐ Responds appropriately when the baby cries
- ☐ Keeps the baby warm
- ☐ Handles the baby gently
- ☐ Knows the newborn danger signs and what to do
- ☐ Is comfortable with exclusive breastfeeding
- ☐ Has taken one vitamin A capsule (200,000 IU) after the birth
- ☐ Is healthy

The newborn

- ☐ Feeds well (8-12 times in 24 hours)
- ☐ Sleeps between feeds
- ☐ Wakes for feedings
- ☐ Urinates at least 6 times during 24 hours
- ☐ Has stools that are not watery
- ☐ Starts to gain weight steadily after the first 7-10 days
- ☐ Has an axillary temperature between 36-37 °C (96.8-98.6 °F)
- ☐ Is breathing quietly, between 30-60 breaths in 1 minute
- ☐ Has skin without pustules or rashes, and is not yellow, blue, or pale
- ☐ Has clean eyes
- ☐ Has a dry and clean umbilicus
- ☐ Has received his first immunizations

FIGURE 2.8 **KEEPING THE BABY WARM**

CHART 2.10 **HOW THE FAMILY CAN KEEP THE NEWBORN WARM**

- Keep the room where the newborn stays warm and free from drafts day and night.
- Dress the baby in warm clothing (the newborn needs at least 1-2 more layers than an adult).
- Keep the baby's head covered with a hat or cloth.
- Use loose clothing and covers. Tight clothing and coverings do not keep the baby as warm.
- Put the newborn in bed with the mother for warmth and breastfeeding.
- Keep the newborn skin-to-skin with the mother. Use a warm cloth or blanket to cover them both together. Be sure not to cover the baby's face so he can breathe freely.

TEACH AND COUNSEL A MOTHER AND FAMILY ABOUT NEWBORN CARE

An important part of the help you give to the newborn, mother, and family is teaching and counseling about newborn care. You should explain:

- What care to give
- Why to give the care

Even if a woman has had a baby before, there may be new information that can help her. When speaking with her, include other family members such as the grandmother, mother-in-law, aunt, sister, and/or husband. This gives everyone a chance to hear the same things the mother hears. It also gives the mother and family time to ask questions. Below is information to talk about when you teach and counsel. The mother and family may have other baby care questions not included below. Take time to discuss all the family's concerns and questions.

Warmth

A newborn needs to be warm—especially for the first few weeks of life. Because newborns cannot adjust their temperature like adults, they get cool or warm much more quickly. The newborn's body is small and not able to stay warm on its own. If the newborn gets too cold, he can die.

Sleep

Newborns need sleep. If they are healthy, they sleep most of the time between feedings (up to 18 hours out of 24). They wake up every 2-3 hours to feed. During the night the baby may sleep up to 4 hours between feeds

Newborns wake up a lot at night. Because of this a mother needs to rest or sleep during the day when her baby is asleep. This pattern changes with time and the baby will begin to sleep more at night and stay awake more during the day.

A baby who is hard to wake up or who sleeps too much may be sick.

Loving Care

A newborn cannot survive without loving care. At birth, he is unable to meet any of his own basic needs. When a newborn is hungry, wet, cold, uncomfortable, in pain or sick, he can only cry or send out other cues.

Every newborn is different. He may be easily irritated or calm and sleepy. He may be fussy and hard to satisfy, or happy and easy going. He may have a loud piercing cry, or a soft, quiet one. A mother must get to know her baby's personality. His survival depends on her understanding and responding appropriately to the signals he sends.

When the baby cries and his needs are met, he learns that the world is a safe and loving place. He also learns confidence and trust: confidence that he can communicate his needs to others and trust that someone will care for him when he needs it. The newborn's crying should not be ignored.

Newborns should always be handled gently. Mothers learn to do what they see you doing. Handle the baby gently, talk to him in a quiet voice, and observe him carefully so that you can respond appropriately to his needs.

Protection from Infection

The system to fight infections is not mature in a newborn. This means that a newborn can get infections more easily than an older child or adult. As the baby grows, the infection fighting system becomes stronger. The mother and family need to protect the newborn from infection at birth and in the early months of life (see chart 2.11).

CHART 2.11 **HOW THE FAMILY SHOULD PROTECT THE NEWBORN FROM INFECTION**

- Wash hands with soap and water before and after touching the newborn.
- Keep fingernails short (germs can live under the fingernails).
- Do not put anything (dressing or herbal or medicinal products) on the umbilical cord.
- Keep the cord clean and dry.
- Wash anything in the home that will touch the baby: clothing, bedding, covers.
- Keep sick children and adults away from the baby.
- Protect the newborn from smoke in the air (from cigarettes or a cooking fire) because this can cause breathing problems.
- Put the newborn to sleep under an insecticide-treated bed net (if available) to protect him from malaria.
- Breastfeed the newborn exclusively. A mother's milk gives infection protection to her newborn.
- Make sure the baby gets all his immunizations on time.

CHART 2.12 KEEP THE NEWBORN WARM DURING A BATH

1. Bathe the newborn in a warm room with no drafts.
2. Have everything ready before the bath so the newborn is not left uncovered for long.
3. Make sure the bath water is warm. Test the bath water by touching it with your elbow.
4. Wash the face first and the hair last. Much heat is lost through the head so it should be bathed last.
5. Bathe the baby quickly.
6. Dry the baby quickly and completely with a warm towel. Be sure to dry the hair thoroughly.
7. Put the baby in skin-to-skin contact with the mother after the bath and cover them both. Remember to cover the baby's head again.

CHART 2.13 BATHING RECOMMENDATIONS

- Clean the baby's eyes by wiping each one with a clean cloth or with a clean corner of the same cloth. Start near the nose and wipe outward.
- Look for signs of infection while you wash the newborn.
  - **Skin infection**: spread the skin folds to look for pustules or rashes.
  - **Cord infection**: redness of skin, swelling, pus, or foul odor around the cord or umbilicus.
  - **Eye infection**: red, swollen eyelids and pus-like discharge from the eyes.
- Wash the baby's bottom from front to back.
- Never use soap on a newborn's face, only clean water.
- Do not clean inside the newborn's ear canals or nose, only the outside.
- Do not use baby powders. Powders can be dangerous to a newborn.
- Be sure to dry inside the skin folds.

Bathing the Newborn

As a health worker it is important for you to teach the mother and family how to wash the newborn. If you show them how to do this, not just tell them, they will remember more. You can also show them how to bathe the newborn with gentleness while checking each part of the baby's body.

Sponge bath: Wait to give the first sponge bath until a minimum of 6 hours after birth, preferably 24 hours. At 3 days of age the newborn's temperature is usually more stable. Give the baby only a sponge bath until the cord falls off and the umbilicus is healed. This helps the cord stay dry and come off more quickly. If the baby has been circumcised, give a sponge bath until the penis is healed.

- During a sponge bath, the newborn is sponged off with a warm, wet washcloth (do not sit the baby in a tub of water).
- First wash the upper body quickly with the washcloth, while the lower body is clothed. Dry the upper body quickly and cover or dress it immediately afterwards.
- Then take the clothes off the lower body, wash it quickly with the washcloth, dry it quickly, then cover or dress the baby again.

Full bath: After the cord falls off and the umbilicus and circumcision are healed, give a full bath every 2-3 days.

Wash the buttocks: The newborn's buttocks can be washed each time the baby urinates or has a bowel movement.

See chart 2.12 for information on keeping a newborn warm during a bath and chart 2.13 for tips to prevent infection while bathing the baby.

Cord Care

Cord care is an important way to prevent a newborn from getting tetanus or sepsis (generalized body infection). Teach and show the mother and family how to do cord care (see chart 2.14).

Putting certain substances on the cord or covering it with dressings can cause serious cord infections, such as tetanus and septicemia.[13] These infections are major causes of neonatal death but are preventable. To prevent these infections:

- Give the mother tetanus toxoid during pregnancy.
- Cut the cord with a sterile instrument or new clean blade.
- Keep the cord clean and dry.
- Do not put anything on the cord.

In a study that reviewed cord care from 10 countries, it was found that keeping the cord clean was as effective and safe as using antibiotics or antiseptics.[14]

CHART 2.14 **CORD CARE**

- Do not put anything on the cord (no medication or dressing).[12]
- Keep the cord clean and dry.
- Urine or stool should not touch the cord. If they do, wash the cord with soap and water and dry it with a clean cloth or air-dry it.
- The cord normally falls off 5-10 days after birth, leaving the umbilicus to heal.
- Give the baby only sponge baths until the cord falls off and the umbilicus is healed.
- Look at the cord and umbilicus for signs of infection every day until it is dry and healed. Signs of infection are: delay in separation, pus discharge, foul smell, and redness and swelling of the skin around the umbilicus (see chapter 6).
- Get medical help right away if you see any of these signs.

Immunizations

Immunizations are given to prevent illnesses that cause serious problems and even death.

The timing of immunizations is important. The baby should receive immunizations in the first few days after birth, at 6 weeks, 10 weeks, 14 weeks, and 9 months. There must be at least 4 weeks between immunizations (see Appendix A).

Breastfeeding

Review the information from chapter 3 with the mother and the family. The following parts of chapter 3 are especially important:

- Benefits of Breastfeeding
- Exclusive Breastfeeding
- Starting to Breastfeed
- Continuing to Breastfeed

Never leave a baby alone on a bed or table from which he can fall. And never hold a newborn by his feet with the head down.

Vitamin A

Because newborns have very small amounts of vitamin A, breastfed infants depend on vitamin A in breast milk to meet their requirements for this vitamin during the first months of life. The amount of vitamin A in breast milk depends on the mother's vitamin A level. Vitamin A helps babies grow and develop well and helps keep mothers and babies from getting infections. When they do get infections, vitamin A also helps them recover quickly.

Food sources of vitamin A for the mother are: red, yellow, and orange fruits and vegetables (mangoes, papaya, carrots); some foods from animal sources (egg yolk, liver, cheese, and fish); and some fats and oils (fish liver oil, palm oil, butter).

Another source is vitamin A capsules. Give the mother a single dose (200,000 IU) vitamin A capsule as soon after birth as possible but not after eight weeks postpartum. By eight weeks postpartum (6 weeks for a non-breastfeeding mother), there is a chance the mother might become pregnant again. Taking a high dose of vitamin A (i.e., more than 10,000 IU per day) in the first trimester could harm her growing fetus.

For the baby, breast milk is the main source of vitamin A. To make sure the baby gets lots of vitamin A, encourage every mother to breastfeed exclusively.

Safety and Security

Never leave a baby alone on a bed or table from which he can fall. Never hold a newborn by his feet with the head down.

Breastfeeding mothers should not smoke, drink alcohol, or take drugs or medications unless prescribed by health care personnel. They should also practice safe sex (condom use, abstinence, or sex only with an HIV-negative partner who is monogamous).

Newborn Danger Signs

Danger signs are the signs of serious health problems which cause the death of many newborns. To prevent death, the mother and family need to recognize the newborn danger signs and respond appropriately. Newborns often die because there is a:

- Delay in recognizing danger signs
- Delay in deciding to get medical care
- Delay in reaching a health worker or facility

Teach the mother and family to recognize newborn danger signs (see chart 2.15) and to get help immediately if one is seen. As you explain each danger sign, ask the mother or family to give you an example of the sign. This way you know they understand. You will find more information about what to do in chapter 6.

Danger signs in a baby are often nonspecific: each danger sign can be a sign of almost any disease or illness. The most common signs of illness in a baby are: he stops feeding well and is cold to touch.

Plan for Follow-up Visits

Make a plan with the mother for newborn follow-up visits. How many visits and when they happen depend on the newborn's health and government policy. For a healthy newborn with no problems, do at least four visits. Because most newborn deaths occur within the first week, especially the first 24 hours, the first 7 days of life are a critical time for postnatal care. A suggested schedule for newborn health care visits is as follows:

Visit 1	Within 24 hours
Visit 2	2-3 days
Visit 3	7 days
Visit 4	28 days

Also remember to make a plan for the 6-week immunization visit and counsel or refer the mother for family planning care. This should be done as soon as possible, preferably during initial postnatal counseling. The child will have a better chance of survival if the mother spaces her children 3-5 years apart.

CHART 2.15 **NEWBORN DANGER SIGNS**

- Breathing problems (less than 30 or more than 60 or breaths in 1 minute, gasping)
- Feeding difficulties or not sucking
- Feels cold
- Fever
- Red, swollen eyelids, and pus discharge from eyes
- Redness of the skin, swelling, pus, or foul odor around the cord or umbilicus
- Convulsions/fits
- Jaundice/yellow skin

TASKS FOR ALL HEALTH WORKERS: ESSENTIAL CARE FOR EVERY NEWBORN

1 Prepare the room, equipment, and supplies for a clean, safe birth.
2 Give immediate newborn care at birth:
   a) Dry and stimulate the newborn.
   b) Assess the baby's breathing and color. (Resuscitation, if needed, is covered in chapter 4.)
   c) Tie and cut the cord.
   d) Put the newborn in skin-to-skin contact with the mother and keep the baby warm.
   e) Help the mother to start breastfeeding within the first hour.
   f) Give eye care.
3 Assess and care for a newborn during the first day.
4 Do the first newborn physical examination.
5 Assess and care for the newborn during the first 28 days (at 2-3 days, 7 days, and 28 days).
6 Teach and counsel the mother and family about care of the newborn:
   a) Needs of babies from birth to 28 days
   b) Keeping the baby warm
   c) Protecting the baby from infection
   d) Bathing the newborn
   e) Care of the cord and umbilicus
   f) Need for immunizations
   g) Exclusive breastfeeding
   h) The breastfeeding mother's need for vitamin A, family planning
7 Teach and counsel the mother and family about danger signs.
8 Teach and counsel the mother and family about care of a baby with abnormal examination findings.

Notes

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2 Saving Newborn Lives. (2001). *State of the World's Newborns.* Washington DC: Saving Newborn Lives/Save the Children Federation.

3 World Health Organization. (1997). *Thermal protection of the newborn: a practical guide.* Geneva: WHO. (WHO/RHT/MSM/97.2)

4 Ibid.

5 Widstrom AM et al. (1990). Short-term effects of early suckling and touch of the nipple on maternal behavior. *Early Human Development*, 21:153-163.

6 Righard L and Alade MO. (1990). Effect of delivery room on success of first breastfeed. *Lancet*, 336:1105-1107.

7 De Chateau P and Wiberg B. (1997). Long-term effect on mother-infant behavior of extra contact during the first hour postpartum. *Acta Paediatrica*, 66:145-151.

8 UNICEF. (1999). *Baby Friendly News*. Number 2 (April):3-4.

9 World Health Organization/UNICEF. (1998). *Protecting, promoting and supporting breastfeeding: the special role of maternity services.* Geneva: WHO.

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12 Saugstad OD. (1998). Routine topical umbilical cord care at birth (Cochrane Review). *The Cochrane Library*, Issue 4, Oxford: Software Update.

13 World Health Organization. (1994). *Clean delivery for the prevention of tetanus and sepsis: Strengthening of country-wide programmes.* Geneva: WHO.

14 Zupan J and Garner P. (2002). Topical umbilical cord care at birth (Cochrane Review). *The Cochrane Library*, Issue 4. Oxford: Software Update.

3

Successful Breastfeeding

3

Successful Breastfeeding

Breastfeeding is a special gift from a mother to her baby. It not only provides a natural opportunity for bonding but also supports the growth and development of the newborn. Many newborn lives are saved because breast milk provides important nutrients and protection against illness and infection. If every baby were exclusively breastfed from birth, about 1.5 million lives would be saved each year.[1] All of us need to say to mothers again and again: "Care for your baby in the best way you can; breastfeed your baby!"

You have an important role in helping mothers successfully breastfeed their babies early and exclusively. Many women fear that they may not have enough milk to feed their infants. First-time mothers in particular need reassurance, knowledge, motivation, and confidence building. To help mothers, you need information and skills to educate and counsel them. If a mother is successful in breastfeeding during the first few days of her baby's life, she is more likely to be successful during the rest of their breastfeeding time. And her baby has a greater chance of surviving to become an adult.

Exclusive breastfeeding on demand provides all the nutrition a baby needs in the first 6 months. This is not true for any breast milk substitute.

Community support for breastfeeding is also essential. How communities provide this support varies in different regions, settings, and families. As the health worker, you can contribute to a supportive environment for breastfeeding in your community. The information in this chapter can be lifesaving.

In this chapter you will find information about:

- How breastfeeding helps mothers and babies
- Early and exclusive breastfeeding
- Things a health worker can do to help ensure a successful first breastfeed
- Things a mother can do to make breastfeeding successful
- How long to breastfeed
- Breastfeeding advice for the mother who is HIV positive
- Common breastfeeding problems
- Reasons to express breast milk
- Reasons to cup feed

In this chapter you will learn to do the following:

- Counsel/advise a mother and her family on early and exclusive breastfeeding
- Help a mother breastfeed the first time
- Assess how well a mother breastfeeds her baby
- Assist a mother to breastfeed successfully
- Counsel and advise an HIV-positive mother on infant feeding
- Recognize and care for common breastfeeding problems
- Teach a mother how to express breast milk
- Teach a mother to cup feed her baby

BENEFITS OF BREASTFEEDING

Breastfeeding helps both the mother and the baby—and therefore the family. It also helps babies who are low birth weight or sick. The reasons why breastfeeding is so healthy are explained in chart 3.1.

CHART 3.1 HOW BREASTFEEDING HELPS BABIES AND MOTHERS

BABIES

- Exclusive breastfeeding on demand provides all the nutrition a baby needs in the first 6 months. This is not true for any breast milk substitute.
- Breast milk contains vitamin A. Babies low in vitamin A have poor appetite, eye problems, and more infections.
- Breast milk is a clean source of food. Water used to mix formula and to wash bottles may have germs that can cause diarrhea. This is a major cause of infant death.
- Breast milk acts like the first immunization for the baby; it makes the immune system stronger.
- Breast milk protects babies against allergies.
- If a baby is sick, breast milk helps a baby get better faster.
- Breast milk helps the baby's body and brain develop and grow.
- Breast milk helps low birth weight babies, especially those who are premature:
  - Breast milk is the easiest food for the baby to digest.
  - Breast milk provides nutrients ideally suited for growth and development.
  - Breast milk helps to prevent a serious disease of the intestines that affects low birth weight babies (necrotizing enterocolitis).
  - Breastfeeding helps stabilize the baby's temperature.
- Breastfeeding helps the baby's mouth, teeth, and jaw develop properly.
- Milk from the breast is always the perfect temperature for the baby.

MOTHERS

- Breastfeeding helps facilitate placental separation.
- Breastfeeding helps the uterus return to its normal size.
- Breastfeeding reduces anemia because the mother starts her menses later.
- Exclusive breastfeeding helps suppress ovulation, so it can delay another pregnancy. When pregnancies are spaced at least 3-5 years apart, mothers are healthier and child survival is increased.
- Breastfeeding strengthens the relationship between a mother and her baby.
- Breastfeeding saves money. The mother does not need to buy other milk to feed the baby or pay for health care when her baby gets sick more often.

FIGURE 3.1 **EXCLUSIVE BREASTFEEDING IS THE HEALTHIEST WAY TO FEED A NEWBORN**

EARLY AND EXCLUSIVE BREASTFEEDING

Early breastfeeding means to give the breast within minutes of the baby's birth. Exclusive breastfeeding means to feed the baby *only* at the breast. This means a baby should not be given any water, tea, herbal drinks, infant formula, other liquids, or food. Exclusive breastfeeding for the first 6 months is recommended throughout the world because it helps a baby survive. It also helps the baby grow and develop.

Giving Other Liquids or Foods During the First 6 Months Can Be Harmful to the Baby and to Breastfeeding

Advise parents about the following information:

- When a baby is given other liquids or food, the baby will not feed as long or as often on the mother's breast. The mother will then make less milk. Then the baby will want more of the other liquids or food, and the mother will make even less milk. This cycle continues until the mother has no milk.
- The baby may become used to a bottle nipple and lose the ability to suck effectively on the breast. This can lead to sore nipples, poor milk let-down, refusal of the breast, lactation failure, and/or malnutrition.
- The baby who takes other liquids or foods along with breast milk does not absorb all the nutrients of breast milk well; vitamins and minerals can be lost.
- Babies stop breastfeeding earlier if they get other foods.[2,3]
- The baby who takes other liquids or foods before 6 months gets sick more often and has a bigger chance of getting diarrhea or an infection, such as pneumonia.[4]

Babies Get Enough Water from Breastfeeding Exclusively

Advise parents about the following information:

- Breast milk is almost all water (88 percent).[5] Even before the milk comes in, colostrum (the thick yellowish first milk) is enough to satisfy the baby. A baby who is breastfed on demand receives all the water she needs from breast milk.[6] When a baby is thirsty, the mother should breastfeed and drink more liquids to help produce more breast milk.

- Babies in very hot and dry climates do not need other fluids if they breastfeed exclusively and on demand.[7,8] They should not be given sugar water, honey water, or anything else. Breast milk supplies all the fluid a baby needs.
- A baby's stomach is small. When a baby drinks water or other liquids, there is less room for breast milk. Studies show that babies who drink water or other liquids before 6 months drink less breast milk. This can cause malnutrition.[9]
- Babies who drink other liquids before 6 months get sick more often with diarrhea and are more likely to die.

STARTING TO BREASTFEED

The first time a mother feeds her baby is an important time: 1) Colostrum is the first milk secreted from the breast and has many benefits for the newborn. Colostrum should therefore not be discarded. 2) If the first breastfeed is successful, it helps later breastfeeding to be successful. Most babies are ready to feed for the first time from 15-55 minutes after birth.[10] Explain the information that follows to the mother and family.

Why Should a Mother Start Breastfeeding During the First Hour After Birth?[11]

- Most newborns have a strong suck reflex and are awake the first hour after birth.
- The newborn's sucking helps the mother make breast milk.
- Colostrum is very high in vitamin A and antibodies, which protect the baby from infection. It is often called the baby's "first immunization."
- Colostrum helps to expel meconium and to prevent jaundice.
- Colostrum contains a very high concentration of nutrients and helps prevent low blood sugar in the first hours of life.
- Mothers have less bleeding after birth if they breastfeed immediately.
- Immediate skin-to-skin contact helps the baby stay at the best temperature.
- Early breastfeeding helps the mother and baby develop a strong relationship.

Self-attachment
There are several studies that describe the newborn's natural ability (if left undisturbed on the mother's abdomen immediately after birth) to look for and crawl to the mother's nipple, unassisted. This includes latching-on and sucking. Steps to support self-attachment include:

- Place the baby face down on the mother's abdomen.
- Support the baby as she moves gradually toward the breast.
- Allow the baby time to mouth the nipple before fully taking it into her mouth. The baby is born with a natural desire to take in and suck on the full areola and nipple.
- Allow the baby to suck as long as she wants.

Source: Righard L, and Alade MO. (1990). Effect of delivery room routines on success of first breast-feed. *Lancet*, 336:1105-1107.

For other sources, please see the list of general references at the end of this chapter.

CHART 3.2 TIPS TO HELP THE FIRST BREASTFEED

WHAT YOU CAN DO TO HELP A MOTHER BREASTFEED SUCCESSFULLY THE FIRST TIME

- Put the baby in skin-to-skin contact with the mother immediately after birth.
- Do not separate the mother and the baby (to weigh, give eye care, etc.) until after the first breastfeed.
- Do not rush; the first breastfeed takes time.

Mother's position

Help the mother get into a comfortable position. If she desires, use pillows or folded blankets under her head if she is lying down or under her arm if she is sitting.

- On her back. The mother may wish for her head and shoulders to be supported.
- Side-lying. If the mother had a cesarean delivery, this position may be most comfortable for her.
- Sitting up.

Baby's position

- The mother should hold the baby close with both the head and the body turned to face the breast.
- The baby is facing the breast with the baby's nose opposite the nipple.
- The baby's whole body is fully supported. If the baby is lower than the mother's breast, put the baby on a pillow or folded blanket so the baby and the breast are at the same level.

Attachment and suck

- Ways to help the baby attach to the breast:
  - The mother should hold her breast in a "C-hold" (thumb on top and other fingers below the breast) with her fingers away from the nipple. (See figure 3.1)
  - Touch the baby's lips with the nipple.
  - Wait for the mouth to open wide.
  - Move the baby onto the breast with baby's lower lip below the nipple. Do not move only the baby's head but support the back of the neck and move the whole body.
  - Look to see how the baby is attached.
  - Make sure that breast tissue does not block the baby's nose while she is sucking.
  - The mother should not lean over the baby. She should bring the baby to her breast, not move her breast to the baby.

- How can you tell the attachment is good?
  - The baby's chin is touching the breast.
  - The baby's mouth is wide open.
  - The lower lip is turned outward.
  - You can see more of the areola above the mouth than below it.
- How can you tell the sucking is good?
  - There are slow deep sucks with some pauses.
  - The mother's breasts and nipples are comfortable.
- What if the attachment and sucking are not good? Take the baby off the breast. Teach the mother to do this by putting her finger gently into the baby's mouth to break the suction. Help the baby attach again. Poor position, poor attachment, and poor sucking can all reduce milk flow into the baby's mouth, hurt the nipple (cause soreness or cracks), and cause breast engorgement (breast becomes too full).

Duration of each feeding

There is no limit to how long a baby should suck. If the attachment, suck, and position are good, the baby can suck until she gets full. Use both breasts. The baby should finish emptying one breast to get the rich hind-milk (the last milk to come from a breast at a feeding) before starting on the second breast.

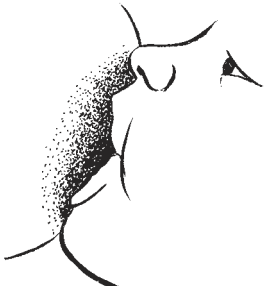
FIGURE 3.2 **WAIT FOR THE MOUTH TO OPEN WIDE**

FIGURE 3.3 **ATTACHMENT**

Incorrect!
This baby is grasping only part of the nipple which will be injured if she sucks this way.

Incorrect!
This baby is grasping only the nipple which will be injured if she sucks this way.

Correct!
This baby's mouth is wide open. She is grasping the areola and her chin is touching the breast.



CONTINUING TO BREASTFEED

Feed the Baby on Demand

- Breastfeed whenever the baby wants to eat. Cues that the baby wants to eat include: nuzzling, sucking on her hand, moving her head back and forth, or opening her mouth.
- Most newborns will eat an average of 8-12 times in 24 hours or about every 2-3 hours. This is important because:
  - A newborn's stomach is small and needs to be filled often.
  - Breast milk is easily digested and therefore passes quickly through the baby.[12]
- With demand feeding, the mother's milk production adjusts to the baby's needs, so there is always enough milk. The more the baby sucks, the more milk the mother makes.

Empty the First Breast at Each Feed

- Encourage the mother to feed first on one breast, without time limitation, before offering the second breast. This helps ensure that the baby gets the rich hindmilk. If the right breast is used to start one feed, at the next feeding start with the left breast. Then both breasts will make the same amount of milk.
- Do not limit how long the baby can suck during a feeding.
  - The first part of a feed on one breast, called the foremilk, is more watery to satisfy the baby's thirst.
  - The end part of a feed, called the hindmilk, is richer in fat to satisfy the baby's hunger.

Drink with Every Breastfeed and Eat More Food Each Day

Breastfeeding mothers need extra liquids. An easy way to remember to drink more: drink a large glass of liquid with every breastfeed and when thirsty.

Advise breastfeeding mothers to avoid drinking alcohol. Moderate to heavy alcohol consumption interferes with the mother's milk let-down reflex, inhibits the baby's milk intake, affects her motor development, and slows down her weight gain.[13]

To stay healthy a breastfeeding woman needs to eat at least one large extra serving of her staple food every day.

Use Different Positions to Hold the Baby

It is important for a mother to be comfortable during breastfeeding. Feeling pain, cold, or being upset makes it hard for her milk to flow out. The way she holds the baby can also make breastfeeding easier for the mother and baby. Each hold has its own benefits. Using different holds helps to draw milk from different parts of the breast. Remember: while the mother holds her baby to breastfeed, the baby needs to face the breast and his body needs to be in a straight line.

Cradle hold

The mother sits up and lays the baby on his side across her lap, facing her. She supports the baby's head in the bend of her elbow and the back and buttocks with her forearm.

Cross-cradle hold

This position is almost like the cradle hold, but the mother uses her other arm to hold the baby. The baby's head is held by the mother's open hand. This position makes it easy to move the baby to the breast and into a comfortable position as the baby latches on and sucks.

Under-arm hold

A mother can put her baby under her arm, holding the baby's head and neck in her hand. The baby's feet go towards her back. This position helps if the mother had a cesarean delivery or if the baby does not take in enough of the mother's nipple and areola in other positions.

FIGURE 3.4 **CRADLE HOLD**

FIGURE 3.5 **CROSS-CRADLE HOLD**

FIGURE 3.6 **UNDER-ARM HOLD**

FIGURE 3.7 **SIDE LYING**

Side lying

This can also be called the eat-and-sleep hold. Both the mother and baby lie on their sides facing each other. The mother may use either her hand or forearm or a pillow behind the baby's back to support him, positioning the head at her lower breast. The mother may prefer this hold during the first few days after giving birth and at night. It also is a good position for a mother who had a cesarean delivery.

Get Enough Rest

A breastfeeding mother is often awake at night. This means she may not get enough sleep. When a mother is very tired, she makes less milk. One way she can get more sleep is to nap when the baby sleeps during the day. If the mother has other children or responsibilities, it can be hard to do this. As a health worker, talk with the mother and family about:

- Why the mother needs to sleep during the day
- How she can get more sleep
- What the family can do to help

Get Enough Nutrients

For the mother to stay healthy, encourage her to eat a wide variety of foods so that she gets sufficient vitamins, minerals, and other nutrients. Eating an extra meal or at least an extra serving of her staple food each day will help improve her nutrition and energy level. Postpartum women also need to replace iron stores. Therefore, vitamin and iron supplements may be beneficial. Important nutrients for the postpartum mother include vitamin A, in areas where vitamin A deficiency is common.[14]

Breastfeed a Sick Baby During and After an Illness

It is even more important for a sick baby to breastfeed. The baby needs the water, minerals, and protection from breast milk.

Feed a Baby More Often During Periods of Rapid Growth

Sometimes a baby will want to feed almost constantly because of a growth spurt. This normally happens at about 10-14 days, at 5-6 weeks, and at about 3 months after birth, when the baby is going from one level of growth to the next. More food and energy are needed at these times. To help the mother make more milk, the baby feeds more often and longer for 1-2 days, or until the mother's milk supply has increased to meet the baby's new demand. Many mothers think the baby is feeding more because she does not have enough milk. Reassure the mother. Explain why the baby is feeding more. Encourage her to drink more fluids and to feed the baby as often as the baby wants.

How to Know If the Baby is Getting Enough Breast Milk

Many mothers worry whether they have enough breast milk for their babies. They may feel this way when the baby has rapid growth spurts, when their "let-down" changes (at about 3 months), or when the baby's stools change at 3-6 weeks. They almost always have plenty of breast milk. There are two things you can do to reassure the mother: 1) express milk from the mother's breast so she can see there is lots of milk, and 2) explain some simple signs she can check (see chart 3.3).

How Exclusive Breastfeeding Can Help Delay Another Pregnancy

Exclusive breastfeeding can help space pregnancies. This is commonly known as the Lactational Amenorrhea Method (LAM). The breastfeeding woman will not ovulate (will not be fertile) as long as three conditions are met:

1. the baby is exclusively breastfed on demand (nothing but breast milk night and day),

2. the baby is 6 months old or less, and

3. the woman has not seen the return of her menstrual period (bleeding).

After the first 6 months, advise the woman that breastfeeding alone cannot be relied upon to prevent pregnancy. She will need counseling on other methods of family planning.

How Long to Continue Breastfeeding

The first 6 months:

A mother should breastfeed exclusively on demand for the first 6 months. This means that for 6 months the baby receives nothing but breast milk whenever the baby wants to suck.

Six months to 2 years:

- After 6 months, breastfeeding alone cannot give the baby all the energy, vitamins, and minerals she needs.
- Continue breastfeeding while giving other foods or liquids.
- The longer a mother breastfeeds, the longer her baby gets infection protection from the breast milk.

CHART 3.3 **SIGNS THAT THE BABY IS GETTING ENOUGH BREAST MILK**[15]

- The baby passes urine at least 6 times in 24 hours.
- You can hear the baby swallow when feeding.
- The mother's breasts feel softer after a feed.
- The baby gains weight over time (after the first week).
- The baby seems contented after feeding. She has times when she is hungry, quiet, awake, and sleepy during the day.

FIGURE 3.8 **UNDER-ARM HOLD WITH TWINS**

FIGURE 3.9 **CRADLE HOLD WITH TWINS**

Breastfeeding Twins

Mothers can make plenty of milk to breastfeed twins successfully. Many times twins are born with low birth weight, so adequate breast milk is even more important for them.

At first, feed just one baby at a time. This helps the mother get used to each baby's way of breastfeeding. Give one breast to one baby and the other breast to the other baby; this ensures that each baby gets enough breast milk. As soon as the mother is used to breastfeeding her twins, she can breastfeed both babies together. This will save time.

When feeding the babies together, use both the under-arm hold and the cradle hold (see figures 3.8 and 3.9). As breastfeeding becomes established, alternate breasts, i.e., do not give one baby the same breast all the time. This keeps a baby from having a favorite side and also keeps one breast from getting bigger than the other if one twin has a stronger suck than the other. Make sure that each baby gets the rich hindmilk.

To stay healthy a mother of twins must: 1) eat extra food that is rich in proteins, vitamins, and minerals everyday, and 2) drink plenty of water each day.

BREASTFEEDING WHEN THE MOTHER IS HIV POSITIVE: MAKING AN INFORMED CHOICE

The baby of a mother who is HIV positive has about a 1 in 7 (15%) chance of getting the HIV infection through breastfeeding. Babies who do get HIV usually die early. The HIV-positive mother faces a difficult choice because of the possible risk of transmission that breastfeeding carries.

Where resources are limited, bottle-feeding the newborn with breast milk substitutes may be riskier than breastfeeding by an HIV-positive mother. Bottle-feeding in low resource areas causes many infant deaths due to diarrhea, malnutrition, and other infections. In ideal conditions, however, it is possible to successfully feed an infant with commercial formula or home-modified animal milk, although this is not easy and can be expensive.

Breast milk is the best food for a newborn. There are three ways to modify breastfeeding so the baby can still get most of the benefits of breast milk with a very low risk of mother-to-child transmission of HIV. These choices are:

- Exclusive breastfeeding with early weaning
- Heat-treating expressed breast milk
- Having an HIV-negative woman breastfeed the newborn (wet nursing)

The decision about how or whether to modify breastfeeding can and should be made by the mother and family, not the health worker. As a health worker, your responsibility is to give information that will guide the mother and family on how to think through the choices. Once they have the information, understand the issues, and review their own situation, they can make an *informed choice*.

Research is constantly giving us new information on prevention of mother-to-child transmission of HIV. In order to stay up-to-date with the latest recommendations, regularly consult the websites listed at the end of this chapter.

The World Health Organization, the Joint United Nations Programme on HIV/AIDS, and the United Nations Children's Fund recommend:

Health workers should give a woman with HIV all the information on the risks and benefits of the different feeding options and then support the woman's feeding choice.[16]

Counseling on Infant Feeding

What information do parents need to make an informed decision? They need to know why you are suggesting that breastfeeding be modified, what the choices are, and the benefits and risks of each option. Support the woman as she makes the decision that is right for her based on her personal, family, and household situation.

Facts About Breastfeeding for HIV-Positive Mothers and Their Families

HIV in breast milk does not transfer as easily to the baby as HIV in blood or other body fluids. Only about 1 out of 7 HIV-positive mothers who breastfeed will infect their babies through breastfeeding. The risk of HIV transmission is less:

- If the baby breastfeeds exclusively
- If the mother seeks immediate care for cracked nipples or breast infections
- If the baby is breastfed for only a few months
- If the mother and baby are given antiretroviral medications

The risk of HIV transmission is more:

- The longer a baby breastfeeds
- If a mother becomes infected while breastfeeding (transmission to the baby doubles)
- If there are problems or infections such as mastitis or cracked nipples in the mother or oral thrush or intestinal infections in the baby
- If the mother shows signs of AIDS

Infants who do not receive breast milk have a much greater risk of dying from other infections in the first 2 months than infants who do receive breast milk.

Option 1: Exclusive Breastfeeding with Early Weaning or When Replacement Feeds Meet AFASS Criteria

- Breastfeeding is stopped as soon as the baby can be weaned to a nutritionally adequate replacement food which is AFASS (acceptable, feasible, affordable, sustainable, and safe).
- The baby receives *only* breast milk for a limited time until AFASS criteria are met or it becomes safe to give other foods (about 6 months).

Benefits

- Exclusive breastfeeding and early weaning by 6 months reduce the risk of HIV transmission.
- The mother gives the baby all the benefits of breastfeeding during the critical early months of life (best food for baby, protection from infection, supports best growth and development).
- The risk of infection from use of a feeding bottle is avoided.

Risks or disadvantages

- Early weaning creates more work for the mother who must prepare a breast milk substitute.
- Feeding with a breast milk substitute is expensive.
- Feeding with a breast milk substitute increases the baby's risk of other infections and poor nutrition.
- Early weaning is difficult for both mother and baby. The mother's breasts will be painfully engorged for a few days; the baby may cry a lot; and the mother may be very upset.
- Early weaning may open the mother to criticism and stigma.
- AFASS criteria may be difficult to meet.

Option 2: Expressing Breast Milk and Heat-treating It Before Feeding

- Heat-treating kills HIV in breast milk.[17,18]
- The mother expresses her breast milk and heat-treats it, then feeds it to the baby by cup.

Two methods used to heat-treat breast milk are:

- Flash boiling: bring the milk just to a boil, cool it, and feed it to the baby.
- Holder (or Pretoria) pasteurization:
  - Place up to half a cup (120 ml) of breast milk in a clean glass jar and screw on the lid.
  - Fill a one liter aluminum pot half full with water and heat it to the boiling point.
  - When the water is boiling, remove the pot from the heat and immediately place the jar of breast milk in the pot of hot water. Let the jar of breast milk stand in the hot water for 15 minutes.
  - Pasteurized milk can be safely stored at room temperature for up to 12 hours if the jar is not opened or handled.

Benefits

- There is almost no risk of transmitting HIV.
- The baby gets the nutritional benefits of breast milk. Although boiling destroys some properties of breast milk, it is still better for the newborn than formula prepared from animal milk.[19]
- The risk of infection is less from cup feeding than from bottle feeding.

Risks or disadvantages

- The mother needs to spend a lot of time expressing breast milk, heat-treating it, and cleaning the container and cup.
- The mother must spend money on fuel to heat-treat breast milk every day.
- The baby must be fed by cup.
- The mother may be stigmatized for not breastfeeding directly.
- There are cultural barriers to this practice in some countries.

Option 3: Wet Nursing by a Woman Who is HIV Negative

The family finds a woman who tests HIV negative and is not likely to be exposed to future HIV infections to breastfeed the baby. The woman is given information on how to practice safe sex because the risk of transmission to the baby is very high if she becomes infected while breastfeeding.

Benefits

- Breastfeeding by another woman gives the baby nearly all the same protective benefits as breastfeeding with the mother.
- There is no risk of transmitting HIV through feeding, as long as the wet nurse does not become infected.
- The risk of infections from use of a feeding bottle is avoided.

Risks or disadvantages

- It may be difficult to be sure another person is HIV negative and stays negative.
- The mother needs to spend focused time with her baby to help their relationship stay close.
- It is not always easy to find a woman willing to take on the responsibility of wet nursing.
- There are cultural barriers to this practice in some countries.
- The mother may need to pay the wet nurse.
- The mother may be stigmatized for not nursing her own baby.
- If the baby is born with HIV, there is a very small risk that breastfeeding may transmit the infection to the wet nurse. This risk is higher if the baby has oral thrush or other mouth lesions, or if the wet nurse has a cracked, bleeding nipple or other breast condition.
- If the mother does not breastfeed, she looses the child-spacing benefits of breastfeeding.

Option 4: Replacement Feeding With Commercial Infant Formula

The infant is fed commercial infant formula from birth (no breastfeeding). See Option 5 for the benefits and risks or disadvantages of replacement feeding.

Option 5: Replacement Feeding With Home-Modified Animal Milk

The infant is fed appropriately modified animal milk from birth (no breastfeeding).

Benefits of replacement feeding

- No risk of HIV transmission through feeding. (There is still a chance that the baby may have acquired HIV infection during pregnancy or birth.)
- Other people besides the mother can help feed the baby.
- Mother and baby can be separated. Infant feeding is not interrupted if the mother is sick or dies.
- The baby can become closely attached to other people besides the mother.

Risks or disadvantages of replacement feeding

- Safe replacement feeding requires:
  - A reliable and affordable supply of the selected replacement food and a safe place to store it
  - Nutritionally adequate commercial infant formula or home-modified animal milk
  - Clean water to prepare the replacement food
  - Clean utensils
  - Adequate supply of fuel
  - Good hygiene and good sanitation
  - Time to prepare and feed the infant the replacement food
  - Knowledge of how to correctly modify animal milk, or the ability to read instructions on the selected infant formula package
- Breast milk substitutes lack anti-infective antibodies.
- Breast milk substitutes lack growth hormones.
- Purchase of enough breast milk substitutes to feed an infant can consume a large portion of the family's income.
- Improper preparation of breast milk substitutes can cause diarrheal disease and/or malnutrition.
- Women who do not breastfeed lose the child-spacing benefit of breastfeeding and need access to affordable and appropriate family planning services.
- Infants who do not breastfeed may not get adequate psychosocial stimulation and may not bond well with their mothers.
- Where breastfeeding is the norm, women who do not breastfeed may be stigmatized and marginalized.

A woman's body is capable of producing plenty of milk to exclusively breastfeed her baby for the first 6 months....It is very rare that there really is not enough milk.

BREASTFEEDING PROBLEMS

Sore or Cracked Nipples

Sometimes a mother's nipples become sore, painful, and may even crack and bleed. If this problem is not managed properly, it can lead to mastitis. Sore or cracked nipples are usually caused by poor positioning and attachment of the baby to the breast.

See chart 3.4 for decision-making steps.

Not Enough Milk

Women often worry whether their babies are getting enough nourishment from breastfeeding. "Not enough milk" is the most common misperception. A mother often thinks that she is not producing enough milk when:

- The baby has a growth spurt (a period of very rapid growth) and wants to suck more often.
- Her sensation of milk let-down changes (a different feeling in her breasts, or her breasts do not leak as much).
- She is stressed for other reasons.

A woman's body is capable of producing plenty of milk to exclusively breastfeed her baby (or more than one baby) for the first 6 months, providing the baby sucks frequently for as long as she wants and the mother has the support she needs. It is very rare that there really is not enough milk.

Nonetheless, if the baby's growth rate is slow, it is possible that the woman is not producing or "letting down" enough milk, for one or more of the following reasons:

- The mother is too tired to feed often and on demand.
- The mother is dehydrated.
- The mother is very stressed.
- The baby is not being fed often enough.
- The baby is being given other foods or liquids.
- The baby does not empty the breast well at each feeding.

In any of these situations, giving the baby a bottle will only make the problem worse. Rather, the mother needs support, encouragement, and practical advice on how to increase her milk supply, particularly to increase the frequency of breastfeeding.

See chart 3.5 for decision-making steps.

Breast Engorgement

Breasts that are too full are engorged. This can be caused by:

- Milk coming in the first time, after the colostrum.
- A baby who does not attach well to the breast, so does not empty the breast completely.
- Separation of mother and baby, so that the baby does not feed for a long period.
- A mother who is stressed, affecting the "let-down."

See chart 3.6 for decision-making steps.

Plugged Milk Duct

One of the ducts through which the breast milk flows gets stopped up. This may happen if one area of the breast is not emptying well.

See chart 3.7 for decision-making steps.

Mastitis[20, 21]

Mastitis is an infection of the breast tissue, not the milk. The main causes are:

- Bacteria (germs) get into the breast because the mother has cracked nipples.
- Milk does not flow well through the milk ducts. Milk is high in sugar and when fluids high in sugar stay in one place, bacteria grows there. When bacteria increases, the mother gets an infection. Things that slow the flow of breast milk can cause infection. For example:
  - The mother has engorged breasts.
  - The mother has a plugged milk duct.
  - The mother wears a very tight bra or ties a cloth very tightly around her breasts.
- The mother's immune system is weak.
  - The mother is in poor health and may be malnourished.
  - The mother is stressed.

See chart 3.8 for decision-making steps.

The mother needs support, encouragement, and practical advice on how to increase her milk supply, particularly to increase the frequency of breastfeeding.

CHART 3.4 SORE OR CRACKED NIPPLES: DECISION-MAKING CHART

History	Ask the mother: ■ What are you feeling? The mother's nipples may be sore or even painful. ■ When does it hurt? Pain is noticed when the baby is first put to the breast at the beginning of a feed.
Exam	Examine the breasts and nipples: the nipples may be red, cracked, and/or bleeding.
	Observe the baby breastfeeding: if the baby's position and attachment are not good, it can cause sore or cracked nipples. ■ Is the baby's body close to the mother's body? ■ Is the baby's chin touching the breast? ■ Is the baby's mouth wide open? ■ Is the lower lip turned outward? ■ Is more of the areola seen above the baby's mouth than below it? ■ Ask if the mother's breasts and nipples comfortable?
Problems/needs	Sore or cracked nipples
	Other problems to think about: ■ Thrush: This is a fungus or yeast infection that will cause the nipples to be red. However, the baby usually also has thrush in her mouth, with white patches on the mucous membranes and the tongue. The baby with thrush may not want to eat because of a sore mouth. (See chapter 6.)

CHART 3.4 SORE OR CRACKED NIPPLES: DECISION-MAKING CHART

Plan of care

Make sure the baby's position, attachment, and suck are good.
If the attachment or position are not good, have the mother take the baby off the breast and try again. (Teach the mother to take the baby off the breast by putting her finger gently into the baby's mouth to break the suction.) Use a different position if necessary.

Give the mother paracetamol for pain 30 minutes before breastfeeding. She can take a 500 mg tablet every 4-6 hours after a meal.

Advise the mother to:

- Ensure that the baby latches on (attaches) properly.
- Use different positions while breastfeeding: side lying, cross-cradle hold, under-arm hold. This moves pressure to different parts of the nipple.
- Apply expressed breast milk on the nipples after a feed or bath, then air-dry them.
- Keep the nipples clean and dry, but do not use soap on the nipples.
- Expose the breasts to sunshine for 10 minutes 2-3 times a day.
- Start feeding with the breast that is less sore.
- *Do not stop breastfeeding*. The baby can suck from a nipple that is bleeding, unless the mother is HIV positive.
- If the mother is HIV positive, she should not breastfeed her baby on a bleeding nipple. If she has a cracked nipple that bleeds, teach her to express and discard the milk from that breast until the crack heals. Then the baby can take both breasts again.
- Only in severe cases should the mother stop to "rest" a nipple for 24 hours. During this time she must express breast milk from the affected breast. She can cup feed the baby with the expressed breast milk and also breastfeed from the breast that has no nipple problem.

Follow-up

See the mother and the baby again in 2-3 days.
Repeat the above history and exam and determine if your advice has been helpful. If not, the mother may need additional support or referral for feeding problems.

CHART 3.5 NOT ENOUGH MILK: DECISION-MAKING CHART

History

Ask the mother about herself:

- How are you feeling? If she is very tired, the mother may make less milk because she does not breastfeed often enough. The ability to let-down milk is also reduced if she is tired.
- How much do you drink in one normal day? A breastfeeding woman needs to drink every time she is thirsty. Ask her to also drink a large glass every time she breastfeeds.
- Do your breasts feel full before breastfeeding and empty afterwards? The breasts should feel full before and soft and empty after each feeding.
- Do your breasts leak milk at times? Most women have less leakage after the first few months. This does not mean that they have less milk. First-time mothers leak more often than experienced breastfeeders.

Ask the mother about the baby:

- How often does the baby breastfeed? It is important for the baby to breastfeed at least every 2-3 hours in the early weeks.
- Is the baby only breastfeeding, or is she also taking other liquids or foods? Taking other liquids or food will reduce how much milk is made and reduce the benefits of breastfeeding.
- How old is the baby? Babies go through growth spurts when they need to feed more often to increase the mother's milk production. This often happens around 10-14 days, at 5-6 weeks, and at about 3 months.
- Is the baby very fussy? This could be a sign the baby is not getting enough milk.
- How much does the baby sleep? Does she wake to feed in the night? A baby who is too sleepy to feed every 2-3 hours may be sick.

Exam

Watch the baby breastfeed. If the baby's attachment and sucking are not good, the mother may make less milk.

Weigh the baby. If the baby's weight gain is less than it should be, the baby may not be getting enough when eating, or she may be ill.

CHART 3.5 NOT ENOUGH MILK: DECISION-MAKING CHART

Problems/needs	The baby is not getting enough milk. List the cause of not enough milk, if known.
	The mother thinks she does not have enough milk, even though the baby is getting enough.
Plan of care	If needed, counsel and help the mother with position and baby attachment.
	Reassure the mother that she can make lots of milk. Advise the mother to: ■ Rest more. ■ Drink more fluids (with every meal and every breastfeeding). ■ Feed the baby on demand, at least every 2-3 hours, more often if the baby wants to suck. ■ Let the baby feed for as long as possible on each breast. ■ Feed *only* at the breast. ■ Stay in bed and keep the baby with her so the baby can feed often during the time she is trying to increase her milk supply. Note: It usually only takes 24-48 hours to increase breast milk.
	Reassure the mother that she has enough milk for her baby: ■ Show her a record of the baby's weight gain (growth chart) and explain that the baby's weight gain is normal. ■ Express a little milk from her breasts to show her that she is producing milk. ■ Explain normal growth spurts and changes in the "let-down" reflex over time. ■ To reassure her that the baby is growing well, have her bring him back for weekly weighing, if possible.
Follow-up	See the mother and baby in 3 days. Repeat the above history and exam. Consider scheduling weekly visits to monitor weight gain. Advise the mother to return if the problem worsens or if there are any danger signs.

CHART 3.6 BREAST ENGORGEMENT: DECISION-MAKING CHART

History	Ask the mother: ■ What do you feel in your breasts? Engorged breasts are hard, swollen, and painful. ■ How often does the baby breastfeed? ■ How long ago did you give birth? Engorgement usually happens about 2-3 days after birth, if the baby is not breastfed for a long period, or if the woman and baby are separated. ■ Do you have any fever, chills, or one area of the breast that has a lump, is red, and is hot? These questions are to rule out other problems, such as a breast infection. Engorgement may be accompanied by a low fever (up to 38 °C or 100.4 °F) lasting not more than 24 hours. If the fever lasts more than 48 hours, suspect mastitis.
Exam	Examine both breasts. Engorged breasts are hard, swollen, and painful. Usually both breasts become engorged at the same time. Look at the baby breastfeeding. See whether the baby is attaching and sucking well.
Problems/needs	Breast engorgement Other problems to think about: ■ **Mastitis**: Usually starts 10 days or more after birth, with fever, one area of redness, and heat. Usually only one breast is affected. ■ **Plugged milk duct**: No fever; the mother feels well except for one hard swollen area of one breast.

CHART 3.6 BREAST ENGORGEMENT: DECISION-MAKING CHART

Plan of care

Explain to the mother how to reduce breast engorgement.
Advise her to:

- Before each breastfeed, put hot wet clean cloths on the breasts for 5-10 minutes or take a warm shower.
- Before each breastfeed, hand-express a small amount of milk before putting the baby to the breast. This softens the area around the nipple (the areola) and helps milk flow, making it easier for the baby to attach.
- Breastfeed often, at least every 2-3 hours. If the baby is not able to suck, express milk every 2-3 hours. (Engorged breasts that are not emptied can become infected.)
- At each feed, empty the first breast before offering the other breast to the baby.
- If the breasts still feel full after a breastfeed, encourage the baby to feed longer or express breast milk for a few minutes (until the breasts feel softer).
- Help close the milk ducts and make the breasts more comfortable after breastfeeding by putting a cold cloth on both breasts for 5-10 minutes after breastfeeding.

Advise the mother on other comfort measures for engorgement:

- Avoid tight-fitting bras.
- Apply cold compresses to the breasts between feedings to help reduce swelling and pain.
- Put cold cabbage leaves on the breasts:[22, 23]
  - Wash and dry cabbage leaves with clean water.
  - Crumple the leaves with your hand to crush veins before using.
  - Put one or more leaves on each breast to completely cover them (including under the arm).
  - Wear a bra or tie on a cloth to hold the leaves in place.
  - Wear the leaves until they become soft.
- Take paracetamol 500 mg by mouth 3 times a day as needed.
- Explain the signs of breast infection, and that the mother should see a health worker if she has any signs of infection:
  - Pain, redness, heat, a lump in one breast, fever and chills

Follow-up

Not needed if engorgement stops and there is no sign of a breast infection.

CHART 3.7 PLUGGED MILK DUCTS: DECISION-MAKING CHART

History	Ask the mother: ■ What are you feeling? Symptoms include a lump in one breast that may be sore when touched. The woman usually does not have a fever. ■ Where do you feel the lump? Often it is in the outer part of the breast.
Exam	Examine both breasts. A plugged milk duct causes a lump in one breast without redness or heat.
	Take the mother's temperature. A plugged milk duct does not cause a fever.
Problems/needs	Plugged milk duct
	Other problems to think about: ■ **Engorgement**: Starts 2-3 days after birth, possibly with a low fever (up to 38 °C or 100.4 °F) lasting up to 24 hours; there is no one area of redness and heat; both breasts are affected. ■ **Mastitis**: Starts 10 days or more after birth, with fever, one area of redness and heat; generally only one breast is affected.

CHART 3.7 PLUGGED MILK DUCTS: DECISION-MAKING CHART

Plan of care

Reassure the mother that she can reduce the breast lump and pain.

Advise her to:

- Before each breastfeed, put hot, wet, clean cloths on both breasts for 5-10 minutes.
- Before each breastfeed, gently massage the breast that has the plugged milk tube. Move the hand that is doing the massage over the plugged area toward the nipple.
- Breastfeed from the breast that has the plugged milk duct first.
- Encourage the baby to feed longer from the breast that has a plugged milk duct.
- If the plugged milk duct is in the outer breast, use the under-arm hold position while feeding. This draws more milk from the outer breast.
- Do not wear a tight bra or tie a cloth tightly around the breasts.

Explain the signs of a breast infection, and that she needs to see a health worker if she has any sign of infection:

- Pain, redness, heat, a lump in one breast, fever and chills

Follow-up

Not needed if the plugged duct opens and there is no sign of a breast infection.

CHART 3.8 MASTITIS: DECISION-MAKING CHART

History	Ask the mother: ■ What are you feeling? Symptoms may include breast pain, body aches and pains, fatigue, fever and chills. ■ How long ago did you deliver? Mastitis usually starts 10 or more days after delivery.
Exam	Examine both breasts: Mastitis causes a hot, red, painful area or lump in the breast and usually only one breast is infected. Take the mother's temperature: Mastitis causes fever. There may be rapid onset of fever, which can become very high (38.5 °C/101 °F or higher).
Problems/needs	Mastitis Other problems to think about: ■ **Engorgement**: Starts 2-3 days after birth. There is no one area of redness and heat; both breasts are affected. There may be low fever (up to 38 °C or 100.4 °F) that does not last more than 24 hours. ■ **Plugged milk duct**: No fever; the mother feels well except for pain in part of one breast.

CHART 3.8 MASTITIS: DECISION-MAKING CHART

Plan of care

Give the mother **one** of the following medicines for 10 days by mouth. Cloxacillin is first choice.

- Cloxacillin 500 mg every 6 hours, or
- Erythromycin 250 mg every 8 hours, or
- Amoxicillin 500 mg every 8 hours, or
- Ampicillin 500 mg every 6 hours

Advise the mother to:

- Before breastfeeding, put hot, wet, clean cloths over the infected area for 5-10 minutes.
- Before breastfeeding, gently massage the infected breast from the outer breast in towards the nipple, over the infected area.
- Breastfeed often (every 2 hours) starting with the infected breast.
- Feed the baby longer from the infected breast.
- If the infection is in the outer breast, use the under-arm hold while feeding. This draws more milk from the outer breast.
- Stay in bed and keep the baby with you to feed often.
- Drink lots of water (at least 4 liters a day).
- Take paracetamol for pain (500 mg tablet every 4-6 hours).

Signs that the infection is getting better include less fever and less breast pain.

Explain danger signs: If there is a hard round lump in the breast that does not go away or if the infection does not get better after 2 days of antibiotics, go to a higher-level health facility for care.

Follow-up

See the mother again in 2 days.

Refer to a higher-level health facility if she still has fever or a hard, painful lump in the breast.

A breast abscess (pocket of pus) may develop. This needs other treatment. An abscess that is not treated is very dangerous!

CHART 3.9 **PREPARING CUPS AND CONTAINERS TO COLLECT EXPRESSED BREAST MILK AND FEED THE BABY**

1. Before each use, wash a cup and a container with soap and water; make sure all milk is removed.

2. Boil the cup and container:
   - Use a pot with a lid.
   - Put the cup and container into the pot.
   - Fill the pot with water so it covers the cup and container.
   - Heat water until boiling and put on the lid.
   - Boil for 10 minutes.

3. Pour the water out of the pot without touching the cup and container.

4. Leave the cup and container in the pot until needed. Keep the pot covered.

EXPRESSING BREAST MILK

It is important to teach all mothers how to express breast milk. Expressing breast milk can be important when:

- The mother is not able to breastfeed. This can happen if the mother is sick, if she is not with her baby, or if the baby cannot suck yet.
- The breasts become engorged when the mother's milk comes in on day 2 or day 3 postpartum. If the breasts are very engorged, the baby may be unable to grasp the nipple unless some of the milk is expressed.
- The mother wants to stimulate her body to make more milk.

Before expressing breast milk, teach the mother to clean and boil a cup and a container. The cup is used to feed the milk to the baby. The container is used to store the breast milk.

Storing Breast Milk

At room temperature

- At 19-22 °C (66-72 °F), up to 10 hours
- At 26 °C (78 °F), up to 6 hours[24]
- If it is hotter than 26 °C (78 °F), only 1-2 hours

In a refrigerator

- At 0-4 °C (32-39 °F), up to 24-48 hours[25]

In a freezer

- If the freezer is inside a refrigerator (temperature may differ due to door opening frequently), up to 2 weeks
- In a separate deep freezer at -18 °C (0 °F), for up to 3 months[26]

CHART 3.10 TEACH THE MOTHER TO EXPRESS BREAST MILK

1. Find a private place where the mother can relax. It helps for the baby to be near or for the mother to think about her baby.

2. Have the mother wash her hands well with soap and water. Wash your hands also.

3. Put clean, warm, wet cloths on the breasts for 5 minutes to help open the milk tubes, if needed.

4. Show the mother how to massage her breasts from the outside towards the nipple to help bring milk down.

5. Be ready with a (cleaned and boiled) cup or container with a wide opening.

6. To express milk, teach the mother to:
   - Hold the breast in a "C-hold" (thumb on top and other fingers below the breast), with fingers and thumb away from the nipple.
   - Lean slightly forward so the milk will go into the container.
   - Press thumb and other fingers in toward the body.
   - Squeeze thumb and other fingers together.
   - Press and release. Try using the same rhythm as the baby sucking.
   - Be patient, even if no milk comes at the beginning.
   - Move her hands around the breast so milk is expressed from all areas of the breast.
   - Express the milk from one breast for at least 3-5 minutes until the flow slows, then express from the other breast, and then repeat for both breasts.
   - It does not matter which hand is used. You may use both hands.

7. Advise her that expressing milk can take 20-30 minutes or longer in the beginning.

FIGURE 3.10 MASSAGING THE BREAST

FIGURE 3.11 EXPRESSING BREAST MILK INTO A CUP

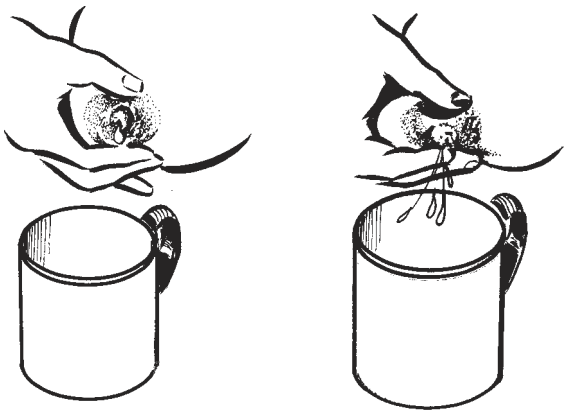


CHART 3.11 **TIPS FOR STORING AND USING STORED BREAST MILK**

After expressing breast milk, the mother can feed it to the baby right away or save it for later. Fresh breast milk has the highest quality. If the breast milk must be saved, advise the mother and family to:

- Use either a glass or hard plastic container with a large opening and a tight lid to store breast milk.
- Use a container and lid which have been boiled for 10 minutes.
- If the mother is literate, teach her to write the time and date the milk was expressed (or morning, afternoon, evening) on the container before storing.
- Store 2-4 ounces (60-120 ml) of milk in one container, enough for one feeding, so as not to waste breast milk. Show the family how 2-4 ounces (60-120 grams) of fluid fills a cup similar to the one they will be using.
- Store the milk in the coolest place possible.

FIGURE 3.13 **CUP FEEDING**

CUP FEEDING

Cup feeding means using a cup to feed a baby. Cup feeding is much better than using either a bottle or a cup and spoon. See chart 3.12 for the reasons why this is so.

Who Should Use Cup Feeding?

Cup feeding can be used for any baby who is not feeding directly on the breast. It is ideal for:

Babies whose mothers work or must be separated from them. A mother can express her milk while she is away from her baby. She should collect and transport it in a wide-mouthed jar, which can be easily cleaned and boiled. The mother's milk should be properly stored and cup fed to the baby when the mother is away.

Low birth weight babies. Cup feeding can be used for low birth weight babies who are premature and not ready to breastfeed. *These babies are able to swallow before they can suck.* They may not have the strength to suck long enough at the breast for a whole feeding. Giving the rest of the breast milk by cup completes the feeding.

Babies with mouth problems (cleft palate). Although most babies with cleft lip and/or cleft palate can breastfeed successfully, some have trouble sucking at the breast.

Babies whose mothers are ill or deceased.

CHART 3.12 WHY USE CUP FEEDING?

Better than a bottle

- Cup feeding is easier for some low birth weight babies who are premature.
- Cup feeding prepares a baby to breastfeed later; the mouth action is more like the action of breastfeeding.
- The baby can control the feed (how fast, how much, when to rest).
- It does not need special equipment.
- Preparation and clean-up are easy.

Better than a cup and spoon[27]

- The feeding is faster.
- Not as much milk is spilled.
- It is not as easy for a baby to get milk in her lungs.
- Forced feeding with a spoon can cause damage to a baby's mouth.

CHART 3.13 SHOW FAMILIES HOW TO CUP FEED

1. Position the baby: Awaken the baby and hold her partly sitting in your lap. Support the baby's shoulders and neck with your hand, so you have control over her head.

2. Hold a small cup of milk, half-filled, to the baby's lips:
   - Tip the cup so the milk just reaches the lips.
   - The cup should rest lightly on the baby's lower lip.
   - The cup edges should touch the outer parts of the baby's upper lip.

3. The baby will become alert and open her mouth and eyes:
   - A low birth weight baby may start to take up the milk with her tongue.
   - A full-term or older baby will suck or sip the milk, spilling some of it.

4. Do not pour the milk into the baby's mouth. Keep the cup at the baby's lips, letting the baby take the milk.

5. When the baby has had enough, the baby will close her mouth and refuse to take more:
   - A baby who has not taken enough may take more at the next feeding, or
   - The mother may increase how often she feeds.

6. Advise the mother to hold the baby to her shoulder and rub the baby's back to help him burp (bring up wind).

7. Measure the baby's intake over 24 hours rather than at each feeding.

TASKS FOR ALL HEALTH WORKERS: BREASTFEEDING

1 Teach and counsel a mother and/or family on breastfeeding:
   a) How breastfeeding helps mothers and babies; importance of colostrum
   b) Exclusive breastfeeding
      - What it is
      - How it can help the baby, the mother, and breastfeeding
   c) How to start the first breastfeed
      - Timing
      - Position
      - Attachment
   d) How to breastfeed successfully
      - Demand feeding
      - Use both breasts
      - Ways to hold the baby
      - Importance of rest
      - Importance of fluids and nutrition (including vitamin A and other supplements)
      - Breastfeeding a sick baby
      - Increased growth periods
      - How to tell a baby is getting enough milk
      - How long to continue breastfeeding
      - Breastfeeding twins
   e) Recognize breastfeeding problems
      - Sore, cracked nipples
      - Not enough milk
      - Breast engorgement
      - Plugged milk tubes
      - Mastitis
   f) Breastfeeding options if the mother is HIV positive
2 Help a woman breastfeed the first time.
3 Help a woman establish her milk supply.
4 Teach a mother how to express milk.
5 Teach a mother and family how to cup feed their baby.
6 Care for mothers with selected breastfeeding problems using the decision-making steps:
   a) Sore, cracked nipples
   b) Not enough milk
   c) Breast engorgement
   d) Plugged milk ducts
   e) Mastitis

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www.who.int/child-adolescent-health//publications/Nutrition/BFC.htm
This is the WHO 40-hour breastfeeding counseling course.

www.who.int/child-adolescent-health/NUTRITION/HIV_infant.htm
This WHO site focuses on HIV and infant feeding. Breastfeeding is a primary focus. Access to six important documents is provided.

www.who.int/child-adolescent-health/publications/NUTRITION/HIV_IF_Framework.htm
A crucial document helping countries to recognize how they must take breastfeeding properly into account at the same time as they initiate measures to reduce postnatal HIV transmission.

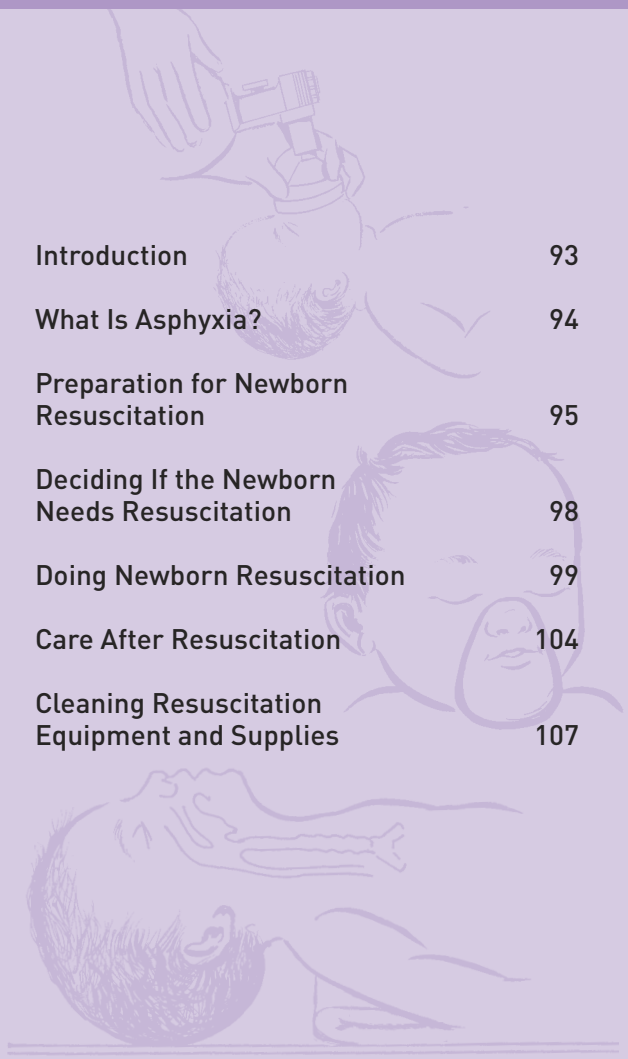
"HIV and Infant Feeding. Guidelines for decision-makers"
www.who.int/child-adolescent-health/publications/NUTRITION/ISBN_92_4_159122_6.htm
(Attention: for some mail systems this link might be divided into two parts)

"HIV and Infant Feeding. A guide for health-care managers and supervisors"
www.who.int/child-adolescent-health/publications/NUTRITION/ISBN_92_4_159123_4.htm
(Attention: for some mail systems this link might be divided into two parts)

www.who.int/reproductive-health/rtis/mtct
This WHO site provides general information on mother-to-child transmission of HIV, as well as WHO recommendations for antiretroviral drug use (Nevirapine) to prevent MTCT. It also contains a PMTCT monthly publications report.

4

Newborn Resuscitation



4

Newborn Resuscitation

About 5-10 percent of all newborns need resuscitation at birth.[1] Nearly 1 million babies die each year because they do not breathe normally at birth.[2] When a baby cannot breathe, urgent management is needed. For many babies, therefore, newborn resuscitation can be lifesaving.

Oxygen is important to every part of the human body. During pregnancy a baby receives oxygen from the mother's blood through the placenta. After birth, the baby gets oxygen through the lungs by breathing. For most babies this change happens without any problems; some babies, however, need help to start or continue breathing. This help is called resuscitation.

FIGURE 4.1 **RESUSCITATION PLACE**

In this chapter you will find information about:

- What asphyxia is
- Why a health care worker should *always* be ready to do newborn resuscitation at *every* birth
- What you need (warmth, clean surface, equipment, and supplies) to do newborn resuscitation
- Signs that a baby needs resuscitation
- Steps of resuscitation
- When to stop newborn resuscitation
- Care of a baby after resuscitation:
  - If the resuscitation is successful
  - If the baby is breathing, but needs referral
  - If the resuscitation is not successful

In this chapter you will learn to do the following:

- Prepare a place, equipment, and supplies for resuscitation
- Clear the mouth and nose of a newborn if there is meconium in the amniotic fluid
- Recognize an asphyxiated newborn
- Resuscitate an asphyxiated newborn
- Monitor and care for a newborn after resuscitation
- Counsel a mother and family after resuscitation
- Counsel a mother and family if a newborn dies
- Decontaminate, clean, and disinfect equipment and supplies for resuscitation

WHAT IS ASPHYXIA?

Asphyxia is when the baby does not begin or sustain adequate breathing at birth. There are many reasons a baby may not breathe at birth. Most of the time it happens when a baby has hypoxia, which is explained in chart 4.2 on pages 96-97.

PREPARATION FOR NEWBORN RESUSCITATION

You cannot always tell which babies will have asphyxia at birth. Therefore, you must be prepared to do newborn resuscitation at *all* births. When things are not prepared, time is lost. If a few minutes pass before the baby starts to breathe, he can suffer brain damage or die. Preparations include: warming the resuscitation area, preparing a clean surface for the resuscitation, and collecting equipment and supplies. Be prepared to cut the cord immediately if the baby needs resuscitation.

Warmth

Keeping a newborn baby warm saves his energy for breathing. There are many ways to keep a baby warm:

- Keep the room warm and free from drafts and fans.
- If possible do the resuscitation near a heat source.
- In a health care facility, use a heater or light bulb above the baby; turn the heater or lamp on before the delivery and keep it on during resuscitation.
- Dry the baby immediately after birth and remove the wet cloth.
- Use a warm cloth to wrap the baby, including the head, while keeping his face and upper chest uncovered.
- Keep the baby's head covered.

Surface for Doing the Resuscitation

Use a flat surface that is clean, dry, and covered with a warm cloth, such as a table.

Equipment and Supplies

Chart 4.1 lists the equipment and supplies you will need for newborn resuscitation.

CHART 4.1 EQUIPMENT AND SUPPLIES FOR NEWBORN RESUSCITATION

Always use a bag and mask for resuscitation if available.*

- Newborn-sized self-inflating resuscitation bag (Ambu bag) and facemasks:
  - Bag volume should be 250-400 ml
  - Facemasks should be:
    Size 1 for a normal weight newborn
    Size 0 for a small newborn (below 2.5 kg)
- Two pieces of gauze or clean cloth
  - One to dry the baby's mouth and nose area
  - One to use as a protective barrier if doing mouth-to-mouth and nose resuscitation
- Three pieces of cloth
  - One to dry the baby
  - One to cover the baby after drying
  - One to roll and put under the baby's shoulders (optional)
- A cap to cover the baby's head
- A clock or watch
- Suction equipment: bulb, mucus extractor (De Lee), or mechanical suction
- Gloves: If available (do not need to be sterile)
- Oxygen: If available. Oxygen is not needed for successful resuscitation

* If a tube-and-mask device is used for resuscitation, follow your local protocol on how to use it.

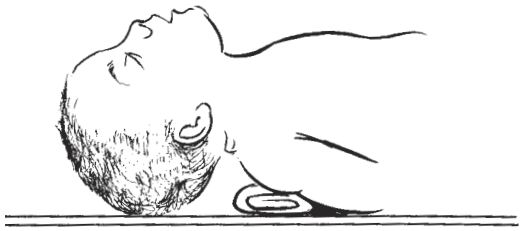
CHART 4.2 HYPOXIA[3]

What is hypoxia?	Not enough oxygen in the body tissues
When can hypoxia happen?	■ During pregnancy ■ During labor and birth ■ After birth
What causes hypoxia?	Hypoxia can occur for many reasons. Some factors that may lead to fetal or neonatal hypoxia include: ■ **During pregnancy**: maternal hypertension, diabetes, infection, sickle cell disease, and asthma (maternal hypoxia) ■ **Intrapartum**: preterm labor, prolonged or obstructed labor, prolapsed cord, placenta previa, placental abruption, administration of narcotics and anesthetics, aspiration of meconium, abnormal presentation of the fetus, difficult or instrumental delivery ■ **Other factors**: preterm or post-term birth, multiple gestation, cord or placenta problems which impede blood flow
Signs of fetal hypoxia	Hypoxia leads to fetal distress, which affects the fetal heart rate and can stimulate the release of meconium into the amniotic fluid. A fetal heart rate below 100 or above 180 indicates hypoxia or fetal distress for some other reason. Meconium-stained amniotic fluid is also a sign of fetal distress.

CHART 4.2 **HYPOXIA**[3]

How to help prevent hypoxia	When a pregnant woman lies on her back, the flow of blood to the uterus decreases. Encourage a woman *not* to lie on her back, especially during labor. Identify and stabilize/treat any maternal problems during labor (high blood pressure, diabetes, infections). Identify and manage obstructed labor, malpresentations, and other problems early.
How to identify hypoxia in labor	Check the fetal heart rate every 30 minutes in active labor, every 15 minutes after full dilatation. If the fetal heart rate is below 100 or above 180 per minute or is either falling or rising significantly, the baby may have hypoxia.
How to treat hypoxia during labor	1. Increase oxygen to the baby: a. Ask the woman to lie on her left side. This position increases the oxygen that goes to the baby. b. Give the woman fluids by mouth and/or IV. c. Give oxygen (if available). d. Discontinue oxytocin drip, if one is running. 2. Check the fetal heart rate again. 3. Identify any maternal factors and treat accordingly. 4. Prepare to do resuscitation, as at any delivery. If the fetal heart rate is still not normal, deliver the baby as soon as possible if this can be done quickly and safely; otherwise, REFER.

FIGURE 4.2 **POSITION THE BABY FOR RESUSCITATION**



DECIDING IF THE NEWBORN NEEDS RESUSCITATION

Immediate Assessment at Birth

For most babies, the immediate care you give at the moment of birth is enough to stimulate the baby to start breathing. Remember to always:

1. Thoroughly dry and stimulate the baby, rubbing him all over, especially up and down the back or trunk with a warm, dry cloth. Flicking the soles of the feet may also help. Other forms of stimulation may be harmful.
2. Discard the wet cloth and wrap the baby quickly in another warm, dry cloth to keep him warm.
3. Look at the baby to see if he is breathing or crying.
4. Decide if the baby needs resuscitation. If he is not breathing, is breathing poorly (less than 30 breaths per minute), or is gasping, he needs resuscitation.

DOING NEWBORN RESUSCITATION

If the baby does not respond to stimulation, begin resuscitation immediately. Continuing tactile stimulation to the newborn who is not breathing wastes time. Resuscitation must be started as soon as you see that the baby is asphyxiated. Quickly clamp (or tie if you have no clamps) and cut the cord, leaving a cord stump at least 10 cm long for now.

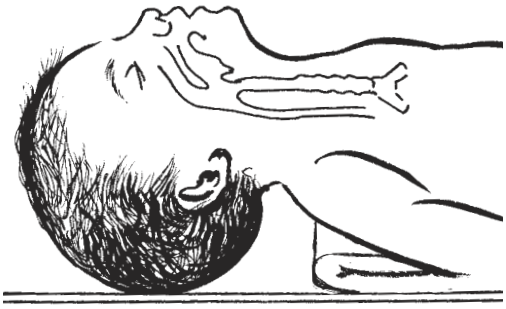
As you prepare to resuscitate, briefly talk to the mother. A mother usually knows something is wrong when she does not hear her baby cry. Explain that the baby needs help with breathing and that you will give that help. Ask another health worker or family member to stay with the mother to give emotional support and to watch for and help with any bleeding.

Step 1: Position the Baby

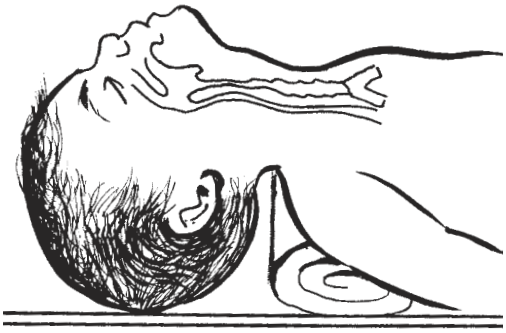
- Place the baby on his back on a flat surface.
- Position the head so that the neck is slightly extended. You may put a rolled cloth under the shoulders to maintain the position.
- The resuscitation surface should be well lit and warm.
- Keep the baby's head and lower body covered to keep him warm.

FIGURE 4.3 **CORRECT HEAD EXTENSION FOR RESUSCITATION**

Correct



Incorrect: over-extended



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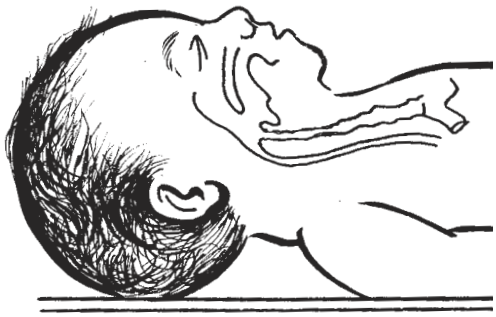

Step 2: Clear the Airway

- Wipe off the baby's face with a clean piece of gauze or cloth.
- Suction the baby.
  - Bulb suction may be used (see Appendix D). Discard the bulb syringe after use.
  - Mechanical suction with a De Lee-type suction device or mucus extractor.
  - Machine suction can be used with a clean soft suction tube or catheter, size 12F. The suction pressure of the machine should not be more than 130 cm water or 100 mm Hg.
  - Always suction the baby's mouth first and then the nose.
  - Suction only while pulling the suction tube out, not while putting it in.
  - Do not suction deep in the throat as this may cause the baby's heart to slow or the baby may stop breathing.
  - Do not insert a suction tube or bulb more than 5 cm into the mouth or 3 cm into the nose.
- If the amniotic fluid was stained with meconium (yellow or greenish color), gently suction out the mouth and nose as soon as the head is born and while it is still on the perineum (before the shoulders emerge).
- Quickly reassess the breathing after you have positioned the baby and cleared the airway.
  - If the baby is breathing without difficulty, no further resuscitation steps are needed. Go to Step 4.
  - If the baby is having trouble breathing or is not breathing, begin ventilation. Go to Step 3.
- Signs the baby is having trouble breathing include:
  - Gasping (short, difficult breaths that produce a sound when the baby breathes in). Gasping is a sign of a serious problem and requires the same management as absent breathing.
  - Breathing less than 30 breaths per minute, with or without any of the following:
    - Indrawing of the chest (when the baby breathes in, areas between the ribs are pulled in)
    - Grunting (a sound the baby makes when breathing out)
    - Shallow irregular breathing

Step 3: Ventilate

For bag-and-mask ventilation use the proper size mask to cover the baby's mouth and nose. To ventilate: hold the mask with one hand to ensure an airtight seal using one or two fingers of the same hand to hold the chin and keep the head slightly extended. Squeeze the bag with the other hand (See figure 4.5).

For mouth-to-mouth ventilation use your mouth (with a piece of gauze over the baby's nose and mouth) to cover the baby's mouth and nose. To ventilate, breathe a mouthful of air into the baby. Remember that the baby's lungs are small. When doing mouth-to-mouth ventilation use only air from your mouth and not your lungs.

Ventilate once or twice, watching to see if the baby's chest rises. If the chest does not rise, check the baby's position, reposition the baby, your mouth or the mask, and try again until you get the chest to rise with each breath. If necessary, repeat suctioning.

- Ventilate about 40 times in 1 minute.
- After 1 minute, stop to see if the baby starts to breathe independently.
- Continue ventilation until the baby spontaneously cries or breaths.

When the baby's breathing is normal, stop ventilation and continue to monitor the baby closely. The cord should now be securely tied and cut to the proper length.

If there is no breathing or gasping after 20 minutes, stop ventilation. The baby has died.

FIGURE 4.4 **PROPER MASK PLACEMENT**

Incorrect mask placement
This mask is too large and will not make a tight fit.

Incorrect mask placement
This mask only covers the mouth. The mask must cover both mouth and nose.

CORRECT mask placement
This mask covers both mouth and nose.

FIGURE 4.5 **BAG-AND-MASK RESUSCITATION**

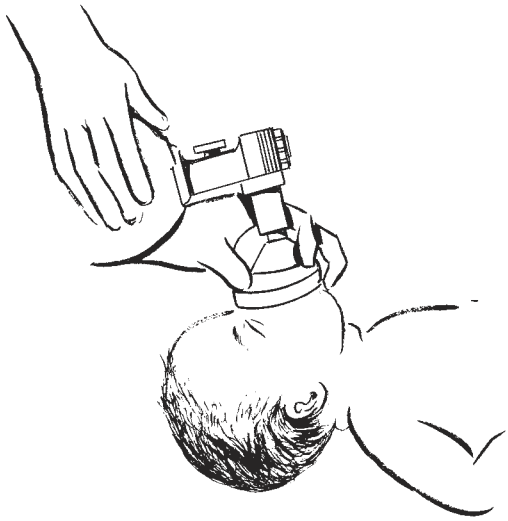

CHART 4.3 **SIGNS A BABY NEEDS REFERRAL AFTER RESUSCITATION**

- Not sustaining adequate breathing (less than 30 breaths in 1 minute) or gasping: continue resuscitation efforts during transport
- More than 60 breaths in 1 minute
- Indrawing of the chest
- Grunting (sound made when breathing out)
- The baby's tongue and lips are blue or the whole body is pale or bluish.

Step 4: Monitor

Closely monitor a baby who had resuscitation or who has poor color, even if he appears to be breathing well.

- Watch for breathing problems: grunting, indrawing of the chest, flaring of the nostrils, rapid breathing (greater than 60 breaths per minute), slow breathing (less than 30 breaths per minute), blue or pale color. If the baby is having difficulty breathing, give oxygen if available.
- Keep the baby warm and dry. Defer the first bath for at least 6 hours until the baby is warm, stable, and breathing normally.
- If the baby's breathing and color are good, give him to his mother, skin-to-skin, for continued warmth, stimulation, and breastfeeding as soon as possible.
- **If the baby's condition deteriorates, transfer rapidly to a hospital for medical care. (See chart 4.3.)**

CHART 4.4 **NEWBORN RESUSCITATION SUMMARY**

Position	Place the baby on his back with the neck slightly extended.
Clear airway	■ Clear the airway by wiping out the mouth with gauze. ■ Suction the baby's nose and mouth. ■ Reassess the baby's breathing.
Ventilate	■ Use bag and mask (or mouth-to-mouth and nose if bag and mask are not available) to ventilate at 40 breaths per minute. ■ Reassess the baby's breathing after 1 minute. ■ Continue to ventilate until the baby breathes independently. ■ Stop after 20 minutes if the baby has not responded.
Monitor	■ Keep the baby warm (skin-to-skin). ■ Defer the bath for at least 6 hours after the baby is stable. ■ Breastfeed as soon as possible. ■ Watch for signs of a breathing problem: rapid, labored, or noisy breathing, poor color. ■ If a breathing problem occurs, stimulate, give oxygen (if available), and refer.

Babies who have difficulty breathing use a lot of energy. Breastfeeding will help give the newborn more energy.

CARE AFTER RESUSCITATION

If Resuscitation Is Successful

Counsel/advise

- Talk with the mother and family about the resuscitation. Answer any questions they may have.
- Teach the mother to check her newborn for breathing and warmth and to contact the health worker if any findings are abnormal.
- Encourage the mother to breastfeed as soon as possible. Babies who have difficulty breathing use a lot of energy. Breastfeeding will help give the newborn more energy.
- Encourage the mother to keep the newborn warm by keeping the baby skin-to-skin.
- Explain to the mother and family how to recognize newborn danger signs and how to get care immediately if the baby has any danger signs.

Give care

- Tie the cord securely and cut it to the proper length.
- Check the newborn hourly for at least 6 hours for:
  - Breathing problems (less than 30 or more than 60 breaths in 1 minute, indrawing of the chest, grunting, or gasping)
  - Color: blue tongue or lips, pale or bluish skin
  - Temperature that is too low (axillary temperature below 36 °C/96.8 °F) or too high (axillary temperature above 37 °C/98.6 °F)
- Give normal care for a newborn (see chapter 2).

Record

- The newborn's condition at birth
- What you did during the resuscitation
- How long the resuscitation took
- Results of the resuscitation
- The care you gave after the resuscitation

Do follow-up

Ask the mother to bring her baby for a follow-up visit on day 2-3.

If the Baby Is Breathing but Needs Referral

After the resuscitation, the baby may need special help.

Counsel/advise

- Talk with the mother and family about the resuscitation and how the baby is doing now. Answer any questions they may have.
- Explain that the baby needs special care.
- If the baby needs to be referred to another facility, send the mother and baby together.
- Explain to the mother that she should breast-feed as soon as possible and during the referral. However, this may not be possible if the baby is not breathing well.
- Explain why and how to keep the baby warm:
  - Keep the baby's head covered.
  - If possible, put the baby skin-to-skin with the mother and cover both the mother and baby with warm blankets.

Give care

- Continue to resuscitate the baby, if needed.
- Keep him warm and monitor his breathing and color.
- Give oxygen, if available. Continue oxygen during transport, if possible.
- Arrange for referral.

Records

- Prepare records for referral (see above).
- Prepare records to be kept at your facility and home-based records to be kept by the family.

Do follow-up

Ask the mother to bring her baby back for a follow-up visit after the baby's problem is resolved.

FIGURE 4.6 **KEEP THE BABY WARM**

Normal changes in a woman's hormones after pregnancy can make her feel very sad, worried, or irritable.

If Resuscitation is Not Successful

If the baby is not breathing or gasping after 20 minutes, stop resuscitation. The baby has died. The mother and family will need much support. Be caring and gentle when talking to the family.

Counsel/advise

- Talk with the mother and family about the resuscitation and the baby's death. Answer any questions they may have.
- Give the mother and family care that is culturally acceptable. Be sensitive to their needs.
- Find out what they wish to do with the baby's body.
- Explain to the mother and family that:
  - The mother will need rest, support, and a good diet at home.
  - The mother should not return to a full workload too early.
  - The mother's breasts will become full around day 2-3. She may have a mild fever for a day or two. She may do the following to shorten the time the breasts will be full:
    - Bind the breasts with a tight bra or cloth until there is no milk in the breasts.
    - Do not express milk or stimulate the breasts.
- The mother may feel very emotional and cry a lot. The normal changes in a woman's hormones after pregnancy can make her feel very sad, worried, or irritable. Because of the baby's death, the feelings may be worse than usual. Encourage the mother and family to speak with a health worker if they wish to talk.

Do follow-up

Ask the mother to return for a postpartum visit early (within three weeks) as ovulation will resume soon since she is not breastfeeding. At that time advise her to use a family planning method until she is physically and emotionally ready to become pregnant again. If possible, give postpartum care at a place away from other postpartum mothers in order to provide privacy for the family during the grieving process. The mother and family may find it painful to be cared for among mothers with healthy newborns.

Records

Do the required recording and notification for a baby's birth and death and complete any other required medical records for the delivery.

CLEANING EQUIPMENT AND SUPPLIES

Equipment and supplies used for infant resuscitation may be contaminated by body fluids from both the mother and the baby. Everything needs to be cleaned correctly to protect health workers and other babies from infection. Use the three infection prevention steps: decontamination (soaking in a decontamination solution), cleaning (washing with soap and water), and high-level disinfection (boiling, autoclaving, or dry heat treatment) for the items listed below (see Appendix C).

- Disposable items: Decontaminate disposable items such as gauze, bulb syringe, gloves, suction catheters, etc. for 10 minutes before discarding in a safe place.
- Reusable suction catheter or gloves: Do the three infection prevention steps (decontamination, cleaning, and high-level disinfection).
- Cloths and linen: Wash, air- or sun-dry, iron, then store in a clean, dry place.
- Table or surface used for resuscitation: Wipe with decontamination solution and then wash with soap and water. Air-dry.

Ask the mother to return for a postpartum visit. At that time advise her to use a family planning method until she is physically and emotionally ready to become pregnant again.

TASKS FOR ALL HEALTH WORKERS: NEWBORN RESUSCITATION

1 Prepare for newborn resuscitation before all births (clean, warm surface; equipment; and supplies).
2 If there is meconium in the amniotic fluid, clear the newborn's mouth and nose during the birthing process. Suction the baby as soon as the head is delivered and before the shoulders emerge.
3 Recognize when a baby needs resuscitation.
4 Resuscitate an asphyxiated newborn.
5 Stop newborn resuscitation if it is not successful after 20 minutes.
6 Monitor the newborn's breathing and color after resuscitation.
7 Care for a newborn and counsel the parents after resuscitation:
a) If the resuscitation is successful
b) If the baby is breathing, but needs referral
8 Counsel and care for a mother and family if a newborn dies.
9 Decontaminate and clean resuscitation equipment and supplies (gloves, catheter, facemask, cloths, table) following the infection prevention guidelines. Do high-level disinfection of gloves and suction catheters.

Notes

1 Saugstad OD. (1998). Practical aspects of resuscitating asphyxiated newborn infants. *Eur J Pediatr*, 157(Suppl. 1): S11-S15.

2 World Health Organization. (1995). *World Health Report*. Geneva: WHO.

3 World Health Organization. (2003). *Managing newborn problems: a guide for doctors, nurses and midwives (Integrated management of pregnancy and childbirth)*. Geneva: WHO. (WHO/RHR/00.7)

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American Heart Association. (2000). Guidelines 2000 for cardiopulmonary resuscitation and emergency cardiovascular care: International consensus on science. *Circulation* (Suppl.), 2(8):I-348.

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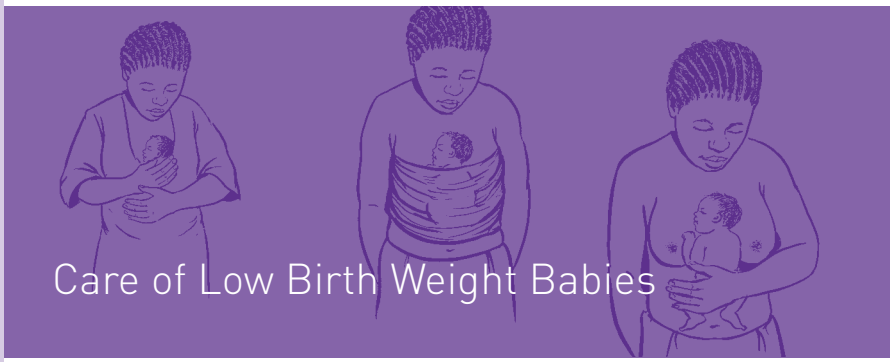

Care of Low Birth Weight Babies

5

Care of Low Birth Weight Babies

A low birth weight (LBW) baby is one who weighs less than 2500 grams at birth. These babies are more likely to die than babies with a birth weight of 2500 grams or more. Low birth weight babies who survive are likely to have more medical and developmental problems than normal term babies. They have special needs. All small babies have a better chance to live and be healthy if they get proper care.

The causes of LBW are not well understood. We do know that if a woman is healthy and eats well, she has less chance of having a LBW baby.

Health workers have an important role in helping low birth weight babies survive. They can help mothers and families learn to care properly for their LBW babies, and they can also advise communities about healthy pregnancies to lower the number of LBW babies.

In this chapter you will find information about:

- What low birth weight is
- How to identify a low birth weight baby
- The appearance of a low birth weight baby
- Problems of low birth weight babies
- Care of low birth weight babies at birth and for the first 28 days
- Skin-to-skin care or kangaroo mother care
- Breastfeeding a low birth weight baby

In this chapter you will learn to do the following:

- Recognize and care for low birth weight babies
- Counsel and advise mothers and families about the care of low birth weight babies
- Refer low birth weight babies who are sick and very low birth weight babies

WHAT IS LOW BIRTH WEIGHT?

A **low birth weight** baby is one who weighs less than 2500 grams at birth.

A ***very* low birth weight** baby is one who weighs less than 1500 grams at birth.

The causes of LBW are complex and poorly understood. During pregnancy babies gain weight by getting enough nourishment from their mothers and by staying in the uterus for at least 37 weeks or 9 calendar months. A baby who does not get enough nourishment in the uterus or who is born before completing 40 weeks may be low birth weight.

LBW babies can be:

- Premature or preterm: A baby born before the 37th week of pregnancy is called premature (or preterm). A premature baby may not be ready to live outside the uterus and may have difficulty initiating breathing, sucking, fighting infection, and staying warm.
- Small for gestational age (SGA): A baby who did not grow well enough in the uterus during pregnancy is called small for gestational age. The SGA baby is usually full-term and often able to breathe and suck well.

A baby may be both small for gestational age and premature.

Because there is no single cause of LBW, it is difficult to prevent. Among healthy, well-nourished women, the frequency of LBW babies is lower. You may be able to help decrease the number of LBW babies born in a community by encouraging all women to get good comprehensive antenatal care. Refer to your country's Safe Motherhood guidelines.

CHART 5.1 **FACTORS ASSOCIATED WITH LOW BIRTH WEIGHT**

FACTORS	HELPFUL ACTIONS/PREVENTIVE MEASURES
Pregnancy in women who: ■ Are less than 20 ■ Have births that are less than 3 years apart or have many pregnancies (five or more)	■ Advise women to delay their first pregnancy until at least 20 years of age. ■ Counsel men and women to space their children at least 3 years apart. ■ Encourage the use of modern contraceptive methods to space or limit pregnancies.

Women who:
■ Had a LBW baby before
■ Do hard physical work for many hours with no rest
■ Are very poor
■ Are underweight and have poor nutrition
■ Have health problems (hypertension, sickle cell disease)
	■ Make the community aware of the need to make childbearing safer. Women should:
	  ■ Eat enough and the right kinds of food
	  ■ Get enough rest from hard work
	  ■ Get good comprehensive antenatal care
	  ■ Have access to health care services to find and treat common problems before pregnancy
	■ Help women meet their health needs during pregnancy.

Women who have pregnancy problems such as: ■ Severe anemia ■ Pre-eclampsia or hypertension ■ Infections during pregnancy (bladder and kidney infections, hepatitis, sexually transmitted infections, HIV/AIDS, malaria) ■ Multiple gestation (e.g., twins)	Teach women and families to: ■ Recognize and respond to danger signs during pregnancy ■ Get treatment for problems during pregnancy ■ Seek follow-up and preventive care
Babies who have: ■ Congenital or genetic abnormalities ■ An infection while in the uterus	During pregnancy teach women and families to: ■ Not take any medicine or treatment unless approved by a health worker ■ Know the pregnancy and newborn danger signs ■ Get treatment for problems during pregnancy

What Do Low Birth Weight and Premature Babies Look Like?

Because they weigh less than 2500 grams, LBW newborns are thin and have very little fat under the skin. This lack of fat is why LBW babies are at higher risk for hypothermia.

Premature babies may also have the following characteristics, depending on the gestational age:

- **Skin**: May be reddened. The skin may be thin so blood vessels are easily seen.
- **Lanugo**: There is a lot of this fine hair all over the baby's body.
- **Limbs**: The limbs are thin and may be poorly flexed or floppy due to poor muscle tone.
- **Head size**: The head appears large in proportion to the body. The fontanelles are smooth and flat.
- **Genitals**: Male: the testes may not be descended and the scrotum may be small. Female: the clitoris and labia minora may be large.
- **Soles of feet**: Creases are located only in the anterior third of the sole, not all over, as in a term newborn.

What Problems Do Low Birth Weight Babies Have?

Low birth weight babies are more likely to die or develop serious health problems. The smaller the baby, the bigger the risk. Chart 5.2 lists the possible problems a low birth weight baby may have and gives recommended care for each problem.

CARE FOR THE LOW BIRTH WEIGHT NEWBORN

Care at Birth

Remember, all babies need the same basic care regardless of birth weight. Use the decision-making steps in chart 5.3 to guide you in giving care to the LBW baby at birth.

Follow-up Care of the Low Birth Weight Baby

The low birth weight newborn is more likely to have problems during the early weeks of life. See this baby every week until the baby weighs 2500 grams. Use the decision-making steps to guide you in giving care during follow-up visits (see chart 5.4).

Newborn Danger Signs

Remember: the newborn danger signs are the same regardless of weight:

- Breathing problems
- Feeding difficulties or not sucking
- Feels cold
- Fever
- Red, swollen eyelids, and pus discharge from eyes
- Redness of skin, swelling, pus or foul odor around the cord or umbilicus
- Convulsions/fits
- Jaundice/yellow skin

CHART 5.2 **LOW BIRTH WEIGHT BABY PROBLEMS**

PROBLEMS	RECOMMENDED CARE
Breathing problems at birth and later (especially premature babies)	Resuscitate if the baby is not breathing, is gasping, or is breathing less than 30 breaths per minute. Premature babies have immature lungs, get cold easily, and are more prone to infections, all of which lead to breathing problems.
Low body temperature because there is little fat on the body and the newborn's temperature regulating system is immature	Kangaroo mother care with the baby in continuous skin-to-skin contact helps keep the LBW newborn warm.
Low blood sugar because there is very little stored energy in the LBW baby's body	These babies need breast milk (colostrum) as soon as possible after birth and very frequent feedings (every 2 hours) in the first weeks.
Feeding problems because of the baby's small size, lack of energy, small stomach, and inability to suck	LBW babies can usually breastfeed well with help. The LBW baby may need many small frequent feeds. Premature babies may not be strong or mature enough to breastfeed well at first.
Infections because the immune system is not mature	Caregivers must use infection prevention practices and wash their hands carefully before caring for LBW babies. At the health care facility, do not house uninfected LBW babies in the same room with septic newborns or sick children. Keep sick people (visitors and staff) away from LBW babies.
Jaundice (high bilirubin) because the liver is not mature	Premature LBW babies become yellow earlier and it lasts longer than in term babies. If there is any jaundice in the first 24 hours or after 2 weeks or if the baby is yellow with any other danger sign, refer to a higher-level facility. The mother should breastfeed the jaundiced LBW newborn more often (at least every 2 hours) to help the baby get rid of the bilirubin through the stool.
Bleeding problems due to immature clotting ability at birth	Give vitamin K at birth.

CHART 5.3 LOW BIRTH WEIGHT BABY—CARE AT BIRTH: DECISION-MAKING CHART

History	Ask about the mother's history, including diseases or problems during the pregnancy and birth. Ask what date the baby was expected or how long the pregnancy lasted.
Examination	Weigh the baby at birth. Do a complete newborn physical examination.
Problems/needs	Decide if the baby is: ■ Very low birth weight: less than 1500 grams ■ Low birth weight: between 1500-2500 grams
Plan of care	As for all newborns: ■ Dry and stimulate ■ Keep the newborn warm ■ Check the baby's breathing and color ■ Start newborn resuscitation if needed ■ Put the baby skin-to-skin with the mother as soon as possible ■ Start breastfeeding as soon as possible (or express breast milk [colostrum] and cup feed as soon as possible) ■ Give eye and cord care

CHART 5.3 LOW BIRTH WEIGHT BABY—CARE AT BIRTH: DECISION-MAKING CHART

Plan of care (continued)

Low birth weight baby (1500-2500 grams)

- If the LBW newborn has no breathing problems, sucks well, and stays warm while in skin-to-skin contact with the mother:
  - Keep the baby warm
  - Keep the baby in continuous skin-to-skin contact with the mother
  - Cover both mother and baby with a warm blanket or cloth
  - Cover the baby's head with a cloth or hat
  - Do not bathe the baby until the baby's temperature is stable; delay the bath at least 24 hours
- Teach the mother and family to keep the baby warm by continuous skin-to-skin contact. If the axillary temperature drops below 36 °C (96.8 °F): warm the baby by warming the room, using a heat source, and cover both baby and mother with more warm blankets or cloths.
- Encourage the mother to breastfeed (or express colostrum and cup feed) as soon as possible and then every 2 hours.
- Check breathing, temperature, color, and feeding (sucking) every 30 minutes for 6 hours.
- Give the newborn a single dose of vitamin K 1 mg IM.
- Advise the mother and family to always wash their hands before handling the LBW baby.
- If the LBW baby has any of the following problems, act first to stabilize the baby, and then refer to a higher-level health facility that is able to provide specialized care (see Referral Guidelines in chapter 6, chart 6.3).
  - Blue tongue and lips: Give oxygen at high level until color improves (see Appendix C).
  - Breathing problems: Resuscitate if indicated.
  - Not feeding or sucking well: Express and give breast milk by cup.

Very low birth weight baby (below 1500 grams)

- Stabilize the baby by making sure the baby is warm and has breastfed or taken breast milk (colostrum) by cup.
- Keep the baby in continuous skin-to-skin contact with the mother.
- Give the baby a single dose of vitamin K 0.5 mg IM.
- Refer the baby to a higher-level health facility where there is care for a very small baby. The baby is at great risk of respiratory problems after birth due to lung immaturity.
- Give the first dose of antibiotics:
  Ampicillin 50 mg/kg IM *and* gentamicin 4 mg/kg IM
  See chapter 6 and follow the Referral Guidelines (chart 6.3).

Follow-up

See the baby weekly to check for any problems and to monitor the weight gain.

CHART 5.4 LOW BIRTH WEIGHT BABY—WEEKLY FOLLOW-UP CARE: DECISION-MAKING CHART

History

- Ask the mother:
  - Is the baby sucking well?
  - How often does the baby feed?
  - How many times does the baby urinate (wet the diaper) in 1 day?
  - Does the baby seem very sleepy? Is the baby hard to wake up?
  - What do the baby's stools look like and how often does your baby have a stool?
  - Have you seen anything in the baby that worries you?
- Look at the baby's birth record to see the birth weight and if there were any problems at birth.

Examination

- Watch the baby breastfeed.
- Weigh the baby, if a scale is available. After the first week (when some weight may be lost), the newborn should gain weight regularly (about 25-30 grams a day after the first 10 days).
- Look at the baby's:
  - Skin for color and any rashes or pustules.
    Jaundice appears earlier and lasts longer in LBW babies. Refer the baby if there is any jaundice in the first 24 hours or after 2 weeks or if there is jaundice with any other danger sign.
  - Blue color of the baby's trunk, lips or tongue indicates a serious lack of oxygen in the blood. This baby needs oxygen immediately.
  - Breathing.
  - Eyes for thick pus discharge.
  - Mouth: tongue, gums for white patches.
  - Cord or umbilicus (for redness, swelling, bad smell, or discharge).
- Feel the temperature or take the axillary temperature. Normal axillary temperature is 36-37 ºC (96.8-98.6 ºF).

Problems/needs

- Decide if the baby is growing.
- Decide if the baby has any problems (see chapter 6).
- Think about the baby's needs: warmth, protection from infection, feeding, safety, love, sleep.

CHART 5.4 LOW BIRTH WEIGHT BABY—WEEKLY FOLLOW-UP CARE: DECISION-MAKING CHART

Plan of care

If the LBW newborn has any danger signs:

- Refer the baby to a higher-level health facility where there is care for a low birth weight baby
- Follow the Referral Guidelines (see chapter 6, chart 6.3)

If the LBW newborn is growing and has no danger signs:

- Make a plan of care for any problem or need
- Continue to advise the mother about how to care for the baby:
  - Continue to keep the baby warm with skin-to-skin contact
  - Protect the baby from infection (handwashing, avoiding contact with people who are sick)
  - Give normal newborn care
  - Breastfeed the baby on demand and exclusively
  - Talk to and comfort the baby
  - Show the baby love
  - Keep the baby safe
  - Watch for danger signs
- Remind the mother of what to do if she notices a danger sign
- Plan for the next visit as needed for follow-up:
  - Immunizations: give on the same schedule as for normal weight babies
  - Give family planning information to the mother to help her choose the method of her choice to space the next pregnancy

Follow-up

- See the low birth weight baby every week to check her growth and to look for any problems until she reaches 2500 grams.
- When the baby reaches 2500 grams, slowly begin to decrease the amount of time the baby is in skin-to-skin contact.

SKIN-TO-SKIN OR KANGAROO MOTHER CARE

Low birth weight babies need more help and time to adjust to life outside the womb. They also need help to stay warm and to get enough breast milk to grow. One way to help a baby with all these needs is to keep the baby in skin-to-skin contact. Kangaroo mother care (KMC) is a way to meet the low birth weight baby's special needs.

Components of Kangaroo Mother Care

Kangaroo mother care has three main parts:

1. **Continuous skin-to-skin contact between the baby's front and mother's chest**: Skin-to-skin contact starts at birth and is continued day and night. There may be brief interruptions such as during the baby's bath. The baby wears only a hat or cloth to keep her head warm and a nappy (diaper).
2. **Exclusive breastfeeding**: The baby breastfeeds within 1 hour after birth and then every 2-3 hours. The cloth that wraps around the mother and baby is loosened to breastfeed. Information about how to help a mother breastfeed her LBW baby follows on pages 120 and 121.
3. **Support to the mother**: The mother can continue to do what she normally does while providing kangaroo mother care. For example, the mother can cook, clean, and even sleep without interrupting skin-to-skin contact. However, she will need a lot of support to maintain this continuous contact. In a health facility the staff can help; at home the family may help by keeping the baby skin-to-skin for short periods while the mother rests or takes care of other duties.

How to Help the Mother Keep Her Baby Warm with Skin-to-Skin Contact

Start skin-to-skin contact as soon after birth as possible. If the baby breathes well and does not need resuscitation or medical treatment, begin skin-to-skin contact immediately.

CHART 5.5 **HOW DOES KMC HELP THE BABY AND MOTHER?**

BABY

- The newborn's breathing becomes regular and stable.
- The newborn's temperature stabilizes at normal.
- The newborn's immunity is improved.
- Infections are reduced.
- The newborn breastfeeds better and gains weight faster.

MOTHER

- The mother becomes more attached to her baby emotionally.
- The mother gains a feeling of competence in caring for her fragile baby.

FIGURE 5.1 **SKIN-TO-SKIN CONTACT**

How to wrap the baby and mother

Place the baby between the mother's breasts with the baby's feet below the mother's breasts and the baby's hands above.

The mother and baby should be chest-to-chest with the baby's head turned to one side.

Use a long piece of cloth to snugly wrap the mother and baby together:

- Place the center of a long cloth over the baby on the mother's chest.
- Wrap both ends of the cloth firmly around the mother, under her arms, to her back. The wrap should not be so tight that it constricts the baby. Leave room for the baby's abdominal breathing.
- Cross the cloth ends behind the mother and tie the ends of the cloth in a secure knot.
- If the cloth is long, bring both ends of cloth to front and tie the ends of the cloth in a knot under the baby.
- The wrap should be tight enough so that the baby does not slip out when the mother stands.
- Support the baby's head by pulling the wrap up to just under the baby's ear. The wrap can be loosened for breastfeeding.

Have the mother put on her blouse or dress. Be sure to use clothing that is loose and that has an adequate opening in the front so as not to cover the baby's face and so that breastfeeding will be easy.

Advise the mother to

- Sleep with her upper body raised some (about 30 degrees) to keep the baby in a head up position.
- Breastfeed the baby on demand, at least every 2 to 2 1/2 hours.
- Use skin-to-skin contact continuously. Another family member may do the skin-to-skin contact for short times when the mother bathes or must do something else.
- Provide continuous skin-to-skin contact until the baby weighs at least 2500 grams.

FIGURE 5.2 **HOW TO WRAP THE BABY AND MOTHER**

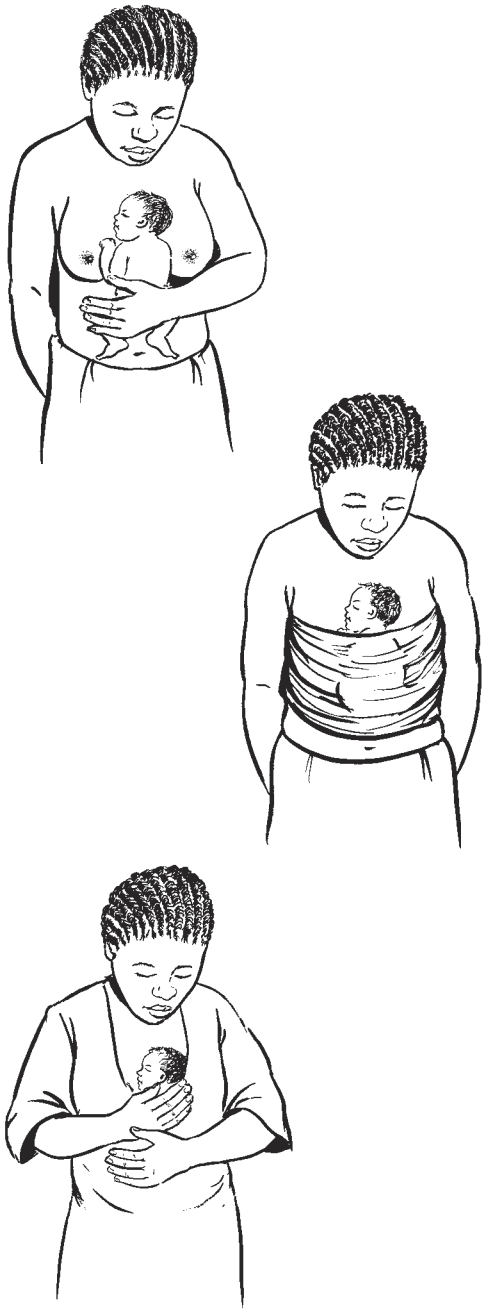

FIGURE 5.3 **BABY IN KMC POSITION**

FIGURE 5.4 **FATHERS CAN ALSO HELP WITH SKIN-TO-SKIN CONTACT**

Breastfeeding the Low Birth Weight Baby

Breast milk is the perfect food for all babies, especially for small low birth weight babies. LBW babies need enough food to recover from birth and to grow, but they have small stomachs, tire easily, and may not have enough energy to suck for long. Also the sucking reflex may be absent or weak in smaller premature or LBW babies at first. Therefore, LBW babies are at risk for not getting enough food. All low birth weight babies need to breastfeed often, at least every 2 to 2 1/2 hours. As the LBW baby grows she will be able to take in more and will not breastfeed as often.

Exclusive and unlimited breastfeeding is an important part of kangaroo mother care. With the baby so close to the mother, the baby can smell the milk and can begin to suck when hungry.

CHART 5.6 **TIPS TO HELP A MOTHER BREAST-FEED HER LOW BIRTH WEIGHT BABY**

Find a quiet place to breastfeed. As LBW babies may have immature nervous systems, noise, lights, and activity can distract them from sucking.

Express a few drops of milk on the nipple to help the baby start nursing.

Give the baby short rests during a breastfeed; feeding is hard work for the LBW baby.

If the baby coughs, gags, or spits up when starting to breastfeed, the milk may be letting down too fast for the little baby. Teach the mother to:

1. Take the baby off the breast if this happens
2. Hold the baby against her chest until the baby can breathe well again
3. Put the baby back to the breast after the let-down of milk has passed

If the LBW baby does not have enough energy to suck for long or a strong enough suck reflex:

- Teach the mother to express breast milk
- Teach her to feed the baby the expressed breast milk by cup

TASKS FOR ALL HEALTH WORKERS: LOW BIRTH WEIGHT BABIES

1 Give health messages to the community to prevent low birth weight.
   a) Explain to women why it is best to delay their first pregnancy until at least 20 years of age.
   b) Encourage women to space their children at least 3-5 years apart.
   c) Encourage the use of modern contraceptive methods to delay and space children.
   d) Make the community aware of women's needs for healthy and safer childbearing.
   e) Help women meet their health needs during pregnancy.
   f) Women should not take any medicine or treatment during pregnancy or while breastfeeding unless approved by a health worker.
   g) Teach women the signs of common problems which occur during pregnancy.
   h) Teach women the importance of getting treatment for problems during pregnancy.
2 Recognize and care for low birth weight babies.
3 Counsel and advise mothers and families about the care of low birth weight babies:
   a) How to keep the LBW baby warm
   b) Breastfeeding the LBW baby
4 Refer low birth weight babies who are sick or very low birth weight.

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6

Common Newborn Problems

6

Common Newborn Problems

During the first 28 days, a newborn is adjusting to life outside the mother's body. The newborn's immune system is not yet mature, so it is easy for the baby to get infections. Some problems, such as hypothermia and jaundice, happen because the newborn's systems for maintaining body temperature and eliminating waste products are immature.

The newborn danger signs suggest serious illness. When a newborn is sick, the cause of the illness may be hard to identify. Often the signs of serious illness in a newborn are different from the signs of the same illness in older children. The newborn's mother and family must always carefully watch for these signs. The baby's chance to survive and be healthy is better if the mother knows the danger signs and how to get medical help for the baby quickly.

The health worker will be able to save babies' lives in two important ways: 1) by teaching mothers and families to recognize and respond to danger signs and problems, and 2) by giving emergency care and referring babies who need specialized care.

In this chapter you will find information about:

- Danger signs in newborns
- Making emergency referrals
- Newborn problems associated with the mother's pregnancy or labor
- Breathing problems
- Newborn infections
  - Sepsis (generalized infection)
  - Skin infection
  - Umbilical cord infection
  - Eye infection
  - Oral thrush
- Problems with the baby's temperature
  - Temperature too low (hypothermia)
  - Temperature too high (hyperthermia)
- Jaundice
- Bleeding from the umbilical cord

In this chapter you will learn to do the following:

- Recognize newborn danger signs
- Advise and counsel mothers about danger signs and what to do
- Stabilize and refer sick newborns
- Recognize and manage common newborn problems
- Advise and counsel mothers about newborn problems:
  - How to recognize each problem
  - How to prevent the problem or prevent it from worsening
  - What treatment and care the baby needs for the problem
  - Care for the problem at home
  - What follow-up the baby needs

NEWBORN DANGER SIGNS

Danger signs in the newborn are often nonspecific. This means that each danger sign can be a sign of almost any newborn disease or problem. The most common signs of illness in a newborn are: the baby stops feeding well, is cold to touch, or has trouble breathing.

Danger signs in the newborn are signs that may mean serious illness. Serious illness in a newborn often leads rapidly to death. Death may be prevented if:

- the mother and family recognize danger signs and quickly seek health care,
- the health worker immediately stabilizes and refers the newborn to the appropriate health facility, *and*
- the baby receives appropriate medical care.

Teach all mothers and families about danger signs before leaving them to care for their newborns. Teach them to recognize and respond immediately to danger signs by taking the newborn with a danger sign to a health worker.

Recognizing danger signs:

- Use job aids, if available, to discuss the danger signs. Pictures are very helpful.
- Have the mother demonstrate her understanding by repeating the danger signs back to you.
- Review the danger signs at every visit with the mother and newborn.

Responding to danger signs:

- Make sure the family has a plan that can be quickly acted upon in case of an emergency. This can simply mean updating the complication readiness plan that was made during pregnancy.
- Teach them to take the newborn with a danger sign to a health worker immediately.

CHART 6.1 **NEWBORN DANGER SIGNS**

Breathing problems	■ Breathing is faster than 60 or less than 30 breaths in a minute. ■ Breathing is shallow or irregular, with or without pauses. ■ There is a noise with each breath (gasping). ■ There is indrawing of the chest with breathing, flaring of the nostrils. ■ Tongue and lips or skin color is blue. (See chart 6.4 Breathing Problems)
Feeding difficulties or not sucking	■ Unable to suck or sucks poorly. ■ Cannot be awakened to suck or does not stay awake to suck long enough to empty the breast. ■ Sucks but does not seem satisfied. (See chart 6.5 Newborn Sepsis)
Feels cold	■ Body (abdomen or back) feels cold or cooler than that of a well person. ■ Axillary temperature below 36 °C. (See chart 6.10 Hypothermia/Low Temperature)
Fever	■ Body (abdomen or back) feels hot compared to that of a well person. ■ Axillary temperature above 37 °C. (See chart 6.11 Hyperthermia/High Temperature)
Red, swollen eyelids and pus discharge from the eyes	(See chart 6.8 Eye Infection)
Redness, swelling, pus, or foul odor around the cord or umbilicus	(See chart 6.6: Umbilical Cord Infection)
Convulsions/fits	■ Fits are more than the tremor or jittery movements of normal babies. ■ The baby may become rigid or shake. (See chart 6.5 Newborn Sepsis)
Jaundice/ yellow skin	■ Yellow skin or eye color which begins in the first 24 hours or after 2 weeks is serious. ■ Yellow skin color that appears when the baby has any other danger sign is serious. (See chart 6.12 Jaundice)

CHART 6.2 **TEACHING MOTHERS, FAMILIES, AND COMMUNITIES TO RESPOND TO NEWBORN DANGER SIGNS**

- Explain the newborn danger signs in the community's local language.
- Use pictures to explain the danger signs.
- Give printed information or pictures to parents to help them remember the newborn danger signs.
- Advise them that quick treatment saves lives. Delay increases the risk of death.
- Help parents and communities plan how to get medical care in case the baby has a danger sign.
  - Plan how to take the baby straight to the hospital or to the closest health facility for emergency care and referral.
  - Plan for money to get transport in case of emergency and to pay for health care services.
  - To prevent delay, plan what to do if the father or other key decision-maker is not at home when the baby shows a danger sign.

STABILIZATION AND EMERGENCY REFERRAL OF NEWBORNS

As a health worker you will refer newborns to a higher level of care when needed. When referring a very sick newborn, it is important that the baby (with his mother) is transported to the facility as soon as possible. Stabilize the baby before transport to help the baby tolerate the trip.

Remember: the mother and family will be worried about the baby's illness and need for referral. Treat the mother and family with gentleness, repeat explanations as often as needed, and address any questions or concerns they may have.

Stabilize the Newborn

To stabilize the recently born baby:

- Give immediate newborn care: dry and keep the newborn warm; resuscitate the baby, if needed; give eye and cord care; and help the mother start breastfeeding.

To stabilize other newborns:

- Keep the baby dry, warm, and in skin-to-skin with the mother.
- Make sure to continue breastfeeding or cup feeding the baby with breast milk every 2-3 hours.

Refer the Newborn

The rest of this chapter presents newborn problems that include abnormal findings from an examination of the baby, danger signs, common newborn problems and illnesses, and problems resulting from the mother's pregnancy or the birth. You will find that referral is often the recommended action or plan. The referral guidelines in chart 6.3 outline the important actions for referring any newborn.

CHART 6.3 NEWBORN REFERRAL GUIDELINES

Explain the reason for referral to the mother and family. Also explain that a higher level of care can probably save the baby's life. Be patient in answering all their questions.

Arranging transport and notifying the referral center

- Arrange transport without delay.
- Send the mother and baby together.
- Make sure that a family member or friend goes with the mother and the baby.
- If possible notify the referral center about the baby's condition and the estimated time of arrival. If the mother has just given birth, also mention that a newly delivered woman is being referred with the sick newborn.

Preparing to transfer the newborn

- Give any emergency treatments before sending the baby to the referral facility. Emergency treatments are outlined in the Plan of Care section of the decision-making charts for common problems which follow in this chapter.
- Give a first dose of antibiotics before referral if serious infection is suspected.
  - For a baby 2 kg or more:
    ampicillin 50 mg/kg IM and gentamicin 5 mg/kg IM
  - For a baby less than 2 kg:
    ampicillin 50 mg/kg IM and gentamicin 4 mg/kg IM
- Stabilize the baby with breastfeeding and warming (skin-to-skin).

Caring for the newborn during transport

- Keep the newborn warm during transport. Keep the baby in skin-to-skin contact with the mother and cover them both with warm clothes. If the climate is very hot, fewer layers of clothing are needed. Protect the baby from direct sun, dust, and wind.
- Encourage the mother to breastfeed during the transport.

Documenting the referral

- Complete a referral form or write a referral note including: 1) findings of your examination, 2) the reason for the referral, 3) all treatments and medicines given, 4) the time and date, and 5) your name.
- Be sure to clearly record the dose and time antibiotics were given in the baby's records and on the referral form.
- Send the pregnancy, labor, delivery, and newborn records to the referral center.

If the referral is delayed, impossible, or the parents refuse

- Continue to support the family.
- Continue treatment, including antibiotic therapy, using available resources.
- If a baby has breathing problems, continue giving oxygen (if available) at a low flow rate, unless otherwise indicated.

PROBLEMS OF THE NEWBORN

Breathing Problems

Birth asphyxia and resuscitation immediately after birth are discussed in chapter 4. Breathing problems can also start hours or days after birth. These may be caused by infection, heart or lung disease, abnormal body temperature, low blood sugar, or other illnesses.

When the newborn has a breathing problem, all his energy is used trying to get enough oxygen into the body. This means that the newborn does not have enough energy to keep warm, to grow, or to fight off infections. Breathing problems, therefore, often lead to death.

See chart 6.4.

Infections

Infections are one of the major causes of newborn death, even though they can be prevented and treated. It is important to remember that small, untreated, localized infections can spread and become serious life-threatening infections.

Generalized infection: newborn sepsis

Sepsis is an infection affecting the whole body. The infection may be in the blood (septicemia) or in one or more organs of the body. Organisms that cause sepsis may enter the baby during pregnancy, during labor and birth, or after birth. They can spread through the body from an infection of the skin, or cord, or other organ. Sepsis is a serious illness and can quickly cause death.

How to help prevent newborn sepsis

- Treat a mother's infections during pregnancy.
- Use clean delivery practices during labor and birth.
- Use infection prevention steps during labor, birth, and postnatal care.
- Wash your hands before and after handling each newborn.
- Teach the mother and family to use infection prevention steps, especially handwashing.
- Treat a mother with antibiotics during labor if she has signs of infection or prolonged rupture of the bag of waters (more than 18 hours).
- Treat a newborn with antibiotics after birth if the mother had fever during labor.
- Breastfeed the newborn exclusively.
- Do not bring the baby into contact with sick people. Isolate a sick newborn from healthy ones.
- Teach the mother and family to keep the baby away from sick people.

See chart 6.5.

LOCALIZED INFECTIONS

A localized infection is an infection in a certain part of the baby's body (cord, skin, eye, or mouth). Any newborn infection is serious because it can spread quickly through the newborn's small body and cause neonatal sepsis. Quick and correct treatment of localized infections may prevent sepsis and possible death.

Umbilical Cord Infection

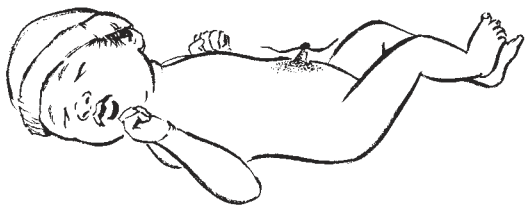
This is an infection around the umbilical cord or the umbilicus. This infection can easily pass through the cord into the rest of the baby's body and lead to sepsis and death, if treatment is delayed or not given. If substances such as powder, clay, dirt, or dung are put on the cord, there is a danger of tetanus or sepsis, which often lead to death.

How to prevent umbilical cord infection

- Always use infection prevention steps during birth and newborn care.
- Cut the cord with sterile scissors or a new razor blade.
- Keep the umbilical cord uncovered, clean, and dry. Avoid putting anything on the cord.
- Give only sponge baths (do not immerse the baby in water) until after the cord falls off and heals.

See chart 6.6.

FIGURE 6.1 **UMBILICAL CORD INFECTION**



Skin Infection

Infection of the newborn's skin causes small pustules (pus-filled blisters) on the skin. A skin infection that is not treated may spread. A skin infection can become serious and develop into a deeper infection or blood infection (septicemia), which are life threatening.

How to prevent a skin infection

- Always use infection prevention steps for birth and postnatal care.
- Do not wash off the vernix (creamy white substance on a newborn's skin) after birth; the vernix protects the newborn's skin.
- Always wash your hands before and after handling each newborn.
- Teach the mother and family to wash their hands before caring for their newborn.
- Teach the mother and family to keep the baby's room, covers, and clothing clean.
- Keep flies away from the newborn.
- Teach the mother how to bathe the baby.

See chart 6.7.

CHART 6.4 BREATHING PROBLEMS: DECISION-MAKING CHART

History

- Review the mother's and baby's records if available.
- Ask the mother:
  - When and where was the baby born?
  - Were there any problems during labor or birth?
  - Did the baby breathe and cry immediately at birth?
  - Did the baby need any help to start or continue breathing?
  - When did the breathing problem start?
  - Has it gotten worse?
  - What other symptoms have you noticed?

Examination

- Examine breathing and skin color.
- Look for abnormal findings:
  - Rapid breathing: more than 60 breaths in 1 minute.
  - Slow breathing: less than 30 breaths in 1 minute.
  - Irregular breathing with respiratory pauses.
  - Indrawing of the chest with each breath.
  - Gasping.
  - Grunting (noisy breathing).
  - Flaring of the nostrils.
  - Blue or pale skin color. (Blue lips and tongue are serious signs of lack of oxygen. This baby needs oxygen immediately, if available, at a high flow rate.)

Problems/needs

Breathing problem

Plan of care

- Resuscitate the baby who breathes less than 30 times in 1 minute, is gasping, or who has stopped breathing (see chapter 4).
- If the baby has blue lips and tongue, there has been a lack of oxygen for some time. For this baby, increase the concentration of oxygen to a high flow rate and continue until the blue color is gone, then refer.
- For other breathing problems give oxygen, if available, at a moderate flow rate.
- Stabilize the baby (warming, frequent breastfeeding, skin-to-skin contact with the mother).
- Refer the baby, following the Referral Guidelines.
- Give a starting dose of antibiotics:
  - For a baby 2 kg or more:
    ampicillin 50 mg/kg IM and gentamicin 5 mg/kg IM
  - For a baby less than 2 kg:
    ampicillin 50 mg/kg IM and gentamicin 4 mg/kg IM
- Keep the newborn warm during transport.
- Give oxygen during transport if available.

Follow-up

Support the family in following health care advice for the baby.

CHART 6.5 NEWBORN SEPSIS: DECISION-MAKING CHART

History

- Review the mother's and baby's records if available.
- Ask the mother:
  - When and where the baby was born
  - If she had a fever during labor
  - If she had a rupture of membranes for more than 18 hours before delivery
  - If the newborn has one or more of the following problems:
    - Poor feeding
    - Lethargy or not waking for feeds
    - History of convulsions or fits
    - Difficulty breathing
    - Yellow color of the skin and eyes
    - Eye, skin, or cord infection

Examination

Examine the baby completely. Look for:

- Difficulty waking up the baby
- Not able to suck or poor sucking
- Rapid or slow breathing; indrawing of chest with breathing
- Periods of apnea lasting more than 20 seconds
- Pale, grey or blue color (blue tongue or lips is serious)
- Hypothermia or fever
- Limp or rigid limbs
- Jaundice
- Distended abdomen
- Signs of eye, skin, or cord infection

Problems/needs

The signs of infection in the newborn are often difficult to recognize because they are not specific. The findings listed above can be caused by other problems besides infection.

Plan of care

- Stabilize the newborn by making sure the baby is warm and has breastfed.
- Cup feed the baby if he is unable to breastfeed (see chapter 3)
- Refer the baby, following the Referral Guidelines.
- Give a starting dose of antibiotics:
  - For a baby 2 kg or more:
    ampicillin 50 mg/kg IM and gentamicin 5 mg/kg IM
  - For a baby less than 2 kg:
    ampicillin 50 mg/kg IM and gentamicin 4 mg/kg IM

Follow-up

Support the family in following health care advice when the newborn returns home from the referral facility.

CHART 6.6 UMBILICAL CORD INFECTION: DECISION-MAKING CHART

History

- Review the mother's and baby's records if available.
- Ask the mother:
  - Did you receive tetanus immunization during pregnancy?
  - When and where was the baby born?
  - What was used to cut the cord?
  - Was anything put on the cord at birth or since then?
  - Has the newborn had any danger signs? (Review the danger signs with the mother.)
  - When did you first notice this problem? Has it gotten worse?

Examination

- Examine the cord and abdomen. Look for:
  - Moist cord
  - Drainage of pus with a bad smell
  - Red, swollen, inflamed skin around the umbilicus
  - Distended abdomen (a sign that the baby is developing sepsis)
- Check for other signs of newborn sepsis (see chart 6.5).

Problems/needs

Localized umbilical cord infection

- The umbilicus has no pus discharge or foul smell.
- Redness and swelling around the skin of the umbilicus does not extend more than 1 cm.
- There may be a delay of cord separation or healing. (Normally the cord falls off by the end of the first week, and the umbilical site heals quickly after that.)
- The baby has no signs of sepsis.

Serious umbilical cord infection

- There is pus discharge from the umbilicus, delayed cord separation or healing *plus* redness of skin and swelling which extends more than 1 cm around the umbilicus.
- The skin around the umbilicus may also be hardened.
- If baby has signs of sepsis such as a distended abdomen, the infection is very serious.

CHART 6.6 UMBILICAL CORD INFECTION: DECISION-MAKING CHART

Plan of care

Localized umbilical cord infection

- Treat the umbilicus/cord stump as follows:
  1. Prepare boiled water which has been allowed to cool, clean cloths, soap, and genetian violet 0.5% solution.
  2. If antiseptics are available, they may be used in place of soap and water for cleaning the cord stump: 2.5% polyvidone iodine, or 4% chlorhexidine gluconate, or 60-90% ethyl or isopropyl alcohol.
  3. Wash your hands with clean soap and water and dry them on a clean towel.
  4. Wash the cord stump and umbilical area gently with lukewarm boiled water, cloths, and soap or with clean cloths and an antiseptic, if available.
  5. Dry the cord stump and umbilical area with a clean cloth.
  6. Apply gentian violet 0.5% to the cord stump and umbilicus.
  7. Wash your hands again after applying the genetian violet.

- Teach the mother to do this treatment 4 times a day for 3 days.
- Remind the mother to use careful handwashing before and after caring for the baby.
- Advise the mother to apply only gentian violet to the cord stump and the skin around it.
- Advise the mother that gentian violet will stain clothes and skin.
- Advise the mother to seek medical care immediately if:
  - the problem does not improve after 3 days
  - the baby has any danger signs
  - the area around the cord becomes hardened
  - redness and swelling increase or
  - the abdomen becomes distended.

Serious umbilical cord infection

- Stabilize the newborn by making sure the baby is warm and has breastfed or cup fed.
- Refer the baby, following the Referral Guidelines.
- Give a starting does of antibiotics:
  - For a baby 2 kg or more:
    ampicillin 50 mg/kg IM and gentamicin 5 mg/kg IM
  - For a baby less than 2 kg:
    ampicillin 50 mg/kg IM and gentamicin 4 mg/kg IM
- If skin pustules are present, treat for skin infection.

Follow-up

Localized umbilical cord infection

Check the newborn in 2 days:

- If the newborn is well and has no signs of serious umbilical cord infection, advise the mother to continue the gentian violet treatment for a total of 3 days.
- If the newborn is not well or has signs of serious umbilical cord infection or sepsis:
  - Follow the above plan of care for serious umbilical cord infection and referral

CHART 6.7 SKIN INFECTION: DECISION-MAKING CHART

History

- Review the mother's and baby's records if available.
- The mother may report:
  - The baby has a rash
  - The baby seems well otherwise
  - The baby feeds well
- Ask the mother:
  - When and where the baby was born
  - History of the labor and birth
  - Whether the newborn has any danger signs
  - When she first noticed the problem and if it has worsened since then
  - What she has put on the rash

Examination

- Examine all of the baby's skin, including the diaper area. Separate the skin folds to look inside the creases of the neck, arms, armpits, groin, and legs.
- Take the newborn's axillary temperature or feel the baby with your hand.
- Look for:
  - Skin pustules (red spots or blisters which contain pus)
  - Look at the whole body to see how many pustules are present
- All other findings are normal. There are no danger signs. There is no fever or hypothermia.

Problems/needs

Localized skin infection

- Fewer than 10 pustules, or the pustules cover less than half of the body
- No danger signs or abnormal findings
- No signs of sepsis

Serious skin infection

It is a serious problem if there are many pustules, if they cover more than half of the body, or if there is any danger sign, especially any sign of sepsis.

CHART 6.7 SKIN INFECTION: DECISION-MAKING CHART

Plan of care

Localized skin infection

- Treat the skin as follows:
  1. Prepare boiled water which has been allowed to cool, clean cloths, soap, and gentian violet 0.5% solution.
  2. If antiseptics are available, they may be used in place of soap and water for cleaning the skin: 2.5% polyvidone iodine, or 4% chlorhexidine gluconate, or 60-90% ethyl or isopropyl alcohol.
  3. Wash your hands with clean soap and water and dry them on a clean towel.
  4. Wash the skin gently with lukewarm boiled water, cloths, and soap to remove all dirt and pus, including any dry crusts. Or use an antiseptic with clean cloths, if available.
  5. Dry the skin with a clean cloth.
  6. Apply gentian violet 0.5% to the affected skin.
  7. On completion wash your hands again.
- Teach the mother to do this treatment 4 times a day for 5 days, using clean cloths each time.
- Remind the mother to use careful handwashing before and after caring for the baby.
- Advise the mother to apply only gentian violet to the skin.
- Advise the mother to seek medical care immediately if the baby has any danger signs or if more pustules develop.
- Record the number of pustules and their distribution (location on the body) in the chart.

Serious skin infection

- Stabilize the newborn by making sure the baby is warm and has breastfed or cup fed.
- Refer the baby, following the Referral Guidelines.
- Give a starting does of antibiotics:
  - For babies of any weight:
    cloxacillin 50 mg/kg IM
- If cloxacillin is not available:
  - For a baby 2 kg or more:
    ampicillin 50 mg/kg IM and gentamicin 5 mg/kg IM
  - For a baby less than 2 kg:
    ampicillin 50 mg/kg IM and gentamicin 4 mg/kg IM
- Record the number of pustules and their distribution (location on the body) in the chart.

Follow-up

Localized skin infection

- See the newborn again in 5 days.
- If most of the pustules are still present, but they have not spread and the baby does not have any danger signs, give cloxacillin by mouth:
  - Cloxacillin 50 mg/kg or 2ml/kg every 8 hours for 5 days.
- Check the baby:
  - If the newborn has no danger signs and if there are fewer pustules, advise the mother to give the gentian violet treatment until the pustules are gone.
  - If the newborn has any danger sign or if the pustules are more or have spread:
    - Follow the plan of care for serious skin infection above

Eye Infection

An eye infection is an infection of the lining of the eyes. The eyelids become swollen and red, and there is fluid or pus in the eyes. Many different organisms cause eye infections. Some sexually transmitted infections of the mother, such as gonorrhea and chlamydia, can cause newborn eye infection. These and other organisms can infect the baby during birth. Less serious eye infections may be caused by germs from the baby's surroundings.

See chart 6.8.

Oral Thrush

Thrush is an infection of the mouth caused by a fungus or yeast. The thrush fungus lives in wet, warm places. It is normal to have a little of this fungus in our mouths. This fungus can also grow in the vagina. At certain times it can grow so much that it causes an infection. Babies can get this infection easily in the first few months of life, since their immune system is not well developed.

How does thrush affect the newborn and the mother?

Thrush covers the newborn's mucous membranes and tongue with a white coating. It makes the mouth painful so the baby may not be able to feed, even though he is hungry. A baby can become very ill quickly because of poor feeding. This then causes weight loss and dehydration. The infection can also go through the baby's stomach and intestines and into the stool. When this happens the infection can spread to the baby's buttocks, causing a painful red rash. It is important to treat thrush as soon as possible.

The fungus infection can also pass to the mother's nipples. The mother will notice that her nipples are sore and red. She will feel breast pain when the baby breastfeeds.

How to prevent thrush:

The mother should be encouraged to breastfeed exclusively from birth. This will transfer immune substances from the mother to the newborn. Teach the mother to:

- Wash her hands before and after caring for the baby
- Wash anything that will touch the newborn (cups, clothing)
- Get medical care for any signs of thrush as soon as possible

See chart 6.9.

CHART 6.8 EYE INFECTION: DECISION-MAKING CHART

History

- Review the mother's and baby's records if available.
  - Find out if silver nitrate drops were used for eye care (silver nitrate can irritate the eye, causing redness, swelling, and sometimes a watery discharge).
- Ask the mother:
  - When and where was the baby born?
  - Did the baby receive eye treatment at birth?
  - When did the problem start? Has it gotten worse?
  - What has been done for the problem?
  - Did you receive any antenatal care?

Examination

Examine the eyes and eyelids and look for:

- Swollen, red eyelids, without pus
- Swollen, red eyelids with discharge of pus from one or both eyes
- Eyelids that are stuck shut

Note: if onset of symptoms is within 1-2 days after birth and silver nitrate was used for eye care, no treatment is needed. This is likely a chemical irritation from the silver nitrate. Follow instructions for cleaning the eyes.

Problems/needs

Eye infection

Plan of care

Red or swollen eyes with no pus

1. Prepare clean cloths and boiled water. Boil water and let it cool.
2. You may also use sterile normal saline solution, if available, to clean the baby's eyes.
3. Wash your hands with clean water and soap, then dry them with a clean towel or air-dry them. Use gloves, if available.
4. Dip a piece of clean cloth into the boiled water or saline solution and gently swab the eye from inner to outer corner to remove crust and discharge. Use each piece of cloth only once.
5. Repeat step 3 above for the second eye, using another piece of cloth or a different corner of the same cloth. Use each piece of cloth or corner of the cloth only once.
6. Wash your hands when you are done.
7. Repeat 4 times daily until the problem is resolved.
8. If the problem continues for more than 4 days, but there is still no pus:
   - Apply 1% tetracycline ointment to the affected eye 4 times daily
   - Give erythromycin 0.5 ml/kg every 6 hours by mouth for 14 days

Red or swollen eyes with pus discharge:

- Refer the baby, following the Referral Guidelines.
- For a baby less than 7 days old who has not been treated with antibiotics, treat for eye infection due to gonorrhea. Give a single dose of antibiotics before referral: ceftriaxone 50mg/kg IM (do not give more than 125 mg)
- Refer the mother for STI screening and treatment for her and partner.

Follow-up

- Because the newborn has been referred, the follow-up care can be done at the next routine visit.
- Teach the mother how to give eye care: See plan of care above.

CHART 6.9 ORAL THRUSH: DECISION-MAKING CHART

History

- Review the mother's and baby's records if available.
- Ask the mother:
  - Does the baby feed well? (Thrush often causes feeding problems because it makes sucking painful.)
  - Is the baby fretful or fussy? (Thrush can cause the baby to be fussy because of pain and hunger.)
  - Are your nipples sore or painful when the baby nurses?
- If the mother says yes to any of these questions, ask:
  - When did this problem start?
- If it has been a problem for a long time, it is more likely that the mother also has thrush on her breasts and that the baby may have thrush on the buttocks.

Examination

- Observe the baby breastfeeding.
- Examine inside the baby's mouth:
  If there are white patches on the mucous membranes or tongue:
  - Use a tongue depressor or a piece of gauze wrapped around your fingertips to gently try to wipe them away.
  - Milk curds wipe away easily without trauma to the mucous membranes.
  - Thrush patches stick to the mucous membranes and are hard to wipe away.
  - The mucous membranes under and around the thrush patches are red and bleed easily.
- Examine the baby's buttocks:
  - If thrush spreads from the mouth to the intestines, there may be a red rash on the buttocks.
- Examine the mothers's nipples:
  - If thrush spreads to the mother, her nipples are red and tender.

Problems/needs

Thrush in the baby's mouth, on his buttocks, or on the mother's nipples.

CHART 6.9 ORAL THRUSH: DECISION-MAKING CHART

Plan of care

Baby's mouth

- Give nystatin 100,000 units/ml suspension: drop 1-2 ml into the baby's mouth 4 times each day, continuing until 2 days after the thrush has disappeared.
- Or treat the mouth with gentian violet 0.5% solution 4 times a day, continuing until 2 days after the thrush has disappeared. Teach the mother to:
  1. Use a clean cloth to apply each treatment.
  2. Wash her hands with clean water and soap, then dry them with a clean towel or air-dry them.
  3. Wrap a clean, soft cloth around her forefinger and pour on gentian violet. Be careful when using gentian violet because it stains skin and clothing.
  4. Wipe inside the baby's mouth (and then the buttocks if they are also infected) with the cloth soaked in gentian violet.
  5. Discard the used cloth.
  6. Wash her hands again when done.

Baby's buttocks

- Apply nystatin cream or gentian violet solution at every diaper change, continuing until 3 days after the rash is gone.
- Expose the buttocks to air if the temperature is warm enough.

Mother's nipples

- Have the mother apply nystatin cream to her nipples and areolas after breastfeeding for as long as the baby is being treated.
- Teach the mother to keep her nipples dry when not breastfeeding. Loose clothing will allow air to dry the nipples.

Follow-up

- See the baby again in 2 days:
  - If improving keep doing this treatment until 2-3 days after thrush is healed (see above).
  - If not improving refer the baby, following the Referral Guidelines.

Problems with Body Temperature

The newborn's normal axillary temperature is between 36 ºC and 37 ºC (96.8-98.6 ºF). The newborn cannot regulate body temperature well. Therefore, at birth and for the first few days and weeks of life, the baby's mother and family must help the baby stay warm.

Hypothermia/low temperature

An axillary temperature below 36 °C (96.8 °F) is too low or too cold for the newborn. This is called hypothermia. Hypothermia may occur soon after birth unless the baby is protected (see chapter 2 for information about how to prevent hypothermia).

Causes of hypothermia/low temperature:

- The room is too cool.
- The baby is in a draft.
- The newborn is wet.
- The baby is uncovered, even for a short time.
- The baby is placed on a cold surface or near a cold wall or window.
- The baby has an infection.
- The baby is not feeding well.
- The baby had birth asphyxia and does not have enough energy left to keep warm.

How does a low temperature affect the newborn?

If the low temperature is not quickly recognized and treated, the baby's condition gets worse. Long periods of hypothermia may be fatal for the newborn.

- The skin hardens and becomes red, especially on the back and the limbs.
- The face becomes bright red.
  Note: This is a *serious* sign and can be mistaken for a sign of good health.
- The heart does not work well.
- The respirations may become irregular.
- Bleeding occurs, especially in the lungs.
- There may be jaundice.[1]
- Without treatment, death follows.

See chart 6.10.

Hyperthermia/high temperature

High temperature occurs when the newborn's axillary temperature goes above 37 °C (98.6 °F). It is not as common in newborns as hypothermia, but it is just as dangerous. The causes of high temperature are:

- The baby is dehydrated from not feeding.
- The room is too hot.
- The baby has on too many covers or clothes.
- The baby has an infection.

How does a high temperature affect the baby?

High temperature (hyperthermia) may cause:

- Dehydration or loss of body water
- Convulsions or fits
- Shock
- Coma and death

How to prevent a high temperature

- Breastfeed the newborn frequently or feed breast milk by cup if the baby is unable to suck.
- Keep the baby away from sources of excessive heat and direct sunlight.
- If the baby feels hot, remove a layer of clothing.
- Prevent infection.

See chart 6.11.

CHART 6.10 HYPOTHERMIA/LOW TEMPERATURE: DECISION-MAKING CHART

History

- Review the mother's and baby's records if available.
- Ask the mother:
  - About her labor and birth history
  - If her baby is lethargic, not alert, or not active
  - If she has noticed that the baby is cold, ask when she first noticed it, and if she has tried to rewarm the baby and if so, how
  - If the baby has any other danger signs

Examination

- Examine the baby's temperature and activity.
- Look for:
  - Low temperature: Feel the baby's skin (abdomen or back) with your hand, or if you have a thermometer, take the axillary temperature.
    - The baby feels cold when compared to normal adult skin.
    - The axillary temperature is below 36 °C.
  - Limp or floppy (hypotonic) tone.
  - Poor sucking or feeding.
  - A weak cry.
  - Slow and shallow breathing.
  - Slow heart rate (below 100 beats per minute).

Problems/needs

Hypothermia

Plan of care

Rewarm the baby quickly. Follow these steps:

1. Make sure the room is warm and free of drafts.
2. Remove cold or wet clothes and place the baby skin-to-skin with the mother. Cover his head. Cover the mother and baby with the mother's warm clothes and a warm blanket or cloths.
3. Encourage breastfeeding. Energy is needed to make body heat. If the baby is too weak to suck at the breast, give expressed breast milk by cup.
4. Check the temperature hourly.
5. Check for signs of infection.[2]

Follow-up

- If the baby does not respond to rewarming within 2 hours, refer to a higher-level health facility.
- Before referral, give the first dose of antibiotics:
  - For a baby 2 kg or more:
    ampicillin 50 mg/kg IM and gentamicin 5 mg/kg IM
  - For a baby less than 2 kg:
    ampicillin 50 mg/kg IM and gentamicin 4 mg/kg IM
- Transport the baby to the health facility wrapped in skin-to-skin contact with the mother, as described above.

CHART 6.11 HYPERTHERMIA/HIGH TEMPERATURE: DECISION-MAKING CHART

History

- Review the mother's and baby's records if available.
- Ask the mother:
  - About her labor and birth history
  - Whether she had a fever during labor or prolonged rupture of membranes (more than 18 hours)
- The mother may report that the baby is:
  - Restless
  - Lethargic (not active)
  - Hot, has a fever

Examination

- Examine the baby's temperature, appearance, and activity.
- Look for:
  - The baby's axillary temperature is above 37 ºC (above 98.6 ºF).
  - The baby's skin feels hot.
  - The baby's breathing is rapid (over 60 breaths per minute).
  - The baby's heart rate is rapid (over 160 beats per minute).
  - The face is flushed and the arms and legs are red.
  - The baby is restless or lethargic.
  - The baby appears dehydrated.
  - When the skin is pinched up, it goes down slowly.
- Check the baby for signs of infection.

Problems/needs

High temperature or hyperthermia

CHART 6.11 HYPERTHERMIA/HIGH TEMPERATURE: DECISION-MAKING CHART

Plan of care

- Move the baby away from any sources of heat such as direct sunlight, a fire, or an electric heater.
- Undress the baby.
- Bathe the baby in warm (not cold) water. The water temperature should be just below the baby's body temperature. Bathing the baby should lower the temperature quickly; as soon as the temperature is normal, dry, dress, and wrap the baby up again.
- Give frequent breastfeeds, or give expressed milk by cup if the baby will not suck. Remember: the baby is at high risk of dehydration by losing body water.
- Check the baby's temperature every hour; if his temperature is still abnormal after 2 hours, or if the temperature rises again, refer.
- Refer to a higher-level health facility (following the Referral Guidelines) if:
  - the baby has any sign of infection,
  - the baby appears dehydrated (persistent skin fold, sunken eyes or fontanelle, dry tongue or mucous membranes), or
  - the baby has any other danger sign.
- Before referral, give the first does of antibiotics:
  - For a baby 2 kg or more:
    ampicillin 50 mg/kg IM and gentamicin 5 mg/kg IM
  - For a baby less than 2 kg:
    ampicillin 50 mg/kg IM and gentamicin 4 mg/kg IM
- Reminder: your referral note should include information about treatment and any medications given (what medication, dose, and time given).
- If the temperature returns to normal, the baby is feeding well, and there are no other problems, teach the mother how to check the infant's temperature (by feeling the body) at home and how to protect the baby from overheating. Have her return with the baby if there are any danger signs or if the baby's temperature goes up again.

Follow-up

No need for follow-up unless the problem appears again or if there are other danger signs

Jaundice

Jaundice is a yellow color of the skin and/or the eyes. It may be physiologic (normal) jaundice or serious (dangerous) jaundice.

In normal babies jaundice sometimes starts after the second postnatal day and goes away by 2 weeks. This is called physiologic jaundice. It is caused by the baby's body breaking down extra red blood cells after birth. When the red blood cells break down, they release a substance called bilirubin. The bilirubin causes the yellow color. The baby's liver usually gets rid of the extra bilirubin and then passes it out of the body in the stool. The health of the newborn is not affected by physiologic jaundice.

The newborn baby gets rid of bilirubin slowly because the liver is immature. Extra bilirubin makes the skin and eyes yellow. The yellow color starts first on the head and moves down the body as the bilirubin level increases.

Serious jaundice occurs when the bilirubin in the blood becomes very high. For example: a baby with a blood disease or sepsis may make too much bilirubin; a baby that is low birth weight (less than 2500g) or premature, not sucking well, or not passing stool, may not be able to get rid of the bilirubin. If the baby has serious jaundice, the extra bilirubin may affect the baby's brain and cause brain damage.

You know the jaundice is serious when the yellow color:

- starts during the first 24 hours of life,
- affects arms and legs on day 2,
- affects hands and feet on day 3 or thereafter,
- lasts longer than 2 weeks, or
- occurs with another danger sign.

How to prevent brain damage from serious jaundice:

- Refer babies to get medical care for any sign of serious jaundice
- Follow up babies closely if they are at risk for serious jaundice:
  - Low birth weight babies
  - Babies with problems at birth, such as those needing resuscitation
  - Babies with any signs of infection
  - Babies who do not feed well

See chart 6.12.

Bleeding from the umbilical cord

Bleeding from the umbilical cord is a problem of the first day or two of life. The cord tie or clamp may become loose as the cord begins to dry, so it starts to bleed. After the cord dries up, it will no longer bleed. The baby's small body does not have much blood. Losing a small amount of blood is serious for the baby and can cause death.

See chart 6.13.

Problems from the mother's pregnancy and labor

If a mother had any of the following health problems during pregnancy or labor, the baby needs treatment to prevent infection. Review the mother's records to check for problems. If there is no antenatal record, ask the mother if she had any of these problems during the pregnancy or labor:

- Syphilis
- Tuberculosis
- HIV
- Maternal infection in labor

Syphilis

Syphilis is a sexually transmitted infection which often leads to abortion, stillbirth, preterm labor, low birth weight, and fetal infection. The mother may be infected without noticing any symptoms. Syphilis infects the fetus of an infected mother who does not get treatment during pregnancy. The untreated baby may develop long-term developmental and neurological disabilities.

The newborn *may* show signs of congenital syphilis within a few weeks or months of birth. These signs include:

- Snuffles (obstructed breathing through the nose)
- Cracks and fissures around the mouth, nose, and anus
- Skin rashes or blisters and peeling on the palms of the hands and soles of the feet
- Distended abdomen
- Respiratory distress
- Jaundice

The newborn may develop other serious complications if the syphilis is not treated.

If the mother is suspected of having syphilis, or if she had a positive syphilis test (VDRL or RPR) in pregnancy but did not receive treatment, or was reinfected:

- Refer the baby to a facility where diagnosis and treatment is available
- Give the baby a single dose of benthazine penicillin 50,000 units/kg IM at birth
- Advise the parents that the baby needs additional treatment and follow-up
- Refer the mother and her partner for screening and treatment

Tuberculosis
Tuberculosis (TB) is a lung infection. It is passed when a sick person coughs germs into the air that other people breathe. TB can spread to other parts of the body, may last for many years, and can take a long time to cure. The woman's poor health may slow the growth and development of the fetus.

Note: Treating a pregnant or breastfeeding mother with streptomycin has a harmful effect on her baby.

If the mother has tuberculosis and was sputum-positive within 2 months of the birth, refer the newborn and the mother to a higher-level health facility for treatment. The mother should still be advised to breastfeed her child.

HIV/AIDS
The human immunodeficiency virus (HIV) slowly destroys a person's ability to fight infections leading to acquired immune deficiency syndrome (AIDS). People with HIV/AIDS get infections caused by germs that would not usually cause disease in healthy people. The HIV-infected mother is likely to be malnourished during pregnancy which may cause poor fetal growth, low birth weight, or fetal death in the uterus.

A mother's HIV infection can be passed to her baby during pregnancy, during labor and delivery, and postnatally through breast milk. Seven or 8 out of 10 HIV-positive women will give birth to babies who are not infected with HIV. However, all babies born of HIV-positive women carry the maternal HIV antibody until age 12-18 months. This means that the standard HIV test cannot show whether a baby has HIV until at least 12 months of age (after the maternal HIV antibodies have gone). There are tests for babies as young as 3-4 months of age, but they are not available everywhere.

An HIV-positive baby will look healthy at birth but will become sick faster than an adult with HIV. This is because a newborn's immune system is not as strong as an older person's. Many HIV-positive babies will start to become ill during their first year.[3]

USE OF ANTIRETROVIRALS (IF AVAILABLE) The likelihood of mother-to-child transmission of HIV can be reduced significantly by administering antiretrovirals to the mother during pregnancy and labor and to the baby during the newborn period. Various antiretroviral medications exist and different protocols for administering them are being studied. These medications are expensive and not always available. If you have access to antiretrovirals, follow your country's clinical guidelines or protocols for giving them to pregnant women, women in labor, and newborns.

Because you can never know for sure whether or not a woman has been infected with HIV, you should care for every newborn as if the mother is HIV positive. (See the section on Mother-to-Child Transmission of HIV in chapter 1 and the section on Breastfeeding When the Mother is HIV Positive: Making an Informed Choice in chapter 3.)

Maternal infection in labor
If the mother had signs of acute infection in labor, the baby is at risk for sepsis and should be treated with antibiotics. There is a high risk of maternal infection if the membranes ruptured more than 18 hours prior to the baby's birth. Signs of acute maternal infection during labor include:

- Fever
- Chills
- Foul-smelling vaginal discharge

CARE FOR THE NEWBORN:

- Stabilize the newborn by making sure the baby is warm and has breastfed.
- Refer the baby, following the Referral Guidelines.
- Give a first dose of antibiotics:
  - For a baby 2 kg or more: ampicillin 50 mg/kg IM and gentamicin 5 mg/kg IM
  - For a baby less than 2 kg: ampicillin 50 mg/kg IM and gentamicin 4 mg/kg IM

CHART 6.12 JAUNDICE: DECISION-MAKING CHART

History

- Review the mother's and baby's records if available.
- Ask the mother:
  - When did she first see the yellow color? Physiologic jaundice is seen after the first 24 hours and is gone by 2 weeks.
  - Does the baby have any other danger sign? Jaundice may be a sign of a serious infection.
  - How is the baby feeding and behaving? If behavior and feeds are normal, the baby probably has physiologic jaundice.
  - Is the baby passing urine and stool? If the baby is feeding well, passing urine and stool will get rid of the bilirubin.

Examination

- Examine the baby's whole body in good daylight. Jaundice is hard to see in artificial or poor light.
- Look for:
  - The skin and the lining of the eyes are yellow.
  - Check to see how much of the body is yellow.
  - Take the axillary temperature. The baby may have fever or hypothermia if infection is the problem.
  - Check for dehydration (persistent skin fold, dry mouth, sunken fontanelle). A baby with dehydration may not be able to get rid of bilirubin.

Problems/needs

Physiologic jaundice of the newborn

- Starts after the first 24 hours and is gone by 2 weeks

Serious jaundice of the newborn

- Starts during the first 24 hours or lasts more than 2 weeks (3 weeks in a premature baby)
- Jaundice of the arms and legs on day 2
- Jaundice of the hands and feet on day 3 and thereafter
- Any jaundice with another danger sign

CHART 6.12 JAUNDICE: DECISION-MAKING CHART

Plan of care

Physiologic jaundice of the newborn

- No treatment or referral is needed, although you need to assess the baby's jaundice in a few days.
- Advise the mother:
  - Reassure the mother that the baby is normal and that the yellow color will slowly disappear.
  - Keep the baby warm.
  - Keep breastfeeding often and exclusively. Drinking lots of breast milk will help the baby get rid of the bilirubin through the stool. The mother should also drink lots of fluids to make more breast milk.
  - Watch the baby for any other danger sign.
  - Review with the mother the danger signs and what to do.
  - Get medical care for any signs of serious jaundice

Serious jaundice of the newborn

- Breastfeed the baby frequently
- Refer the baby, following the Referral Guidelines.
- Give a starting dose of antibiotics:
  - For a baby 2 kg or more:
    ampicillin 50 mg/kg IM and gentamicin 5 mg/kg IM
  - For a baby less than 2 kg:
    ampicillin 50 mg/kg IM and gentamicin 4 mg/kg IM

Follow-up

Physiologic jaundice of the newborn

- See the baby again in 2-3 days to make sure the jaundice is going away.
- Refer to a higher-level health facility if signs of serious jaundice appear.

Serious jaundice of the newborn

- After treatment, follow up at the usual times to make sure the baby is growing and has no other problems.

CHART 6.13 BLEEDING FROM THE UMBILICAL CORD: DECISION-MAKING CHART

History

- Review the mother's and baby's records if available.
- If the mother reports bleeding from the cord, ask:
  - The history of her labor and the birth
  - What time she first noticed the bleeding
  - If she has noticed bleeding from anywhere else such as urine or stool
  - How much the baby has bled
  - If she has noticed any other symptoms

Examination

Examine the baby:

- Look at the amount of blood lost.
- Look at the cord tie.
- Check the baby for other signs of a problem from blood loss:
  - Pale skin
  - Lethargy (drowsy and unresponsive)
  - Rapid breathing
  - Rapid heart rate
- Look for other signs of bleeding, such as blood in urine or stool or unexplained bruises.

Problems/needs

Bleeding from the cord

Plan of care

Bleeding from the cord

- Wash your hands, put on clean exam or sterile gloves, if available.
- Retie the cord tightly with a new clean tie.
- Look at the cord every 15 minutes for 2 hours to make sure there is no more bleeding.
- Advise the mother to watch for any danger signs and to breastfeed frequently.

If bleeding persists, or there are other sites of bleeding, or there are other problems from blood loss:

- Give vitamin K, 1 mg IM. (Give 0.5 mg for a baby below 1500 grams.)
- Refer the baby, following the Referral Guidelines.

Follow-up

- If a lot of blood has been lost, the baby may have anemia. Refer.
- See the baby again at day 2-3 to check for other health problems. As at every visit, review danger signs with the mother.

TASKS FOR ALL HEALTH WORKERS: COMMON NEWBORN PROBLEMS

1 Counsel the mother and family on newborn danger signs and referral:
   a) Danger signs
      - What the danger signs are
      - What to do if a danger sign is seen
   b) Referral
      - Preparations (transport, who should go with the mother or baby)
      - What to do during the referral

2 Stabilize and refer newborns with danger signs.

3 Counsel the mother and family on prevention and management of common newborn problems:
   a) Breathing problems
   b) Infections
      - Newborn sepsis/generalized infection
      - Umbilical cord infection
      - Skin infection
      - Eye infection
      - Oral thrush
   c) Problems with body temperature
      - Temperature too low
      - Temperature too high
   d) Others
      - Jaundice
      - Bleeding from the umbilical cord
   e) Problems from the mother's pregnancy and labor

4 Give care to newborns who have the problems listed above, using the decision-making steps.

Notes

1 World Health Organization. (1996). *Care in Normal Birth: a practical guide*. Geneva: WHO.

2 Ibid.

3 Yeargin P. (2002). *Medical Considerations: Clinical Management of the HIV Infected Adult*. Atlanta, GA: Southeast AIDS Training and Education Center, Emory University.

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Appendices

A

Maternal and Infant Immunization Schedules

ANTENATAL TETANUS TOXOID SCHEDULE

To protect the mother and newborn from tetanus, it is important to give tetanus toxoid (TT) during pregnancy—at least two doses of tetanus toxoid vaccine at least four weeks apart, with the last dose at least two weeks before delivery.

Provide the woman with a card, or update her existing one, and inform her when the next injection is due.

CHART A.1 IMMUNIZATION FOR MOTHERS

	TETANUS TOXOID (TT)
Use	Give during pregnancy to prevent tetanus of mother and newborn.
Giving the Immunization	Tetanus Toxoid: 0.5 ml IM or subcutaneous: ■ TT1—First contact or first ANC visit ■ TT2—4 weeks later For lifelong protection, give 5 doses of TT using the following schedule: ■ TT1 and TT2 as above ■ TT3—6 months after TT2 ■ TT4—1 year after TT3 ■ TT5—1 year after TT4
Notes	TT1 should be given at first contact with a woman of childbearing age or first antenatal visit. Side effects: headache, chills, temperature elevation, swelling, soreness at place of injection
Dangers	Immunizations given to the mother are not harmful to her baby.

CHART A.2 **INFANT IMMUNIZATION SCHEDULE**

BIRTH	BCG + OPV + Hepatitis B
6 WEEKS	DPT + OPV + Hepatitis B
10 WEEKS	DPT + OPV + Hepatitis B
14 WEEKS	DPT + OPV + Hepatitis B

Abbreviation	**Immunization**
BCG	*Bacillus Calmette-Guerin (to prevent TB)*
OPV	*Oral Polio Vaccine*
DPT	*Diphtheria-Pertussis-Tetanus*

It is important to note that:

- There must be an interval of at least 4 weeks before giving the next dose of most immunizations.
- Different immunizations can be given on the same day, but be sure to give each injection in a separate injection site.
- Do not mix different vaccines in one syringe. Use a different syringe and needle for each vaccine.
- Some countries follow a three-dose instead of a four-dose schedule of hepatitis B vaccine, depending on the prevalence of the disease. The most important dose for preventing perinatal hepatitis B is the birth dose.
- In some countries immunization against *Haemophilus influenzae* type B (HiB) is provided to protect infants against pneumonia caused by this germ. HiB immunization is given at 6, 10, and 14 weeks.
- Follow your own country's immunization schedule; availability of vaccines and recommendations may be different.

CHART A.3 INFANT IMMUNIZATIONS

	BCG	HEPATITIS B (Hep B)
Use	To prevent tuberculosis	To prevent hepatitis B
Giving the Immunization	BCG: 0.05 ml intradermal in upper left arm Give only one time	Hep B: 0.5 ml IM in the thigh Give 3 times: ■ In the first few days ■ At 6 weeks ■ At 14 weeks
Notes	Keep the site dry for 24 hours after the injection. Do not expose the site to people with open cuts as live bacteria may be transferred. Side effects: local abscess, swollen lymph glands. BCG injection eventually results in a small scar.	
Dangers	Do not give to: ■ A baby with symptomatic HIV/AIDS infection ■ A baby receiving isoniazid because BCG is inactivated by isoniazid Give BCG 2 weeks after the course of isoniazid ends.	

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CHART A.3 **INFANT IMMUNIZATIONS**

	ORAL POLIO (OPV)	DIPHTHERIA-PERTUSSIS-TETANUS (DPT)
Use	To prevent polio	To prevent diphtheria, pertussis and tetanus
Giving the Immunization	OPV: two drops by mouth on the tongue Give 4 times: ■ In the first few days ■ At 6 weeks ■ At 10 weeks ■ At 14 weeks	DPT: 0.5 ml IM Give 3 times: ■ At 6 weeks ■ At 10 weeks ■ At 14 weeks
Notes	A change in medication color from pink to yellow is due to storage at cold temperature. This does not change the medication.	
Dangers		Do not give DPT2 or DPT3 to a child who had convulsions, shock, or other adverse reactions after the most recent dose. Instead give DT (Diphtheria-Tetanus), if available. Do not give DPT to a child with recurrent convulsions or another active neurological disease of the central nervous system.

General References

United Nations Children's Fund. (2002). *Facts for Life.* New York: Joint effort of UNICEF, WHO, UNESCO, UNFPA, UNDP, UNAIDS, WFP, and the World Bank.

Internet References

To obtain the complete UNICEF *Facts for Life* document and more info:
www.unicef.org/ffl/index.html

To obtain the chapter on immunizations from the *Facts for Life* document:
www.unicef.org/ffl/pdf/factsforlife-en-part7.pdf
www.unicef.org/ffl/06/1.htm

To obtain up-to-date information on immunizations:
www.cdc.gov/nip (CDC's National Immunization Program)
www.immunizationinfo.org (National Network for Immunization Information)
www.unicef.org/ (UNICEF)
www.who.int/vaccines/

B

Medication Reference

This appendix gives additional information about medications mentioned in the *Care of the Newborn Reference Manual* and other medications used commonly for newborns and mothers. Refer to your local clinical guidelines for medications and doses to be used in your clinical setting.

PART 1: DRUGS FOR NEWBORNS

Why Are Newborns More Likely to Have Harmful Drug Effects?

Drugs must be used very carefully in babies. Newborns are more likely to have toxic or harmful effects from drugs because their bodies are immature. Newborns are at greater risk from drug effects because:

- They do not have well-developed systems for breaking down and using the medications.
- Their kidneys are immature and cannot get rid of medications promptly.
- The premature baby is less mature and at even greater risk for harm from the effects of drugs.

Giving Medications to Newborns

- **By mouth:** Medications are absorbed slowly from the newborn's intestine. This can lead to overdose.
- **By intramuscular (IM) injection:**
  - Absorption of the drug from the place of injection depends on the flow of blood. If the newborn is cold, the blood flow will be reduced and the drug will be poorly absorbed.
  - When giving an IM injection, remember all newborns have small muscles, and preterm infants have even smaller muscles.
  - Repeated IM injections may cause sterile abscesses.
  - Subcutaneous injections are generally not given to newborns because they have so little subcutaneous tissue.
- **By intravenous (IV):** Sometimes it is advised to give drugs to newborns by IV infusion (drip) to be sure the drug flows through the whole body.

CHART B.1 PART 1: DRUGS FOR NEWBORNS—ANTI-INFECTIVE AGENTS

	AMPICILLIN	BENZATHINE BENZYLPENICILLIN
Use	To prevent or treat infection (sepsis) Given with gentamicin	To prevent neonatal syphilis if the mother had a positive RPR or VDRL test during pregnancy and did not receive treatment during the pregnancy, was treated inadequately or treatment status is unknown.
Giving the Drug	Ampicillin: 50 mg/kg IM or IV for 10 days or until well for 4 days: ■ Age 1-7 days: every 12 hours ■ Age over 7 days: every 8 hours Dosage is different for meningitis only—refer if suspected.	For babies showing no signs of syphilis: Benzathine penicillin: 75 mg/kg (100,000 units/kg) IM as a single dose
Notes/ Alternatives	Babies' kidneys are immature and work slowly. To avoid overdose, give the drug at longer intervals to preterm and very young newborns. Shorten the interval as the baby matures. After a baby is 4 weeks old, ampicillin can be given every 6 hours. 500 mg vial + 5 ml sterile water = 5 ml containing 100 mg ampicillin per ml. Use at once.	Refer the newborn to a facility for diagnosis and more extensive treatment if newborn shows signs of congenital syphilis or drug is not available. If the mother has not been treated, refer her and her partner for treatment.
Dangers		

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CHART B.1 **PART 1: DRUGS FOR NEWBORNS—ANTI-INFECTIVE AGENTS**

	CEFTRIAXONE	ERYTHROMYCIN
Use	To treat eye infection due to gonorrhea	To treat eye infection due to chlamydia
Giving the Drug	Ceftriaxone: 50 mg/kg IM as a single dose (may also be given IV)	Erythromycin: 12.5 mg/kg by mouth every 6 hours for 14 days
Notes/ Alternatives	Maximum dose = 125 mg If ceftriaxone is not available use: ■ Kanamycin 25 mg/kg IM in a single dose (maximum dose 75 mg) OR ■ Spectinomycin 25 mg/kg IM in a single dose (maximum dose 75 mg)	
Dangers		

CHART B.1 PART 1: DRUGS FOR NEWBORNS—ANTI-INFECTIVE AGENTS

	GENTAMICIN	GENTIAN VIOLET
Use	To prevent or treat infection received during labor To treat newborn sepsis Given with ampicillin (in a separate syringe)	To treat thrush, a fungus, or yeast infection of the mouth To treat yeast or fungus (thrush) skin infection of the buttocks To treat a localized skin or umbilical cord infection. Also see nystatin
Giving the Drug	**Baby's weight is 2 kg or more:** Gentamicin: 5 mg/kg IM or IV daily for 10 days **Baby's weight is less than 2 kg:** Gentamicin: 4 mg/kg IM or IV daily for 10 days **Age over 8 days** (any weight): Gentamicin: 7.5 mg/kg IM or IV once daily for 10 days or 3.5 mg/kg every 12 hours	Gentian violet: 0.5% (only for infants) solution in water: ■ **Mouth:** Wipe in the mouth 4 times daily until 2 days after the patches are gone. ■ **Buttocks:** Wipe on the skin 4 times daily until 3 days after the rash is gone. ■ **Skin:** Apply to the affected area 4 times daily for 5 days. ■ **Umbilicus:** Apply to the cord stump and umbilicus 4 times daily for 3 days.
Notes/ Alternatives	For IV use, give slowly, over 20-30 minutes, after ampicillin has been infused. See notes for ampicillin.	Gentian violet must have contact with the fungus or bacteria, so it has to be applied directly onto the tongue and gums or skin. Gentian violet stains clothing and skin; use care when applying the solution.
Dangers	Do not mix in the same bottle or syringe with penicillin. May be toxic to hearing and kidneys when used for a long period of time.	Do not let the baby drink gentian violet. Gentian violet solution can cause skin irritation and damage if the solution is stronger than 1% or if the medication is used too often.

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CHART B.1 **PART 1: DRUGS FOR NEWBORNS—ANTI-INFECTIVE AGENTS**

	ISONIAZID	NYSTATIN
Use	To prevent newborn tuberculosis infection if the mother has TB	To treat thrush, a mouth infection caused by yeast or fungus To treat yeast or fungus (thrush) skin infection of the buttocks Also see gentian violet
Giving the Drug	Isoniazid: 5 mg/kg once daily by mouth until newborn reaches 6 weeks of age. At 6 weeks, refer baby for evaluation to determine whether or not isoniazid can be continued to complete 6 months of treatment.	Nystatin oral suspension 100,000 units per ml: ■ **Mouth:** Paint or wipe in the mouth every 4 hours until 2 days after the patches are gone. Nystatin ointment: ■ **Buttocks:** Apply at each napkin change until 3 days after the rash is gone.
Notes/ Alternatives	Supplied as syrup: 50 mg/5 ml Side effect: diarrhea	When first applied this medication gives some discomfort. Side effect: skin irritation
Dangers	Isoniazid inactivates BCG (delay BCG vaccine until 2 weeks after the course of isoniazid ends). If BCG was already given, repeat 2 weeks after the course of isoniazid ends.	

CHART B.1 PART 1: DRUGS FOR NEWBORNS—ANTI-INFECTIVE AGENTS

	NEVIRAPINE	ZIDOVUDINE (AZT)
Use	**Baby of mother with HIV:** To reduce the risk of mother-to-child HIV transmission	**Baby of mother with HIV:** To reduce the risk of mother-to-child HIV transmission Zidovudine: 2 mg/kg by mouth. Start at 8-12 hours of age: ■ Full-term: every 6 hours ■ Premature: every 8-12 hours
Giving the Drug	Nevirapine: 2 mg/kg by mouth in a single dose within 3 days of birth	Continue for 6 weeks. Use if zidovudine was taken by the mother for 4 weeks before birth. For up-to-date guidelines: www.aidsinfo.nih.gov/guidelines
Notes/ Alternatives	For up-to-date guidelines: www.who.int/reproductive-health/rtis/nevirapine.htm	
Dangers		

CHART B.2 **PART 1: DRUGS FOR NEWBORNS—VITAMINS**

	VITAMIN K
Use	To prevent or treat bleeding due to lack of vitamin K in newborns
Giving the Drug	**Baby's weight is over 1500 gm:** Give vitamin K 1 mg IM. **Baby's weight is less than 1500 gm:** Give vitamin K 0.5 mg IM. Give one dose.
Notes/ Alternatives	Usually given once, but may be repeated in 6 hours to treat a bleeding problem.
Dangers	

CHART B.3 PART 1: DRUGS FOR NEWBORNS—ANTI-INFECTIVE MEDICATIONS FOR EYE CARE AT BIRTH

Apply one of the following eye treatments within one hour after birth to prevent eye infection.
Do not touch eye with tip of ointment tube or dropper.

	SILVER NITRATE SOLUTION 1%	TETRACYCLINE 1% OINTMENT	POLYVIDONE-IODINE SOLUTION 2.5%
Use	To prevent eye infection at birth	To prevent eye infection at birth	To prevent eye infection at birth
Giving the Drug	Put 1 drop into each eye.	Apply to inside of lower lid of each eye.	Put 1 drop into each eye.
Notes/ Alternatives	Do not rinse out drops.		Not a first choice due to insufficient studies.
Dangers	May cause eye irritation.		

PART 2: DRUGS FOR MOTHERS

General Guidelines for Safe Use of Drugs for Mothers

Drugs must be used very carefully in mothers who are pregnant or breastfeeding. The drugs listed in this appendix are considered safe for mothers if used as directed. Read the information under "Notes/Alternatives" and "Dangers" to find safety instructions. Refer to your local guidelines for medications and doses to be used in your clinical setting.

Safe Use of Drugs During Pregnancy

Most drugs taken by a pregnant woman reach her baby through the placenta. Therefore, women should avoid taking any drugs during pregnancy whenever possible. But if drug treatments are unavoidable, always consult the manufacturer's product information before prescribing any drug for a pregnant woman. Some drugs, for example, should never be used during pregnancy; others are dangerous to give in the first trimester, but may be used later in pregnancy.

Safe Use of Drugs for Breastfeeding Mothers

Most drugs taken by a breastfeeding mother reach her baby through the breast milk.

- If the drug is commonly prescribed for infants, it is safe to take while nursing because the baby generally gets a much lower dose from the milk than he would from taking it directly. Examples are most antibiotics, such as amoxycillin.
- Drugs considered safe during pregnancy are usually safe to take while nursing.
- Drugs that are not absorbed from the gastrointestinal tract (stomach or intestines) are usually safe. Many of these drugs are injected, such as heparin, insulin, and lidocaine or other local anesthetics.

CHART B.4 PART 2: DRUGS FOR MOTHERS—ANTI-INFECTIVE AGENTS

	AMOXICILLIN	AMPICILLIN
Use	**Mother postpartum:** To treat mastitis	**Mother in labor:** To prevent infection if the bag of waters has been broken for more than 18 hours before birth. To treat labor infection, use as 1 of 3 antibiotics with: ■ Gentamicin ■ Metronidazole **Mother postpartum:** To treat mastitis
Giving the Drug	Amoxicillin: 500 mg by mouth, every 8 hours for 10 days	**Mother in labor:** Ampicillin: 2 gm IV every 6 hours until delivery If the mother has a fever after delivery, continue ampicillin until there is no fever for 24 hours. **Mother postpartum:** Ampicillin: 500 mg by mouth every 6 hours for 10 days
Notes/ Alternatives		**Mother in labor:** Monitor for fever after delivery. Side effects: diarrhea **Mother postpartum:** Side effects: diarrhea See penicillin G.
Dangers	Risk of allergic reaction. Do not give to women with allergy to penicillin.	**Mother in labor:** Risk of allergic reaction. Do not give to women with allergy to penicillin. **Mother postpartum:** Risk of allergic reaction. Do not give to women with allergy to penicillin.

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CHART B.4 **PART 2: DRUGS FOR MOTHERS—ANTI-INFECTIVE AGENTS**

	BENZATHINE PENICILLIN	CLOTRIMAZOLE (ANTIFUNGAL)
Use	To treat syphilis or positive syphilis test (RPR or VDRL test) during pregnancy	Nipple infection caused by yeast/fungus (thrush) Also see nystatin
Giving the Drug	Benzathine penicillin: 2.4 million units IM in a single dose Give this as 2 injections in separate sites (1.2 million units in each buttock).	Clotrimazole cream, lotion, or topical solution 1%: Apply to skin of nipple/areola 2 times daily for 14 days.
Notes/ Alternatives	Be sure to refer mother's partner for treatment.	It is not necessary to wash medicine off before breastfeeding.
Dangers	Risk of allergic reaction. Do not give to women with allergy to penicillin.	Avoid contact with baby's eyes.

CHART B.4 PART 2: DRUGS FOR MOTHERS—ANTI-INFECTIVE AGENTS

	CLOXACILLIN	ERYTHROMYCIN
Use	**Mother postpartum:** To treat mastitis	**Mother with preterm, prelabor rupture of the bag of waters:** To prevent infection **Mother postpartum:** To treat mastitis
Giving the Drug	Cloxacillin: 500 mg by mouth every 6 hours for 10 days	**Mother with preterm, prelabor rupture of the bag of waters:** Erythromycin: 250-500 mg by mouth every 6 hours for 10 days **Mother postpartum:** Erythromycin: 250 mg by mouth every 8 hours for 10 days
Notes/ Alternatives	Side effects: nausea, abdominal discomfort	Take on an empty stomach for better effect. May take with food if GI upset occurs. Side effects: nausea, abdominal discomfort
Dangers	Risk of allergic reaction. Do not give to women with allergy to penicillin.	Erythromycin can usually be given to women who are allergic to penicillin.

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CHART B.4 **PART 2: DRUGS FOR MOTHERS—ANTI-INFECTIVE AGENTS**

	GENTAMICIN	GENTIAN VIOLET
Use	**Mother in labor:** To treat infection, use as 1 of 3 antibiotics with: ■ Ampicillin ■ Metronidazole	To treat nipple infection caused by yeast/ fungus (thrush)
Giving the Drug	Gentamicin: 5 mg/kg every 24 hours IV until delivery If the mother has a fever after delivery, continue gentamicin until there is no fever for 24 hours.	Gentian violet: 0.5 or 1% solution Wipe on the skin of the nipple/ areola 2 times daily until signs are gone.
Notes/ Alternatives	Make sure the woman's fluid intake is good. Monitor for fever after delivery.	Do not wash off of the nipple before breastfeeding. Gentian violet stains skin and clothing.
Dangers	Toxic to hearing and kidneys	Gentian violet solution can cause skin irritation and damage if the solution is stronger than 1% or if the medication is used too often.

CHART B.4 **PART 2: DRUGS FOR MOTHERS—ANTI-INFECTIVE AGENTS**

	METRONIDAZOLE	NYSTATIN
Use	**Mother in labor:** To treat infection, use as 1 of 3 antibiotics with: ■ Ampicillin ■ Gentamicin	To treat nipple infection caused by yeast/fungus (thrush) Also see clotrimazole
Giving the Drug	Metronidazole: 500 mg IV every 8 hours until delivery If the mother has a fever after delivery, continue metronidazole until there is no fever for 24 hours.	Nystatin cream: Apply to nipple/areola two times daily after breastfeeding; continue for 3 days after signs are gone.
Notes/ Alternatives	Monitor for fever after delivery.	It is not necessary to wash off of the nipple before breastfeeding.
Dangers		

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CHART B.4 **PART 2: DRUGS FOR MOTHERS—ANTI-INFECTIVE AGENTS**

	NEVIRAPINE	PENICILLIN G
Use	**Mother with HIV:** To reduce risk of mother-to-child HIV transmission	**Mother during labor:** To reduce the risk of uterine infection when the bag of waters is broken for over 18 hours, give penicillin G or ampicillin. Also see ampicillin
Giving the Drug	Nevirapine: 200 mg by mouth as a single dose at onset of labor	Penicillin G: 2 million units IV every 6 hours until delivery
Notes/ Alternatives	For up-to-date guidelines: http://www.who.int/reproductive-health/rtis/nevirapine.htm	
Dangers		Risk of allergic reaction. Do not give to women with allergy to penicillin.

CHART B.4 PART 2: DRUGS FOR MOTHERS—ANTI-INFECTIVE AGENTS

	ZIDOVUDINE (AZT)
Use	**Mother with HIV:** To reduce the risk of mother-to-child HIV transmission
Giving the Drug	**Long course:** **Start at 14-36 weeks:** Zidovudine: 200 mg by mouth 3 times a day (every 8 hours) or 300 mg every 12 hours. Continue until the onset of labor. **During labor:** Zidovudine: 2 mg/kg IV over 1 hour at onset of labor, then 1 mg/kg every hour until delivery **Short course:** **Start at 36 weeks:** Zidovudine: 300 mg by mouth twice daily **During labor:** Zidovudine: 300 mg by mouth every 3 hours from onset of labor until delivery
Notes/ Alternatives	For up-to-date guidelines: www.aidsinfo.nih.gov/guidelines
Dangers	

CHART B.5 PART 2: DRUGS FOR MOTHERS—ANTI-MALARIALS

	SULFADOXINE-PYRIMETHAMINE (SP)
Use	Intermittent preventive treatment for falciparum malaria
Giving the Drug	Sulfadoxine-pyrimethamine: Dose is 3 tablets. Give at least 2 doses during pregnancy as follows: ■ One dose at the first antenatal visit (after 4 months) ■ One dose at the next one or two antenatal visits, but not more often than monthly.
Notes/ Alternatives	Alternatives: ■ Mefloquine 250 mg by mouth weekly, start in second trimester ■ Chloroquine 500 mg each week for 26 weeks starting at first antenatal visit
Dangers	Do not give SP before 16 weeks (4 months) of pregnancy. Follow specific country guidelines on intermittent preventive treatment since drug resistance varies from place to place. Do not give SP to women who are allergic to sulfa drugs.

CHART B.6 PART 2: DRUGS FOR MOTHERS—ANTI-HELMINTHICS

	MEBENDAZOLE
Use	**Mother during pregnancy:** Control of hookworm
Giving the Drug	Mebendozole: 500 mg in a single dose by mouth during the second trimester
Notes/ Alternatives	Alternatives: ■ Albendazole: a single dose of 400 mg after the first trimester ■ Alvendozole ■ Levamisole ■ Pyrantel
Dangers	Do not take during first trimester. If hookworm is highly endemic (greater than 50 percent prevalence), take an additional dose in the third trimester of pregnancy.

CHART B.7 PART 2: DRUGS FOR MOTHERS—VITAMINS AND IRON/FOLATE

	VITAMIN A	IRON/FOLATE (FE/FA)
Use	**Mothers:** Given to women who live in areas where there is vitamin A deficiency. Vitamin A is needed to fight infection and prevent night blindness. Mothers pass vitamin A to their babies in breast milk.	To prevent and treat anemia in pregnancy
Giving the Drug	Vitamin A: **Pregnant women:** Vitamin A: One 10,000 IU capsule daily throughout pregnancy OR Vitamin A: One 25,000 IU capsule weekly after the third month and until the birth **Postpartum:** Vitamin A: One 200,000 IU capsule during the first 8 weeks after delivery (6 weeks if not breastfeeding)	Ferrous sulfate: 320 mg (60 mg elemental iron) and 400 mcg to 1 mg of folate by mouth daily
Notes/ Alternatives	Protect the drug from light. Store in an area away from direct light, such as in a cupboard.	Side effects: black stools, constipation, GI upset and nausea Take Fe/FA tablets with vitamin C or food high in vitamin C to increase absorption. Tea, coffee, and colas inhibit iron absorption.
Dangers	Do not give more than the doses listed. *Excess doses during pregnancy may cause malformations in the baby.* Do not give in first trimester. An overdose in the mother may cause nausea, vomiting, malaise, headache. **Do not give to a baby:** babies younger than 6 months of age get vitamin A from breast milk.	Tablets are poisonous to small children. Keep tablets in a safe place.

CHART B.8	PART 2: DRUGS FOR MOTHERS—OTHER DRUGS
	PARACETAMOL (ACETAMINOPHEN)
Use	To relieve pain and fever
Giving the Drug	Paracetamol: 325-650 mg by mouth every 4-6 hours
Notes/ Alternatives	
Dangers	Do not give to a mother with liver disease or damage.

PART 3: GIVING OXYGEN TO A NEWBORN

If a baby needs oxygen, follow these guidelines:

- Make sure the baby receives the correct amount of oxygen because:
  - Too much oxygen, over time, can damage the newborn's lungs and eyes, especially if the baby is very premature (less than 35 weeks).
  - Too little oxygen can damage the newborn's organs and may lead to death.
- Feeding must continue during oxygen therapy. Feeding methods may include breastfeeding, or giving expressed breast milk by cup, or by nasogastric tube.

If at all possible, help the mother to breastfeed while the baby continues to receive oxygen. If this is not possible, try disconnecting the oxygen briefly while you observe the breastfeeding. If the baby becomes pale, or blue, or has signs of difficulty breathing, stop the feeding and reconnect the oxygen immediately. Reassure the mother and then feed the baby with expressed breast milk by cup, if possible.

If the baby is seriously ill and cannot tolerate oral feeds, feed the baby breast milk through a nasogastric tube. Start the baby on direct breastfeeding as soon as possible.

- When the baby's breathing starts to improve, gradually decrease the flow of oxygen.
- Discontinue oxygen when the baby's respiratory rate is normal (30-60 breaths per minute) and there are no signs of difficult breathing. Then observe the baby closely:
  - If the tongue and lips remain pink, do not give any more oxygen. Then observe for blue tongue and lips (central cyanosis) every 15 minutes for the next hour. Keep the baby in the facility for at least 24 hours of monitoring after the oxygen is discontinued.
  - If blue tongue and lips appear again, restart oxygen and prepare for referral. This baby needs specialized care and oxygen during transport to the referral facility.

CHART B.9 **PART 3: GIVING OXYGEN TO NEWBORNS[1]**

	NASAL PRONGS	NASAL CATHETER	FACE MASK
Flow and Concentration	■ Low = 0.5 L per minute ■ Moderate = 0.5-1 L per minute ■ High = more than 1 L per minute	■ Low = 0.5 L per minute ■ Moderate = 0.5-1 L per minute ■ High = more than 1 L per minute	■ Low = 1 L per minute ■ Moderate = 1-2 L per minute ■ High = more than 2 L per minute
Advantages	■ A low flow of oxygen is required to deliver the desired concentration ■ Can deliver a constant concentration of oxygen if applied correctly ■ Oxygen administration can continue through breastfeeding	■ A low flow of oxygen is required to deliver the desired concentration ■ Can deliver a constant concentration of oxygen if applied correctly ■ Oxygen administration can continue through breastfeeding	■ Oxygen administration can be started quickly and easily ■ Convenient for administering oxygen for short periods of time
Disadvantages	■ Requires special prongs for use on newborn babies ■ Requires flow-control device that allows low flow ■ Directs cold oxygen into baby's lungs	■ Requires flow-control device that allows low flow ■ Directs cold oxygen into baby's lungs	■ Carbon dioxide can accumulate if the flow rate is low or the mask is small ■ Breastfeeding is not possible while the mask is in place ■ Difficult to keep the mask in place

CHART B.9 PART 3: GIVING OXYGEN TO NEWBORNS

	HEAD BOX	INCUBATOR
Flow and Concentration	■ Low = 3 L per minute ■ Moderate = 3-5 L per minute ■ High = more than 5 L per minute	■ If using a head box inside the incubator, follow instructions for head box. ■ If connecting oxygen directly to the incubator, follow the manufacturer's instructions.
Advantages	■ Warms the oxygen ■ Can give a high concentration of oxygen	■ Warms the oxygen

Disadvantages	■ High flow of oxygen required to achieve desired concentration
	■ Direct breastfeeding is not possible
		■ Disadvantages of giving oxygen directly into the incubator:
		  ■ Oxygen is wasted because a high flow of oxygen is required to deliver the desired concentration to the baby
		  ■ Difficult to maintain oxygen concentration when the incubator portholes are open for care and procedures
		  ■ Direct breastfeeding is not possible

Note

1 Chart B.9 was adapted from: World Health Organization. (2003). Managing newborn problems: A guide for doctors, nurses and midwives. Integrated Management of Pregnancy and Childbirth. Geneva: WHO.

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C

Infection Prevention

Infections cause many newborn deaths. This is because the baby's immune system (the system that fights infections) is not fully developed at birth. Health workers are also at risk of getting infections because they have contact with patients who may have infections.

Health workers can prevent infections and teach families how to prevent infections. Following simple infection prevention steps during health care at home or in a facility can save lives.

CAUSES OF INFECTIONS

Infection is caused by small, invisible germs growing and multiplying in the body. There are many kinds of germs: bacteria, viruses, fungi, and parasites. When germs enter the body, the immune system works to kill them and prevent illness. If germs are strong or numerous, they may take over and cause infection even in a healthy person's body. Newborns and people who are already sick, malnourished, or who have weak immune systems do not have a strong ability to kill germs. They become sick with infections more easily. Infectious germs are passed in different ways:

Touching

Touching an object that is dirty or contaminated spreads germs and contaminates the hands. A cut on the hand allows germs to enter the body and cause an infection. Without handwashing, germs can also be passed on to others by touching.

Blood or body secretions

Some infectious germs live in the blood or body secretions (HIV, hepatitis B) and can be passed on:

- By a mother to her baby during pregnancy, birth, or with breastfeeding
- Through sexual contact
- By contact with blood or amniotic fluid from an infected person. The blood or fluid enters the body of a person who is not infected through:
  - An open sore, mucous membrane, or eye
  - Receiving blood from or sharing needles with an infected person

Air

Other infectious germs are coughed into the air by an infected person and passed to others who breathe in the air.

Food and water

Germs that live in food or water pass to people who eat or drink the contaminated food or water.

WHO IS AT RISK FOR INFECTION AND HOW

Health workers

- Contaminated needles or other sharp instruments (sharps) may puncture skin.
- Contaminated fluids (blood or other body fluids) may splash on mucous membranes (eyes, nose, or mouth).
- Infectious germs may enter broken skin (due to cuts, scratches, rash, chapped skin, or fungal infections).

Mothers and babies

- Mothers and babies are at risk when health workers do not wash their hands between patients and procedures.
- They are at risk when used instruments and other items are not cleaned and processed correctly.

Community

Improper disposal of medical waste (including contaminated dressings, tissue, placenta, needles, syringes) creates a risk to the community. Contaminated waste items can be found by children or others, in open garbage dumps or on the ground.

STANDARD PRECAUTIONS TO PREVENT PASSING INFECTIONS

Many infections can be prevented by consistently using standard precautions. These are routine procedures that protect both health workers and patients from contact with infectious materials.

Using standard precautions means to always:

- Consider every person potentially infectious (even the baby and medical staff).
- Wash your hands.
- Wear protective clothing when needed (gloves, eye protection, aprons, closed shoes).
- Prevent injuries with sharps.
- Process patient care instruments and equipment safely.
- Keep patient care rooms clean.
- Dispose of wastes safely.
- Handle, transport, and process used/dirty linens safely.

Follow standard precautions with *every* patient, whether or not you think the patient might have an infection. This is important because it is not always possible to tell who is infected. Often infected people do not know if they are infected.

HANDWASHING

Hand contact is the most common way to pass infections, and handwashing is the most important way to reduce the spread of infections. Wash your hands whenever there is a chance that your hands might be contaminated. Always wash your hands under the following circumstances:

- Immediately when you arrive at the health facility or patient's home
- Before examining a mother or baby
- Before putting on gloves for procedures
- Before leaving the health facility or the patient's home
- Before eating
- After examining each patient
- After touching any instrument or item that might be contaminated with blood or other body fluids, or after touching mucous membranes
- After you handle blood, urine, or stool
- After removing any kind of gloves (hands can become contaminated if gloves contain tiny holes or tears)
- After using the toilet or latrine

There are two kinds of handwashing used in caring for mothers and babies:

1) handwashing with soap and running water, and
2) using an alcohol handrub.

Do not use chlorine bleach directly on the hands. It is extremely irritating and dries out the skin, causing cracks and fissures through which germs can enter.

Do not wash your hands in a basin of standing water, even if an antiseptic such as Dettol or Savlon has been added. Germs grow and multiply in standing water.

FIGURE C.1 **WASHING HANDS**

CHART C.1 TIPS FOR HANDWASHING WITH SOAP AND RUNNING WATER

Handwashing with soap and water removes germs and soil such as dirt, blood, feces, and other body materials.

Steps for handwashing:

1. Wet hands with RUNNING WATER. When a running water tap is not available, use:
   - A bucket with a tap, or
   - A bucket and pitcher. One person pours clean water over the hands of the person who is washing.
   - See Chart C.2 for use of alcohol handrub if no clean water is available.
2. Rub hands together with soap to lather, covering all surfaces.
3. Weave soapy, wet fingers and thumbs together and slide them back and forth.
4. Rinse hands under RUNNING WATER until all soap is gone.
5. Dry hands with a clean towel or air-dry them if no clean towel is available.
6. When washing hands before a procedure, do not touch any unclean surfaces before touching the patient, touching clean instruments, or before putting on gloves.

Handwashing should take:

15–20 seconds: Before and after most activities such as examining a baby, contact with a patient, or using the toilet or latrine.

2–3 minutes: If your hands are very dirty with blood, other organic material (such as when your gloves have been torn), or dirt.

CHART C.2 TIPS FOR HANDWASHING WITH AN ALCOHOL HANDRUB

An alcohol handrub is very effective in killing normal germs.

When not to use: An alcohol handrub is not effective in removing dirt, blood, feces, or other body materials. Washing with soap and water removes these materials.

How to make an alcohol handrub. Because alcohol used by itself dries the skin and can make it crack, mix alcohol as follows with an ingredient to moisturize the skin:

- 100 ml of 60–90 % alcohol
- 2 ml of glycerin, propylene glycol, or sorbitol

How to use:

- Pour 3–5 ml (1 teaspoon) of the alcohol handrub into the palm of your hand.
- Rub hands together, including between fingers and under nails, until dry.

After using this method 5–10 times, you will need to remove the build-up of moisturizer (such as glycerin) from your skin. Wash off with soap and water.

PROCESSING INSTRUMENTS AND OTHER ITEMS

Instruments and other items such as reusable gloves, reusable syringes, and cord ties must be processed so they do not pass infection when used. Proper processing includes the following steps:

Step 1: Decontamination
Step 2: Cleaning
Step 3: High-level disinfection (HLD) or sterilization
Step 4: Storage and use

It is important to do these steps in the correct order for several reasons:

Step 1: Decontamination must be done first to make items safer to touch.
Step 2: Cleaning must be done next to remove material (such as dried blood) that can get in the way of sterilization or HLD.
Step 3: HLD or sterilization must be done before use or storage to reduce the risk of infecting patients.
Step 4: Store or use items immediately after HLD or sterilization so that they do not become contaminated.

How to Make a 0.5% Chlorine Decontamination Solution[1]

Chlorine is usually the least expensive, most available, and most rapidly acting chemical for making a decontamination solution. A chlorine solution can be made from:

- Liquid household bleach (sodium hypochlorite)
- Bleach powder (calcium hypochlorite or chlorinated lime)
- Chlorine-releasing tablets

Because of its low cost and wide availability, liquid or powdered bleach is recommended. A solution of 0.5% chlorine is needed for decontamination. A weaker solution (less than 0.5%) may not kill germs. A stronger solution (more than 0.5%) uses more chlorine (is more expensive) and may damage the instruments.

CHART C.3 **STEP 1: DECONTAMINATION**

The purpose of decontaminating instruments and other reuseable items is:

- To kill viruses (such as hepatitis B, hepatitis C, and HIV) and many other germs
- To make items safer to handle during cleaning
- To make items easier to clean by preventing blood or other body fluids and tissue from drying on them

How to decontaminate instruments and other items:

1. Put the items in a plastic container of 0.5% chlorine solution immediately after using them.
2. Cover the items completely with chlorine solution.
3. Soak items for 10 minutes. Do not leave them in the solution for more than 10 minutes. Soaking too long in chlorine solution can damage instruments and other items.
4. Remove items from the chlorine solution. Always wear utility gloves when removing items from a chlorine solution.
5. Rinse the items with water. Set them aside until you are ready to clean them.
6. Change the solution: 1) at the beginning of each day, 2) whenever the solution is very contaminated with blood or body fluids, or 3) if the solution becomes cloudy.

Chlorine-containing compounds are described as having a certain percentage of "active" (or available) chlorine. It is the active chlorine in these products that kills germs. The amount of active chlorine is described as a percentage and may differ from one product to another. This is important to know in order to prepare a chlorine solution containing 0.5% active chlorine.

In countries where French products are available, the amount of active chlorine is usually expressed in chlorometric degrees (°chlorom). One °chlorom contains about 0.3% active chlorine. For example, *eau de Javel* contains 15 °chlorom which is approximately 5% active chlorine (15 times 0.3% equals 4.5% which is rounded up to 5%).

Using liquid household bleach

Chlorine in liquid bleach comes in different concentrations. As long as you know what the concentration is, you can use any household bleach to make a 0.5% chlorine solution by using the following formula:

[% chlorine in the liquid bleach divided by 0.5%] minus 1= parts of water for each part bleach[2]

Example: To make a 0.5% chlorine solution from a 3.5% chlorine concentrate, calculate as follows:

[3.5% divided by 0.5%] minus 1 = [7] minus 1 = 6

In this case you must mix 1 part liquid bleach with 6 parts water in order to get a 0.5% chlorine solution.

Using bleach powder

If using bleach powder, calculate the ratio of bleach to water using the following formula:

[% chlorine desired divided by % chlorine in the bleach powder] times 1,000 = grams powder for each liter of water

Example: To make a 0.5% chlorine solution from a calcium hypochlorite powder containing 35% available chlorine, calculate as follows:

[0.5% divided by 35%] times 1,000 = 14.3

In this case you must dissolve 14.3 grams of calcium hypochlorite powder in 1 liter of water in order to get a 0.5% chlorine solution.

Using chlorine-releasing tablets

Since the percentage of active chlorine in these products varies, follow the manufacturer's instructions. If the instructions are not available with the tablets, ask for the product's instruction sheet from your supply source or contact the manufacturer.

Use of Soap in Cleaning

Soap is important for effective cleaning, since water alone will not remove protein, oils, and grease:

- When soap is dissolved in water, it breaks up grease, oil, and other foreign matter, making them easy to remove by cleaning.
- Use household cleaning soap (bar or liquid), if available, rather than bath soaps. The fatty acids in bath soaps will react with the minerals in hard water and leave a scum that is difficult to remove.
- If you use bar soap, keep it in a soap rack or in a dish with holes for drainage.
- Do not use steel wool or abrasive cleansers such as Vim or Comet. These can scratch or damage instruments and other such items, making grooves. Germs can then grow and hide in these grooves.

White mineral deposit: A powdery white deposit may be left on the pot and on items that are boiled frequently. This is caused by lime salts in the water. To reduce this deposit:

1. Add vinegar to the water.
2. Boil the water for 10 minutes before adding instruments to be high-level disinfected. This makes the lime come out of the water and settle on the bottom or sides of the pot (instead of on the items being boiled).
3. Use the same water throughout the day. Add only enough water to keep the items under water.
4. Drain and clean out the pot at the end of each day.

Flaming: Holding an item in a flame is not recommended as a method of HLD because it does not effectively kill germs.

CHART C.4 **STEP 2: CLEANING**

The purpose of scrubbing with a brush, soap, and water is:

- To remove blood, other body fluids, tissue, and dirt.
- To reduce the number of germs.
- To make sterilization or high-level disinfection effective. If a clot of blood, for example, is left on an instrument, germs in the clot may not be completely killed by sterilization or HLD.

Steps for cleaning

1. Wear utility gloves, a mask, and protective eyewear when cleaning.
2. Use a soft brush or old toothbrush, soap, and water.
3. Scrub items well while holding them under the water (try not to splash). Brush the grooves, teeth, and joints of instruments where blood and tissue can collect.
4. Rinse all items well with clean water to remove all soap.

C

CHART C.5 STEP 3: HIGH-LEVEL DISINFECTION (HLD) BY BOILING

HLD kills all germs except some endospores (difficult-to-kill bacteria, such as tetanus or gas gangrene that form a hard outside shell). HLD can be used for instruments and items that come in contact with broken skin or intact mucous membranes. If sterilization is not available, HLD is the only other acceptable choice. HLD can be done by boiling or steaming.

Steps for boiling:

1. Put all instruments and other items to disinfect into a pot for boiling.
2. Open scissors and all instruments with joints.
3. Place forceps or pickups on top of all other equipment in the pot. A string tied to the forceps or pickups and left hanging out over the lip of the pot makes removal easier.
4. Cover all items completely with water.
5. Bring the water to a boil.
6. When the water comes to a boil, cover the pot and boil for **20 MINUTES**. Do not add any items after timing starts. Do not boil the water too vigorously. This protects the instruments from damage and saves fuel.
7. Remove items from the pot with the HLD forceps or pickups.
8. Put instruments or items in a HLD container. There are two ways to high-level disinfect a container: a) put the container on top of all the other equipment to be boiled and remove it first, or b) fill the container with 0.5% chlorine solution and let it soak for 20 minutes. Then pour out the chlorine solution and rinse the container well with boiled water. Air-dry the container before reusing.
9. Air-dry boiled items before use or storage. Do not leave boiled items sitting in water that has stopped boiling. They could easily become contaminated as the water cools.

CHART C.6 STEP 3: HLD BY STEAMING

Advantages of steaming instead of boiling:

- Steaming causes less damage to gloves and other plastic or rubber items.
- Steaming uses less water.
- Steaming uses less fuel because there is less water to boil.
- Steaming does not cause build-up of lime salts on metal instruments.

Steps for steaming:

1. Put water into the bottom of a steamer pot.
2. Put in a steamer tray that has holes in it.
3. Put all items onto the steamer tray. Open up scissors and other instruments with joints.
4. Place forceps or pickups on top of all other equipment in the pot. A string tied to the forceps or pickups and left hanging out over the lip of the pot makes removal easier.
5. Bring the water to a boil.
6. When the water starts to boil, cover the pot and boil for **20 MINUTES**. Do not add any items once the timing starts. Do not boil the water too vigorously. This saves fuel.
7. Remove items from the pot with HLD forceps or pickups.
8. Put HLD instruments or items in a HLD container. There are two ways to high-level disinfect a container: a) put the container and its lid on top of all the other equipment to be steamed and remove them first, or b) fill the container with 0.5% chlorine solution and let it soak for 20 minutes. Then pour out the chlorine solution and rinse the container well with boiled water. Air-dry the container before reusing.
9. Air-dry items.
10. When dry, use or store items in a covered, HLD container.

CHART C.7 STEP 3: STERILIZATION BY STEAM (AUTOCLAVE)

Sterilization kills all germs, including endospores. Any item that will come in contact with the bloodstream or tissues under the skin (needles, syringes, surgical instruments, etc.) should be sterilized using steam (autoclaving) or dry heat.

Steam sterilization uses moist heat under pressure, so both water and heat are needed. Heat can be provided by electricity or by another fuel source (such as a kerosene burner). The autoclave machine must have a pressure gauge.

Steps for steam sterilization:

1. Decontaminate, clean, and dry all instruments and other items to be sterilized.
2. Open or unlock all jointed instruments, such as scissors so steam can reach all surfaces of the item.
3. If wrapping items for autoclaving, use two layers of paper, newsprint, or cotton or muslin fabric. (Do not use canvas as steam may not penetrate this material.) Wrap first in one layer, then wrap the packet in a second layer. Make points (see figure C.2) while wrapping items so that the packs can be opened easily without contaminating the items. Do not seal items in a closed container that cannot be penetrated by steam.
4. Do not pack the items together tightly in the autoclave. Leave space between the items so that steam can move about freely.
   Many types of autoclaves are used around the world. Follow the manufacturer's instructions whenever possible. In general, sterilize at 121 °C (250 °F) and 106 kPa (15 lb/in^2) pressure. Do not begin timing until the autoclave reaches the needed temperature and pressure:
   - Wrapped items take 30 minutes.
   - Unwrapped items take 20 minutes.

   Note: The units of pressure marked on an autoclave's pressure gauge may vary from one autoclave to another. The required amount of pressure may be expressed in any of the following:
   - 15 lb/in^2 (15 pounds per square inch)
   - 106 kPa (106 kilopascals)
   - 1 atm (1 atmosphere)
   - 1 kgf/cm^2 (1 kilogram of force per square centimeter)
   - 776 torr
   - 776 mm Hg (776 millimeters of mercury)
5. At the end of the cycle:
   - If the autoclave is automatic, the heat will shut off and the pressure will begin to fall.
   - If the autoclave is not automatic, turn off the heat or remove the autoclave from the heat source.
6. Wait until the pressure gauge reaches "zero." Open the autoclave's lid or door so that the remaining steam escapes.
7. Leave instrument packs or items in the autoclave until they dry completely, which could take up to 30 minutes. Items must be dry before removal. Packs that are damp when removed from the autoclave draw microorganisms from the environment and should be considered contaminated.
8. Remove items from the autoclave when dry. If any items are not wrapped, use sterile pickups to remove and transfer them to a sterile container.
9. Use or store autoclaved equipment immediately.

FIGURE C.2 **WRAPPING INSTRUMENTS FOR STERILIZATION**

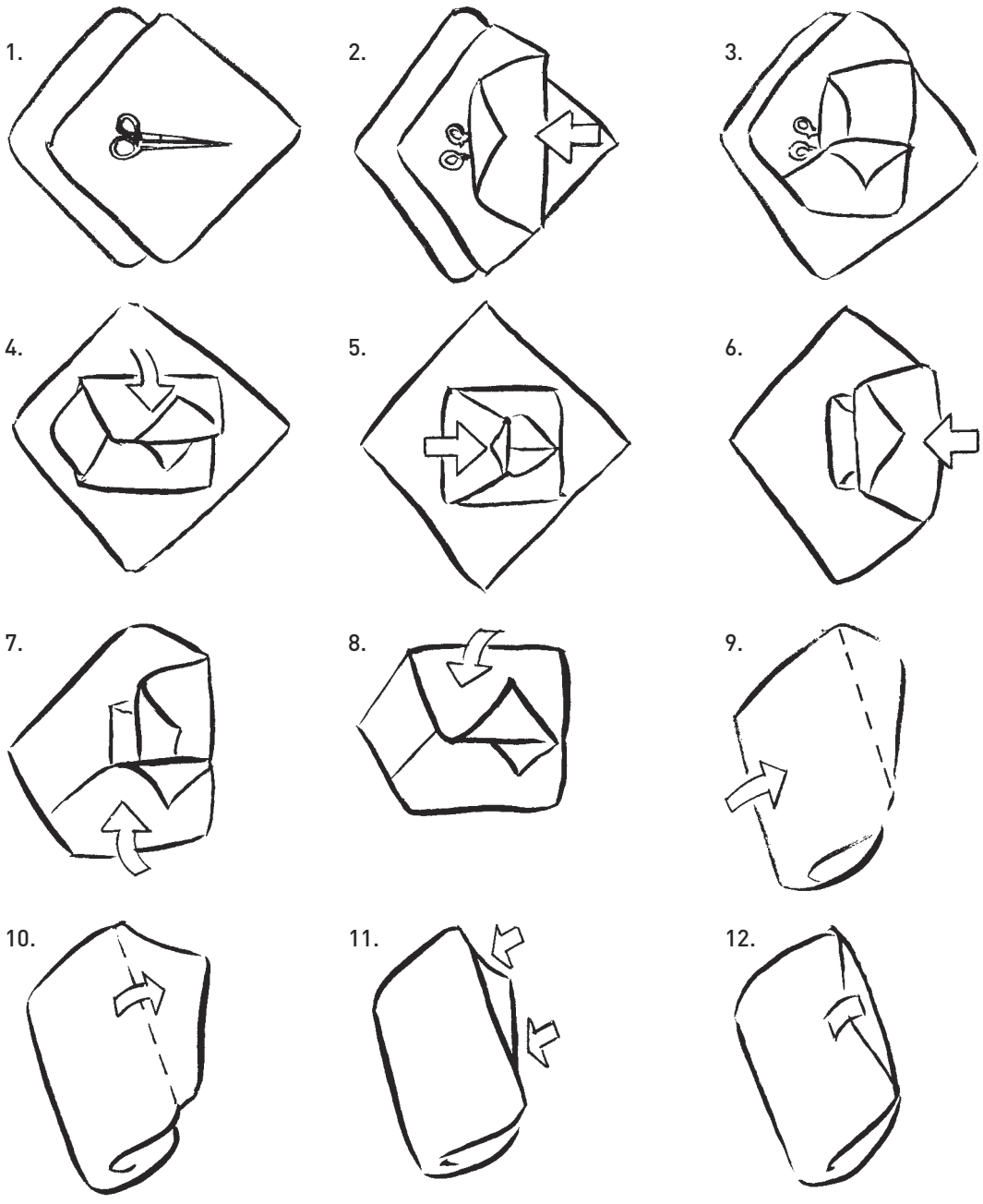


CHART C.8 STEP 3: STERILIZATION BY DRY HEAT (ELECTRIC OR GAS OVEN)

Dry heat sterilization needs sustained high heat. This requires a constant supply of electricity or fuel. Only glass or metal items can be dry heat sterilized. Gloves or plastic items will melt or burn at high temperatures.

Steps for dry heat sterilization:

1. Decontaminate, clean, and dry all items to be sterilized.
2. Prepare instruments:
   a) wrap instruments using aluminium foil, double-layered cotton, or muslin fabric;
   b) put unwrapped instruments on a tray or shelf; or
   c) put them in a metal, lidded container.
3. Put items in the oven and heat them to the needed temperature. Use an oven thermometer to make sure the proper temperature is reached.
4. Maintain the temperature for the required time. Begin timing after reaching the desired temperature. Do not open the oven door or add or remove any items once timing starts. The time required depends on the temperature:
   170 °C (340 °F) = 1 hour
   160 °C (320 °F) = 2 hours
   150 °C (300 °F) = 2.5 hours
   140 °C (285 °F) = 3 hours
   Because dry heat can dull sharp instruments and needles, these items should not be sterilized at temperatures higher than 160 °C.
5. Turn the oven off and leave items in it to cool before removing.
6. When completely cool, remove the items using sterile pickups.
7. Use or store sterilized instruments immediately.

CHART C.9 STEP 4: STORE OR USE

After processing, HLD or sterilized items should be used immediately or stored properly so they do not become contaminated. Proper storage is as important as decontamination, cleaning, sterilization, or HLD.

Guidelines for storage or use:

- Always store instruments or other items dry. Do *not* store them in solutions because microorganisms can live and multiply in both antiseptic and disinfectant solutions.
- Keep your storage area clean, dry, and dust-free.
- Packs and containers should be stored at least:
  - 20-25 cm (8-10 inches) off the floor
  - 45-50 cm (18-20 inches) from the ceiling
  - 15-20 cm (6-8 inches) from an outside wall
- Do not use cardboard boxes. They collect dust and may contain insects.
- Date and rotate the supplies. Follow the first in/first out principle:
  - Write the sterilization date on the packet before placing it in the sterilizer.
  - Use items with the earliest sterilization date first.
  - Store freshly sterilized items behind or under items sterilized earlier.
- How long items stay sterile or HLD depends on:
  - The quality of the wrapper/container
  - The number of times a container is opened
  - The number of times a package is handled before use
  - Whether the package is stored on open or closed shelves
  - The condition of the storage area (temperature, humidity, and cleanliness)
  - The use of plastic bags to cover the package and how it is sealed

Wrapped items. With good storage and little handling, properly wrapped items can be considered sterile as long as they remain intact and dry. *When in doubt* about the sterility of a pack, consider it contaminated and sterilize it again.

Unwrapped items. Use unwrapped items immediately or keep them in a covered HLD or sterile container for up to one week.

PROCESSING LINENS

The risk of passing infection from dirty linen is small. It does not need decontamination. The biggest dangers from processing linen happen:

- When sharp objects, such as needles and surgical instruments, are left in or on linens
- During sorting
- When washing linen by hand

Always wear heavy utility gloves when handling dirty linen. During sorting and handwashing of soiled linen, you should also wear protective eyewear, a plastic or rubber apron, and closed shoes. The steps for processing linens are explained below:

1. Collect and transport
- Never put dirty linens on the floor. Put them in a leak-proof container with a lid or in a plastic bag.
- Transport the dirty linens in that same container or bag to prevent contact with skin, mucous membranes, or clothing.

2. Sort
- Handle soiled linen as little as possible.
- To prevent spreading germs, do not shake dirty linen.
- Remove any instruments or dirty or bloody dressings.

3. Wash
- Hand or machine wash.
- Heavily soiled linens should be:
  - Presoaked in soap, water, and bleach (especially if they will be handwashed)
  - Washed separately from non-soiled linens
- Use detergent and water.
- Use warm or hot water if available (helps to loosen soil).
- After washing, check for cleanliness. Rewash if still dirty.
- Rinse with clean water.

4. Dry
- Completely air- or machine-dry.
- If air-drying, keep linen off the ground and away from animals, dust, and dirt.

5. Check and fold
- Check for holes. Repair any found.
- Iron linens and fold them, unless they are to be sterilized. (Ironing dries out the fabric and makes autoclaving more difficult.)

6. Sterilize
- Use this step only if sterile linens are needed (such as for surgery).
- Only steam sterilization (autoclaving) should be used for linens. Many fabrics burn at the high temperatures used for dry heat sterilization.
- Packs containing linens should not be more than 30 x 30 x 50 cm (12 x 12 x 20 in) or 5 kg (11 lb) to allow steam to go through the items. Place linen packs in the autoclave on their sides. It is easier for steam to go through the items on their sides than through flat, compressed surfaces.

7. Store
- Keep clean linen in a clean, dry, closed storage area.

GLOVES AND PROTECTIVE CLOTHING

To reduce the spread of germs and keep the environment free of infection, use protective gloves and handwashing. The three kinds of gloves that may be used are:

1. Utility or heavy duty gloves (household gloves)

Wear utility gloves for:
- Handling dirty instruments, linens, and waste
- Doing housekeeping
- Cleaning contaminated surfaces

Utility gloves can be reused after cleaning. After using utility gloves, always wash your hands twice: once with gloves on and again after removal.

2. Single-use gloves (exam gloves)

Exam gloves should be worn:
- For procedures that involve contact with intact mucous membranes
- When there is risk of exposure to blood or other body fluids (collecting specimens for lab tests, changing dressing, etc.)

Exam gloves are: 1) clean, but not sterile or HLD, 2) very thin and should always be discarded after one use, and 3) supplied in bulk in a box or may be individually packaged.

CHART C.10 **WHEN AND WHAT KIND OF GLOVES ARE NEEDED**

ACTION	ARE GLOVES NEEDED?	RECOMMENDED GLOVE	ACCEPTABLE GLOVE
Temperature check	No	-	-
Injection	No	-	-
Newborn exam	No	-	-
Blood drawing	Yes	Single-use	HLD
Normal delivery	Yes	Surgical	HLD
Newborn resuscitation	Preferred	Single-use	HLD
Surgery	Yes	Surgical	HLD
Cleaning instruments	Yes	Utility	HLD
Cleaning blood or body fluid spills	Yes	Utility	HLD
Handling contaminated waste	Yes	Utility	HLD
Cleaning linens	Yes	Utility	HLD

3. Surgical gloves (sterile)
Wear surgical gloves for all procedures that require contact with tissues under the skin or with the bloodstream (surgical procedures, deliveries, etc.). Disposable surgical gloves are recommended whenever possible.

Gloves for surgical procedures should be sterile. Take care not to contaminate them while putting them on.

Reprocessing of Surgical Gloves

Gloves are difficult to clean and reprocess properly; therefore, reprocessing is not usually recommended. Where gloves are in short supply, they can be reused if they have no holes and the three-step process is followed:

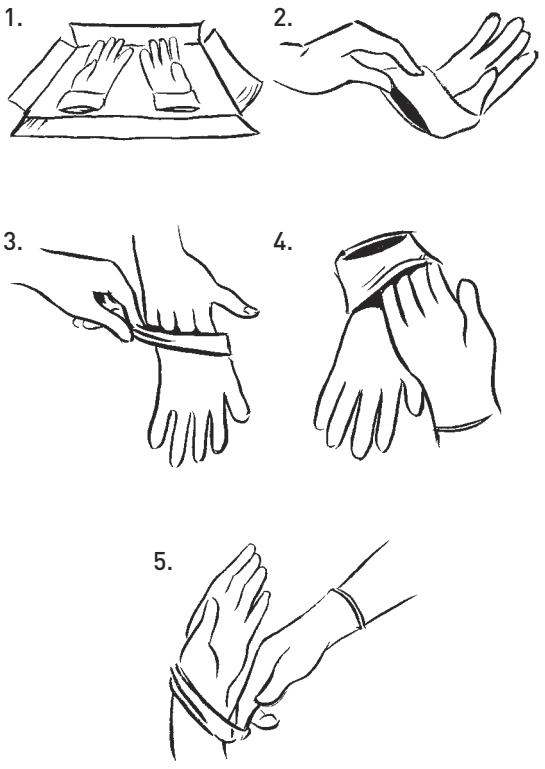
1. Decontamination (by soaking in 0.5% chlorine solution)
2. Cleaning (by washing with soap and then rinsing)
3. Sterilization (by autoclaving) or high-level disinfection (by steaming)

Boiling of gloves is not recommended.

How to Put on Sterile Surgical Gloves

1. Scrub hands thoroughly with soap and water and dry them on a clean towel or air-dry.
2. Open the glove packet carefully without touching the gloves or the inside surface of the packaging material.
3. A pair of surgical gloves contains a right-hand glove and a left-hand glove. Slide the fingers of one hand part way into its glove and lift it up. Do not let anything touch the outside of the glove as you are putting it on.
4. Grasp the glove's folded-over cuff with the other hand and pull it on all the way. Do not unfold the cuff or touch the outside of the glove as you do this. (See figure C.3.)

FIGURE C.3 **PUTTING ON SURGICAL GLOVES**



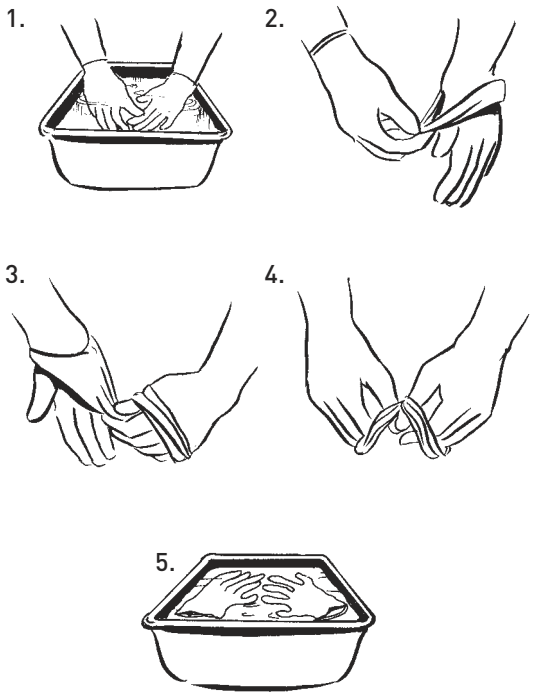
5. Slide the gloved fingers of the first hand under the folded-over cuff of the second glove.
6. Slide the second hand into the second glove.
7. Roll back the cuffs (unfold them). As you do this, your gloved fingers should touch only the outside surfaces of the gloves.
8. Once the sterile gloves are on, hold your hands up and away from your body, being very careful not to touch anything outside of the sterile field.

Removing Contaminated Gloves

1. Remove used gloves before touching anything.
2. Before removing contaminated gloves, dip gloved hands into a 0.5% chlorine solution to rinse the outer surfaces and to remove blood, other fluids, and tissue.
3. Carefully remove gloves without touching the outer surface with your bare hands.
   - To remove the first glove: with one hand, peel the glove off the other hand by slowly pulling it down from the cuff and turning it inside out.
   - To remove the second glove: use the inside-out glove to remove the second glove by slowly peeling it down from the cuff and off. The second glove should also turn inside out.
4. Put both gloves into the 0.5% chlorine solution to soak.

Remember: After removing all gloves, wash your hands! Gloves can tear during use. Most gloves also have tiny holes that cannot be seen. Germs can enter and reach your hands even when you wear gloves.

FIGURE C.4 **TAKING OFF SURGICAL GLOVES**



Protective Clothing

Protective clothing can protect both the health worker and the patient. Any wet clothing acts as a sponge for germs. These germs can enter a person's body through any open cut or sore and through the mucous membranes of the eyes, nose, and mouth.

Mask and eye protection

Masks and eye protection should be worn whenever blood or body fluids might splash and enter a health worker's eyes, mouth, or nose. This can happen when:

- Sorting and cleaning instruments and linens
- Attending a vaginal delivery
- Cutting the umbilical cord

Eye protection can include goggles, face shields, prescription glasses, or glasses with plain lenses.

Apron

The apron should be made of rubber or plastic material (waterproof) and worn for:

- Sorting and cleaning instruments and linens
- Attending a vaginal delivery

Feet protection

Sturdy, closed shoes or boots should be worn at all times to protect the health worker from:

- Injury by sharps or heavy items
- Blood or other body fluids that splash or spill on the floor. (This is especially important if the health worker has a cut or sore on her foot.)

Protecting the patient

The health worker should wear a mask if she has a cold, cough, sore throat, or upper respiratory infection. If the health worker has a cut or wound on her hand, she should keep it clean and covered with a dressing and wear a glove over the dressing.

PROTECTION FROM SHARPS

Sharps are any needles, razors, scalpel blades, or other sharp instruments used to give health care. After the sharp has been used, it is contaminated and can easily pass infection to others through an accidental nick, cut, or stick.

To Prevent Injuries from Sharps

Take extreme care in handling needles and other sharps, and handle them as little as possible after use. Put reusable needles and syringes in decontamination solution to soak immediately after use.

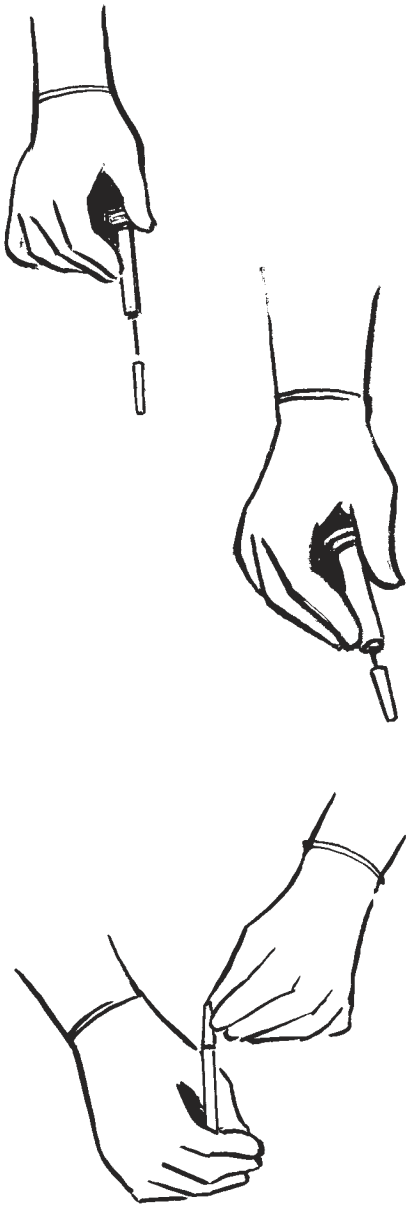
Handle needles as follows:

- Do not bend, break, or cut single-use hypodermic needles before disposal.
- Do not remove the needle from a syringe by hand. Grasp the needle with a forceps to separate them prior to cleaning and HLD.
- Do not recap needles. Accidental needle sticks can easily happen. If you must recap a needle (for example, when immediate disposal is not possible), use the one-hand technique: holding the syringe with attached needle in one hand, insert the needle into the cap which is lying on an inanimate surface such as a table top. Then hold the syringe upright (still using the same hand) and use the other hand to secure the cap.

Dispose of single-use hypodermic needles and other sharps properly.

- Dispose of needles and syringes immediately after use.
- Put into a puncture-resistant sharps disposal container with a small opening. It may be made out of heavy cardboard, plastic, glass, or metal.
- Seal the opening and burn the sharps disposal container when it becomes three-quarters full.
- If burning is not possible, decontaminate needles and syringes, then put them in a sharps disposal container and bury it in a pit. Use the following process:
  1. After use do not recap the needle or separate the needle from the syringe.
  2. Fill the needle and syringe with 0.5% decontamination solution. Fill and push out solution three times.
  3. Put the needle and syringe in a sharps disposal container after this decontamination.

FIGURE C.5 **ONE-HAND TECHNIQUE**



HOUSEKEEPING

Good housekeeping reduces germs, reduces the risk of accidents, and provides a safe place for health care.

Cleaning Solutions Used in Housekeeping

Detergent and water solution

- Detergents remove dirt and dissolve or suspend grease and oil so they are easier to remove by scrubbing.
- Used for general cleaning of:
  - Walls, windows, ceilings, doors (including door handles)
  - Floors (if no body fluids are present)
  - Equipment such as stethoscopes, weighing scales (if no body fluids present)

Decontamination solution

- Used for decontaminating a soiled area before cleaning so it is safer to clean. This solution should be used first, before general cleaning, whenever you have body fluids spilled on:
  - Floors, walls, furniture, beds, etc.
  - Equipment such as stethoscopes, weighing scales
- Use 0.5% chlorine decontamination solution.

Disinfectant cleaning solution

- Contains a disinfectant, a detergent, and water.
- Prepare cleaning solution by mixing a 0.5% chlorine solution with some detergent. Keep adding detergent and stirring until the solution is mildly sudsy.
- Chlorine solutions should never be mixed with cleaning products containing ammonia, ammonium chloride, or phosphoric acid. Combining these chemicals will cause the release of chlorine gas, which can cause nausea, eye irritation, headache, and shortness of breath. These symptoms may last for several hours. If you are exposed to a strong odor after mixing chlorine solution with a cleaning product, leave the room or area immediately until the fumes have cleared completely.
- The disinfectant kills many infectious germs, while the detergent removes dirt and other material that cannot be removed by water or disinfectants alone.
- Used for cleaning areas that may be contaminated with infectious materials such as:
  - Delivery rooms, surgical theaters, procedure and examination rooms
  - Floors (if body fluids are present)
  - Sinks (use a separate mop, cloth, or brush with disinfectant cleaning solution, then rinse the sink with water)
  - Toilets and latrines (use a separate mop, cloth, or brush with disinfection solution)
  - Chairs, tables, tabletops, beds, mattresses, counters
  - Waste containers

General Housekeeping Guidelines

- **Always wear gloves** when cleaning. Use thick utility gloves if possible.
- **Use a damp or wet mop or cloth** instead of a dry one for dusting or sweeping (to reduce the spread of dust and germs).
- **Scrubbing** is the best way to remove dirt and germs.
- **Cleaning should always go from top to bottom** so that dust, dirt, and germs fall to the floor which is cleaned up last. For example, clean ceiling lamps, then shelves, then tables, and then the floor.
- **Prepare fresh cleaning solution daily.**
- **Change cleaning solution whenever it looks dirty.** A solution is less likely to kill infectious germs if it is very dirty.
- Follow a regular cleaning schedule. (See chart C.11 opposite.)
- **Supplies and equipment used for cleaning also need to be cleaned.** Equipment (such as mops, buckets, and cloths) should be decontaminated with a 0.5% chlorine solution, cleaned in detergent and water, rinsed in clean water, and dried before reuse.

CHART C.11 **RECOMMENDED HOUSEKEEPING ROUTINES FOR A HEALTH FACILITY**

FREQUENCY	WHAT TO CLEAN
Daily	Delivery rooms, surgical theaters, procedure and examination rooms
	Floors
	Furniture and equipment used daily (exam tables, chairs, tabletops, counters, weighing scales, stethoscopes, delivery beds, IV poles)
	Sinks (use a separate mop, cloth, or brush with disinfectant cleaning solution, then rinse the sink with water)
	Toilets and latrines (use a separate mop, cloth, or brush with disinfectant cleaning solution)
	Waste containers (use disinfectant cleaning solution)
Weekly	Use a detergent and water solution for cleaning the following: ■ Doors (including door handles) ■ Windows ■ Walls ■ Ceilings ■ Ceiling fixtures
Immediately	Furniture, floors, rooms, and equipment; after spills, after a procedure, or after a delivery
Following discharge of a patient	Mattress, bed linen, bed frame, and any other equipment that was used for the patient's care (use disinfectant cleaning solution)

Cleaning spills

Clean up spills of blood and body fluids immediately.

When cleaning up spills:

- Always wear gloves.
- **For a small spill**: Wipe up the spill with a cloth soaked with a 0.5% chlorine solution. Then wipe the area clean with a disinfectant cleaning solution.
- **For a large spill**: Cover (flood) the spill with a 0.5% chlorine solution. Then mop up the solution, and clean the area with a disinfectant cleaning solution.
- Do not leave a spill on the floor for cleaning up later (even if it is covered); someone could slip and fall on it and be injured.

DISPOSAL OF CONTAMINATED WASTE

Waste disposal is a crucial part of infection prevention. Proper waste disposal:

- Prevents the spread of infection to health workers and cleaning staff who handle the waste
- Prevents the spread of infection to the local community
- Attracts fewer insects and does not attract animals
- Prevents contamination of the soil or ground water with chemicals or germs

Caution! Always dispose of medical waste correctly. Never simply throw it outside or leave it in an open pile.

Protect Yourself While Disposing of Waste

1. Always wear protection when transporting and disposing of waste (utility gloves, eye protection, and waterproof apron).
2. Carefully dispose of liquid waste:
   - Carefully pour liquids down a drain, toilet, or latrine to prevent splashing.
   - Decontaminate a container that was used for liquid waste by soaking it in a 0.5% chlorine solution for 10 minutes before washing.
3. Carefully dispose of solid waste:
   - Never use your hands to compress or stuff waste into containers.
   - Hold plastic bags at the top.
   - Keep bags of waste from touching or brushing against your body when lifting and during transport.
4. After completing waste disposal, remove contaminated utility gloves, eyewear, and apron. Wipe them down with a disinfectant cleaning solution (0.5% chlorine solution and detergent) daily, and whenever they are visibly dirty.
5. Wash and dry your hands with either soap and water or an alcohol handrub.

Disposal of Placentas: A Special Situation

It is often important to a family to take the placenta home after a birth. This is the family's right. As a health worker, you can help the family by giving them the placenta and by explaining the safest way to handle it.

Tell them to take the placenta home, double-bagged in leak-proof plastic bags, or place it in a plastic bag inside a rigid clay, metal, or plastic container.

Explain that the placenta contains blood, so it is best not to touch it directly with bare hands. Advise them to use gloves or a plastic bag to cover their hands when handling the placenta and to wash their hands afterwards.

CHART C.12 WAYS TO DISPOSE OF CONTAMINATED WASTE

Sink, Toilet, or Latrine	Before pouring liquid waste down a sink or toilet, think about where the drain empties. It is dangerous for liquid medical waste to run through open gutters or sewers.
Burn	This is the best method to dispose of contaminated solid waste. It prevents scavenging and reuse.
Bury	Burial is another option for disposal of contaminated solid waste. The pit must be in a safe location and correctly filled in and covered. A safely located pit: ■ Has a fence around it ■ Is at least 50 meters (155 feet) from any water source ■ Is downhill from any wells ■ Is not in an area that floods ■ Has a water table more than 4 meters (12 feet) below the surface
Encapsulate	Seal the container that has waste in it by filling it completely with cement, plastic foam, or clay and waiting until it dries. Then either bury the sealed container or dispose of it in a landfill. This method can be used for disposal of sharps and other hazardous materials.

CHART C.13 **KINDS OF WASTE AND HOW TO DISPOSE OF THEM**

KINDS OF WASTE	EXAMPLES	DISPOSAL METHODS
Noncontaminated Waste	Paper Boxes Bottles Plastic Food Alkaline batteries	Usual methods In some places, small businesses collect items that can be processed and then safely reused. Examples of this are tin cans, spray cans, or batteries.
Contaminated Waste	Liquid contaminated waste: blood, feces, urine, pus, other body fluids	Sink, toilet, or latrine, or Bury
	Solid contaminated waste: ■ Body parts (including placentas) ■ Gauze and dressings contaminated with blood and other body fluids ■ Sharps (used or unused), including needles and syringes, scalpel blades, razor blades, blood tubes, other glass items that have been in contact with contaminated materials	Burn or bury **Note:** Decontaminate and encapsulate sharps before burying.
Hazardous Waste (can harm the environment)	Mercury from broken blood pressure gauges or thermometers	Encapsulate and bury
	Lithium or NiCad batteries Aerosol spray cans (can explode if burned)	Recycle or encapsulate and bury
	Chemicals and medicines: expired drugs, disinfectants such as formaldehyde and glutaraldehydes (Cidex), and solvents like acetone and chloroform	Small amounts: Burn, encapsulate, or bury Large amounts: Burn

Notes

1 Adapted from: EngenderHealth. (2001). Infection Prevention OnLine Course. Accessed May 3, 2004, from www.engenderhealth.org/ip/about/ip.pdf

2 Note that "parts" can be used for any unit of measure (ounce, liter, or gallon) and need not even represent a defined unit of measure (it can be a pitcher or container).

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D

Basic Skills for Care of the Newborn

This appendix presents newborn care skills in a brief outline format. This information may be used for review and teaching health workers.

HOW TO ASSESS THE FETAL HEART RATE DURING LABOR

- The best time to hear the baby's heartbeat during labor is between contractions, when the mother's uterus is resting.
- After a contraction has passed, place the fetoscope or stethoscope on the mother's lower abdomen. Listen for the fetal heartbeat. Move the fetoscope around until you find the place where you can hear the baby's heartbeat most clearly.
- Look at a clock or watch with a second hand and count the number of times the heart beats in one full minute.

HOW TO SUCTION THE NEWBORN'S AIRWAY BEFORE THE BIRTH OF THE BODY

- If there is meconium in the amniotic fluid, try to suction the baby's airway before the baby takes her first breath.
- Explain to the mother what you are going to do and how she can help.
- Have your suction apparatus ready in your hand before the head emerges.
- As soon as the baby's head is born, ask the mother NOT to push but to breathe lightly and rapidly through her mouth.
- Quickly suction the baby's mouth and nose. Keep a hand on the baby's head to be prepared for sudden birth of the body.
- As soon as your finish, ask the mother to push again to deliver the body.

HOW TO SUCTION THE NEWBORN'S AIRWAY AFTER DELIVERY

- Suctioning of the airway is stressful to the newborn and can cause an irregular heartbeat.
- Suction only if the newborn has trouble breathing, if the airway is blocked, if there is meconium-stained amniotic fluid, or if the baby needs resuscitation.
- Suction once gently and correctly.

Suction the Airway with a Bulb Syringe (Ear Syringe):

- Squeeze the bulb syringe and maintain the pressure.
- Place the tip of the bulb syringe in the baby's mouth and release your pressure on the bulb.
- Take the bulb syringe out of the baby's mouth and squirt out the mucus on a cloth.
- Repeat these steps to suction both nostrils.

Suction the Airway with a Mucus Extractor with a Filter or Suction Trap

- Attach a clean, soft, size 12F (French size 12) suction catheter to the extractor.
- Place the tube no more than 5 cm into the baby's mouth.
- Apply suction while pulling the tube out of the baby's mouth.
- To suction the nose, place the tube no more than 3 cm into the nostril.
- Apply suction while pulling the tube out.
- Repeat for the other nostril.

FIGURE D.1 **BULB SYRINGE**

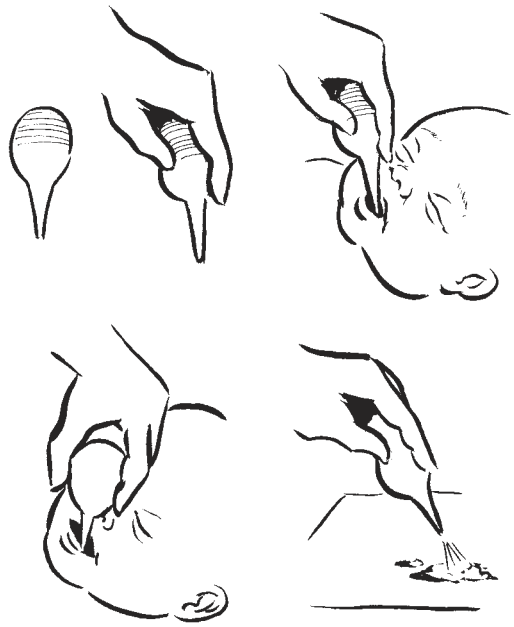
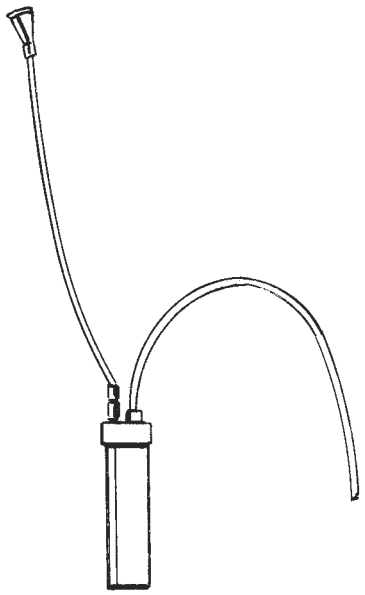


FIGURE D.2 **DE LEE MUCUS TRAP**



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Suction the Airway with an Electric or Mechanical (Foot-Pumped) Suction Apparatus

- Make sure the vacuum pressure of the machine is not more than 136 cm water, 100 mm Hg, or 13.3 kPa.
- Attach a clean, soft, F10 (French size 10) catheter with an end-hole to the suction machine.
- Place the tube no more than 5 cm into the baby's mouth.
- Apply suction while pulling the tube out of the baby's mouth.
- To suction the nose, place the tube no more than 3 cm into the nostril.
- Apply suction while pulling the tube out.
- Repeat for the other nostril.

HOW TO ASSESS THE NEWBORN'S TEMPERATURE

If You Do *Not* Have a Thermometer

- Place the back of your hand on the baby's back or abdomen.
- Feel your own forehead with the back of your other hand.
- If the baby's skin is warmer than your skin, the baby may have a high body temperature. Look for other danger signs.
- If the baby's skin is cooler than your skin, the baby has a low body temperature. Look for other signs of hypothermia.

If You Have a Thermometer

- Clean the thermometer with cold water and soap. Rinse with cold water.
- Hold the thermometer by the clear-glass end.
- Turn the thermometer until you can see the silver or red line.
- The end of the silver or red line marks the temperature.
- Shake the thermometer hard with a snap of your wrist.
- Repeat this until it reads less than 35 °C or 95.0 °F.
- Put the other end of the thermometer in the baby's armpit and hold the baby's arm still against her ribcage.
- Wait 4 minutes.
- Read the temperature and record it.
- Shake the thermometer down again (as above) so it will be ready for use.
- Decontaminate the thermometer by soaking it for 10 minutes in a 0.5% chlorine solution.
- Wash the thermometer with cold water and soap. Rinse with cold water.

HOW TO COUNT THE NEWBORN'S BREATHING AND HEART RATE

How to Count the Baby's Breathing

- Look at the baby's chest and abdomen. (Newborns are abdominal breathers.)
- Hold a watch or timer close to the baby so you can see the watch and the baby at the same time.
- Count the number of times the chest or abdomen rises in one full minute.

How to Count the Baby's Heart Rate

- Feel the baby's chest and find the spot where you can best feel the heartbeat.
- You may also use a stethoscope, if available, to listen to the heartbeat.
- Hold a watch or timer close to the baby so you can see the watch and the baby at the same time.
- Count the number of times the heart beats in one full minute.

HOW TO WEIGH THE NEWBORN

- Place a clean blanket or cloth on the baby scale.
- Adjust the baby scale so that it reads "0" with the blanket or cloth on it.
- Wrap the naked baby in the blanket or cloth on the scale.
- Weigh the wrapped baby using care to prevent injury.
- Note the weight when the baby and the scale stop moving.
- Write down the weight.
- Place the baby back in skin-to-skin contact with the mother or in her arms.

HOW TO GIVE AN INJECTION TO A NEWBORN

IMPORTANT INFORMATION

1. When drugs are injected, there is a high risk of passing blood-borne diseases, such as HIV or hepatitis, if the needle and syringe are not sterile.
2. To prevent passing infectious illnesses, always use sterilized syringes and needles or new, previously unopened syringes and needles.
3. Decontaminate all needles and syringes immediately after use.
4. Dispose of single-use syringes and needles safely in a sharps disposal container after decontaminating them.

Gather the Equipment You Will Need

- Syringe and needle:
  - Disposable (never used and in a sterile package), or a
  - Reusable syringe and needle that have been sterilized
- The medication to be given
- Any fluid needed to dilute the drug (sterile saline solution or distilled water)
- Clean water and gauze or cotton
- Wash your hands thoroughly with soap and water. Dry your hands on a clean cloth or air-dry.

Make Sure You Have the Correct Medication in the Correct Dose

- Look carefully at the label of the medication container.
  - Make sure the name of the medication is correct.
  - Make sure the expiration date has not passed.
  - Read any instructions for mixing the medication with a diluting fluid (diluent).
- Look at the dose of the medication you need to give and figure out how much of the medication you will need to draw into the syringe.

How to Mix a Drug with a Diluting Fluid

- Open the syringe and needle packet or assemble the reusable syringe and needle.
  - Touch only the outside of the syringe barrel, the end of the plunger, and the hub of the needle.
  - Do not touch any part of the syringe and needle that will touch the client's body.
- Clean the drug container(s) before use.
  - If using a single dose ampule, clean the glass neck with cotton and clean water or alcohol.
  - If using a medicine bottle with a rubber stopper, clean the rubber with cotton and clean water or alcohol.
- Dilute a medication that comes in powdered form.
  - If the diluting fluid is in a glass ampule, clean the ampule neck, cover the ampule neck with a gauze or cloth (so that you will not cut your hand), and then break it.
  - Do not let the needle touch the outside of the ampule.
  - Draw up into the syringe the correct amount of the correct diluting fluid.
  - Carefully draw up the fluid into the syringe. Tip the ampule to get all the fluid.
  - Withdraw the needle and syringe from the ampule and hold the syringe so the needle does not touch anything. Inject the diluting fluid through the cleaned rubber stopper into the bottle with the powdered medication.
  - Take the needle and syringe out. Do not let the needle touch anything.
- Shake the medication until it mixes completely.

How to Draw up the Medication:

- Clean the rubber stopper and push the needle into the bottle of mixed medication.
- Draw up the correct dose in the syringe.
  - Hold a medicine bottle with a rubber stopper upside down to withdraw the drug.
  - Without drawing air into the syringe, insert the needle through the rubber.
  - Draw up the correct amount of medication into the syringe.
  - Pull the needle out of the bottle.
- Remove all the air from the syringe.
  - Hold the syringe with the needle pointing up.
  - Tap on the barrel of the syringe so that any air bubbles rise.
  - Gently expel all the air from the syringe.

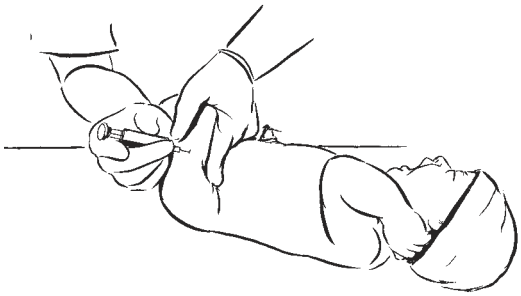
How to Inject into the Muscle (Intramuscular)

- Explain to the mother what you are going to do.
- Ask the mother to hold the baby so the thigh is exposed and held still. (Or you can hold down the knee so the baby cannot kick.)
- Find the correct injection site.
  - Grasp the muscle of the upper anterior thigh.
- Clean the skin with clean water. If you use alcohol, let it dry before injecting.
- In one quick movement, put the needle straight in.
- Before injecting the drug, pull back on the plunger a little bit.
  - Watch to see if any blood comes into the syringe.
  - If blood is seen, take the needle out and inject again in a spot nearby.
  - Again pull back a little on the plunger to check for blood.
  - Do not inject if there is blood as the drug is likely to go into a vein and may be harmful.
- Inject the drug slowly.
- Remove the needle and wipe the skin again.
- Decontaminate needle and syringe. See directions on page 219.

How to Inject Between the Skin Layers (Intradermal)

- Explain to the mother what you are going to do.
- Ask the mother to hold the baby so the arm is exposed and held still.
- Grasp the baby's arm so the skin is tight.
- Clean the skin with clean water or alcohol. If you use alcohol, let the skin dry before injecting.
- Lay the syringe and needle almost flat along the arm with the opening of the needle facing up.
- Insert the tip of the needle just under the skin and only a bit past the opening of the needle.
- Inject the vaccine.
  - If the needle is in the correct position, the plunger is hard to push and you will see a distinct round swelling like a small blister.
  - If the vaccine goes in easily, the injection may be too deep. Stop injecting and reposition the needle to give the rest of the dose correctly.
- Remove the needle. Do not wipe off the skin.

FIGURE D.3 **INTRAMUSCULAR INJECTION**



How to Decontaminate the Needle and Syringe

- Fill the needle and syringe with 0.5% chlorine solution. Fill and push out solution three times.
- Dispose of decontaminated single-use needles and syringes in a sharps disposal container.

For reusable needles and syringes:

- Drop the needle and syringe into the chlorine solution and soak for 10 minutes.
- Wash and sterilize decontaminated reusable needles and syringes (see Appendix C).

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E

Communication and Counseling

Two skills that health workers use as part of their work are communication and counseling. Communication is a way for people to share each other's ideas, thoughts, and feelings. Counseling is a way to help someone (such as a mother) make a decision or solve a problem by talking person-to-person. Effective communication skills help you to counsel better.

COMMUNICATION

Communication is a two-way information-sharing process that leads to mutual understanding. In this process each person:

- Actively shares his or her thoughts and feelings
- Actively listens and works to understand the other person's thoughts and feelings

Communication can be done in other ways besides talking. You can also communicate or send messages through body language: the way you hold your body, your facial expressions, looking at the person when you talk, and the tone of your voice.

Good communication skills are important in helping health workers successfully interact with mothers and families. When you care for a mother and her newborn, effective communication skills help establish mutual comfort and trust. If the mother is comfortable and feels trust, she will tell you more about herself, her problems, and her needs. She is also more likely to follow your recommendations, which will help ensure that she and her baby receive the best possible care.

Good communication skills help health workers give better care.

FIGURE E.1 **COMMUNICATION BETWEEN HEALTH WORKER AND MOTHER**

Good Communication Skills

Good communication skills are techniques you can use to show the mother or family that you care and respect them and that you want to help. Often health workers give care to many people in one day. They worry that using good communication skills will take more time. If it takes more time, their busy workdays will be even busier. But ask yourself: does it take more time to smile, to make eye contact, to use a gentle voice, to use words the mother understands? Of course not. Instead, using good communication skills will help you to give better care and make the mother feel more comfortable and respected.

Good communication skills also include body language. If you use good body language, others will feel more comfortable and trust you more quickly. It helps a mother to feel more confident in giving you information. However, you must remember every gesture or action you make should be culturally appropriate. Certain gestures may not be interpreted in the same positive manner in every culture. To avoid offending people, learn about what is acceptable body language and adapt your behavior accordingly.

Good communication skills help you receive and give information more completely and effectively. These skills include:

Showing respect

Treat the mother as someone who can understand her baby's health problems and can make good decisions about care.

Not being judgmental

Never blame a woman for her or her baby's problem, cultural practices, or past decisions she has made.

Speaking clearly and using words the mother understands

For communication to happen, what is said needs to be understood by both the health worker and the mother. If possible, speak with the woman in the language with which she is most comfortable.

Listening actively

- Listen to what the mother says and how she says it (tone of voice, choice of words, facial expressions, and gestures).
- Keep silent sometimes. Give the mother time to think, ask questions, and talk. She may find she already knows some of the answers to her problem.
- Listen carefully instead of thinking what you are going to say next.
- Give feedback to show that you have heard what the mother is saying; for example, nod your head, say "yes." This encourages the mother to continue.
- Occasionally rephrase or summarize what the mother has said. Then both you and the mother will know that you have understood.
- Give praise and encouragement for positive behaviors or practices.

Using good body language

- Smile.
- Have eye contact while talking and listening.
- Use a gentle voice.
- Keep your body height at the same level as the mother's.
- If appropriate, touch the mother gently on her arm or shoulder.

Encouraging the woman to voice her concerns and ask questions

- Answer her questions honestly.
- Be sure to ask if she has understood your response and repeat explanations if needed.

Respecting the woman's right to make decisions about her own health care and that of her baby

- It is your responsibility to give the woman all the information she needs to make a decision, not to make the decision for her.

Listening to what the woman has to say

- Give her enough time to tell you what she thinks is important.
- Avoid interrupting her while she is talking.

COUNSELING[1]

Good communication skills are an important part of counseling. When you counsel, you talk person-to-person to help someone. Counseling helps a mother decide what to do and how to do it. If you use good communication skills, your counseling will be more effective.

Good Counseling Skills

Make the mother feel welcome

This shows that you care, helps to relax the mother, and builds trust.

- Greet the mother in a friendly and respectful way.
- If the mother or baby will be examined or have a procedure, explain what will happen.
- Provide privacy during the examination, counseling, or a procedure. Make sure others cannot see what is happening or hear what is being said.
- Give reassurance and comfort if needed.
- Encourage the mother to ask questions or voice her concerns at any time during the visit.

Use effective questions

Questions are an important part of counseling. They help you decide what problems or needs the mother or baby have. It is helpful, for example, to find out what she already knows about essential newborn care and if she and her family are currently practicing any positive newborn care behaviors. This will help you identify any problems or needs and will guide you on what and how to counsel.

To ask effective questions:

- Use good communication skills.
- Ask only one question at a time. Wait with interest for the answer.
- Try not to start questions with "Why." Sometimes "Why" sounds as if you are finding fault.
- Use open-ended questions to encourage a mother to explain her situation. Open-ended questions give the health worker more information. Closed-ended questions require only a "yes" or "no" answer and cut off discussion. For example:
  - (Open-ended question): "Would you please tell me your reason for coming today?"
  - (Closed-ended question): "Did you come today because your baby is sick?"
- If the mother does not understand, rephrase the question.

Give useful, correct information

No matter what you are counseling about, the information you give needs to be correct, clear, and useful to the mother

Help the mother and her family make their own choices based on clear information and their own feelings, situation, and needs

After assessing the family's needs, offer recommendations tailored to each family's situation and resources. After you give counseling and guidance to a mother or family, they usually decide themselves what they will do. People carry out their own decisions best. This is why good counselors do not make decisions, but help others to make their own decisions. Sometimes you need to be flexible. What you recommend may not be possible in every mother's situation. When this happens, help her and her family find a solution which works for them.

Help the mother remember what to do

When giving instructions, it helps a mother remember if you:

- Keep instructions short, including the most important points.
- Keep it simple.
- Point out what to remember.
- Give the most important information first.
- Show a picture or give a demonstration as you speak.
- Repeat the information as a summary.
- Ask the person to repeat what you have explained. This helps people remember. Gently correct any information that is missing or incorrect.

Praise the mother for coming and remind her of her next visit

- Giving praise recognizes the mother and her family's efforts toward good health care.
- Encourage her to come for her next appointment or whenever she has a problem or she or her baby experience any danger sign.

Counseling Challenges

Counseling is not always easy. You may have situations where it is hard to know what you should do. Below are some situations you may face, along with suggestions on what to do.

The person is silent

- If the person is silent at the start of the meeting, gently call attention to the silence. You could say, for example: "I can see that it is difficult to talk. It's often that way. I wonder if you are feeling a little worried." Look at the person and use body language that shows empathy and interest. Wait for the person to answer.
- During discussion, silence can be appropriate. Sometimes the person is thinking or deciding how to talk about feelings or thoughts. Give the person time to think.

The person cries

- A person may cry for different reasons: to express sadness, to win sympathy, out of stress or nervousness, or to stop further discussion. Do not assume you know why the person is crying.
- Wait for a while. If the crying continues, say that it is all right to cry; it is a natural reaction. This permits the person to explain the reasons for crying. You may ask the reasons gently.

The counselor cannot see a solution to the person's problem

- Counselors may feel anxious if they are not sure what to advise. You do not have to solve every problem for the person. Express understanding. Sometimes this is what the person really wants. You can also suggest others who could help.

The counselor does not know the answer to a person's question

- Explain honestly and openly that you do not know the answer but together you can find out. Check with a supervisor, a knowledgeable coworker, or reference materials, and give the person the correct answer.

The counselor makes a mistake

- Correct the mistake and say you are sorry. It is important to be correct, but it's not important to look perfect. Admitting a mistake shows respect for the other person.
- Be honest. The more honestly you express your own feelings when appropriate (without revealing your personal life), the easier it is for the other person to do the same.

The person asks a personal question

- In general, try not to talk about yourself. This takes attention away from the other person.
- You do not have to answer personal questions. The relationship between a person and counselor is a professional one, not a social one.

Note

1 Adapted from: Population Reports. (1998). *GATHER Guide to Counseling.* Series J, Number 48.

Glossary

Definitions of Terms Used in the *Care of the Newborn Reference Manual*

Abortion: Spontaneous loss of a pregnancy or induced termination of pregnancy before 22 weeks of gestation or below 500 grams weight of the fetus.

AIDS: Acquired immune deficiency syndrome. Sickness resulting from infection with HIV. See HIV.

Amniotic fluid: The liquid surrounding the fetus inside the uterus.

Anemia: A condition in which the blood is not able to carry enough oxygen to all the body because of a low concentration of red blood cells.

Antenatal care: Care given to pregnant women to improve their health, to detect and treat any problems promptly, and to improve the outcome of pregnancy. Essential components of antenatal care include: actions and treatments to promote health and prevent illness, health education and counseling, helping women and families prepare for birth and possible emergencies (including counseling on danger signs), and early detection and treatment of pregnancy complications.

Antibiotic: A medication that fights bacterial infection. Penicillin is one of many antibiotics.

Antibodies: Substances in the blood that fight infection; part of the body's immune system.

Anti-infective medication or drug: A medication that fights infection-causing microbes (germs). Includes antibiotics.

Apnea: A condition in which respirations stop for more than 20 seconds.

Asphyxia: When the baby does not begin or sustain adequate breathing at birth.

Assessment: Determination of a person's condition, needs, or problems based on the information you have collected.

Axillary: Under the arm, in the axilla or armpit.

Bag of waters: The sac of fluid that surrounds the baby in the uterus. The bag of waters is made of membranes that contain the amniotic fluid.

Birth defect: An abnormality in the structure or function of the baby, present at birth, that results in a physical or mental disability. It is a problem that the baby is born with, for example, a cleft lip or clubfoot. See congenital malformation.

Birth injury or birth trauma: An injury to the baby caused by the labor or birth process.

Blister: A raised bump on the skin that contains clear liquid.

Caput succedaneum: Diffuse swelling produced on the presenting part of the baby's head during labor. It is usually reabsorbed within a few days after birth.

Cephalhematoma: Swelling on the newborn's head caused by bleeding beneath the periosteum (a membrane covering the skull bone). The swelling does not cross suture lines and gradually disappears during the weeks after birth.

Clean delivery: Childbirth attended by a health worker who follows the principles of cleanliness (clean hands, clean surface, clean cutting of the cord).

Colostrum: The first milk secreted from the mother's breast, which is high in nutrients and calories. It is also very high in vitamin A and antibodies which protect the baby from infection. Colostrum is often called the baby's "first immunization."

Congenital malformation: A physical or mental problem a baby is born with, for example, a cleft lip or an extra finger.

Contraindications: Conditions or situations that make a medication or treatment dangerous. An allergy to penicillin, for example, is a contraindication for giving penicillin.

Danger sign: A sign or symptom that may indicate serious illness, life-threatening condition, or other danger to health or well-being.

Decontamination: The first step in processing equipment for reuse. Decontamination kills many surface germs and makes the equipment safer for handling during the next steps.

Dehydration: Loss of body water.

Developmental disabilities: Abnormal or slow development as the newborn grows into childhood.

Diagnosis: Medical term for the identification of a health problem based on signs and symptoms. In this document, it is equivalent to the step in the decision-making process that uses information from the history, physical exam, and lab tests to help identify the problems and needs.

Diarrhea: Watery stools.

Diluent: Diluting fluid used to dissolve medication that is in powder form.

Distended: Swollen or inflated due to excess fluid or gas.

Draft: A current of moving air.

Endospore: A thick-walled reproductive cell (or spore) produced by some bacteria. The thick wall makes a spore difficult to destroy since it is very resistant to heat. Prolonged exposure to high heat is needed to destroy endospores. Tetanus is a type of endospore-forming bacteria.

Engorgement: Swelling caused by an accumulation of excessive fluid, milk, or blood.

Environment: Surroundings. For example, the room where baby care takes place or the place where a baby lives.

Essential newborn care: In this manual essential newborn care (ENC) refers to the basic care that every baby should receive to help ensure survival and well-being. This essential care includes immediate care after birth as well as throughout the first month of life. Although some babies (for example, those who are sick or premature) may need special care, ENC helps ensure that the basic health needs of all babies are met.

Exclusive breastfeeding: Feeding an infant only breast milk without any additional food or drink (not even water).

Fetal death: Death of a baby in the uterus after 22 weeks of gestation.

Fetal stethoscope: A device to listen to the fetal heart beat during pregnancy and labor. Also called a fetoscope.

Fetus: The baby while in the uterus.

Fissure: A narrow or very small opening; a slit, cut, or break in the skin.

Flaring nostrils: Nostrils that widen or move with each breath.

Flexion: Bending at the joint.

Fontanelles: The soft spots on a newborn's head where the skull bones do not meet. The anterior fontanelle (on top of the head) is diamond shaped and easily felt. The posterior fontanelle (behind the anterior fontanelle) is smaller and triangular or Y-shaped.

Foremilk: The milk that comes from the breast at the beginning of a feed. The foremilk is more watery than the later milk of a feed (the hindmilk). The foremilk helps keep the baby well hydrated.

Full-term pregnancy: Thirty-seven to forty-two completed weeks of pregnancy.

Fungus (*pl.* fungi): A kind of germ or microorganism. Yeast is a fungus.

Gasping: To breathe (especially inhale) with short, difficult and audible breaths. Gasping is a sign of a serious breathing problem and requires resuscitation.

Genetic conditions: Conditions the fetus inherits or receives from the parents.

Germ: A general term for any microorganism that causes infections or infectious disease.

Gestation: Growth in the uterus. Gestation is measured in weeks. Thirty-seven to forty-two weeks' gestation is a full-term pregnancy.

Gonococcal, gonococcus: Refers to the germ that causes the sexually transmitted infection gonorrhea.

Growth spurt: A short period of time when there is rapid growth.

Grunting: Making a soft noise when breathing out.

Hindmilk: The milk that comes from the breast at the end of a feed. The hindmilk contains more fat than the first milk of a feed (the foremilk). The hindmilk is rich in energy.

HIV: Human immunodeficiency virus. HIV attacks the disease-fighting (immune) system in the body.

Hyperbilirubinemia: Excess bilirubin in the blood from destroyed blood cells. High levels of bilirubin are dangerous to the newborn and may harm the brain. See jaundice.

Hyperthermia: Fever; when the baby's axillary temperature rises above 37 °C (98.6 °F).

Hypothermia: Low axillary temperature, below 36 °C (96.8 °F).

Hypoxia: Lack of enough oxygen in the body tissues.

Immunizations: Medications (antibodies or vaccines) given to prevent certain illnesses.

Indrawing of the chest: When the skin between the ribs and around the neck is drawn in with each breath. Indrawing is a sign of breathing difficulty. Also called chest retraction.

Infant: A baby from birth through the first year of life.

Infant mortality: Death of infants within the first year of life. The infant mortality rate is expressed per 1,000 live births.

Informed choice: The client freely makes a decision based on complete, accurate, useful information.

Jaundice: Yellow color of the skin and eyes. In newborns it may be caused by excess bilirubin (hyperbilirubinemia) from excess blood cells that are destroyed.

Kangaroo Mother Care: a method of keeping the baby warm through continuous skin-to-skin contact between and mother and her newborn.

Lanugo: Fine, soft hair found all over the body of the fetus except the palms of hands and soles of feet. Lanugo appears at about five months gestation and begins to shed around seven to eight months gestation. Premature babies tend to have more lanugo, although it may also be present in term newborns. Lanugo will disappear within a few days or weeks after birth.

Lethargy: Sluggish or having abnormal drowsiness. Lack of energy often causing reduced activity.

Live birth: Complete birth of a baby from the mother, at any stage of the pregnancy, after which the baby breathes or shows any evidence of life.

Low birth weight: Having a birth weight of less than 2,500 grams.

Very low birth weight: Having a birth weight of 1,500 grams or less.

Malformation: A physical deformity a baby is born with. See congenital malformation.

Meconium: Dark, greenish-black, sticky stool that forms in the baby's intestine while she is in the uterus. Meconium is the first stool the newborn passes. If meconium is passed while the baby is still in the uterus, it causes yellow, brown, or green staining of the amniotic fluid.

Milia: Tiny (the size of a pin head), white bumps on the newborns face. This is a normal finding. There is no pus or redness of the skin.

Molding: Change in shape of the baby's head as it moves through the birth canal.

Monitor: To reassess on a regular basis, for example, to observe the newborn frequently to assess his breathing and warmth.

Monogamous: Having only one sexual partner at a time.

Mucous membranes: The moist lining of some organs. For example, the inside of the mouth and the lining of the eye.

Neonate: A newborn; a baby in the first 28 days of life.

Neural tube defect: An opening or weakness in the tissues along the route of the spinal cord and brain. The defect may be under the skin and not visible to the eye or may not be open. If the neural tube defect is open, a sac of membranes or a small hole may be seen.

Neurological disabilities: Abnormal development of the brain and nervous system.

Newborn: A baby from birth through the 28th day of life; a neonate.

Newborn death or neonatal death: The death of a live-born baby during the neonatal period.

- **Early newborn death or early neonatal death**: Death of a baby during the first seven days of life.
- **Late newborn death or late neonatal death**: Death of a baby occurring after the 7th day of life but before 28 days of life.

Newborn period or neonatal period: The first 28 days of life.

- **Early neonatal period**: The first seven days of life.

Oral: Referring to the mouth, as in oral thrush; a mouth infection.

Oxygen: The gas in the air that supports life. Oxygen is carried by red blood cells to all parts of the body.

Palate: The roof of the mouth.

Partograph: A chart used to monitor labor progress and maternal and fetal condition. The partograph includes a graphic record of labor to help identify abnormal labor. When caregivers use the partograph to identify maternal and fetal problems, they can intervene quickly with lifesaving action. The partograph can reduce fetal and maternal mortality and morbidity and prevent unnecessary cesareans.

Perinatal death: Includes both intrauterine deaths of fetuses (>500 grams) after 22 weeks of pregnancy and deaths which occur during the first week of life, both stillbirths and early neonatal deaths.

Perinatal period: From 22 weeks of gestation until seven completed days after delivery.

Plugged milk duct: Obstruction of one of the small milk ducts in the breast.

Posture: The position the body is held in by joints and muscles. The posture of the normal term newborn is flexed with arms and knees bent.

Pre-eclampsia: A condition in pregnancy manifested by high blood pressure and protein in the urine. Late signs are edema of the face, visual changes, severe headache, and upper abdominal pain. Pre-eclampsia may progress to life-threatening eclampsia with convulsions and fits.

Premature, Prematurity: A baby who is born before her body is mature, that is, before 37 weeks gestation. Because babies mature at different rates, the word "preterm" is often preferred.

Preterm: A baby who is born before 37 weeks of gestation.

Preterm birth: Delivery of the baby before 37 weeks gestation.

- **Very premature or preterm infant**: A baby delivered at less than 32 weeks gestation.

Puncture-resistant container: A container that cannot be pierced by needles or blades.

Pustule: A raised skin bump containing pus.

Purulent discharge: Drainage of liquid that contains pus.

Resuscitation: Actions to help a baby start and maintain breathing.

Rewarm: To treat hypothermia by warming to bring the baby's temperature back to normal.

RPR: Rapid plasma reagin. A blood test for syphilis.

Screening test: A test given to a group of people to detect conditions or diseases that are common in a certain region or age range. Screening can be done even if there are no signs or symptoms of a disease in a particular person. For example, testing all pregnant women during antenatal care for syphilis or anemia is a form of screening.

Scrotum: A sac of tissue that holds the testes. The scrotum is located at the base of the penis.

Sepsis: A term for generalized infection. Neonatal sepsis, for example, refers to a newborn with signs of serious infection.

Septicemia: Infection in the blood stream.

Sharps: Any equipment that is sharp (razor blade, needle, surgical knife blade). Sharps must be discarded carefully to avoid piercing the skin of anyone who comes in contact with the trash.

Skilled birth attendant: A person with midwifery skills (e.g., midwife, nurse, nurse-midwife, or doctor) who has been trained to manage normal pregnancy, labor, birth, and the immediate postpartum and newborn periods and to manage or refer complications.

Skin-to-skin contact: Placing a baby (naked except for a diaper and a head covering) on the mother's chest and covering them both. Using the mother as a heat source for the baby.

Sponge bath: Washing a baby by wiping with a cloth wet with warm water and soap without putting the baby's body in water.

Stillbirth: The delivery of a dead baby who died sometime after 28 weeks of pregnancy and before the birth.

Stump: Cord stump is the piece of umbilical cord left attached to the baby's abdomen after the cord is cut.

Testes: The male reproductive glands, located in a sac of tissue (scrotum) at the base of the penis.

Tetanus: A disease caused by toxic spores that are released from *Clostridium tetani*, a bacteria that grows in dead tissues and decaying matter. Transmission occurs when there is contact between the bacteria and any broken skin or dead tissues, such as a wound, circumcision, or when an infant's umbilical cord is cut. Common signs of tetanus include muscle spasms of the jaw (lockjaw) and back. If not treated properly, newborn tetanus can lead to death.

Transmission: The passing of something from one person to another, such as transmission of an infection.

Treatment: A method used to care for a health problem. Treatments can include: medications, heat or cold applications, dressings, washing, advice about foods to eat or avoid, rest, exercises. Treatments are part of a plan of care.

Unrestricted or demand feeding: Letting the baby feed for as long and as often as he likes (on demand).

Umbilical cord: The cord connecting the fetus to the placenta.

Umbilicus: The area where the umbilical cord was attached to the baby's abdomen; the navel.

Urethra: The structure that carries urine to the outside of the body. In the male the urethra normally opens at the end of the penis. In the female the urethra normally opens anterior to the vagina and below the clitoris.

Urinary tract: The kidneys, ureters, bladder, and urethra.

Urination: The act of passing urine, voiding, emptying the bladder.

Vaccine: A medication that helps the body build immunity, or resistance, to a particular infectious illness.

VDRL: Venereal Disease Research Laboratory. A screening test for syphilis.

Ventilate: To blow air into the baby's lungs using either mouth-to-mouth or bag and mask.

Vernix: A whitish, creamy substance that covers the fetus in the womb to protect the skin. After birth the vernix is seen mostly in body creases. It is absorbed gradually and need not be washed off.

Visual disturbances: Changes in a person's ability to see. This includes spots in the vision, blurred vision, and double vision.

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Internet resources

www.aidsinfo.nih.gov/guidelines

www.breastfeedingbasics.org/

www.healthynewborns.com
This is the official site of the Healthy Newborn Partnership with links to resources on newborn issues and the websites of participating institutions.

www.mnh.jhpiego.org/
This site gives an overview of the Maternal and Neonatal Health Program. It includes direct links to publications and technical resources.

www.savethechildren.org/
The Save the Children website contains extensive material about Saving Newborn Lives and its program initiatives

www.who.int/child-adolescent-health/NUTRITION/HIV_infant.htm
This WHO document focuses on HIV and infant feeding, particularly breastfeeding. Access to six important documents is provided.

www.who.int/child-adolescent-health/New_Publications/NUTRITION/updt-14.htm
An update on *Breastfeeding Counseling: A training course* is available at this site.

www.who.int/reproductive-health/rtis/mtct
This WHO document provides general information on mother-to-child transmission of HIV, as well as WHO recommendations for antiretroviral drug use (nevirapine) to prevent MTCT.

Index

ABOUT THE AUTHORS

Diana Beck, CNM, MS
Diana Beck is an independent maternal-newborn health consultant with extensive experience in training and development of educational materials. She has co-authored several manuals for international use, including *Home-Based Life Saving Skills* and *Healthy Mother Healthy Newborn Care* reference manual and guidebook. A Certified Nurse-Midwife, Ms. Beck has worked in the United States, Africa, Asia and Central America and currently serves as a consultant with Saving Newborn Lives.

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Frances Ganges is a Certified Nurse-Midwife with more than 20 years' experience in maternal-newborn and reproductive health. With clinical and teaching experience both domestically and internationally, Ms Ganges has provided technical assistance to programs in Africa, Asia and Latin America. She has co-authored several training manuals and has been involved in both pre- and in-service training of all levels of health personnel. Currently, Ms. Ganges is the Senior Newborn Health Advisor for SNL, and provided the technical leadership for the development of this manual.

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Susan Goldman is a Certified Nurse-Midwife with extensive experience living and working in Africa and more than 20 years' experience consulting in Africa, Asia, Eastern Europe, and Latin America in midwifery, maternal and child health, public health, famine relief and nutrition. Ms. Goldman has been involved in training all levels of health workers in developing countries. She has both authored and co-authored a nursing textbook, training manuals, scientific articles and other professional documents.

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Phyllis Long is one of the co-founders of the Institute for Midwifery, Women and Health, a midwifery educational program based at the Philadelphia University. She has a lengthy career in pre-service and in-service education, both nationally and internationally, including a four-year faculty position at the Public Health College in Gondar, Ethiopia. Recently retired from the University of Philadelphia, Ms. Long serves as an independent consultant for midwifery education and distributive learning.

In recent years, child survival has improved dramatically in developing countries, largely through activities such as childhood immunization and diarrhea control programs. However, high mortality rates among newborns (infants from birth to 28 days of life) remain virtually unchanged. Over 40 percent of all deaths of children under five occur among newborns—even though proven, cost-effective measures to prevent newborn deaths are available. To provide newborns with appropriate care during the first month of life, Saving Newborn Lives, an initiative of Save the Children, has developed the *Care of the Newborn Reference Manual* as a training resource for all health workers.

The *Care of the Newborn Reference Manual* provides up-to-date, comprehensive, evidence-based information, and defines and illustrates the skills needed to keep newborns healthy, including routine and preventive care as well as early detection and management of life-threatening problems. In addition, the manual introduces skills for communicating that information to mothers and families, who must understand how to care for their newborns 24 hours a day. Each chapter presents information in the form of descriptions, tasks and checklists, illustrations, and decision-making tables.

Contents include: Newborn Care Starts Before Birth, Essential Care for Every Newborn, Successful Breastfeeding, Newborn Resuscitation, Care of Low Birth Weight Babies, and Common Newborn Problems. Appendices contain Maternal and Infant Immunization Schedules, a Medication Reference (for newborns and for mothers), and technical information on Infection Prevention, Basic Skills for Care of the Newborn, and Communication and Counseling.

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