

National Standards for Reproductive Health Services in Afghanistan: Newborn Care Services

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Transitional Islamic Government of Afghanistan:
Ministry of Health, Reproductive Health Task Force

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**NATIONAL STANDARDS
FOR
REPRODUCTIVE HEALTH SERVICES**

NEWBORN CARE SERVICES

FINAL DOCUMENT – 25 Nov. 2003

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DEPARTMENT OF WOMEN AND REPRODUCTIVE HEALTH
General Directorate for Health Care and Promotion
MINISTRY OF HEALTH
TRANSITIONAL ISLAMIC GOVERNMENT OF AFGHANISTAN**

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- WHO. Essential Newborn Care. WHO, Geneva, 1996.
- Lawn, J. McCarthy, B. & Rae Ross, S. The Healthy Newborn: A Reference Manual for Program Managers. CDC & Care, Atlanta, 2002. (CD-ROM)
- Kinzie, B. Gomez, P. Basic Maternal and Newborn Care, Section Four: Newborn Care. JHPIEGO, Baltimore, June 2003. (Draft)
- WHO. Basic Newborn Resuscitation: A Practical Guide. WHO, Geneva, 1998.

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ABBREVIATIONS

ABO	A, B, and O blood types (A blood group system)
AFGA	Afghan Family Guidance Association
AFSOG	Afghan Society of Obstetrics and Gynecology
ALRI	Acute Lower Respiratory track Infection
BCG	Bacille Calmette-Guerin (BCG vaccine)
BPHS	Basic Package of Health Services
CDC	Center for Disease Control and Prevention
CSF	Cerebral Spinal Fluid
Hb	Hemoglobin
HBV	Hepatitis B Virus
HIV	Human Immuno-Deficiency Virus
IMC	International Medical Corps
IMCI	Integrated Management of Childhood Illness
IUGR	Intra-Uterine Growth Restriction
JICA	Japan International Cooperation Agency
LBW	Low Birth Weight
MCH	Mother and Child Health
MICS	Multiple Indicators Cluster Survey
MOH	Ministry Of Health
MSH	Management Sciences for Health
OPV	Oral Polio Vaccine
PID	Pelvic Inflammatory Disease
RH	Reproductive Health
RHTF	Reproductive Health Task Force
SCA	Swedish Committee for Afghanistan
SMI	Safe Motherhood Initiative
STI	Sexually Transmitted Infections
TBA	Traditional Birth Attendants
UNFPA	United Nations Population Fund
UNICEF	United Nations Children Fund
USAID/REACH	The United States Agency for International Development, Rapid Expansion of Afghanistan Community-based Health Care Project
VDRL	Venereal Disease Research Laboratory
WHO	World Health Organization
WRH	Women and Reproductive Health

CONTENT

INTRODUCTION.....	6
CHAPTER 1 – BACKGROUND INFORMATION	7
1- BASIC DEFINITIONS	7
2- GLOBAL TRENDS	8
3- CAUSES OF NEWBORN DEATHS.....	9
4- NEWBORN HEALTH IN AFGHANISTAN.....	10
CHAPTER 2 – RATIONALE AND PRINCIPLES.....	12
CHAPTER 3 – GOALS AND SCOPE OF WORK	15
1- GOALS	15
2– SCOPE OF WORK	16
CHAPTER 4 - NEWBORN CARE	17
1 – FREQUENCY OF CARE.....	17
2 – QUICK CHECK AND DANGER SIGNS.....	17
3 – BASIC ASSESSMENT	18
<i>A- History.....</i>	<i>18</i>
<i>B- Physical Examination.....</i>	<i>20</i>
4 – ESSENTIAL NEWBORN CARE	23
<i>A- Cleanliness</i>	<i>24</i>
<i>B- Thermal protection.....</i>	<i>26</i>
<i>C- Breastfeeding</i>	<i>28</i>
<i>D- Resuscitation.....</i>	<i>29</i>
<i>E- Eye Care.....</i>	<i>31</i>
<i>F- Immunization.....</i>	<i>32</i>
<i>G- Vitamin K.....</i>	<i>32</i>
<i>H- Complication readiness and scheduling return visit</i>	<i>32</i>
5 – EXTRA NEWBORN CARE.....	34
<i>A- Identification of the LBW baby</i>	<i>34</i>
<i>B- Extra clinical care of the LBW baby.....</i>	<i>35</i>

<i>C- Extra support for feeding</i>	36
<i>D- Extra support for warmth</i>	37
6 – EMERGENCY NEWBORN CARE.....	39
<i>A- Identification of neonatal danger signs</i>	39
<i>B- Quality emergency care of the sick baby</i>	40
<i>C- Severe neonatal infection</i>	41
<i>D- Neonatal tetanus</i>	43
<i>E- Neonatal asphyxia</i>	44
<i>F- Neonatal jaundice</i>	45
<i>G- Birth defects</i>	47
<i>H- Severe bleeding in the neonate</i>	48
CHAPTER 5 – MATERNAL CARE WITH AN IMPACT ON NEWBORN HEALTH	49
1 – PRE-PREGNANCY HEALTH	49
2 – CARE DURING PREGNANCY.....	49
3 – CARE DURING DELIVERY	50
4 – POSTPARTUM CARE OF THE MOTHER	51
REFERENCES	52
ANNEX 1 – EXCLUSIVE BREAST-FEEDING	54
ANNEX 2 – BASIC NEWBORN RESUSCITATION	61
ANNEX 3 – PREPARATION OF THE NEWBORN CARE SITE	73

INTRODUCTION

The Transitional Islamic Government of Afghanistan attaches great importance to the health of women and children and this is reflected in the Ministry of Health (MOH) document on its mission statement, values, and principles, which states that the MOH will “lay the foundations for equitable quality health care for the people in Afghanistan, especially mothers and children. Priority emphasis will be on provision of good quality care to mothers and children”

Based on this mission, the MOH is committed “to ensure access to a full range of affordable reproductive health services” as stated in the National Health Policy document. A Basic Package of Health Services (BPHS) has been defined to translate these policies into practice, under which a Maternal and Newborn Health Package with five components (antenatal care, delivery care, postpartum care, family planning, and care of the newborn) has been introduced.

To that end, MOH has initiated several programs and activities. As part of these efforts, Women’s and Reproductive Health Department of Ministry of Health hosts a Reproductive Health Task Force (RHTF), consists of main institutions involved in Afghanistan reproductive health scene, including WRH department of MOH, Kabul Medical Institute, Institute for Nursing and Allied Health, Afghan Society of Obstetrics and Gynecology (AFSOG), Afghan Family Guidance Association (AFGA), Malalai Maternity Hospital, Rabia Balkhi Hospital, 52 beds Khair Khana Hospital, UNFPA, UNICEF, WHO, JICA, USAID/REACH, IMC, and SCA.

Under RHTF, nine working groups have been established to develop national operational standards of specific topics, including family planning, antenatal care, postpartum care, birthing and emergency obstetric care, newborn care, monitoring and evaluation, and adolescent health. These standards will not only serve as a guideline for policymaking, program development, and management of health facilities under BPHS, but also help program managers in developing training curriculum for health personnel, management tools and systems, clinical protocols and references, and public education material and other information-education-communication activities. This document is the output of Newborn Care Working Group, coordinated by WHO-Afghanistan.

In this document, chapter one presents some background information on newborn death and its pattern and trend. Chapter two provides rationale and principles of newborn care and chapter three defines the MOH goals and objectives. Finally, chapter four presents detail operational standards of newborn care, including those maternal care services that have an impact on newborn health. Annexes present detail information on breast-feeding and newborn resuscitation, as well as a list of needed equipment, supplies, and drugs.

CHAPTER 1 – BACKGROUND INFORMATION

1- Basic Definitions

Birth planning:

A process that empowers pregnant women, families, and communities to prepare for safe delivery and for motherhood.

Birth weight:

Birth weight is the first weight of a live or stillborn baby, which should preferably be taken within the first hour of life and certainly during the first day of life.

Care during pregnancy:

Care throughout pregnancy until the onset of labor, including care both at home and in the formal health care system, such as in an antenatal clinic.

Care during delivery:

Care from the onset of labor until the delivery of the placenta.

Emergency newborn care:

Identification, stabilization, and management of sick babies with conditions such as neonatal sepsis, asphyxia, and jaundice.

Emergency preparedness:

An approach to promote early recognition of complications for mother and baby at any time during pregnancy, delivery, or after delivery and to maximize the likelihood of timely referral and management. This involves preparedness in the community and in the formal health care system.

Essential newborn care:

Basic preventive care for all newborns, especially warmth, cleanliness, breastfeeding, cord and eye care, and immunizations.

Extra newborn care:

Identification of and additional support for babies who are born weighing less than 2,500 grams. Mortality rates for babies with birth weight between 1,750-2,500 grams can be improved significantly with simple interventions. Babies weighing less than 1,750 grams at birth are likely to require more specialized care.

This may also apply to other babies who are not LBW, but have other special requirements, such as babies born to HIV-positive mothers.

Fetal death:

Death prior to the complete expulsion or extraction from his/her mother of a product of conception, irrespective of the duration of pregnancy. Death is indicated by absence of any signs of life.

Live birth:

Live birth is complete expulsion or extraction from the mother of a product of conception (irrespective of the duration of pregnancy) and which after such separation, the baby breathes or shows any other evidence of life such as heart beat, pulsation of umbilical cord, or definite movements of the attachment of the placenta/cord.

Low birth weight (LBW):

Birth weight less than 2,500 grams

Newborn period or Neonatal period:

The first 28 days of life; divided into early neonatal period (first 7 days) and late neonatal period (days 8-28).

Newborn care:

Care from birth until the 28th completed day of life, including care both at home and in the formal health care system.

Postpartum care:

Care from delivery until 42 days after delivery, including care both at home and in the formal health care system.

Post-term birth:

Live birth after 42 completed weeks of gestation.

Pre-pregnancy health:

The health of the woman before she becomes pregnant.

Pre-term birth:

Live birth before 37 completed weeks of gestation.

Prinatal care:

Care from 28 completed weeks of gestation until 7 days after delivery, including care both at home and in the formal health care system.

Stillbirth:

Baby born showing no sign of life who weighs over 1 kg or is over 22 weeks of gestation.

2- Global Trends

Globally, each year an estimated eight million babies are stillborn or die in the first month of life. Almost all (98%) of these deaths occur in developing countries. Of the seven million infants who die each year, approximately two-thirds die in the first month of life. Neonatal deaths now account for about 66 percent of infant deaths globally because of falling post-neonatal deaths over the last few decades. Almost 66 percent of infant deaths occur in the first month of life; among those who die in the first month of

life, over 66 percent die in the first week of life; and of those who die within the first week, approximately 66 percent die in the first 24 hours of life. Conservative estimates from WHO suggest four million stillbirths and four million neonatal deaths occur each year globally.

Many fetal-neonatal deaths occur at home, often without the presence of a skilled attendant. Only about one-third (37%) of deliveries in developing countries take place in a health care facility. In addition, about half (53%) of all pregnant women deliver with the assistance of a skilled attendant. As the proportion of deliveries with a skilled attendant increases, both maternal and perinatal deaths decrease. In considering skilled attendant coverage or the percentage of institutional births, it is important to remember that these proportions are averages; many subpopulations, such as those in rural areas and the peri-urban poor, have much lower coverage. Often these populations are the most likely to have high rates of maternal and fetal-neonatal death.

These shocking statistics should raise a loud cry for attention to newborn health in developing countries. Despite medical advances in saving the lives of newborns, neonatal mortality rates are still high in many developing countries, and most of these deaths could be prevented by simple and low-cost interventions. Five major reasons may explain the question of why newborn health has been neglected:

- Low status of women and newborns in a society: This affects their access to resources that may be scarce.
- Invisibility due to lack of data: This is a major barrier to recognition of the number of fetal-neonatal deaths, which in turn inhibits action to improve newborn survival.
- Inadequate quality of available data: This is due to confusion in definitions and terminology, poor recording of birth weight, and difficulties in attributing a cause of death in the newborn period.
- Institutional and programmatic gaps: Attention and funding directed at care for the mother are still inadequate, given the size of the problem. International attention and resources for the newborn seem lost in the gap between the Safe Motherhood and the Child Survival programs.
- Perceived impossibility: It is a common misunderstanding that expensive technology is needed to save newborn lives and that inexpensive interventions cannot be applied effectively in low-resource settings.

3- Causes of Newborn Deaths

In 1993, 42% (1.7 million) of all newborn deaths were due to infections (neonatal tetanus, sepsis, meningitis, pneumonia, and diarrhea). Two-thirds of those infections were related to the birth process. Neonatal tetanus causes more than half a million of these deaths (14% of the total). In developing countries around 3% of newborns suffer mild to moderate birth asphyxia, and an estimated 840 000 newborns died of this cause in 1993 (25% of birth-related deaths). An equal number of survivors suffer brain damage. About 19% or almost 24 million of all infants are born with a birth weight less than 2500 g, which is classed as low birth weight (LBW). LBW is probably the single most important

factor in neonatal mortality and is a significant determinant of post-neonatal mortality and childhood morbidity. In short, major causes of newborn death could be classified as follows:

- Direct Medical Causes of Perinatal Deaths
 - o Direct medical causes of fetal deaths.
 - o Direct medical causes of neonatal deaths.
 - o Low birth weight and preterm birth.
- Underlying Causes of Perinatal Deaths
 - o Inadequate pre-pregnancy health.
 - o Inadequate care during pregnancy.
 - o Inadequate care during delivery.
 - o Inadequate newborn care.
- Delays in Access that Contribute to Perinatal Deaths
 - o Delays in problem recognition within the home.
 - o Delays in deciding to seek care.
 - o Delays in reaching the health facility due to lack of transport and resources.
 - o Delays in receiving appropriate, quality care at the facility.
- Socio-cultural Causes of Perinatal Deaths
 - o Newborn outcomes as a marker for women's health and social status.
 - o Traditional care practices in the home and the community.

4- Newborn Health in Afghanistan

Recent reviews and assessments of reproductive health situation in Afghanistan during 2002 have highlighted the unmet needs in this area, including newborn care. The national health resources assessment has shown that availability of basic reproductive health services is extremely limited – only 17% of the basic primary health facilities provide safe motherhood and family planning services.

Table 1 provides the available reproductive health indicators for Afghanistan, which highlight the enormous challenges the MOH is facing in terms of reproductive health in the country.

Table 1 Available reproductive health indicators for Afghanistan

Indicator		Source
Maternal Mortality ratio (per 100,000 live births)	1600	CDC / UNICEF study 2002
Anemia in pregnant women in Eastern and South eastern region	55%-91%	MICS 2000
Basic primary health services facilities providing basic RH services	17%	National Health Resources Assessment HANDS / MSH 2002
Health facilities providing cesarean section and blood transfusion	2%	National Health Resources Assessment HANDS / MSH 2002

Indicator		Source
BPHS facilities providing three methods of contraception	19%	National Health Resources Assessment HANDS / MSH 2002
Coverage of Antenatal Care (%)	12%	WHO Afghanistan 1999
Births attended by trained personnel	15%	WHO Afghanistan 1999
Proportion of deliveries at home	90%	WHO Afghanistan 1999
Coverage of tetanus vaccination (% of pregnant women)	16%	WHO / UNICEF Afghanistan 2000
Total fertility rate (per woman)	6.9%	WHO Afghanistan 1999
Contraceptive prevalence (% of women 15-49)	2%	UNFPA 1972-73

Source: Ministry of Public Health. National Reproductive Health Strategy for Afghanistan. Ministry of Public Health, Kabul, Afghanistan, July 2003.

Although 75% (566) of all existing health facilities in Afghanistan claim to provide some kind of newborn care services, only a few of them may provide the basic standard set of newborn care as defined by BPHS. Availability of tetanus toxoid vaccination for pregnant women is limited to 57% of BPHS facilities. There is no other information available on newborn care in Afghanistan.

CHAPTER 2 – RATIONALE AND PRINCIPLES

The most obvious reason to focus attention and programs on newborns is the sheer number of fetal-neonatal deaths and the fact that neonatal mortality constitutes an increasing proportion of infant mortality. However, there are many other compelling reasons, especially the importance of newborn health for health in later childhood and even adult life, and the economic and social consequences of maternal and neonatal ill health. Increasing number of healthy births has broader implications than simply reducing newborn deaths. In reality, it cuts across many priorities that are often considered separately. As such, newborn survival often results in delayed pregnancy, which improves the health of mother.

There are striking variations from place to place in the patterns of care and interventions that newborn infants receive. In many cases, however, there is a lack of knowledge of what is needed for optimal newborn care. Some modern hospital practices and traditional ones neglect the basic needs of newborns: warmth, cleanliness, breast milk, safety and vigilance. Most newborn deaths can be avoided by both preventive measures (such as clean delivery) and by effective management of complications (such as resuscitation, management of infections). Other interventions also have important preventive effects (such as thermal protection, breast-feeding, and eye care to reduce blindness).

Furthermore, maternal and newborn deaths both tend to occur in this same period, a fact that emphasizes the need to invest in systems that reduce both maternal and neonatal mortality by addressing care in the early postpartum and neonatal period. Although the immediate medical causes of maternal and perinatal deaths may differ, the underlying causes of these deaths are very similar. These causes include the inability to access quality maternal and newborn care, especially at delivery, and the low social status of women and newborns. Many of the conditions that result in complications for the mother before pregnancy, during pregnancy, during delivery, and after delivery also result in complications for the baby.

The causes of maternal mortality are similar to the causes of perinatal mortality, therefore the trends follow similar patterns, and attention to the intrapartum and postpartum periods would benefit both mother and baby. The presence of a skilled birth attendant at delivery is associated with lower maternal and newborn deaths. Improvements in the health of mothers and babies are synergistic; interventions for the mother may reduce perinatal mortality by up to 75 percent, but many of these interventions also directly benefit mothers. Efforts are required to strengthen the systems in which mothers and babies receive health care, so that communities and formal health care systems can work together to improve maternal and newborn health. The four sets of causes of neonatal deaths are poor pre-pregnancy health; inadequate care during pregnancy; inadequate care during delivery; and inadequate newborn care.

In fact, the main factor that has been missing is attention to the newborn with the mother at all levels of decision-making. Because all fetal deaths and most neonatal deaths are related to maternal causes, priority should be given to interventions that benefit both the

mother and the baby. Some evidence-based interventions benefiting both are outlined in the following table.

Table 2 Interventions that benefit both mother and newborn

BENEFIT TO MOTHER	INTERVENTION	BENEFIT TO NEWBORN
		
<i>During pregnancy</i>		
Reduce risks of infection, pelvic inflammatory disease (PID), infertility, other STI complications	Treatment of STIs (especially syphilis)	Reduce stillbirth, preterm birth, IUGR, ophthalmitis, infection, and death
Decrease severe anemia, severe malaria, and death	Prevention/treatment of malaria	Reduce risks of stillbirth, preterm birth, IUGR, and death
Reduce risk of tetanus (rare)	Administration of tetanus toxoid vaccine	Protect against neonatal tetanus (common)
Decrease iron deficiency anemia	Provide iron and folic acid; treat hookworm	Reduce risk of LBW, asphyxia, stillbirth, and some birth defects
Reduce “depletion syndrome”	Targeted protein-calorie supplements	Reduce risk of LBW, preterm birth, and perinatal death
Reduce risk of eclampsia and adverse outcomes, including death	Identification and management of pregnancy induced hypertension and pre-eclampsia	Reduce risk of LBW, asphyxia, stillbirth, neonatal death
Decrease prolonged labor, ruptured uterus, sepsis, morbidity and mortality	Identification of major risk of obstructed labor (dystocia)	Reduce risk of asphyxia, fetal-neonatal death, birth trauma
<i>During delivery</i>		
Early identification and management of complications and reduced death and morbidity	Delivery with skilled attendant and access to emergency obstetric care	Reduce neonatal asphyxia; provision of neonatal resuscitation if needed
Reduce risk of infection, sepsis, and infertility	Clean delivery	Reduce risks of tetanus, sepsis, and death
Reduce risk of infection, sepsis, and infertility	Antibiotics for prolonged and/or preterm rupture of membranes	Reduce risk of sepsis and death
No known benefit	Corticosteroids in preterm labor	40% – 60% reduced risk of respiratory distress
<i>Immediate postpartum period</i>		
Reduce risk of death (40% of maternal deaths occur within first week after delivery)	Integrated maternal and newborn postpartum care	Reduce risk of death (66% of neonatal deaths occur within the first week after birth)
Reduce risk of postpartum hemorrhage, and breast abscess	Promotion of early breastfeeding	Prevent early hypoglycemia and dehydration; reduced risks of early neonatal jaundice and sepsis/ALRI

BENEFIT TO MOTHER	INTERVENTION	BENEFIT TO NEWBORN
←		→
Reduce maternal stress due to infant illness	Appropriate cord, eye, and skin care	Reduce risks of sepsis, tetanus, and ophthalmitis
Enhance bonding	Promote skin-to-skin contact	Enhance thermal regulation
Reduce Vitamin A deficiency, and night blindness	High-dose Vitamin A to mother	Possible reduction in neonatal infection
Reduce maternal depletion, especially if pregnancy and breastfeeding overlap	Family planning counseling	Reduce risk of early malnutrition if mother stops breastfeeding after she becomes pregnant again

Source: Lawn, J. McCarthy, B. & Rae Ross, S. The Healthy Newborn: A Reference Manual for Program Managers. CDC & Care, Atlanta, 2002. (CD-ROM)

CHAPTER 3 – GOALS AND SCOPE OF WORK

1- Goals

The focus of newborn care provision should be on ensuring, supporting, and maintaining the well being of the newborn. In order to achieve the ultimate goal of NBC – a healthy newborn period for the baby – the skilled provider should work toward accomplishing four supporting goals:

1- Early detection and treatment:

An important goal of NBC is the early detection and treatment of problems that can complicate the newborn's earliest days. Focused NBC promotes targeted assessment, during which the skilled provider interviews the mother (or guardian) and examines the baby to detect signs/symptoms of complications, congenital problems, and chronic or infectious conditions that are common in the population being served. Early detection and treatment of the following problems can mean the difference between survival and death for the newborn:

- Asphyxia/breathing difficulties
- Sepsis/infections of the eye or umbilicus
- Complications of low birth weight (e.g., jaundice) or high birth weight
- Feeding difficulties
- Birth defects (e.g., cleft palate, club foot, spina bifida)
- Birth injuries (e.g., broken limbs, arm palsy)
- Hyperthermia/Hypothermia

Maternal chronic or infectious conditions—such as HIV/AIDS, tuberculosis, gonorrhea and other sexually transmitted infections (STIs), anemia, heart disease, and diabetes—can also harm the baby if they are not identified and adequately addressed.

2- Prevention:

In addition to the early detection and treatment of problems, focused NBC promotes the implementation of safe, simple, and cost-effective interventions to prevent certain conditions. Two key interventions for reducing neonatal mortality and morbidity are:

- Early and exclusive breastfeeding – This provides the best nutrition for the baby while helping to prevent infection, hypothermia, hypoglycemia, and other harmful conditions.
- Immunization – When vaccines are received according to the recommended schedule, they protect the child against polio, hepatitis B virus, tuberculosis, and other diseases.

3- Complication Readiness:

If a newborn's family is well prepared for possible complications, the newborn is more likely to receive the skilled and timely care she/he needs to protect her/his overall health and possibly save her/his life. Because every newborn is at risk of developing a

complication and most of these complications cannot be predicted, the family should develop a complication readiness plan to ensure appropriate and timely response to any complication. The complication readiness plan should include:

- Recognition of and response to danger signs
- Decision-making in an emergency situation
- Emergency funds
- Emergency transportation

When the newborn is brought for care, the skilled provider should assist the family in establishing this plan to respond to possible complications.

4- Health Promotion:

Integrated throughout newborn care, health messages, and counseling help prevent potential problems, and support and encourage the mother and family as they care for the newest member of their family. The skilled provider should ensure that they have the information they need to make healthy decisions during newborn period – as well as sufficient guidance in applying that information in their particular situation. Focused NBC promotes setting time aside, during each visit, for discussion of the following essential elements of newborn care:

- Early and exclusive breastfeeding
- Maintaining warmth
- Hygiene/infection prevention
- Washing and bathing
- Cord care
- Sleeping and other needs and behaviors

2– Scope of Work

As mentioned above, health of the newborn depends on several factors and starts even before pregnancy. Service providers should pay special attention to the following list of health interventions for each period of care. Although some of these interventions may specifically target mothers, they will ultimately impact newborn health. Service providers, at all levels of care, should provide these services based on their respective national standards and note the impact of these services on newborn health:

1. Newborn care:
 - Essential newborn care
 - Extra newborn care
 - Emergency newborn care
2. Maternal care with an impact on newborn health:
 - Pre-pregnancy health
 - Care during pregnancy
 - Care during delivery
 - Postpartum care of the mother

CHAPTER 4 - NEWBORN CARE

While focused NBC proposes a standard package of basic NBC services that all newborns should receive, it also recognizes the importance of developing a plan of care that meets each newborn's individual needs. By taking into consideration all of the information known about a newborn – her/his birth, the medical history of the mother and the newborn, and specific newborn behaviors such as feeding and elimination, and any other unique circumstances – the provider can individualize both the assessment and care provision components of their care plans. For example, if the newborn has problems attaching to the breast, or the woman reveals that she has had problems breastfeeding in the past, the provider may emphasize techniques for successful breastfeeding; or if the family lives far from the nearest healthcare facility with emergency care capability, the provider may give extra assistance in preparing for possible complications.

1 – Frequency of Care

In the early newborn period, a skilled provider should see the baby at least twice, once at 6 hours and once at 6 days, and perform quick check and basic assessment, as described below. However, if the newborn was referred to health facility at any other time, quick check and basic assessment should indeed be performed. The initial visit, at 6 hours, allows the provider to detect any complications or congenital problems, assist the mother in instituting sound breastfeeding practices, develop a complication readiness plan, and counsel her on essential elements of newborn care. The skilled provider should also see the baby at 6 days, as this is when sepsis may first appear and when treatment may still be effective. Also, at 6 days, breastfeeding problems may have become evident and the general health of the baby can be also be evaluated.

2 – Quick Check and Danger Signs

Immediately upon the mother and newborn's arrival at the postpartum/newborn care ward (pre-discharge) or the healthcare site, an skilled provider, who is trained to recognize and respond appropriately to danger signs, should perform the following quick check on the newborn.

1. A service provider should observe the baby for and ask the mother if the baby has or has recently had any of the following danger signs:
 - Difficulty breathing (abnormal respirations, chest in drawing, grunting on expiration, gasping)
 - Convulsions, spasms, or loss of consciousness
 - Cyanosis (blueness)
 - Floppiness
 - Hotness/fever
 - Coldness
 - Bleeding
 - Jaundice (yellowness)
 - Not feeding

- Diarrhea
 - Continuous vomiting
 - Pus or redness of the umbilicus, eyes, skin, etc.
 - Swollen limb or joint
 - Pallor or blue lips/tongue
2. If ANY of the above danger signs is (or was recently) present, skilled provider should perform the following steps:
 - Immediately initiate the emergency-response procedures, and
 - Perform a rapid initial assessment to assess the newborn’s need for stabilization and/or referral.
 3. If NONE of the above danger signs is (or was recently) present, skilled provider should proceed with basic assessment (as described below) and provide essential NBC.

3 – Basic Assessment

If it is determined, through the quick check, that the newborn is not experiencing a life-threatening complication, the skilled provider may proceed to the basic assessment.

Through the basic assessment process, the provider works to:

- Ensure newborn well being.
- Gather information that can be used to individualize a plan of care to best meet the needs of the newborn and her/his family.
- Identify special needs.
- Detect conditions beyond the scope of basic care, including life-threatening complications.
- Establish a trusting and respectful relationship with the newborn’s mother/family/caregiver.

A- History

The newborn’s history provides information that helps the provider target the physical examination, as well as individualize the plan of care. History taking also facilitates identification of special needs, as well as detection of abnormal signs/symptoms – and helps focus the additional care required. Rationales for each element of the history taking are described in Table 3, followed by detail explanation below.

Table 3 Rationales for each element of the history

Element	Rationale
Personal information	<ul style="list-style-type: none"> - Identifying the newborn and determining her/his age - Determining the need for additional care - Developing the complication readiness plan and - Individualizing the health messages/counseling
Birth history	<ul style="list-style-type: none"> - Directing further assessment of the newborn

Element	Rationale
Medical history	<ul style="list-style-type: none"> - Determining needs for treatment, counseling of the parents, or referral. - Planning and implementing appropriate care
Newborn period history	<ul style="list-style-type: none"> - Understanding the current condition of the newborn - Plan appropriate care, including counseling of the mother/caregiver
Interim history	<ul style="list-style-type: none"> - Planning and implementing care, including counseling of the mother/care giver and referral if necessary

Adopted from: Kinzie, B. Gomez, P. Basic Maternal and Newborn Care, Section Four: Newborn Care. JHPIEGO, Baltimore, June 2003. (Draft)

1-1 Personal information:

The provider uses this information to identify the newborn and to determine her/his age. The age of the newborn will guide further assessment as well as care provision. For instance, the 6-hour old infant will have a more fragile thermoregulatory mechanism than the 6-day old newborn. Likewise, the breastfeeding pattern/behavior or the sleeping pattern/behavior of the 6-hour old baby, whose mother’s milk has not yet come in, will be different from the pattern/behavior of the 6-day old baby. Asking about particular problems that the newborn may be having or any care received by another provider helps determine the need for additional care, which may include assessing the newborn further to confirm that there is not a problem or reassuring the mother/family. Gathering general information about the family guides development of the complication readiness plan and individualization of health messages/counseling and other aspects of basic care provision.

1-2 Birth history:

This part of the history can assist the provider in directing further assessment of the newborn. For instance, if a newborn is being seen at 6 hours of age, and the records or the mother reports a difficult birth with a shoulder dystocia, the provider would want to closely examine the scapula/clavicle to be sure there are no fractures or other birth injuries.

1-3 Medical history:

Gathering information about any maternal infections at the time of the birth, such as HIV/AIDS or syphilis, can assist the provider in identifying needs for treatment and/or referral, as well as planning and implementing appropriate care. Likewise, information about any infections or congenital problems that may have been diagnosed in the newborn, will guide the provider in determining needs for treatment, counseling of the parents, or referral. Determining which immunizations the newborn has had will guide the provider in determining immunization needs at the present time.

1-4 Newborn period history:

Key information about the newborn’s behavior helps the provider understand the current condition of the newborn, and to plan appropriate care, including counseling of the mother/caregiver. Some of the main issues covered in this part of the history are described in more detail below.

Breastfeeding – The success of the breastfeeding, including the newborn’s satisfaction after feeding will guide the provider as she observes breastfeeding. Problems that the mother may describe at this point in the history will guide the counseling and health messages of the provider to ensure that the mother continues breastfeeding and that the newborn breastfeeds successfully. Service provider should check exclusiveness of breastfeeding in order to know there is a need for additional breastfeeding support. For detailed information, refer to the following section on essential newborn care and the attachment on breastfeeding.

Eliminating – The frequency of urination of the newborn will help determine if the newborn is receiving sufficient milk, and guide counseling and health messages. The frequency and consistency of the newborn’s stools will help determine if feeding is adequate.

This part of the history also includes assessing the mother’s feelings and attitudes toward her new baby and her ability to care for him/her.

1-5 Interim History:

Information about problems that may have developed since last visit, and information about treatment or care of the newborn, will guide the provider in planning and implementing care, including referral if necessary. This information will also guide the counseling of the mother/care giver. Any problems that would cause a mother/care giver to bring her newborn for treatment must be addressed as a priority in order to gain or maintain the mother’s/care giver’s trust, and to encourage the mother to continue to be vigilant in observations and care of her newborn.

B- Physical Examination

Physical examination helps the provider determine the well being of the newborn, and also identify abnormal signs, special needs, and other potential problems that should be considered during further assessment and when planning and implementing care. A rationale for each element of the physical examination is indicated in Table 4 below.

Table 4 Rationales for elements of newborn physical examination/observation

Element	Rationale – To ensure “normal” and to detect the following abnormal signs or conditions:
Abdomen	Distension, which may indicate infection or bowel obstruction
Back	Dent or opening over the spine, which may indicate a serious malformation, such as spina bifida
Bonding	Lack of empathy on the part of the mother, or lack of “communication” and physical contact between mother and baby, which may indicate postpartum blues or a more serious condition

Element	Rationale – To ensure “normal” and to detect the following abnormal signs or conditions:
Breastfeeding	Problems with holding, positioning, or newborn attaching/sucking, which may indicate lack of technique (and a need for breastfeeding support), breast problems (e.g., sore/cracked nipples), or a more serious condition
Chest	In drawing or asymmetrical/irregular movements, which may indicate respiratory distress, other breathing problems, or another serious condition
Color	Central cyanosis, which may indicate respiratory distress Jaundice/yellowness, which may indicate sepsis, blood incompatibility, or another serious condition Pallor, which may indicate anemia, internal bleeding, a blood abnormality, congenital heart disease, or another serious condition
Cord stump/ Umbilicus	Bleeding, which may indicate a need to retie the cord or a more serious condition Redness, swelling, or pus, which may indicate infection Protrusions at the base, which may indicate an umbilical hernia or a more serious condition
External genitalia & anus	Irregularity of genitalia or imperforate anus, which may indicate a congenital malformation
Eyes	Redness, swelling, or pus, which may indicate infection
Face and mouth	Irregular/asymmetrical features (e.g., cleft palate) or facial movements, which may indicate a congenital malformation or another serious condition
Head	Disproportionate size, bulging anterior fontanel, or abnormally wide sutures, which may indicate hydrocephalus, a congenital malformation, or other serious condition
Level of alertness and muscle tone	Floppiness or lethargy, which may indicate damage to central nervous system, sepsis, drug withdrawal, a blood abnormality, or another serious condition Irregular/asymmetric movements which may indicate birth injury or another more serious condition
Limbs	Swelling over a bone or joint, which may indicate infection or birth injury Irregular/asymmetrical movements, which may indicate birth injury Birth defects (e.g., club foot)
Movements and posture	Convulsions, spasms, or extreme jitteriness, which may indicate damage to central nervous system or another serious condition Extreme hyperextension, which may indicate tetanus
Respirations	Abnormal respirations, grunting on expirations, or gasping, which may indicate respiratory distress, infection, other breathing problems, or another serious condition
Weight	Birth weight less than 2.5 kg or more than 4 kg indicates special needs and possibly serious conditions At 6 weeks, weight gain should be evident.

Element	Rationale – To ensure “normal” and to detect the following abnormal signs or conditions:
Skin	Bruises, which may indicate birth injury or another more serious condition Lesions, which may indicate congenital syphilis or another more serious condition Cuts and abrasions, which may indicate birth injury
Temperature	Fever or hypothermia (i.e. less than 36.5 °C or more than 37.5 °C, axillary), which may indicate infection or another serious condition

Source: Kinzie, B. Gomez, P. Basic Maternal and Newborn Care, Section Four: Newborn Care. JHPIEGO, Baltimore, June 2003. (Draft)

4 – ESSENTIAL NEWBORN CARE

The overall vision for all newborn care is for babies to have as healthy a start as possible. This means that there needs to be early recognition of danger signs and complications to have timely access to quality medical care for treatment, if complications arise.

A newborn may belong to one of four major categories at birth:

1. normal;
2. normal but requiring special attention because of a maternal condition (e.g. syphilis and HIV);
3. low birth weight but stable, at least initially; and
4. experiencing complications.

All newborns require essential newborn care to minimize the risk of illness and to maximize their growth and development. Babies can quickly change from appearing normal to being very sick. Emergency preparedness by the family, community, and health care system is crucial because sick newborns need to be rapidly assessed, stabilized, and managed with standard emergency care protocols. A LBW baby is more likely to become ill than a normal birth weight baby. LBW babies need extra care for their basic needs and extra attention for the prevention and identification of illness.

Basic needs for all newborns include breathing, warmth, cleanliness, feeding, and love. Clearly, good essential care of the newborn will prevent many newborn emergencies. For example, the umbilical cord may be the most common source of neonatal sepsis and also of tetanus infection, and good cord care could dramatically reduce the risks of these serious conditions. Breastfeeding has a significant protective effect against infections. Early breastfeeding with the baby held close to the mother reduces the risk of hypothermia, as well as hypoglycemia and jaundice. Each of the eight items listed below, as the essential newborn care will be further discussed in the following sections.

1. *Cleanliness: clean delivery and clean cord care for the prevention of newborn infections (tetanus and sepsis)* – Clean delivery and clean cord care can be ensured everywhere: in health facilities by policies and practices for prevention, detection and control of nosocomial infections; in home deliveries by strengthening standards of cleanliness by using disposable delivery kits. A complementary strategy to reduce neonatal tetanus is immunizing pregnant women with tetanus toxoid.*
2. *Thermal protection: prevention and/or management of neonatal hypothermia and hyperthermia* – Simple measures such as a warm room for delivery, immediate drying of the baby and skin-to-skin contact with the mother can prevent loss of body warmth. Birth attendants and families need instruction on how to re-warm babies that become hypothermic.

* National standard for tetanus toxoid injection for all women is twice injection in a pregnancy and 5 times in a lifetime.

3. *Breast-feeding: early initiation and exclusive use of breast feeding* – Breast-feeding should be started within an hour of birth. Feeding should be as frequent as the baby demands, without prelacteal feeds or other fluids and food. Breastfeeding works on the principle that the more breast milk the baby takes, the more the mother will produce. Knowledge about the importance of breast-feeding should be disseminated among families and communities as well as health workers and managers.
4. *Resuscitation: initiation of breathing* – Birth asphyxia should be recognized promptly and management should follow the basic principles of resuscitation, as described later.
5. *Eye care: prevention and management of ophthalmia neonatorum* – Eye prophylaxis involves cleaning the eyes immediately after birth and applying either silver nitrate drops or tetracycline ointment within the first hour of birth. There must be early diagnosis and management of ophthalmia.
6. *Immunization* – At birth BCG and OPV-0 are recommended.
7. *Vitamin K* – All normal weight babies should receive Vitamin K injection one mg one time immediately after birth, if possible.
8. *Complication readiness and scheduling return visit* – Since all newborns are at risk of complications, and most of these complications cannot be predicted, every family should be prepared to respond appropriately in an emergency situation.

A- Cleanliness

Clean delivery and cord care for the prevention of newborn infections (tetanus and sepsis)

Principles:

Clean delivery and cord care means observing principles of cleanliness throughout labour and delivery and after birth until the separation of the cord stump. Principles of cleanliness at birth are:

- clean hands
- clean perineum
- clean vaginal exam (gloves and instruments)
- clean delivery surface
- cleanliness in cutting the umbilical cord
- cleanliness for cord care of the newborn baby

Principles of cleanliness are as essential in health facilities as they are at home. In addition to hygiene during delivery (clean hands, clean environment, sterilized/disinfected equipment and supplies), these principles include special measures for newborns to prevent hospital infections through rooming-in, prevention of overcrowding, provision of clean water, and washing of hands by health personnel. The

hands of the birth attendant must be washed with water and soap, as well as the perineum of the woman. The surface on which the baby is delivered must be clean. Instruments, gauze and ties for cutting the cord should be sterile. Institutional policies need to define methods for prevention, detection, and control of nosocomial infections

Care of umbilical cord:

There is an abundance of traditional practices for cutting the umbilical cord. Many of them are harmful, such as using unclean knife. Those that observe the principles of cleanliness can be preserved but others must be changed. The cord stump remains the major means of entry for infections after birth. Nothing should be applied either to the cutting surface or to the stump. These principles of clean cord stump care (keep it dry and clean and do not apply anything) apply at home as well as in the health facility. The stump will dry and mummify if exposed to the air without any dressing, binding or bandages. It will remain clean if it is protected with clean clothes and is kept from urine and soiling. No antiseptics are needed for cleaning. If soiled, the cord can be washed with clean water and dried with clean gauze. Health care providers should carefully examine local practices of putting various substances on the cord stump, whether in health facilities or homes. These practices should be discouraged if found harmful, such as putting cosmetic powders on the cord stump in Afghanistan, and substituted with acceptable ones.

If the umbilical stump is draining pus, the skin around it is becoming red or it has a foul smell, these are signs of an umbilical infection that requires treatment with antibiotics. If, at the same time, the baby stops suckling well, is sleepy, does not wake up, or is having difficulty breathing, these may be signs of serious infection. The baby must be referred immediately to the hospital for proper treatment.

Home delivery kit:

For home deliveries, the use of simple disposable delivery kits will help in achieving as clean a delivery as possible. The kit should contain, as a minimum, a nail cleaning stick; a piece of soap for clean hands and clean perineum; a plastic sheet of about 1 x 1 m to provide a clean surface, a new razor blade (heated or boiled), ties, and gauze for the clean cutting and care of the umbilical cord. All the materials should be packed in a sealed plastic bag with instructions on how to wash hands thoroughly before delivery and again before handling the baby's umbilical cord, and how to use other items in the package. The best means of providing and promoting the kits to pregnant women should be determined locally, either at health facility or at the community.

Rooming in:

Maintaining the mother-infant contact that was established immediately after birth favors colonization of the infant's skin and gastrointestinal tract with the mother's microorganisms, which tend to be non-pathogenic and against which the mother has antibodies in her breast milk. The infant is thus simultaneously exposed to and protected against the organisms for which active immunity will be developed only later in life. There are a number of ways to organize rooming-in to allow a mother free and easy access to her infant, whether the infant shares the mother's bed or is in another bed in the

same room. In health facilities where mothers and babies are separated, babies are often kept in nurseries where they share equipment and supplies. Here they may be exposed to microorganisms of the hospital staff, which are more pathogenic, are often resistant to many antimicrobial drugs, and for which breast milk contains no specific antibodies. Keeping babies with mothers and having mothers taking care of them eliminates the danger of cross-infections.

B- Thermal protection

Prevention and/or management of neonatal hypothermia and hyperthermia

2-1 Hypothermia:

The normal body temperature of the newborn is 36.5 - 37.5 °C (Axillary). Hypothermia occurs when the body temperature drops below 36.5 °C.

Time and causes of hypothermia:

The newborn is most sensitive to hypothermia during the stabilization period in the first 6 - 12 hours after birth, although hypothermia may occur at any time if the environmental temperature is low and thermal protection inadequate. The newborn has a relatively large surface area, poor thermal insulation, a small body mass to produce and conserve heat, little ability to conserve heat by changing posture, and no ability to adjust her/his own clothing in response to thermal stress. Hypothermia can easily occur if a newborn is left wet and unprotected from cold while waiting for the placenta to be delivered. Hypothermia can occur after birth even at moderate environmental temperatures when babies are not well protected or because of practices such as bathing the newborn.

Signs of hypothermia:

As the body temperature drops below 36.5 °C, the baby becomes less active, lethargic, hypotonic, sucks poorly, and the cry becomes weaker. Respiration becomes shallow and slow and the heartbeat decreases. Sclerema - hardening of skin with redness - develops mainly on the back and the limbs. The face can also become bright red. As the condition progresses it causes profound changes in body metabolism resulting in impaired cardiac function, hemorrhage (especially pulmonary), jaundice, and death.

Severe hypothermia:

Infants with severe hypothermia need rapid re-warming. They must be referred to the hospital where they can receive support treatment in addition to effective re-warming. During transport, skin-to-skin is the best way to re-warm.

Preventing hypothermia:

The principles for preventing hypothermia in newborn infants require:

- delivery of the baby in a warm room,
- drying her/him thoroughly immediately after birth with a fine clean cloth,
- wrapping her/him in another dry warm cloth while keeping her/him out of draughts on a warm surface,

- giving her/him to the mother as soon as possible and initiate breastfeeding, and
- avoiding early bathing of the baby.

The baby's mother is the best source of warmth. Early skin-to-skin contact for the first few hours after birth is more than just a measure for preventing hypothermia; it provides warmth, enables early breast-feeding, and prevents hypoglycemia.

If separated from her/his mother, a newborn baby needs to be well protected from cold and/or heat. Swaddling is not a good way to keep babies warm. If the cloths are wrapped tightly round the baby, there is little air trapped between the body and the cloth and the cloth itself does not provide sufficient insulation. A better way of protecting babies is to use clothes or wrap the baby in loose layers of light but warm material.

Re-warming:

The temperature of a newborn should be checked regularly. Families need to know how to recognize hypothermia by touching the feet and body of the baby. They need to know how to re-warm the baby by skin-to-skin contact with the mother or father - the simplest and most effective method. Other simple and safe measures of re-warming at home include wrapping a baby in layers of warm clothes and changing them frequently, and using measures such as warm water bottles. Families also need to know that if the baby does not get better she/he must be taken to the health center or hospital to prevent further complications. A baby who is colder than expected may have severe infection and should be reassessed.

Hypothermia at health facility:

In health facilities, the baby's temperature should be checked regularly, especially in the period immediately after birth. If the temperature is found to be low, the infant must be re-warmed and health evaluated. A newborn with hypothermia should also trigger a review of the institution's practices for thermal protection.

Early bathing and hypothermia:

No bathing is needed during the first 24 hours. All newborn should be bathed only after one day of life and when the temperature is stable and the baby is doing well. This is usually done for cosmetic purposes (to remove the vernix). Vernix has lubricating and anti-infection properties and should not be removed.

2-2 Hyperthermia:

Hyperthermia is defined as body temperature above 37.5°C (axillary). Newborn infants develop hyperthermia if exposed to an environment that is too warm (sun, proximity to a heater, etc.). The baby is initially irritated, breaths fast, with increased heart rate, and hot and dry skin; and the face appears flushed. She/he gradually becomes apathetic, lethargic and pale. When the body temperature goes above 41°C, stupor, coma, and convulsions develop. The infant should be moved from the heat, undressed, and the body should be cooled. Dehydration is a serious complication of hyperthermia and usually requires hospitalization.

2-3 Persistent hypothermia or hyperthermia:

The infant's condition should be reevaluated after the causes of hypothermia or hyperthermia are determined and removed. If hypothermia or hyperthermia persist, despite an appropriate intervention, the baby might have a serious problem (infection) and should be immediately referred to the hospital.

C- Breastfeeding

Early and exclusive breast-feeding

Advantages:

Breast milk provides optimal nutrition and promotes the child's growth and development; it is associated with improved growth during the first months of life. By breast-feeding, a mother begins the immunization process at birth and protects her child against a variety of viral and bacterial pathogens before get active immunity through vaccination, because the baby's skin and gastrointestinal tract are colonized with the mother's microorganisms, against which she has antibodies in her breast milk. Breast milk has unique anti-infective properties. Early suckling provides the baby with colostrum that offers protection from infection, gives important nutrients, and has a beneficial effect on maternal uterine contractions, which can prevent postpartum hemorrhage. Frequent and exclusive breast-feeding can be an appropriate method of fertility regulation for many women, particularly when other family planning methods are not readily available or desired.

Key factors for successful breastfeeding:

Important factors in establishing and maintaining breast-feeding after birth are:

- giving the first feed within one hour of birth,
- correct position that enables good attachment of the baby,
- frequent feeds on demand,
- no prelacteal feeds with non-breast milk supplements,
- psychosocial support for breast-feeding mothers,
- early contact (immediately after birth) between the mother and the baby, which has a beneficial effect on breast-feeding, as well as on temperature conservation, and
- support of the family.

Babies have a wide range of behaviors following spontaneous delivery and are not all ready to feed at the same time. A skilled person can help to facilitate the process by ensuring correct positioning and attachment. A healthy baby has no need for large volumes of fluid any earlier than they become available physiologically from the mother's breast. There is no evidence to support the practice of providing supplementary feeds of water, glucose, or formula. Traditional prelacteal feeds should be strongly discouraged, including use of butter or tea or the like. Every birth attendant should also

know the importance of unrestricted feeding and the ways to support breast-feeding mothers. Mothers should be instructed about the need for an adequate diet to sustain lactation. They should be helped and encouraged if they have difficulties breast-feeding.

Rooming in:

Rooming-in has many advantages for separating babies and mothers. In health facilities, its advantage, in addition to breast-feeding, is to reduce nosocomial infections. The Baby-Friendly Hospital Initiative is an international program of WHO and UNICEF. Based on the WHO/UNICEF Ten Steps to Successful Breastfeeding, the Initiative recognizes hospitals and birth centers that have taken steps to provide an optimal environment for the promotion, protection, and support of breastfeeding.

See Annex 1 for additional and detailed information on breast-feeding.

D- Resuscitation

Initiation of breathing

Newborn infants may have difficulty in initiating breathing due to prolonged and/or obstructed labour, prematurity, infection, and many unknown causes. Therefore, the equipment and skills for resuscitation are needed for every birth. See Annex 2 for detailed information on resuscitation.

Basic steps for initiating breathing:

Usually it is impossible to anticipate that the newborn will have trouble in initiating breathing. Often, limited stimulation such as immediate cleaning mouth and nose, drying, and warming after birth suffice for initiating breathing. If a newborn does not cry after initial steps of stimulation, she/he must be assessed for breathing.

Definition of birth asphyxia:

The operational definition of birth asphyxia is a delay in initiating breathing at birth. To a certain extent, birth asphyxia can be prevented by referring women to health facilities when complications that may cause birth asphyxia (such as prolonged labour or preterm delivery) are expected. However, when a newborn is not breathing after birth, urgent and skilled resuscitation is needed immediately.

Resuscitation principles:

If the infant is not breathing or the breathing is poor, she/he needs active resuscitation. The aim of resuscitation is to initiate breathing by expanding the lungs, filling them with air to allow an exchange of gases and to permit changes in circulation. Aspiration of the nose and mouth only is recommended as the first step in resuscitation but it is not sufficient to initiate breathing. However, it should be noted that deeper aspiration could in fact stimulate reflexes causing apnea. Obstruction of the nose and mouth is uncommon and therefore not a primary reason for a newborn not breathing. However, thick meconium may obstruct airways and it should be removed from the upper airways immediately after birth, before initiating ventilation. After brief aspiration, if the baby is

not breathing, the priority is to inflate the lungs with air for example 5 large inflationary breaths via ambubag and mouthpiece or mouth to mouth/nose.

The great majority of infants with asphyxia can be successfully managed by appropriate ventilation without drugs, volume expanders, or other interventions. Applying the basic principles of resuscitation to all infants at all levels of care will substantially improve newborn health and decrease deaths. Timely and correct resuscitation will not only revive them but will enable them to develop normally. Most will need no further special care after resuscitation.

Resuscitation process:

Proper ventilation of the infant is the most important aspect of resuscitation. Positive pressure ventilation with a self-inflating bag and a mask using additional oxygen is a usual method for management of birth asphyxia. When additional oxygen is not available, infants should be resuscitated using air. If no equipment is available, mouth-to-mouth ventilation can be effective for initiating breathing in newborns with mild and moderate asphyxia. In experienced hands, ventilation by endotracheal tube is likely to be more effective than ventilation by facemask. However, personnel who do not frequently intubate newborn infants should initiate resuscitation using a facemask and should consider intubation only if the heart rate does not increase promptly with properly performed bag and mask ventilation.

Needed personnel and equipment:

Every birth attendant should know the basic principles of resuscitation, have basic skills in neonatal resuscitation, and have access to appropriate resuscitation equipment. Whenever possible, a person skilled in resuscitation should attend deliveries when complications are anticipated (such as prolonged labour or preeclampsia or history of previous fetal death) in order to devote full attention to the baby. Resuscitation equipment should not only be available in every delivery room, but its presence and proper working order should be verified before every delivery. See annex 2 for detail information.

Common errors:

The most common serious error in neonatal resuscitation is the failure to recognize and to correct hypoventilation, a problem that is preventable with sufficient staff training and experience. Cardiac massage should be avoided.

Home resuscitation:

Resuscitation of the newborn is also possible at home. The same principles apply. The birth attendant should be trained in recognizing a problem and managing it. When teaching mouth-to-mouth ventilation, special attention should be given to providing the right volume and pressure and to the importance of urgency in initiating ventilation and some sense of its duration, for situations where no clock is available.

E- Eye Care

Prevention and management of ophthalmia neonatorum

Definition:

Ophthalmia neonatorum is defined as any conjunctivitis with discharge occurring during the first two weeks of life. It typically appears 2-5 days after birth, although it may appear as early as the first day or as late as the 13th. Purulent discharge that starts within the first two weeks of life must be recognized as a sign of ophthalmia and the newborns treated or referred for parenteral application of antibiotics.

Signs:

Most often both eyelids become swollen and red with purulent discharge. Corneal damage with ulceration, perforation, synechiae, and pan-ophthalmitis develop if there is no treatment or if there is delay in treatment. Many infants will also progress into systemic disease.

Causes:

Infection by *Neisseria gonorrhoea* and *Chlamydia trachomatis* are the two main causes of ophthalmia but cannot be accurately distinguished on clinical grounds alone. In gonococcal ophthalmia, complications are more severe and appear more rapidly. The transmission rate for gonorrhoea from a mother to her newborn is 30-50%.

Prevention:

In the absence of systematic diagnosis and treatment of maternal genital infections before delivery, most cases of conjunctivitis of the newborn can be prevented by disinfection of the infant conjunctivae immediately after birth.

Preventing conjunctival infection is done by cleaning the eyes immediately after birth by clean water (boiled and cooled) and a soft cloth and applying either 1% silver nitrate solution or 1% tetracycline or 0.5% erythromycin ointment, to the eyes within one hour after delivery. Nonetheless, newborns given silver nitrate or tetracycline ointment still run the risk of infection (7% and 3% respectively), if the mother was infected.

Prevention failure:

The most common reasons for failure of ocular prophylaxis are:

- delay in giving the prophylaxis (after the first hour),
- flushing the eyes after administration of silver nitrate to prevent chemical conjunctivitis, and
- giving drops that are too concentrated through evaporation. This can be prevented by dispensing silver nitrate in small containers, avoiding prolonged storage, or by using single-dose preparations.

Traditional eye care practices:

Since there is a lack of evidence of the extent to which the traditional practice of applying mother's milk to the eyes of the newborn is effective in preventing ophthalmia, this

practice cannot be recommended instead of silver nitrate drops, tetracycline ointment, or erythromycin ointment.

F- Immunization

In line with national immunization program, the BCG should be given as soon after birth as possible in all populations, including those who are at high risk of tuberculosis infection.

Also, the national immunization program recommends the administration of a single dose of OPV at birth or in the two weeks after birth in order to increase early protection.

Hepatitis B vaccine should have been integrated into national immunization programs in all countries by 1997, yet not occurred in Afghanistan. Although it's not part of national immunization policy, wherever perinatal infections are common, it is important to administer the first dose as soon as possible after birth, if available.

G- Vitamin K

All newborns should be given an injection of 1 mg of Vitamin K immediately after birth in order to prevent bleeding due to Vitamin K deficiency.

A global recommendation to give Vitamin K to all neonates has not been made by WHO, although the Vitamin is given in most developed and many developing countries. It is also recommended in Afghanistan, at any health facility that is feasible.

H- Complication readiness and scheduling return visit

Complication readiness:

Providers, as well as family, must be familiar with the signs that refer to a health problem that requires help. They should also know where to find that help. Delay in recognizing that there is a life-threatening problem can cost the life of the newborn. It is essential that emergency plan be established before the complication arises as the time spent to find transportation and make decisions and arrangements to access that care, may easily define the line between survival and death. The complication readiness plan, should include particularly:

- Recognition of and response to danger signs (as mentioned in page 20)
- Timely decision-making in an emergency situation
- Emergency funds
- Emergency transportation

See the national standards for antenatal care services for more detailed information on complication readiness, particularly birth and emergency plan.

Scheduling return visit:

Even a well baby will need regular visits to a health care worker throughout childhood in order to receive all necessary immunizations and to screen for growth problems. A newborn is more vulnerable to death than older children. Therefore need regular contact with a healthcare provider.

5 – EXTRA NEWBORN CARE

LBW babies are at much greater risk of dying than are normal-weight babies. A LBW baby born at term has about a 3-fold greater chance of dying than one with normal birth weight. However, a preterm baby has a 9- to 10-fold higher death rate depending on how premature the baby is.

Yet many babies weighing 1.75 to 2.5 kg (the majority of LBW babies) could be saved with simple interventions. In settings where the LBW rate is about 30 percent and the majority of deaths are LBW babies, a little extra care of these babies could dramatically reduce neonatal mortality rates. In areas, where LBW rates are lower (usually about 15% or less) and a bigger proportion of LBW may be due to preterm birth, the effect of extra care for LBW babies may be less dramatic. However, other vulnerable groups of babies may benefit from the same philosophy of extra care, particularly babies of multiple pregnancies (twins, triplets) or babies with birth defects, such as cleft palate.

Extra newborn care has four main components

1. Identification of the LBW baby
2. Extra clinical care of the LBW baby
3. Extra support for feeding
4. Extra support for warmth

A- Identification of the LBW baby

To target LBW babies for extra care, they must first be identified. However, it should be stressed that it is not necessary to weigh all babies with digital scales. For the purposes of targeting those babies most likely to need extra care, a simple alternative assessment, such as foot size or chest circumference with a color-coded tape, is all that is required. As more deliveries occur with a skilled attendant, recording of birth weight will become the norm. Ideally, each baby should be weighed and have the birth weight recorded.

Foot size:

One community-based program in India taught village health workers to refer all babies whose foot length was less than 6.5 cm to the sub center and to make frequent follow-up visits for newborns if foot size was 6.5–7.0 cm to supervise feeding and thermal protection.

Chest mid-upper-arm, or head circumference:

Chest circumference has been used as a simple, accurate surrogate for birth size, but there is no agreed international cut-off point. A study in Ethiopia found that a chest circumference of less than 30 cm sensitively predicted LBW. Sensitivity and specificity will be improved by combining measurement of chest circumference with either mid-arm circumference (less than 8.7 cm used) or with head circumference (less than 33 cm used).

Balance scale:

Most hospitals and many health centers are equipped with balance scales and are more accurate.

B- Extra clinical care of the LBW baby

Babies weighing between 1.75 kg and 2.5 kg (corresponding to more than 34 weeks of gestation) have a high probability of survival without major disability and can be managed in a lower-level health facility or even at home with careful supervision. Babies weighing less than 1.75 kg are likely to be preterm and are more likely to require skilled care, although not necessarily intensive care. The WHO Essential Care Practice Guidelines recommend that babies weighing less than 1.75 kg at birth should be looked after in an institution with basic equipment for tube feeding and giving oxygen therapy. Whether the baby is cared for at home or in a facility, the mother should be present and actively involved in care, unless she is too ill to do so. Her presence and input are the most important “equipment.”

Babies weighing between 1.75 kg and 2.5 kg could be monitored at a health care facility or even at home with extra support. Skilled providers or caregivers should ensure that these babies are provided with extra breastfeeding support and extra warmth.

Skilled provider or caregiver should also watch out for danger signs. These may be subtler in a LBW baby, especially if the baby is preterm and not feeding well or inactive because of prematurity. The mother and other caregivers need to be aware of danger signs and need to know how to respond.

Babies weighing less than 1.75 kg should be taken care of at a health care facility, which has basic equipment and staff with newborn care skills. Service providers should perform the following tasks:

- Prevent hypoglycemia – A stable baby can be tube-fed with expressed breast milk, if necessary, giving less volume more often (for example, dividing the every-3-hour feeding volume into three and giving this amount every hourly). A baby with significant respiratory distress will require IV fluids, administration of which should be supervised very carefully. Even if a micro-dropper drip is available, it is very easy to give too much fluid.
- Prevent hypothermia – Babies this small, or who are unstable, need to be observed more carefully, and so a "hot cot" or an incubator is the best for them. Incubators, if available, need to be used appropriately and well maintained (see explanation in the section on Extra Warmth).
- Identify and treat complications – Examples of complications include hypoglycemia, neonatal sepsis, and jaundice.
- Evaluate for infection

Premature labour is often associated with infection. Therefore, these babies are at high risk of infections. The caregiver needs to have a XXXX to treat the baby for infections with antibiotics.

Again, service providers should watch out for danger signs (page 20). These will be subtler in a LBW baby, especially if the baby is not feeding well and is inactive because of prematurity. Jaundice damages the brain of a preterm baby or a sick baby at a lower level than for a full term baby, and should be decreased by adequate hydration and frequent stool and if available, treated by exposure to UV light.

C- Extra support for feeding

Breast milk provides the best nutrition for all babies, including LBW and preterm babies. For these babies, early feeding after delivery is not just beneficial, it is essential. Babies who are term LBW due to Intra-Uterine Growth Retardation (IUGR) will often feed very well and may experience a growth spurt if the mother is encouraged to feed on demand. Preterm babies often struggle to breastfeed, and so supporting the mother to express milk and feed, is crucial for them to thrive in low-resource settings where infections are a high risk. Giving other than breastmilk reduces the baby's ability to fight infection. Well babies should be put to the breast first at every feed before cup feeding, even if they have not yet learned to suckle.

As outlined in the section on care of the baby weighing less than 1.75 kg, many of these babies will require tube feeding or intravenous fluids and are better managed in a health institution. With time these babies will transit to sucking at the breast and then cup feeding to "top-up" volume. For those who are supporting mothers to care for preterm babies, one of the key skills is the ability to encourage the mother as she expresses milk and as the baby learns to suckle.

Breast-feeding depends on the condition and maturity of the baby, as well as the delivery setting. The following provides rough guidelines:

- A well baby weighing more than 1.75 kg can be cup-fed or spoon-fed. They can learn to suckle at the breast unless she or he is sick.
- A baby weighing less than 1.75 kg may need to be tube-fed (use a fine tube size Fr. 5 or 6, check the position by aspirating, and fix well with tape that will not damage the baby's skin) and is more likely to be unwell and need IV fluids.
- A very preterm baby (less than 32 weeks) will gradually progress from IV to tube-fed to cup-fed to sucking at the breast over a period of days or weeks.

Feeds are usually given every 3 hours, until the baby weighs more than 2.5 kg. In the first few days of life, the baby may require smaller volumes more frequently (hourly), especially if the baby is very preterm or slightly unwell. If the baby has shown respiratory distress or is very unwell, an IV drip is indicated.

There are several guidelines for total (oral plus IV) recommended daily volume of fluid intake for newborns. The most commonly used guidelines in Afghanistan are:

Table 5 fluid requirements of low birth weight babies (ml/kg/day)

Day	Less than 1000g	1000-1500 g	More than 1500g
1 st & 2 nd	100-120	80-100	60-80
3 rd and 4 th	130-140	110-120	90-100
5 th and 6 th	150-160	130-140	110-120
7 th and 8 th	170-180	150-160	130-140
9 th onwards	190-200	170-180	150-160

Source: Singh, M. Care of the Newborn. Sagar Printers & Publisher, New Delhi, 2002.

Service provider should watch for the baby becoming unwell while feeding, significant vomiting, or the stomach swelling up. If this happens, stop feeding and set up an IV line. Furthermore, service provider should weigh the baby every two to three days to assure that they are gaining weight.

D- Extra support for warmth

LBW babies, especially preterm babies, are much more likely to become hypothermic. The priority should be prevention of hypothermia, as discussed under thermal protection in the essential newborn care. The main points are drying the baby at birth and wrapping well, keeping the baby very close to the mother unless either the mother or the baby is very ill, and keeping the room warm. Kangaroo care is particularly suited for the stable baby of intermediate birth weight (1.75 to 2.5 kg). Details of Kangaroo care are discussed below.

Increased awareness of hypothermia could be achieved by using a simple low-cost liquid crystal thermometer. Warming a hypothermic (temperature less than 36°C) baby can be achieved by various methods. If the baby is stable, kangaroo care is the most efficient method. If the baby is unwell, an overhead radiant heater is the best method if available. Hot cots or incubators are alternatives.

Kangaroo care

The use of incubators for care of babies in low-resource settings is problematic for many reasons, including expense of purchase and maintenance; unreliability of electricity supplies; and increased infection risk because they are difficult to clean and are often shared by several babies.

In the kangaroo care method, a well preterm infant, wearing only a diaper, is placed between the mother's breasts in skin-to-skin contact. Kangaroo care can also be provided by the father or another relative, although this has been less well studied. Many studies all over the world have demonstrated improvements in outcomes and other advantages of kangaroo care, such as higher maternal satisfaction and improvement in survival for

hospitalized LBW infants. The latter has been documented to be 20-60 percent in randomized controlled trials.

Implementation is not as simple as it may appear, partly due to behavioral and cultural barriers among mothers concerned about indecency. Medical staff may also be resistant to shifting away from technological solutions. Home use of kangaroo care has not been well studied, but this is a potential method to improve home care of the LBW baby.

6 – EMERGENCY NEWBORN CARE

While many newborn lives can be saved with simple interventions, there are some newborns that require more institutional services to save their lives. Service providers need to be prepared to deal with sick newborns. The main areas to focus on are infections (i.e., sepsis, tetanus) that may contribute to other conditions that may jeopardize the newborns condition (such as hyperthermia or hypothermia), hypoglycemia, and dehydration. Prompt recognition of danger signs/complications and timely treatment is essential to prevent a neonatal death.

The emergency newborn care has eight components, which will be further discussed below:

1. Identification of neonatal danger signs
2. Quality emergency care of the sick baby
3. Severe neonatal infection
4. Neonatal tetanus
5. Neonatal asphyxia
6. Neonatal jaundice
7. Birth defects
8. Severe bleeding in the neonate

A- Identification of neonatal danger signs

Numerous attempts have been made to develop algorithms for early identification of severe illness in the neonate, but those that have been shown to be sensitive and specific are usually highly complex in terms of the clinical skills and laboratory investigations required. Approaches that have worked at the community level involve identification of simple symptoms/signs; such approaches may result in over-treatment of some babies without serious illness. Given the high risks associated with failing to detect severe illness, using simple symptoms/signs seems to be the most feasible approach until a specific algorithm is available.

The presence of one danger sign is a cause for concern and many should know the danger signs, including individual women, households (especially decision-makers, such as husbands and mothers-in-law), community leaders, care givers in the informal sector such as community health workers, TBAs, and attendants at delivery. Danger signs, as mentioned above, include:

1. Difficulty breathing (abnormal respirations, chest in drawing, grunting on expiration, gasping)
2. Convulsions, spasms, or loss of consciousness
3. Cyanosis (blueness)
4. Floppiness
5. Hotness/fever
6. Coldness
7. Bleeding

8. Jaundice (yellowness)
9. Not feeding
10. Diarrhea
11. Continuous vomiting
12. Pus or redness of the umbilicus, eyes, skin, etc.
13. Swollen limb or joint
14. Pallor or blue lips/tongue

B- Quality emergency care of the sick baby

Good supportive care (detailed attention to preventing hypoglycemia, hypothermia, provision of oxygen if required, etc.) may contribute as much to the reduction of neonatal mortality as treatment of specific conditions. While antibiotic therapy is crucial for severe infections, other conditions, such as asphyxia, depend largely on supportive care. Once again, it is important to involve the mother in caring for the baby and to offer family-centered care that takes a welcoming, communicative approach. Motivated clinical care, from doctors, nurses, and midwives, is also invaluable.

Major interventions for assuring quality care of a sick baby include:

A- Family-centered care

- Involve the mother actively in care unless she is too ill to do so.
- Communicate with the mother and family and support them.

B- Supportive treatment

- Stabilization, including basic resuscitation with bag and mask, if needed
- Oxygen therapy, given by nasal cannula, if required
- Thermal protection – Wrap baby well (although still need to be able to maintain close observation).
 - o Kangaroo care is probably not good to use for the very sick newborn.
 - o Use overhead lights, hot cots, or sleeping bags (see Warm Chain).
 - o Use an incubator, if available.
- Correct/prevent hypoglycemia – Measure blood glucose (i.e., using blood sugar stick for diabetics), where possible.
 - o If blood sugar is less than two mmol/L, correct with a bolus of 10 percent dextrose 20 mL/kg and set up a 10 percent dextrose drip to avoid rebound hypoglycemia.
 - o If the blood glucose level is greater than two mmol/L but the baby is very ill, set an IV line to prevent hypoglycemia. If the baby is stable, support the mother to breastfeed or to express milk and feed. Chart how much milk should be given and when, and record how much is actually given.

C- Specific treatment

- Standards - It is very important to set locally agreed, feasible protocols for management of important conditions, including severe infection, neonatal asphyxia, severe jaundice, and bleeding.

- Standards and guidelines need to be visible, i.e., laminated and displayed on walls.
- Skills - Attendants at birth and other providers need to be competent in applying these guidelines.
- Supplies and equipment – Basic drugs, equipment, and other supplies should be available consistently (annex 2)
- Investigations improve the accuracy of specific treatment considerably, especially:
 - o blood sugar level,
 - o hemoglobin level or packed cell volume,
 - o bilirubin,
 - o blood cultures and cerebral-spinal fluid (CSF) culture, and
 - o blood gases (where possible).
- Monitoring of vital signs (heart rate, respiratory rate, and blood pressure)

C- Severe neonatal infection

Severe infection in neonates is the single largest cause of neonatal deaths globally. Severe infections include neonatal sepsis and meningitis, as well as acute lower respiratory tract infections.

In low-resource settings, infections are more common and case-fatality rates are higher both because of delays in access to care and lack of quality care. The priority is prevention, but better identification and management can markedly reduce mortality.

While treatment is possible without investigation, if feasible, blood, central spinal fluid, and urine cultures are important to guide management. If most cases are being treated without investigation, it is important to have some tracking, at least at the hospital level, of what the organisms are and how sensitivity to antibiotics is changing so that antibiotic policies can be adjusted with time. Table 5 lists the presenting problem, possible organisms, and likely treatment for various infections. These treatments are intended only as a guideline, and local patterns of organisms and sensitivities, need to be taken into account before developing a local policy.

Table 6 Presentations, possible organisms, and treatment for severe neonatal infection

Presenting Problem	Possible Infection	Likely Organisms	Suggested Antibiotic Therapy
Temperature change (more than 38°C or less than 36°C axillary)	Possible septicemia or other infections	Streptococcus pneumonia Staphylococcus aureus Escherichia coli	Injection Ampicillin & gentamicin
Poor feeding (less than 50% of normal) (alone or with one of the other signs)	Possible septicemia or other infection	Salmonella spp Group B streptococcus	

Presenting Problem	Possible Infection	Likely Organisms	Suggested Antibiotic Therapy
Irregular breathing or fast difficult Breathing (respiratory rate more than 60 per minute)	Lower respiratory tract infection	S. pneumoniae S. aureus	Injection penicillin & gentamicin
Convulsions or twitching, extreme irritability or lack of activity	Meningitis	S. pneumoniae Group B streptococcus	Injection penicillin & gentamicin
Very stiff with spasms	Tetanus	Clostridium tetani (often associated with gram-negative sepsis)	Injection penicillin & gentamicin
Skin rashes with pustules and/or umbilical cord discharge, especially with surrounding redness	Localized skin infection which may spread to cause septicaemia	S. aureus Streptococci	Injection cloxacillin
Eye discharge, especially if the eyelid and surrounding tissues are red Note: It is important to treat the mother and her partner(s) as well as the baby.	Ophthalmitis	Gonococcus Chlamydia S. aureus	Injection ceftriaxone 25-50 mg/kg single dose not to exceed 125 mg. Also, wash eyes every 4-6 hours and apply tetracycline 1% ointment.
Neonate of mother with syphilis or neonate with suspected congenital syphilis (rhinitis, skin rash especially pustules on soles/palms, hepatosplenomegaly, jaundice). Note: 50% of cases are asymptomatic.	Possible congenital syphilis	Treponema pallidum	Procaine penicillin G 50,000 units/kg single daily dose for 10 days (should be given even if the mother has been treated unless her VDRL has been shown to decrease 4-fold)
Vomiting	Sepsis or urinary tract infection	E. Coli Group B streptococcus	Injection Ampicillin & gentamicin
Lethargy	Sepsis	E. Coli Group B streptococcus H. Influenza Other	Injection Ampicillin & gentamicin

Source: Lawn, J. McCarthy, B. & Rae Ross, S. The Healthy Newborn: A Reference Manual for Program Managers. CDC & Care, Atlanta, 2002. (CD-ROM)

The main elements that the program managers needs to consider in terms of prevention, identification, and treatment of neonatal infections are:

A- Identification of severe infection

- Fever more than 38°C (LBW babies especially may become hypothermic)

- Poor feeding (especially after feeding well); lethargy
- Difficulty breathing or irregular breathing
- Convulsions, spasms, or being jittery
- Redness around the umbilicus with or without pus discharge
- B- Monitoring and investigations (where available)
 - Monitoring vital signs
 - Blood sugar level.
 - Hemoglobin level
 - Blood cultures
 - Lumbar puncture
- C- Specific treatment (see table above)
- D- Prevention
 - Treatment of STIs in the mother during pregnancy
 - Antibiotics for prolonged rupture of membranes (more than 24 hours before delivery)
 - Antibiotic cover for preterm rupture of membranes (rupture before the 37th week of pregnancy)
 - Clean delivery.
 - Good cord care, address local cord care practices that are dangerous
 - Eye prophylaxis.

D- Neonatal tetanus

Neonatal tetanus accounts for about 300,000 deaths annually and has one of the highest case fatality rates of any infection. Approximately 90 percent of babies with neonatal tetanus will die. Even with high technological care, the case-fatality rate is very high. The key lies in prevention, clean deliveries, and good cord care, not just with increased coverage with tetanus toxoid. The reasons vary by setting, but generally fall into three major categories:

- low coverage of care during pregnancy or poor quality care during pregnancy resulting in low tetanus toxoid coverage;
- inadequate care during delivery with unhygienic cord-cutting procedures and cord care; and
- poor newborn care, particularly local traditional cord care practices or circumcision practices.

Achieving high tetanus toxoid coverage for pregnant women is more complex than immunization coverage in young infants. One remaining challenge is the development of a record card that covers one pregnancy to the next, thereby allowing on-going information on the expected immunity of women to tetanus. Tetanus toxoid coverage alone is not the answer to preventing tetanus; programs also need to address intrapartum care and newborn care for high-risk populations.

Poor feeding (especially after feeding well), spasms, stiffness (especially stiff jaw), and fever are main signs and symptoms of neonatal tetanus. Laboratory investigations include blood sugar level, hemoglobin level, blood cultures, and CSF exam (lumbar puncture).

The principles of treatment are:

- neutralize tetanus toxoid by giving tetanus antitoxin 5,000 units intramuscularly as a single dose;
- treat the tetanus infection using benzylpenicillin 50,000-100,000 units per kg per day in 2 divided dose, intravenously, at least for 5 days;
- antibiotic cover for associated gram-negative sepsis (i.e., gentamicin);
- control spasms – Treatment is controversial and very difficult because once the baby is sedated to stop spasms, respiratory arrest is a major risk. The goal is to sedate well, and then titrate sedation very carefully against the spasms, tailing off sedation quickly when the spasms stop;
- avoid hypoglycemia by giving IV fluids or by nasogastric tube feeding when the baby's condition is more stable.

Preventive measures include:

- Tetanus toxoid coverage for the mother antenatally (2 shots during pregnancy or 5 shots in a lifetime)
- Clean delivery, especially a clean surface and a clean implement to cut the cord and a clean delivery kit
- Good cord care and address local cord care practices that are dangerous
- Consideration of antiseptics on the cord if the cord is a major source of infection and advise that nothing be put on the cord.

E- Neonatal asphyxia

Each year an estimated 1 million babies die of birth asphyxia. As with other emergency conditions newborns face, the key lies in prevention – better intrapartum care and resuscitation at birth, if required. In the absence of intensive care, many babies with severe asphyxia (now often termed hypoxic ischaemic encephalopathy) will die or have a high probability of severe disability. For babies with moderate or milder effects of asphyxia, the probability of long-term survival without disability is reasonably good. Careful supportive management of these babies in the first few days of life is critical.

Baby who did not cry at birth or did not breathe and required resuscitation, a baby with history of difficult or prolonged delivery, and a baby who is very lethargic or twitching on the first day of life could be considered as possible cases of neonatal asphyxia.

Babies who are very big at birth (over 4 kg) or post-term (after 42 weeks of gestation) are at increased risk of obstructed labor and resultant asphyxia.

Preterm babies are more sensitive to injury from asphyxia and more likely to be severely affected and die or to have a long-term handicap.

Unfortunately, there is no specific treatment. Good supportive care is essential:

- Give oxygen, if available, and observe the baby closely for convulsions or ceased breathing.
- Control seizures with medication as per local protocol (i.e., paraldehyde).
- Take care to avoid hypoglycemia by feeding the baby regularly by cup or nasogastric tube if the baby is fairly stable, or giving IV dextrose if unstable.
- Pay close attention to temperature control.
- Explain carefully to the parents that the next delivery should be in a setting where the baby can be resuscitated well.

Preventive measures include:

- Provide good care during delivery.
- Identify babies who are more likely to need extra resuscitation (preterm, mothers with complications of pregnancy or delivery) and prepare before delivery, ideally moving the mother to a center where more skilled staff are available.
- Ensure attendants at delivery are skilled in resuscitation and equipment is available and functional.
- Have standard resuscitation policies that are understood and used.

Care of babies with diabetic mothers:

Pregnant women with diabetes or gestational diabetes need to be monitored closely for control of blood sugar during pregnancy, as uncontrolled high blood sugars result in a greater risk of congenital abnormalities and of high birth weight. Maternal high blood sugar levels also increase the probability that the baby will have too much insulin circulating at birth and will have recurrent hypoglycemia for the first few days. Any full-term baby weighing more than 4kg at birth should be considered at risk of being an infant of a diabetic mother, as many cases of gestational diabetes are not detected in low-resource settings. These babies should have blood sugar checked at least once in the first 6 hours of life and should have extra attention to support breastfeeding and correction of hypoglycemia if detected.

F- Neonatal jaundice

Jaundice is normal to some extent in the newborn. It often starts about the 3rd day and peaks about the 4th day. When jaundice starts before the 2nd day it is likely to become severe.

Severe jaundice may be an under-reported cause of neonatal mortality and is certainly an important cause of long-term disability in many developing countries. Neonatal jaundice is a special concern in areas such as South Asia and West Africa where the inherited red cell defect of glucose-6-phosphate dehydrogenase deficiency is common and a major cause of neonatal jaundice. Any baby with jaundice noted in the first 48 hours of life should be considered to have serious jaundice. These babies need to be assessed quickly and treated appropriately with phototherapy or exchange transfusion, if indicated.

Quality management of jaundice is difficult in the absence of investigations to detect the level of the bilirubin in the blood, but these investigations are unavailable in many settings. The lack of accurate testing may result in under treatment of jaundice or the overuse of phototherapy and unnecessary separation of mother and baby. The bilirubin level at which to start phototherapy or carry out an exchange transfusion depends on the gestation of the baby, time since birth, whether the baby is ill, and how fast the bilirubin is rising.

The major sign of neonatal jaundice is yellow skin, especially with high levels of bilirubin, starting within the first 2 days of life. This can be assessed by looking at the bridge of the nose or at the gums and gently pressing and letting go. Obvious yellow jaundice on the soles of the feet is more likely to be serious jaundice. Convulsions or jitteriness with jaundice may be a sign of the bilirubin crossing into the brain.

Laboratory investigations include:

- blood sugar level,
- bilirubin level,
- hemoglobin level,
- mother's and baby's blood groups (looking for ABO or Rhesus blood group incompatibility)
- blood cultures if signs suggest infection (i.e., fever more than 38°C or persistent hypothermia).
- screening test for glucose-6-phosphate dehydrogenase (G6PD) deficiency, especially if it is common locally.

Specific treatment include:

- Phototherapy if the bilirubin level is above the threshold for treatment given age and gestation. Phototherapy units can be made with fluorescent light bulbs in a wooden frame above a simple cot. If there is no other option for phototherapy, use direct sunlight on the baby's skin but not in the middle of the day.
- Exchange transfusion if the bilirubin level is above the threshold for treatment, given age, and gestation.
- Antibiotic therapy if infection is suspected.

Skilled provider should also pay special attention to supportive treatment and preventive measures:

- Regular breastfeeding to avoid hypoglycemia and dehydration, helping the mother to breastfeed the baby or to express and cup feed.
- If G6PD deficiency or ABO/Rhesus incompatibility is identified, take time to explain to it the parents.
- Breastfeed all babies early and support mothers to feed preterm babies who are at higher risk of jaundice and more likely to be damaged by jaundice.
- Identify before delivery if a woman is at risk of her baby developing serious jaundice and observe the baby in a center where phototherapy and management of jaundice is possible. Major risk factors are:

- history of a previous baby with severe jaundice; and
- mother with blood group Rhesus negative.
- If a baby does develop jaundice in the first 48 hours or high jaundice between day two and day six, identify early and refer quickly.
- Start phototherapy as soon as it is indicated (also stop as soon as it is not indicated).

G- Birth defects

Congenital abnormalities are estimated to account for only 11 percent of neonatal deaths globally. It has been estimated that between 50 and 70 percent of congenital abnormalities could be prevented with policy and environmental interventions. There are four major categories of congenital abnormalities that could be addressed at district, national, and international levels at present. These four were selected because they are severe, common in many settings, and intervention is currently feasible:

- Neural tube defects, which might be prevented very cheaply through folic acid supplements to pregnant woman and account for an estimated 300,000 cases globally;
- Severe iodine deficiency, which can be prevented by using of iodized salt instead of uniodized salt;
- Down's syndrome (trisomy 21) cases, which can be avoided by providing family planning services to older women who wish to use them; and
- Congenital rubella syndrome can be prevented by rubella immunization. There are an estimated 110,000 to 308,000 infants born with congenital rubella syndrome annually.

For babies born with abnormalities, one of the main priorities is support for the parents. Particular attention should be paid to informing the husband and relatives that the mother is not at fault. Often there is considerable stigma associated with the birth of a baby with abnormalities, and mothers are wrongly blamed.

Certain abnormalities, such as cleft lip and palate, may do very well with surgery if this procedure is available. Careful help with feeding is also important. Other abnormalities, such as neural tube defects and serious heart defects, are very complex to repair and likely need ongoing expert medical help. With neural tube defects, it is important to remember to advise the mother to take folic acid tablets regularly to avoid recurrence.

It is especially important to listen to the parents and support the mother, specifying that she is not to blame for the baby's abnormality. Preventive measures include:

- Community awareness about the risks of consanguineous marriages, especially first cousin marriage (Such marriages dramatically increase the risk of having children with autosomal recessive conditions, which are usually rare.)
- Preconception folic acid to prevent neural tube defects
- Rubella immunization, to prevent congenital rubella syndrome.
- Iodine supplementation of salt to prevent cretinism due to severe iodine deficiency during pregnancy
- Avoid known toxins, particularly irradiation and heavy metals.

- Inform women and health care personnel about the risk of taking medications during pregnancy without careful consideration of the consequences.

H- Severe bleeding in the neonate

Baby with obvious blood loss or history of blood loss (usually from cord or circumcision) and a very pale baby who is not jaundiced (may have bled into the abdomen or head especially if preterm) are considered as cases of severe neonatal bleeding.

Although severe bleeding in the neonate is not common, it is life threatening. The most common causes of severe bleeding are hemorrhagic disease of the newborn (due to Vitamin K deficiency) and sepsis with associated bleeding. Hemorrhagic disease of the newborn usually presents at two to five days of life with bleeding from the gut (vomiting blood or passing stool) or with excessive bleeding from circumcision wounds. The baby is apparently otherwise well, with no fever and no history of feeding poorly. The baby with sepsis has a fever (more than 38°C or less than 36.5°C) and may have small red dots under the skin (petechiae) and be jaundiced.

The management priority is to assess whether the baby requires a blood transfusion, and if so, to organize this intervention and give the transfusion as soon as possible. Hemoglobin levels for transfusion depend on several factors, including the age of the baby, the gestation of the baby, and whether there is active bleeding. Commonly chosen levels for the first week of life are 12 g/dL for term babies and 15 g/dL for preterm babies. Even when the hemoglobin or packed cell volume seems to be well above the transfusion level, if the baby is actively bleeding, blood should be organized for transfusion. If no fresh frozen plasma is available to stop the bleeding in a baby with hemorrhagic disease of the newborn, screened fresh whole blood can be used instead. All babies with active bleeding should be given Vitamin K intravenously (not intramuscularly as this can cause an intramuscular bleed).

Laboratory investigations include hemoglobin or packed cell volume, blood group and mother's blood group (always cross-match neonatal transfusions on the mother as well as the baby because maternal antibodies may be circulating in the baby and cause a transfusion reaction), and blood cultures if neonatal sepsis is suspected.

Specific treatment procedures include:

- If a term baby's hemoglobin is less than 12g/dL or above this but the baby is actively bleeding, transfuse the baby with fresh whole blood at 20 mL per kg body weight. For a pre-term baby, transfuse if the Hb is less than 15g/dL.
- Give IV Vitamin K 2mg daily for 3 days.

Preventive measures include injection of Vitamin K 0.5 mg intra-muscular to all LBW babies and early identification and treatment of severe sepsis.

CHAPTER 5 – MATERNAL CARE WITH AN IMPACT ON NEWBORN HEALTH

1 – Pre-Pregnancy Health

The health and behaviors of women before they become pregnant are an important foundation for improving outcomes for women and babies. Many of the interventions for pre-pregnancy health may not have a short-term obvious impact on newborn health outcomes, such as reduced rates of neonatal mortality or LBW rate. However, these interventions may improve newborn and maternal survival and health in the long-term as well as reduce the gap in the status and education of women and the under-nutrition of female children.

Main components of pre-pregnancy care with an impact on newborn health include:

1. Family planning
 - Delay age at first pregnancy (more than 18 years of age).
 - Encourage good spacing between pregnancies (more than 24 months).
2. Preconception nutrition
 - Promote good nutritional status (pre-pregnancy weight more than 41 kg).
 - Ensure that key micronutrients are replete, especially folic acid and iron, one tablet of Ferrous Sulfate + Folic Acid (60+400) one–two times per day..
3. Infection prevention and treatment among women of reproductive age
 - Prevent HIV and STIs.
 - Identify and treat STIs.
 - Immunize against relevant diseases, especially tetanus.
4. Woman's status and education
 - Increase female literacy rate.
 - Enable women to participate in household decision-making.
 - Improve women's access to financial resources.
 - Address violence against women.
 - Improve nutrition for girls and women

2 – Care During Pregnancy

Care during pregnancy includes the care of the woman and her fetus both in the home and community and in the formal health care sector, particularly at the antenatal clinic. Although most pregnancies are “normal” where mothers and babies survive without complications, any woman or newborn can develop complications. Appropriate care during pregnancy provides individuals and communities with information and an enabling environment to promote healthy choices.

Main components of care during pregnancy with an impact on newborn health include:

1. Provision of antenatal care
 - Increase coverage of antenatal care services.
 - Improve the quality of antenatal care.
 - Rapidly recognize and manage severe hypertension or pre-eclampsia.

- Identify and manage complications and major risks at delivery (e.g., multiple birth, malpresentation).
- 2. Improved nutrition in pregnant women
 - Promote iron and folate supplementation for all pregnant women.
 - Provide targeted protein-energy supplementation as appropriate.
- 3. Address anemia in pregnancy
 - Prevent anemia with good diet, iron and folate supplementation and presumptive treatment of malaria.
 - Identify and treat severe and moderate anemia.
- 4. Prevention and treatment of infections in pregnant women
 - Identify and treat STIs, especially syphilis, gonorrhea, and HIV/AIDS.
 - Institute prevention of malaria in endemic areas.
 - Ensure tetanus toxoid immunization coverage of all pregnant women.
- 5. Promotion of birth planning
 - Educate women/communities about danger signs for the mother and newborn.
 - Enable women to choose a skilled provider and to ensure clean materials for delivery.
 - Encourage mothers, fathers, and families to prepare for potential complications during delivery or in the newborn period, including referral.
 - Address transport difficulties with use of community participatory methods.
 - Help the mother and family prepare for care of the newborn, especially regarding early and exclusive breastfeeding and avoiding harmful practices.

3 – Care During Delivery

The care during delivery period is critical for mother and baby because many deaths (or initiation of the cause of later deaths) occur then. Improved care during labor and delivery could potentially reduce maternal mortality by 50 to 80 percent and perinatal mortality by 30 to 40 percent.

Main components of care during delivery with an impact on newborn health include:

1. Skilled Attendant at Birth
 - Monitor labor carefully.
 - Ensure a clean delivery.
 - Provide early recognition and action for danger signs for mother and newborn, including facilitating access to emergency care, if required.
 - Carry out basic newborn resuscitation, if required.
2. Emergency Obstetric Care
 - Provide early recognition of danger signs.
 - Facilitate timely access to emergency obstetric care services.
 - Provide quality services.
 - Use standard protocols.
 - Train and supervise skilled staff that can perform cesarean delivery.
 - Sustain supply of drugs and equipment.
 - Sustain safe blood bank supply.

4 – Postpartum Care of the Mother

Postpartum care of the mother is essential to reduce maternal deaths. However, it also clearly affects the newborn because the mother's ongoing health and survival are crucial for the baby's. The same skilled birth attendant who is responsible for postpartum care of the mother will also be responsible for assessing the progress of the stable newborn during the first week. Integration of postpartum and newborn care in this way benefits both mother and newborn. At each postpartum visit, the primary focus should be assessing the condition of the mother (as well as the newborn) for danger signs, such as bleeding, infection, and breastfeeding problems. It is important to watch for breast engorgement to reduce the risk of developing breast abscesses. For many women who have just delivered, especially for those with their first baby, one of the most valuable inputs of postpartum care is the support and encouragement in basic care for their newborn, especially for exclusive breastfeeding.

Main components of care following delivery with an impact on newborn health include:

1. Contact with a skilled service provider
 - Timing of routine care
 - o Monitor mothers/newborn for at least the first 6 hours (preferably 24 hours) after delivery.
 - o Schedule visits at 6 days and 4-6 weeks.
 - Content of care
 - o Provide support for mother and family, especially for breastfeeding.
 - o Provide early identification of complications and referral.
 - o Give Vitamin A, 200,000 IU, for the mother.
 - o Reinforce counseling on family planning and newborn care.
 - o Immunize the baby and advise the mother on newborn care.
2. Reduce delays in access to emergency care
 - Educate women, households, and communities about early recognition of danger signs.
 - Provide timely decision-making for referral.
 - Provide timely transportation.
 - Provide quality care, including:
 - o Standard protocols;
 - o Skilled staff;
 - o Sustainable supplies and equipment; and
 - o Safe blood supply.

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ANNEX 1 – EXCLUSIVE BREAST-FEEDING

Definition and benefits

The best way to feed a young infant is to breastfeed exclusively. Exclusive breastfeeding means that the infant takes only breast-milk, and no additional food, water, or other fluids. (Medicines and vitamins are exceptions.)

Human milk is the best available milk for the human infant as it is uniquely adapted to his/her needs. It is already available at the proper temperature, provides the necessary nutrients, requires no time for preparation and is free. It is free of contamination, potentially life saving, does not cause allergy or intolerance, provide immunity, and enhances the immune system. It promotes sensory and cognitive development and has positive psychological advantages for both mother and infant.

Counseling

Exclusive breastfeeding gives a young infant the best nutrition and protection from disease possible. If mothers understand that exclusive breastfeeding gives the best chances of good growth and development, they may be more willing to breastfeed. They may be motivated to breastfeed to give their infants a good start in spite of the social or personal reasons that make exclusive breastfeeding difficult or undesirable.

Exclusive breastfeeding for 6 months is the optimal way of feeding infants. Thereafter infants should receive complementary feeding with continued breastfeeding up to 2 years of age or beyond. To enable mothers to establish and sustain exclusive breastfeeding for 6 months, the recommendation is to:

- Initiation of breastfeeding within the first hour of life
- Exclusive breastfeeding – that is the infant only receives breast-milk without any additional food or drink, not even water.
- Breastfeeding on demand – that is as often as the child wants, day and night.
- No use of bottles, teats or pacifiers.
- Start adequately and timely complementary feeding at 6 months

Therefore the young infant should be breastfed as often and for as long as the infant wants, day and night. This could be 8 or more times in 24 hours.

While breastfeeding is a natural act, it is also a learned behaviour. Mothers and other caregivers require active support for establishing and sustaining appropriate breastfeeding practices.

Ten steps to successful breastfeeding

Each facility that provides maternity and newborn care is encouraged to adopt the Baby Friendly 10 principles for encouraging breast feeding to promote maternal and newborn health, which include:

1. *Have a written breastfeeding policy that is routinely communicated to all health care staff:*

The health facility should have a written breastfeeding policy that addresses all 10 steps and protects breastfeeding. The policy document should be available to all staff so that those who take care of mothers and babies can refer to it. It should be visibly posted in all areas of the health care facility, which serve mothers, infants, and/or children and should be displayed in the language(s) most commonly understood by patients and staff.

2. *Train all health care staff in skills necessary to implement this policy:*

All health care staff that have any contact with mothers, infants, and/or children must receive instruction on the implementation of the breastfeeding policy. Training in breastfeeding and lactation management should be given to various types of staff including new employees; it should be at least 18 hours in total with a minimum of 3 hours of supervised clinical experience and cover at least 8 steps.

3. *Inform all pregnant women about the benefits and management of breastfeeding:*

In all antenatal care services, breastfeeding counseling should be given to all pregnant women using those services. The antenatal discussion should cover the importance of exclusive breastfeeding for the first 6 months, the benefits of breastfeeding, and basic breastfeeding management. Pregnant women of 32 weeks or more gestation should confirm that the benefits of breastfeeding have been discussed with them, including at least two of the following benefits: nutritional, protective, bonding, and health benefits to the mother; and that they have received no group education on the use of infant formula. They should be able to describe at least two of the following breastfeeding management topics: importance of rooming-in, importance of feeding on demand, how to assure enough milk, and positioning and attachment.

4. *Show mothers how to breastfeed, and how to maintain lactation even if they should be separated from their infants:*

Nursing staff should offer further assistance with breastfeeding within six hours of delivery and mothers should be shown how to express their milk or given written information on expression and/or advised where they could get help, should they need it. Mothers with babies in special care should be helped to initiate and maintain lactation by frequent expression of breast milk. Staff should teach mothers positioning/attachment and techniques for manual expression of breast milk.

5. *Help mothers initiate breastfeeding within a half-hour of birth:*

Mothers in the maternity ward who have had normal vaginal deliveries should confirm that within a half-hour of birth they were given their babies to hold with skin contact, for at least 30 minutes, and offered help by a staff member to initiate breastfeeding. At least 50% of mothers who have had caesarean deliveries should confirm that within a half-hour of being able to respond, they were given their babies to hold with skin contact.

6. *Give newborn infants no food or drink other than breast milk, unless medically indicated:*

For any breastfeeding babies being given food or drink other than breast milk there should be acceptable medical reasons. No promotion for infant foods or drinks other than breast milk should be displayed or distributed to mothers, staff, or the facility.

7. *Practice rooming-in and allow mothers and infants to remain together, 24 hours a day:*

Mothers with normal babies (including those born by caesarean section) should stay with them in the same room day and night, except for periods of up to an hour for hospital procedures, from the time they come to their room after delivery (or from when they were able to respond to their babies in the case of caesareans). It should start no later than one hour after normal vaginal deliveries. Normal postpartum mothers should have their babies with them or in cots by their bedside unless separation is indicated.

8. *Encourage breastfeeding on demand:*

Mothers of normal babies (including caesareans) who are breastfeeding should have no restrictions placed on the frequency or length of their babies' breastfeeds. They should be advised to breastfeed their babies whenever they are hungry or as often as the baby wants and they should wake their babies for breastfeeding if the babies sleep too long or the mother's breasts are overfull

9. *Give no artificial teats or pacifiers (also called dummies or soothers) to breastfeeding infants:*

Infants should not be fed using bottles with artificial teats (nipples) nor allowed to suck on pacifiers.

10. *Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the hospital or clinic:*

Mothers' breastfeeding should be explored for their plans for infant feeding after discharge. They should also be able to describe one thing that has been recommended to ensure that they will be linked to a breastfeeding support group (if adequate support is not available in their own families) or report that the health facility will provide follow-up support on breastfeeding if needed.

The skilled provider should be aware of any breastfeeding support groups in the local area and, if there are any, describe a way mothers are referred to them. Alternatively, she or he should be able to describe a system of follow-up support for all breastfeeding mothers after they are discharged (early postnatal or lactation clinic checkup, home visit, and the like).

Techniques to apply appropriate breast-feeding practices

Good positioning:

At feeding, the infant should be dry neither cold nor too warm. Held in a comfortable position with the mother also at ease. The baby should be supported with the arm

supporting his neck and hand supporting the trunk, and the face facing the mother's breast. Ensure that the child breathing is not obstructed.

Good attachment:

The four signs of good attachment are:

- Chin touching breast (or very close)
- Mouth wide open
- Lower lip turned outward
- More areola visible above than below the mouth

If all of these four signs are present, the infant has *good attachment*.

If attachment is not good, you may see:

- Chin not touching breast
- Mouth not wide open, lips pushed forward
- Lower lip turned in, or
- More areola (or equal amount) visible below infant's mouth than above it

Suckling effectively:

The infant is suckling effectively if he suckles with slow deep sucks and sometimes pauses. It is possible to see or hear the infant swallowing. By observing how the breastfeed finishes, signs that the infant is satisfied can be checked. If satisfied, the infant releases the breast spontaneously (that is, the mother does not cause the infant to stop breastfeeding in any way). The infant appears relaxed, sleepy, and loses interest in the breast.

Wrong beliefs about breastfeeding:

Service providers should advise mothers about the local myths and wrong beliefs about breastfeeding. In particular, they should advise mothers on:

- Continuing breastfeed when the baby has diarrhoea
- Not stopping breastfeeding suddenly when women become pregnant
- Explaining that exclusive breastfeeding provides the best benefits (i.e. no other fluids or foods except breast milk)
- Feeding babies with the first fluid from the breast (colostrum) that is especially good for the baby and should be given to the baby while waiting for the milk to come in.

Difficult breastfeeding

The mother may mention that breastfeeding is uncomfortable for her, or that her child seems to have difficulty breastfeeding. If so, breast-feeding should be assessed. The infant's positioning and attachment may need to be improved.

Use of feeding bottle

Feeding bottles should not be used. They are often dirty, and germs easily grow in them. Fluids tend to be left in them and soon become spoiled or sour. The child may drink the spoiled fluid and become ill. The sucking action is different from breastfeeding. Also, sucking on a bottle may interfere with the child's desire to breastfeed, as the baby takes less from the breast and less breast milk is then produced.

Complementary feeding

Complementary feeding is defined as the process starting when breast milk alone is no longer sufficient to meet the nutritional requirements of infants, and therefore other foods and liquids are needed, along with breast milk. The target age range for complementary feeding is 6 to 24 months of age, even though breastfeeding may continue beyond two years. Chopped foods are appropriate at this age, and care should be taken to prepare food that is appropriate for the child's level of tooth development.

When breast-milk is no longer enough to meet the nutritional needs of the infant, complementary foods should be added to the diet of the child. The transition from exclusive breastfeeding to family foods, referred to as complementary feeding, typically covers the period from 6 to 24 months of age, and is a very vulnerable period. It is the time when malnutrition starts in many infants.

Complementary feeding should be:

- *Timely*, meaning that all infants should start receiving foods in addition to breast-milk from 6 months onwards;
- *Adequate*, meaning that the nutritional value of complementary foods should parallel at least that of breast-milk;
- *Safe*, meaning that foods should be prepared and given in a hygienic manner and measures are taken to minimize the risk of contamination with pathogens; and
- *Appropriate*, meaning that foods are of appropriate texture and given in sufficient quantity.

Duration of exclusive breastfeeding and introduction of complementary foods

Skilled provider should advise mothers about the following points:

- Practice exclusive breastfeeding from birth to 6 months of age, and introduce complementary foods at 6 months of age (180 days) while continuing to breastfeed.
- Continue frequent, on-demand breastfeeding until 2 years of age or beyond.
- Practice responsive feeding, applying the principles of psychosocial care.

Specifically:

- o Feed infants directly and assist older children when they feed themselves, being sensitive to their hunger and satiety cues;
- o Feed slowly and patiently, and encourage children to eat, but do not force them;
- o If children refuse many foods, try with different food combinations, tastes, textures and methods of encouragement;

- Minimize distractions during meals if the child loses interest easily;
- Remember that feeding times are periods of learning and love, talk to children during feeding, with eye-to-eye contact.
- Practice good hygiene and proper food handling by:
 - Washing caregivers' and children's hands before food preparation and eating,
 - Storing foods safely and serving foods immediately after preparation,
 - Using clean utensils to prepare and serve food,
 - Using clean cups and bowls when feeding children, and
 - Avoiding the use of feeding bottles, which are difficult to keep clean
- Start at six months of age with small amounts of food and increase the quantity, as the child gets older, while maintaining frequent breastfeeding. The energy needs from complementary foods for infants with "average" breast milk intake in developing countries are approximately 200 kcal per day at 6-8 months of age, 300 kcal per day at 9-11 months of age, and 550 kcal per day at 12-23 months of age.
- Gradually increase food consistency and variety, as the infant gets older, adapting to the infant's requirements and abilities. Infants can eat pureed, mashed, and semi-solid foods beginning at six months. By 8 months most infants can also eat "finger foods" (snacks that can be eaten by children alone). By 12 months, most children can eat the same types of foods as consumed by the rest of the family (keeping in mind the need for nutrient-dense foods). Avoid foods that may cause choking (i.e., items that have a shape and/or consistency that may cause them to become lodged in the trachea, such as nuts, grapes, raw carrots)
- Increase the number of times that the child is fed complementary foods, as he/she gets older. The appropriate number of feedings depends on the energy density of the local goods and the usual amounts consumed at each feeding. For the average healthy breastfed infant, meals of complementary foods should be provided 2-3 times per day at 6-8 months of age and 3-4 times per day at 9-11 and 12-24 months of age, with additional nutritious snacks (such as a piece of fruit or bread or chapatti) offered 1-2 times per day, as desired. Snacks are defined as foods eaten between meals-usually self-fed, convenient and easy to prepare. If energy density or amount of food per meal is low, or the child is no longer breastfed, more frequent meals may be required.
- Feed a variety of foods to ensure that nutrient needs are met. Meat, poultry, fish, or eggs should be eaten daily, or as often as possible. Vegetarian diets cannot meet nutrient needs at this age unless nutrient supplements or fortified products are used. Vitamin A-rich fruits and vegetables should be eaten daily, such as liver, carrots, and spinach. Provide diets with adequate fat content. Avoid giving drinks with low nutrient value, such as tea, coffee, and sugary drinks such as soda. Limit the amount of juice offered so as to avoid displacing more nutrient rich foods.
- Use fortified complementary foods or vitamin-mineral supplements for the infant, as needed. In some populations, breastfeeding mothers may also need vitamin-mineral supplements or fortified products, both for their own health and to ensure normal concentrations of certain nutrients (particularly vitamins) in their breast milk. [Such products may also be beneficial for pre-pregnant and pregnant women as well].
- Increase fluid intake during illness, including more frequent breastfeeding, and encourage the older infant to eat small frequent meals of soft, varied, appetizing, and

favourite foods. After illness, give food more often than usual and encourage the child to eat more.

The adequacy of complementary feeding (adequacy in short for timely, adequate, safe, and appropriate) not only depends on the availability of a variety of foods in the household, but also on the feeding practices of caregivers.

Active feeding

Feeding young infants requires active care and stimulation, where the caregiver is responsive to the child clues for hunger and also encourages the child to eat. This is also referred to as *active or responsive* feeding.

Young children often need to be encouraged and assisted to eat. This is especially true if a child has very low weight. If a young child is left to feed himself/herself, or if he/she has to compete with siblings for food, he/she may not get enough to eat.

Feeding during illness

The child may be eating much less, or eating different foods during illness. Children often lose their appetite during illness. However, they should still be encouraged to eat the types of food recommended for their age, as often as recommended, even if they do not eat much. They should be offered their favorite nutritious foods, if possible, to encourage eating.

ANNEX 2 – BASIC NEWBORN RESUSCITATION

Introduction

Several important things happen to a baby at birth to enable it to make the transition to extra-uterine life. Changes take place in the lungs to allow breathing, and changes in the heart and circulatory system switch off circulation through the placenta and redirect it through the lungs.

In most babies these changes occur smoothly; the babies start breathing as soon as they are delivered, within a minute of birth at the latest, and they adapt within just a few minutes. All they need is a clean and warm welcome, vigilant observation, to be born in a warm room, to be dried immediately, to be observed for breathing, and to be given to the mother for warmth and breast-feeding. The newborn's cry at birth – one of the most eagerly anticipated events – is commonly considered a cry of health. Studies have shown that a vigorous cry is an important indicator of the health of the newborn. Other signs of good health at birth are pink skin, good muscular tonus, and good reactions. The heart rate in a healthy baby is always normal, i.e. above 100 per minute.

For most infants nothing more is needed and nothing further is recommended. The mother is the best source of warmth, affection, food, and protection from infection, and she is the best observer of the newborn in the days to come.

In a small proportion of newborns (3-5%) the changes do not occur smoothly and the newborns do not start breathing immediately and spontaneously. They have what is called birth asphyxia and they need assistance to initiate breathing. In other words they need resuscitation.

Birth asphyxia is defined simply as the failure to initiate and sustain breathing at birth. According to WHO estimates, around 3% of approximately 120 million infants born every year in developing countries develop birth asphyxia requiring resuscitation. It is estimated that some 900,000 of these newborns die each year.

In most circumstances, it is not possible to tell with certainty how severe birth asphyxia is by clinical methods. The concept of primary and secondary apnea is often used in describing what goes wrong but it is not particularly useful in determining the severity of asphyxia and guiding resuscitation. If the newborn that is not breathing is also limp, asphyxia is probably severe. However, resuscitation can always be started in the same way.

The incidence of birth asphyxia is higher in developing countries than in developed because of a higher prevalence of risk factors, namely:

- women are in poor health when they become pregnant;
- the incidence of pregnancy and delivery complications in these women is high;
- care during labour and delivery is often inadequate or nonexistent; and
- about 10% of infants are estimated to be born preterm.

Thus, resuscitation of newborns is more often needed in developing countries than in developed. However, most newborns do not at present receive adequate care because most birth attendants do not have the necessary knowledge, skills and equipment to help them. Some traditional practices are not only ineffective in reviving depressed newborns but are also harmful to them.

The common worry of health professionals and parents is the permanent brain damage that birth asphyxia can cause and the common aim is to reduce the number of newborns affected. Improving women's health and health care will reduce the risk factors and decrease the number of newborns needing resuscitation. However, as there is no single cause of poor maternal health there is no single intervention that will improve it. Reducing the incidence of birth asphyxia will therefore take time.

Nevertheless, there is one single intervention for dealing with asphyxia when it occurs: resuscitation. The need for resuscitation can sometimes be predicted though very often it cannot. Therefore every birth attendant must be both skilled and equipped to resuscitate newborns, who do not start breathing spontaneously. The approach should be feasible even where resources are limited.

Resuscitation protocol

Effective basic resuscitation will revive more than three-quarters of newborns with birth asphyxia. It will not delay deaths or increase the number of disabled children if the steps below are followed.

A- Anticipate

Be prepared for every birth by having the skill to resuscitate and by knowing the institution's policy on resuscitation. Review the risk factors for birth asphyxia, which include:

- maternal illnesses such as sexually transmitted diseases
- malaria
- eclampsia (including the treatment)
- bleeding before or during labour
- fever during labour
- maternal sedation, analgesia, or anesthesia
- prolonged rupture of membranes
- breech or other abnormal presentation
- prolonged labour
- difficult or traumatic delivery
- prolapsed cord
- meconium-stained amniotic fluid
- preterm birth
- post-term birth
- multiple birth
- congenital anomaly

However, remember that the risk factors are poor predictors of birth asphyxia. Up to half of newborns who require resuscitation have no identifiable risk factors before birth. Therefore it is not enough to be prepared only in cases where one or more risk factors are present.

Get help if necessary and if possible. Clearly decide on the responsibilities of each health care provider during resuscitation.

Remember that the mother is also at greater risk of complications. Her greatest immediate danger is bleeding.

Prepare for birth. Make sure that the following are available for the newborn: two clean (warm) towels for thermal protection (drying and wrapping/covering the newborn to prevent heat loss) and a draught-free delivery room with a temperature of at least 25 °C.

For cleanliness, use water, soap, gloves, a clean surface for the newborn, and a clean delivery kit for cord care. For resuscitation, a self-inflating bag (newborn size), two infant masks (for normal and small newborn), a suction device (mucus extractor), a radiant heater (if available), warm towels, a blanket, and a clock are needed.

Always have an additional set of equipment in reserve for multiple births or in case of failure of the first set.

B- Immediate care at birth

Wash hands with water and soap when preparing for the birth. Use gloves. Deliver the newborn. Remember the time (hour and minute) of the birth.

Note that the newborn should be wrapped during the assessment, suction and ventilation to be protected from heat loss.

Lie the newborn on the mother's abdomen or other warm surface. Immediately dry the newborn with a clean (warm) towel. Remove the wet towel and wrap/cover the newborn, except for the face and upper chest, with a second dry towel. While drying make sure that the head is in a neutral position, neither too flexed nor too extended.

C- Assess breathing

If the newborn is crying, breathing is normal and no resuscitation is needed. Provide normal care.

If there is no cry, assess breathing: if the chest is rising symmetrically with frequency of more than 30 per minute, no immediate action is needed. If the newborn is not breathing or gasping, immediately start resuscitation. Occasional gasps are not considered breathing. If necessary, tie and cut the cord.

D- Resuscitate: act quickly and correctly

Inform the mother - explain to her quickly what the problem is and what you are going to do. Tell her to watch for vaginal bleeding - if she starts bleeding she should tell you.

1- Open the airway:

Position the newborn by moving it from the mother's abdomen to a dry, clean and, if possible, warm surface next to her. Put the baby on its back. Position the head so that it is slightly extended. A folded piece of cloth under the shoulders may help accomplish this.

Clear the airway by suctioning first the mouth and then the nose. Be especially thorough if there is blood or meconium in the baby's mouth and/or nose. The newborn may start breathing because suctioning provides additional stimulation. If so, no immediate further action is needed. If there is still no breathing, start ventilating.

2- Ventilate:

Select the appropriate mask. Reposition the newborn and make sure that the neck is slightly extended. Place the mask on the newborn's face, so that it covers the chin, mouth, and nose. Form a seal between the mask and the infant's face. Squeeze the bag with two fingers only or with the whole hand, depending on the size of the bag and manufacturer's instructions. Check the seal by ventilating two or three times and observing for the rise of the chest.

If the chest is not rising, the most probable obstacles are inappropriate head position, poor seal between the mask and the face, insufficient ventilation pressure or mucus, or blood or meconium in the airway. The corrective steps are repositioning of the newborn's head, repositioning of the face mask, increased ventilation pressure by pressing the bag with the whole hand; exactly how much to press will depend on the size of the bag and further suctioning of the upper airway. The first ventilations require higher inflation pressure than later ventilation.

Once a seal is ensured and chest movement is present, ventilate the newborn with a frequency of around 40 breaths per minute, the range being 30-60 (better more than less).

After effectively ventilating for about 1 minute, stop briefly but do not remove the mask and bag and look for spontaneous breathing. If there is none or it is weak, continue ventilating until spontaneous cry/breathing begins. Observe the chest for an easy rise and fall. Hold the head in the correct position to keep the airway open during ventilation and keep a tight seal between the mask and the face. Continue ventilating. If the chest is rising, ventilation pressure is most probably adequate.

If the newborn starts crying, stop ventilating but do not leave the newborn. Observe breathing when it stops crying; if breathing is normal (i.e. 30-60 per minute) and there is no chest or costal indrawing and no grunting for one minute, no further resuscitation is needed. Tie the cord and cut it (if not done earlier). Put the newborn skin-to-skin on the mother's chest to prevent heat loss.

If breathing is slow (frequency of breathing is less than 30 per minute), or if there is severe indrawing, continue ventilating and ask for arrangement for referral if possible. A newborn will benefit from transfer only if it is properly ventilated and kept warm during transport. Two people are needed for the transport of the newborn that requires ventilation: one will ventilate while the other will assist with other tasks. If possible, transfer for the mother should be arranged.

If there is no gasping or breathing at all after 20 minutes of ventilation, stop ventilating. If there was gasping but no spontaneous breathing after 30 minutes of ventilation, stop ventilating.

After resuscitation check the mother, ensure that she is not bleeding or having convulsions. Explain to her what you did and what happened because of your action.

Practices that are not beneficial

There are many practices, both traditional and modern, that are either harmful or of unproven benefit. These include:

- routine aspiration (suction) of the baby's mouth and nose as soon as the head is born, or later when the amniotic fluid has been clear;
- routine aspiration (suction) of the baby's stomach at birth;
- stimulation of the newborn by slapping or by flicking the soles of its feet;
- postural drainage and slapping the back;
- squeezing the chest to remove secretions from the airway;
- routine giving of sodium bicarbonate to newborns who are not breathing; and
- intubation by an unskilled person.

They should be replaced by the simple method of newborn resuscitation described in this document.

Almost none of the traditional resuscitation practices are beneficial, and some are harmful. Slapping the newborn, soaking it in cold water, sprinkling it with water, stimulating the anus, using onion juice, cooking the placenta, and milking the cord are a few examples of ineffective and harmful practices still used.

Not all modern practices are beneficial either. Some derive from traditional practices, while others were introduced in good faith by health professionals but without good evidence that they would be beneficial. Modern practices include:

- Tactile stimulation – Various methods have been used to stimulate newborns that do not breathe immediately after birth. Holding the newborn's head down by holding the baby by the legs has been proved dangerous. Slapping and flicking of the soles, although effective in the experience of many, may initiate breathing only in mildly depressed newborns. Thorough drying provides enough stimulus for breathing, and also protects against hypothermia. Since it is difficult to predict the severity of birth asphyxia by clinical methods alone, additional stimulation is

a waste of time and is not recommended. Instead, assisted ventilation should be started immediately.

- Routine aspiration of upper airway – There is no evidence that routine aspiration of the newborn's mouth and nose as soon as the head is born or later is of any benefit if the amniotic fluid has been clear. The procedure is therefore unnecessary in newborns who start crying or breathing immediately after birth. Routine suctioning is associated with hazards such as cardiac arrhythmia.
- Routine gastric suctioning – There is also no justification for routine gastric suctioning at birth.
- Postural drainage – Postural drainage and slapping the back are not effective and should not be practiced. Squeezing the chest to remove secretions from the airway is also dangerous as it may cause fracture, lung injury, respiratory distress and death.
- Sodium bicarbonate – Sodium bicarbonate is not recommended in the immediate postnatal period if there is no documented metabolic acidosis. It should therefore *not be given routinely* to newborns who are not breathing.

Care after successful resuscitation

Do not separate the mother and the newborn. Leave the newborn skin-to-skin with the mother.

After taking care of the mother's needs, examine the newborn. Measure the newborn's body temperature, count breaths, observe for indrawing and grunting, and observe for malformations, birth injury, or other danger signs.

Encourage breast-feeding within one hour of birth. The newborn that needs resuscitation is at higher risk of developing hypoglycaemia. Observe suckling; good suckling is a sign of good recovery.

If the newborn temperature is less than 36 °C or the skin feels cold, the baby has hypothermia. Skin-to-skin contact will re-warm the newborn. For re-warming cover the newborn with an additional cloth or blanket. The mother will observe breathing and movement. Check the body temperature every hour until it is normal. Small babies must be observed more carefully since danger signs indicating serious problems are more common and more subtle.

If the newborn has difficulty breathing or there are other danger signs, organize referral for special care. Explain the findings of the examination to the mother. Refer with the mother if possible.

Record the resuscitation and the problems, if any. Examine the newborn before discharge. Signs of the newborn's well being are normal body temperature, normal breathing, occasional cry, good suckling and movements. Discuss the procedure again with the parents: explain that, although the possibility of complications is low, there is a small probability that the newborn will have problems such as difficulty feeding or

convulsions in the first few days. Instruct them to take the newborn to the hospital if these problems occur.

Clean the equipment and prepare it for the next birth.

Apgar score

Taking an Apgar score is not a prerequisite for resuscitation. The need for resuscitation must be recognized before the end of the first minute of life which is when the first Apgar score is taken. The most important indicator that resuscitation is needed is failure to breathe after birth so, if the baby does not breathe, resuscitation must be started immediately.

Apgar scoring has been used as a systematic tool to assess and document the clinical status of the newborn at birth, or more precisely at 1 and 5 minutes of life. The newborn is examined for five signs: breathing, heart rate, muscle tone, reflex irritability, and color; as described in Table 7.

Table 7 Apgar scoring method

Sign	Score		
	0	1	2
Heart rate	Absent	Slow (<100 beats/min)	=>100 beats/min
Breathing	Absent	Slow, irregular	Good, crying
Muscle tone	Limp	Some flexion	Active motion
Reflex irritability	No response	Grimace	Cough, sneeze
Color	Blue or pale	Pink body with blue extremities	Completely pink

Source: WHO. Basic Newborn Resuscitation: A Practical Guide. WHO, Geneva, 1998.

Determining the Apgar score correctly requires good training. The score depends not only on the severity of birth asphyxia, but also on other factors such as drugs given to the mother, anesthetics, fetal infection, fetal anomalies, and prematurity.

Advanced resuscitation

A small proportion of infants fail to respond to ventilation with the bag and mask. This happens infrequently but, when it does, additional decisions must be made and actions taken.

Advanced procedures can be introduced in a health care institution if the following criteria are met:

- trained staff with the necessary equipment and supplies are available;
- at least two skilled persons are available to carry out the resuscitation;
- there are sufficient deliveries for the skill to be maintained; and

- the institution has the capacity to care for or to transfer newborns who suffer severe birth asphyxia since they are expected to have problems after being resuscitated.

Guidelines and training materials on advanced newborn resuscitation are available from universities and professional organizations. Below is a brief outline of the procedures.

Endotracheal intubation:

This has been shown to provide more effective ventilation in severely depressed/ill newborns. It is more convenient for prolonged resuscitation but is also a more complicated procedure that requires good training. Endotracheal intubation is needed only rarely and can be dangerous if performed by untrained staff. Potential hazards include cardiac arrhythmias, laryngospasms, and pulmonary artery vasospasm. Usually only newborns that are severely ill will require endotracheal intubation.

Tracheal suction by a skilled resuscitator has been shown to reduce morbidity among depressed infants born with meconium in the pharynx. However, it requires a highly experienced person to do it without causing damage. Despite its potential benefit, tracheal suction is not recommended unless the resuscitator is very skilled, because of the severe hazards associated with it (hypoxia and bradycardia).

Oxygen:

Additional oxygen is not necessary for basic resuscitation although it has been considered so by some practitioners. Oxygen is not available at all places and at all times. It is also expensive. Moreover, new evidence from a controlled trial shows that most newborns can be successfully resuscitated without additional oxygen. Research also suggests that high oxygen concentration may not be beneficial in most circumstances. However, when the newborn's color does not improve despite effective ventilation, oxygen should be given if available. An increased concentration of oxygen is needed for severe lung problems such as meconium aspiration and immature lung, or when the baby does not become pink despite adequate ventilation.

Chest compressions:

Chest compressions are not recommended for basic newborn resuscitation. There is no need to assess the heartbeat before starting ventilation. Slow heartbeat is usually caused by lack of oxygen, and in most newborns the heart rate will improve as soon as effective ventilation is established. Effective ventilation should be established before chest compressions are started.

It has been shown that it is more difficult to assess the heart rate reliably in newborns than in older children, especially by feeling the beat (pulse) through the chest wall or over big arteries. Therefore a person without experience is highly likely to make a mistake in assessing the heart rate in a newborn. Assessing the heart rate without the necessary skill and equipment is a waste of time, and a wrongly assessed pulse may lead to wrong decisions.

However, in newborns with persistent bradycardia (heart rate more than 80 per minute and falling) despite adequate ventilation, chest compressions may be life-saving by ensuring adequate circulation. A higher mean arterial pressure was observed using the method in which the hands encircle the chest compared to the two-finger method of compressing the sternum. Two people are needed for effective chest compression and ventilation. Before the decision is taken that chest compressions are necessary, the heart rate must be assessed correctly.

Drugs:

Drugs are seldom needed to stimulate the heart, to increase tissue perfusion and to restore acid-base balance. They may be required in newborns who do not respond to adequate ventilation with 100% oxygen and chest compressions. Narcotic antagonists and plasma expanders have limited indications in newborn resuscitation.

Equipment and supplies

Basic newborn resuscitation requires a bag and a mask for ventilation, a mucus extractor for suctioning, a source of warmth for thermal protection, and a clock. It is important to choose quality equipment that will not fail when it is most needed. A resuscitation trolley is useful but is not absolutely necessary. In the operating theatre where caesarean sections are performed, a corner that is protected from draught and can be kept warm should be prepared for the immediate care of the newborn, including resuscitation when needed.

An institution should have at least two sets of equipment in case of multiple births, or for other births occurring at the same time, or in case one set does not function.

When to start resuscitating

There is a lot of concern that simple resuscitation only delays death or results in a severely disabled infant, thus draining scarce resources, especially when the newborn has a severe malformation, is extremely preterm or has extremely low birth weight, or is an apparently stillborn fetus.

There are no clear guidelines on when to start and when to stop newborn resuscitation. The most frequently asked questions are whether the baby will be damaged if it is resuscitated and survives, and whether it will be a burden for the family and the society.

Whenever a doubt exists, a liberal policy of newborn resuscitation is recommended. In individual cases parents must be consulted as soon as possible, and their wishes should be respected. If it is unclear what to do, it is better to resuscitate since a mild disability or malformation (e.g. cleft lip) will be aggravated by brain damage if the newborn is not resuscitated properly but nevertheless survives.

Apparently stillborn fetus:

If after delivery the fetus does not breathe and shows no other evidence of life (such as beating of the heart, pulsation of the umbilical cord, definite movement of voluntary

muscles) or shows signs of maceration, it is considered stillborn. However, in a fresh stillborn newborn it is difficult to determine how long before birth the death occurred unless the fetal heartbeat has been checked frequently during the second phase of birth. The policy on when to initiate resuscitation will depend on the practice of monitoring fetal well being. If the fetal heartbeat was heard shortly before birth, resuscitation should begin.

Malformations:

If the newborn has a severe malformation that is lethal, resuscitation should not be attempted. A list of identifiable malformations that are incompatible with life is as follows:

- Severe hydrocephaly
- Anencephaly
- Holoprosencephaly
- 13 Trisomy syndrome
- 18 Trisomy syndrome
- Sirenomelia
- Short-limb dwarfism syndromes
- Multiple defects syndromes
- Renal agenesis (potter syndrome)

These malformations have either a lethal outcome, or vegetative survival, or the defect requires major corrective surgery. Most can be easily diagnosed at birth. Less severe malformations such as big omphalocele can be added to the list if there are no facilities for their correction and care. However, most malformations are not lethal. If the newborn with a malformation is not resuscitated correctly, it may survive with a double disability, i.e. the malformation and brain damage due to prolonged asphyxia.

Abnormalities that also cause serious difficulties for resuscitation, such as diaphragmatic hernia, hypoplastic lung, or cardiac defects, are not visible and therefore cannot be easily diagnosed at birth. They are rare (less than 1 in 1000 births). Such a malformation could be suspected if the condition of the newborn does not improve despite correct resuscitation procedure. However, the recommended procedure should not be changed.

Extremely low gestational age:

Viability of the newborn in terms of gestational age may differ according to local circumstances. Even with the best resources available, the rate of survival of newborns below 26 weeks of gestational age or 1000 g is low. However, it is difficult to base the decision to resuscitate on gestational age alone. The assessment is imprecise especially when time to carry out the evaluation is very limited.

When to stop resuscitating

The decision of when to stop resuscitation of newborns who fail to show signs of life at birth is a major dilemma for health professionals and parents.

There is no clear information as to the maximum duration of resuscitation that should be recommended. A newborn that does not start breathing after 20 minutes of adequate ventilation has probably suffered severe asphyxia. It will probably require intensive care if it survives. If such care is available, the ventilation could continue for 30 minutes while admission to the intensive care unit is being arranged. If such care is not available (that is the case in most circumstances) ventilation can be discontinued if there is no response (no spontaneous breathing) after 20 minutes of ventilation.

Failed resuscitation

Not every resuscitation will be successful in reviving the newborn. It is very important to inform parents fully about failed resuscitation, explaining to them in a way they can understand the circumstances and probable causes of failure. Details of failed resuscitation must be recorded thoroughly. Death must be reported as required by the authorities. Disposal of the body should be arranged according to the regulations and parents' wishes. Parents may need counseling to deal with the newborn's death. The circumstances of the failed resuscitation must be discussed and analyzed with the staff soon after the event. Any problems should trigger further investigation and proper action.

Special conditions

The recommendations on basic resuscitation are suited to most newborns who need it. Some situations need special consideration.

Caesarean section:

Resuscitation may be needed more often in newborns delivered by caesarean section because of the complications that made the procedure necessary and the drugs given to the mother for analgesia and anesthesia. It is very important to have a warm corner for the care and resuscitation of the newborn. A radiant heater is preferable. The cord is cut before initiating the resuscitation.

Preterm and/or low birth weight infant:

Resuscitation is also needed more often if the newborn is preterm and/or growth-retarded. The lower the gestational age, the more difficulties the newborn may have in starting breathing spontaneously. The principles of resuscitation are the same as for term infants, but preterm newborns often take longer than term infants to start breathing spontaneously and their breathing may be difficult, as shown by the chest and costal indrawing. These newborns are more likely to require referral to a special care unit.

Apnea after birth:

Breathing of preterm newborns may be irregular with frequent pauses that may last 20-30 seconds. Usually breathing resumes spontaneously. In rare cases a newborn stops breathing for a longer period, or does not resume breathing at all. Resuscitation is no different from resuscitation at birth:

- clear the airway;
- reassess breathing;

- position the head; and
- ventilate with positive pressure.

The same principles apply as for basic resuscitation at birth.

Infection is often a cause of apnea in a newborn. As soon as possible after resuscitation the newborn must be examined for the cause of apnea by a health care provider who is skilled in the care of sick newborns.

Mouth to mouth and mouth to nose breathing

Newborn resuscitation is always feasible, even in situations where no bag, mask or mucus extractor are available. Every birth attendant should be trained in mouth to mouth and mouth to nose ventilation in case there is no equipment or the equipment fails.

The principles are the same: anticipation, preparation, timely recognition, and quick and correct action by opening the airway and ventilation. In summary, the newborn should be dried first, wrapped in a dry cloth, and assessed for crying/breathing. If the newborn is not breathing, the airway is opened by positioning the head and ventilated by blowing air into the baby's airway and the effect assessed by observing the chest rise. If there is blood in the mouth or the amniotic fluid was meconium stained, the airway can be cleared by wiping the mouth with a dry cloth around the finger.

For ventilation, the resuscitator covers the newborn's nose and the mouth with her/his mouth and blows air at a frequency of around 40 breaths per minute. The amount of air blown into a newborn's lungs is much less than that needed for children or adults. During blowing the chest should be observed to see if it rises. The position of the newborn's head must be checked and corrected frequently since it is more difficult to hold it in the correct position during mouth to mouth-and-nose ventilation than when ventilating with the bag. Evaluation and duration of the ventilation are the same as when equipment is used.

This method requires as much training as the use of the bag and mask. Training should include practicing achieving the correct ventilation pressure, the frequency and assessment of ventilation, and keeping the head in the correct position.

Mouth to mouth and mouth to nose resuscitation in the newborn has some risk for the person resuscitating, though this has not been quantified. There is a risk of infection for both the newborn and the resuscitator, and the risk for the newborn of lung injury if the resuscitator blows too hard into its mouth. A piece of cloth can be put between the newborn's mouth and the resuscitator's mouth in an emergency and probably reduces the risk of some infections, though it is not sufficient to prevent HIV transmission.

ANNEX 3 – PREPARATION OF THE NEWBORN CARE SITE

Before safe and effective NBC services can be provided to newborns on a consistent basis, the care site itself must be adequately prepared. Whether the newborn is brought to a healthcare facility for care or receives care in her/his own home, it is the skilled provider's responsibility to ensure that:

- The newborn care area is adequately prepared,
- There is an emergency-response system in place, and
- Essential equipment and supplies are available and ready for use.

Newborn Care Area

The newborn care area is where assessment and care of the newborn takes place. Again, whether in a healthcare facility or the newborn's home, this area should meet the following basic requirements.

1. General Cleanliness and Order

- The area is warm (at least 25° C), clean, and free from clutter.
- Surfaces are wiped with chlorine solution (0.5%) before use.
- Essential supplies and equipment are available, easily accessible, and ready for use (i.e., clean, high-level disinfected, and/or sterile).
- Contaminated objects and waste from previous use (if in the healthcare facility) or activities of daily living (if in the home) have been removed or placed in the appropriate containers.
- Separate containers for soiled linens (to be laundered) and contaminated instruments (to be processed) are conveniently located.
- Separate containers for proper disposal of different kinds of waste products are conveniently located, including a:
 - o Container for general (non-medical, nontoxic) waste, such as paper, bottles, cans, etc.
 - o Covered container for medical waste, such as blood, bandages, etc.
 - o Puncture-proof container for sharps, such as needles, glass slides, etc.

2. Clean Water Supply

A supply of clean water is available. The water can come from a faucet, pump, or portable container with a tap, or it may be poured from a container or basin.

3. Light Source

- There is a reliable source of adequate light, which may be artificial or natural.
- Natural light, as from a window, may be adequate for a general physical examination.
- Artificial light sources, such as a lamp or torch (flashlight), may provide more intense light if needed for examining inside a newborn's mouth.

4. Furnishings

The newborn care area should have sufficient space for the mother/family to sit and should contain:

- A clean table or other surface on which the newborn could be resuscitated if necessary
- A comfortable seat for the woman and her companion (partner, friend, or family member)
- A stool or seat for the skilled provider
- A writing surface, such as desk, table, or clipboard

5. Privacy/Confidentiality

No one should be able to see or hear what is done or said while the baby is being examined and treated. The following measures can help the woman and family feel confident that their right to privacy is being respected.

- Close doors to the exam/treatment area while in use.
- Secure the curtains, making sure that they block any view of the care area.
- Speak in a low voice when discussing the newborn's history or present health status.
- In healthcare facilities, arrange for the waiting area to be at a distance from the care area.

Ideally, the client care area is a separate room with a door that closes, but this is not always feasible. Simple changes can make privacy and confidentiality possible, such as:

- Using curtains or dividers for visual privacy; and
- Limiting traffic of health care personnel and visitors into and through the area.

Emergency-Response System

All healthcare staff at a health site should be trained to recognize danger signs – which indicate that the newborn may be experiencing a life-threatening complication – and to respond in an agreed-upon fashion. Having an emergency-response system in place ensures that newborns that are experiencing problems are identified, stabilized, and treated as quickly as possible.

1. Identification and Initial Response

Skilled healthcare provider should be trained to recognize and respond to an emergency situation. Every newborn that is brought for care should undergo a quick check – that is, be questioned and observed immediately upon arrival to determine whether the newborn is experiencing a complication. If danger signs are identified, the person conducting the quick check should respond according to protocols. This may mean shouting for help and carrying the newborn to an area where he/she can receive immediate attention.

In caring for a newborn that presents with danger signs, the skilled provider should perform a rapid initial assessment to determine his/her degree of illness (if any) and the need for stabilization before proceeding.

2. Management or Referral

Once the newborn is in stable condition, the skilled provider should provide or facilitate appropriate care for both according to the provider/facility's level of competency/capacity and available resources, which may include:

- Providing appropriate care according to local protocols for diagnosis and management; or
- Referral to a specialist, higher level of care, or other supportive services for appropriate care.

If the newborn is referred to another facility, the provider should also facilitate this process, including:

- Obtaining, or assisting the family in obtaining, reliable transportation to the referral site;
- Arranging for appropriate care and support during transport;
- Sending complete documentation of the newborn's history and condition to the referral site, including all relevant findings and interventions; and
- Communicating with the referral site as needed to ensure continuity of care and appropriate follow-up of the newborn.

The baby should be kept with his/her mother throughout transport, preferably held in her arms. If the baby is low birth weight or has an unstable temperature, he/she should be kept in skin-to-skin contact with the mother. If it is not possible for the mother or other family member to accompany the baby, a healthcare worker should hold the baby in her/his arms during transport.

In the home setting, the quick check is the first action a skilled provider should take upon entering the home, just as it is the first action taken when a newborn arrives at a healthcare facility. If danger signs are found, appropriate action should be taken in proceeding to rapid initial assessment, stabilization (if needed), and treating or referring/transporting the newborn to the appropriate facility.

The newborn's complication readiness plan will specify arrangements previously made by the mother and family for complication readiness, including emergency transportation and funds, and decision-making. This plan will enable the provider and family members to respond appropriately and without delay – even in the home setting.

Essential Equipment and Supplies

Certain equipment, drugs, and supplies should be available for care of the newborn. A system for re-supply and maintenance of this equipment should be in place. Table 8 lists the essential equipment, drugs, and supplies needed to provide NBC services.

Table 8 Essential equipment, drugs, and supplies for essential NBC

<p><u>Client Care Area</u></p> <ul style="list-style-type: none">- Table covered with a washable surface- Washable surface for placing equipment- Cloths or blanket to cover the baby- Cloths or towels to use for drying baby after bathing- Curtains (if needed) for privacy- Light source- Clock (or watch)- Clean water supply- Kettle or other means to warm water for bathing baby- Soap- Clean towels for hand drying- Chlorine solution (0.5%)- Cloth or rag for cleaning- Receptacle for soiled linens- Separate containers for general and medical waste disposal and contaminated instruments- Puncture-proof container for sharps disposal <p><u>Examination</u></p> <ul style="list-style-type: none">- Utility gloves- Thermometer- Gloves (clean or high-level disinfected)- Gauze or clean swab of cloth for wiping baby's eyes, if needed- Hat or covering for baby's head- Baby weigh scale- Thermometer- Syringes and needles- Cotton wipes and alcohol	<p><u>Drugs/Vaccines</u></p> <ul style="list-style-type: none">- Silver nitrate 1% solution OR povidone-iodine 2.5% OR tetracycline 1% eye ointment- OPV- BCG- HBV vaccine- Vitamin K₁ <p><u>Records and Forms</u></p> <ul style="list-style-type: none">- Newborn care record- Referral form <p><u>Emergency Tray</u></p> <ul style="list-style-type: none">- Mucus extractor- Infant Ambu bag- Face masks size 0 and 1- Infant oxygen mask and tubing <p><u>Emergency Drugs</u></p> <ul style="list-style-type: none">- Ampicillin- Gentamycin- Benzathine penicillin
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Source: Kinzie, B. Gomez, P. Basic Maternal and Newborn Care, Section Four: Newborn Care. JHPIEGO, Baltimore, June 2003. (Draft)