



Newborn Health in Humanitarian Settings

FIELD GUIDE

INTERIM
VERSION



Save the Children®





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VERSION



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ACKNOWLEDGEMENTS



The *Newborn Health in Humanitarian Settings: Field Guide* is the result of inter-agency collaboration among representatives from the United Nations High Commissioner for Refugees (UNHCR), United Nations Population Fund (UNFPA), United Nations Children's Fund (UNICEF), the World Health Organization (WHO), the U.S. Centers for Disease Control and Prevention (CDC), International Rescue Committee (IRC), Save the Children, World Vision International, International Medical Corps (IMC), Médecins Sans Frontières (MSF), and Women's Refugee Commission (WRC).

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(UNICEF), Nicolas Peyraud (MSF), Paul Robinson (IMC), Severin Ritter Von Xylander (WHO), Marian Schilperoord, Lisa Thomas (WHO), Basia Tomczyk (CDC), Maria Tsolka (Save the Children), Stephen Wall (Save the Children), and Bina Valsangkar (Save the Children). Reviewers drew on their wealth of experience and their commitment to and knowledge about Reproductive, Maternal, Newborn, Child, and Adolescent Health (RMNCAH) in humanitarian settings to ensure the *Field Guide* is relevant and adherent to international standards and guidelines for newborn care.

Co-chairs of the newborn health in humanitarian settings working group: Ribka Amsalu (Save the Children), Heather Papowitz (UNICEF), Basia Tomczyk (CDC), and Sandra Krause (WRC).

This *Field Guide* is a companion to the *Inter-Agency Field Manual on Reproductive Health in Humanitarian Settings (2010)*, providing information related specifically to newborn care during the neonatal period (days 0-28 of life). It has been designed as an enhancement to national strategies and programs aimed at improving the lives of newborns and their mothers, and to strategies such as the *Every Newborn Action Plan* (ENAP).¹ We encourage its use in advocacy and strengthening efforts of existing country programs for newborn care, regardless of whether such programs were developed in response to humanitarian crises or as permanent systems during times of stability. Our ultimate aim is to improve the survival of newborns in humanitarian settings.

We welcome your feedback. Please send comments and suggestions to Heather Papowitz (hpapowitz@unicef.org) and Ribka Amsalu (ramsalu@savethechildren.org) for future revisions. Funding for this *Field Guide* was provided by Saving Newborn Lives/Save the Children, Save the Children Innovation Fund (IDEA) and UNICEF.

¹ WHO, UNICEF. *Every Newborn Action Plan*. Geneva, Switzerland: WHO; 2014. www.everynewborn.org/Documents/Every_Newborn_Action_Plan-ENGLISH_updated_July2014.pdf

ABBREVIATIONS

ACS	Antenatal Corticosteroids
ANC	Antenatal Care
ART	Antiretroviral Therapy
BCC	Behavior Change Communication
BEmOC	Basic Emergency Obstetric Care
CBR	Crude Birth Rate
CDC	U.S. Centers for Disease Control and Prevention
CEmOC	Comprehensive Emergency Obstetric Care
CHW	Community Health Worker
CHX	Chlorhexidine
CPR	Contraceptive Prevalence Rate
CPAP	Continuous Positive Airway Pressure
CSF	Cerebral Spinal Fluid
DRC	The Democratic Republic of Congo
ENC	Essential Newborn Care
GBS	Group B Streptococci
HBB	Helping Babies Breathe
HFA	Health Facility Assessment
HIV	Human Immunodeficiency Virus
IAFM	<i>Inter-Agency Field Manual on Reproductive Health in Humanitarian Settings</i>
ICCM	Integrated Community Case Management
IDP	Internally Displaced Person
IM	Intramuscular
IMCI	Integrated Management of Childhood Illnesses

IPTp	Intermittent Preventive Treatment of Malaria during pregnancy
ITN	Insecticide Treated Net
IV	Intravenous
KMC	Kangaroo Mother Care
LBW	Low Birth Weight
MISP	Minimum Initial Service Package for Reproductive Health in Crisis Situations
MMR	Maternal Mortality Ratio
M&E	Monitoring and Evaluation
MNH	Maternal and newborn health
NMR	Neonatal Mortality Rate
NGO	Non-Governmental Organization
PNC	Postnatal Care
pPROM	Preterm Premature Rupture of Membranes
RMNCAH	Reproductive, Maternal, Newborn, Child & Adolescent Health
SARA	Service Availability and Readiness Assessment
SGA	Small Size for Gestational Age
STI	Sexually Transmitted Infection
SBR	Stillbirth Rate
TFR	Total Fertility Rate
U5MR	Under-five Mortality Rate
UN	United Nations
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
WASH	Water, Sanitation and Hygiene
WHO	World Health Organization



1.1 What is the Purpose of this Field Guide?

The *Newborn Health in Humanitarian Settings: Field Guide* provides guidance and tools to reduce neonatal morbidity and mortality in humanitarian crisis situations that result from natural disasters, armed conflicts, political turmoil and other social and systemic upheavals.

The *Field Guide* focuses on the unique challenges surrounding the 28-day neonatal period following birth. It complements guidance provided by the *Inter-agency Field Manual on Reproductive Health in Humanitarian Settings*² (IAFM) for building reproductive, maternal, newborn and child health programs along a comprehensive care continuum. The IAFM was first published in 1996 (as the *Inter-agency Field Manual on Reproductive Health in Humanitarian Settings*), calling the attention of the international community to the urgent need to prioritize reproductive health within health responses to humanitarian crises. The current edition of the IAFM, released for field testing in 2010, includes the *Minimum Initial Service Package (MISP) for Reproductive Health in Crisis Situations*, describing essential services to be established at the onset of an emergency with recommendations and guidelines for the establishment of more comprehensive reproductive health services as situations stabilize.

2 Inter-agency Working Group on Reproductive Health in Crises. *Inter-agency Field Manual on Reproductive Health in Humanitarian Settings: 2010 Revision for Field Testing*. IAWG; 2012.

This *Field Guide* builds upon the *IAFM* guidance by focusing on field implementation of the most critical newborn health services, prioritizing lifesaving activities that can be introduced relatively quickly, without specialist training in advanced newborn care. It provides guidance to program managers regarding the initiation of newborn health services during the acute phase of a humanitarian crisis as well as the enhancement and expansion of these services over time, as the setting allows.

The epidemiology, interventions, and services highlighted in this *Field Guide* are not unique to humanitarian settings; information presented here is derived from existing World Health Organization (WHO) standards and guidelines on the basic care required for all babies, and services to prevent and manage the three main causes of newborn mortality: severe infections, intrapartum-related complications and prematurity.



1.2 Who is the Field Guide Intended For?

The *Newborn Health in Humanitarian Settings: Field Guide* provides essential guidance and tools to health staff involved in designing, managing, monitoring and evaluating newborn health services within humanitarian settings. Also targeted are general program and surge staff deployed for emergency response, including field-level health program managers who may originate from host governments, local and international non-governmental organizations (NGOs), United Nations agencies, donor organizations or private voluntary organizations. The information presented here may also be useful to health policy staff and program leaders at the regional and national levels advocating for, prioritizing and scaling up existing newborn care interventions in crisis situations.

The *Field Guide* is not a clinical guide; rather, the guidance and tools presented here are designed to assist humanitarian programs to develop new initiatives to provide newborn care, as well as to support the expansion of newborn health services within existing humanitarian response plans. The *Field Guide* includes abbreviated clinical and technical aspects of newborn health services as well as planning and programmatic aspects in order to support those staff working at all points along the continuum of health service planning and implementation: before a crisis, as a component in the disaster preparedness plan of a local, regional or national health program; during a crisis, as acute health care needs arise; and/or immediately following a crisis, when health services are being re-established. Certain sections of the *Field Guide* may prove more useful to organizational leaders and managers, while others may be more relevant to field staff.

The language use in this *Field Guide* is directive in tone, describing how to develop and implement various newborn health services and program components and to ensure essential supplies are ordered and available. In some instances, the *Field Guide* may direct readers to provide a specific service, to educate women and families, to conduct surveys or to carry out other similar activities. The intention of this instruction is to ensure that readers note essential activities and ensure they are completed.



1.3 How is the Field Guide Organized?

Background on Newborn Health. The *Field Guide* begins with an introduction to humanitarian settings and the challenges to providing health services within them, followed by an overview of the newborn epidemiology. The reader may use these facts to enhance communication and training materials for humanitarian health staff, as well as to advocate for increased attention to the topic of newborn health in crisis situations at the uppermost levels of policy and program development.

Technical Content: Newborn Health Services. This section includes abridged clinical and technical guidance for providing newborn care,



centered around preventing and treating the three main causes of newborn mortality during and immediately following humanitarian crises. The outlined services and required commodities are relevant whether crisis-affected populations are accessing health services through UN/NGO supported services (such as mobile clinics, or temporary clinics set up in camps) or via local health care systems. Links to resources and training materials are also included.

Program Implementation Considerations. This section presents guidance related to newborn health service development and implementation. Critical activities described in this section include developing key messages and behavior change communication (BCC) materials, developing referral systems, strengthening postnatal care at community level, and procuring medicines and commodities for newborn health supply kits.



Strategic Considerations. This section presents considerations for broader program development, service integration and coordination within humanitarian settings. Areas addressed include working with governments and humanitarian partner organizations, conducting a situation analysis, developing an integrated strategy and response plan and introducing a monitoring and evaluation (M&E) plan that incorporates key health indicators.

Resource List. Resources and references to complement the Field Guide are presented at the end of each chapter, and are comprised in a full list of recommended resources in this section. Resources are presented according to topic and chapters. These resources are intended for all readers, at all staff levels, functioning in diverse roles.

Annexes. A set of annexes containing practical tools and templates to facilitate newborn health interventions is included at the end of the *Field Guide*. Each annex is cited within the section of the document to which it relates. For many readers, these tools will form the most essential and practical components of the *Field Guide*. To maximize their benefit, apply these tools in the way described within the technical sections of the document.

Throughout the *Field Guide*, boxes and figures are used to differentiate key elements:

- **BLUE BOXES**, included throughout the text, contain examples, supporting facts and key details about topics
- **GREEN BOXES**, presented at the end of each chapter, identify important topical resources
- **FIGURES** display visual information to illustrate important facts about topics

The information provided in this Field Guide focuses on the first month of life because the newborn period is an identified gap and a key time to influence care throughout the life cycle. However, all services should be situated within a system that cares for women and older children as well. The *Newborn Health in Humanitarian Settings: Field Guide*, therefore, is not a “stand-alone” package. Apply it as an essential component within a comprehensive national approach to RMNCAH, complementing government services, the *IAFM/MISP* and other RMNCAH protocols currently in use. Specific areas that are **not covered** in this guide, but are critical complementary packages to these core newborn health services, include maternal health care; prevention of mother-to-child transmission (PMTCT) of HIV; water, sanitation and hygiene, nutrition interventions, early childhood development (EDC) and protection services. ■



2.1 Humanitarian Settings Across the Globe

A humanitarian crisis may result from a natural disaster, such as an earthquake, flood or epidemic, or from political turmoil, an armed conflict or other types of social upheavals. Humanitarian crises threaten the health, safety and wellbeing of a community or a large group of people across a region or a country, not just because of the impact of injuries and illnesses directly related to the crisis, but also because of the destruction of existing health services and systems resulting from the crisis, exacerbating the toll associated with the usual causes of morbidity and mortality in the affected area.

In recent years, humanitarian crises worldwide have intensified in terms of complexity and scale. Regional political turmoil and armed conflicts have produced the largest global numbers of refugees and internally displaced persons seen in 15 years. In the Middle East and North Africa, intense social and political upheavals, as well as armed conflicts continue to the present, and have resulted in major population displacements in

Libya, Syria, Yemen and elsewhere. Similarly, conflicts in Africa, such as in the Central African Republic (CAR), Democratic Republic of the Congo (DRC), Mali and South Sudan have produced major population displacements (Box 2.1). Globally, a trend of increasing insecurity and violence has been documented in these crisis situations, alongside shrinking humanitarian-designated space coupled with an exacerbation of attacks against health workers and healthcare facilities.

In parallel, natural disasters regularly wreak havoc on populations in low-resource settings worldwide. In areas where famine, floods and other natural crises may already threaten populations, climate change has added a new menace. Examples include more frequent and severe droughts in the Horn of Africa and the Sahel; floods, particularly in Pakistan and other Asian nations; and windstorms, in Myanmar, the Philippines and elsewhere. In addition, the past decade has seen some of the most devastating earthquakes and tsunamis ever documented; examples include Haiti, Japan and Indonesia. In some countries, these natural disasters may be exacerbated by political and social turmoil and armed conflicts, producing complex, challenging humanitarian crises requiring urgent, comprehensive and effective responses.

BOX 2.1. The DRC: a humanitarian setting with no end in sight

Since 1998, in the DRC war, hunger and disease have killed more than 5 million people. Millions have been displaced, and the health system has been destroyed. It is statistically more dangerous to be a woman or a child than it is to be a soldier in the DRC: 1 child in 8 does not survive to age 5, and 21,000 women die each year from causes related to pregnancy or childbirth.

Humanitarian response programs must incorporate services tailored to the special needs of pregnant women and their newborns in these complex settings to protect their health and survival.

UNICEF: *State of the World's Children 2015*. New York City, NY: UNICEF; 2014. <http://sowc2015.unicef.org/> in *Humanitarian Crise*^s

Rebuilding health facilities and systems, providing emergency care and training health workers form critical components of any humanitarian response, and maternal and newborn health services comprise a key domain within that process. Some facts:

- More than 250 million children under age 5 live in countries affected by armed conflict
- Worldwide, women and children are up to 14 times more likely than men to die in a humanitarian crisis
- More than 80 % of the high-mortality countries have suffered either a recent conflict, recurring natural disasters or both, setting them back from achieving global targets for reduction of child deaths.³

2.2 Newborn Health: Epidemiology

“Newborn” and “neonatal” are terms that refer to the first 28 days of life. Mortality risk during the neonatal period is highest at the time of birth and decreases over the subsequent days and weeks. Up to 36% of neonatal deaths occur within the first 24 hours of birth and nearly 73% in the first week of life.⁴ This period is also when most maternal deaths occur, rendering labor and delivery, and the early postnatal period, a dangerous time for both mothers and their babies.

Increasing access to maternal and newborn health (MNH) services and to lifesaving medical commodities may be the single most important way to improve these statistics. About one third (32%) of all mothers and newborns globally do not receive skilled care at birth⁵, and evidence has shown that about three quarters of all babies born outside a health

3 Save the Children. State of the World's Mothers 2014: *Saving Mothers and Children in Humanitarian Crises*. Westport, CT: Save the Children; 2014. www.savethechildren.org/atf/cf/%7B9def2ebe-10ae-432c-9bd0-df91d2eba74a%7D/SOWM_2014.PDF

4 Oza S, Cousens SN, Lawn JE, et al. Estimation of daily risk of neonatal death, including the day of birth, in 186 countries in 2013: a vital-registration and modelling-based study. *The Lancet Global Health*, 2014, 2(11):e635-644.

5 UNICEF. *State of the World's Children 2015*. New York City, NY: UNICEF; 2014. <http://sowc2015.unicef.org/>

facility do not receive an early postnatal care visit following delivery.⁶ It is estimated that improving MNH services could prevent up to three out of four newborn deaths, specifically through the increased coverage and quality of preconception, antenatal, intrapartum, and postnatal interventions (Box 2.2).⁷

2.2.a. Global burden of newborn mortality

Deaths in the first month of life account for an increasing proportion of all deaths amongst children under-5 in every region of the world; now 44%. Yet up until recently these newborn deaths have received comparatively little attention to their causes and solutions. *Figure 2.1* presents a map of neonatal mortality, highlighting the important contribution of these deaths to total under-5 mortality globally, and *Figure 2.2* displays rates of progress for neonatal survival across the globe.

BOX 2.2. Available interventions scaled up can improve outcomes for every newborn and nations.

The health of mothers and their babies is so closely linked that the delivery of effective interventions has a triple return on investment with the potential to avert 71% of newborn deaths, 33% of stillbirths, and 54% of maternal deaths at full coverage. These interventions and packages can be scaled up within existing health systems. They are cost effective and will also benefit development outcomes and economic capital.

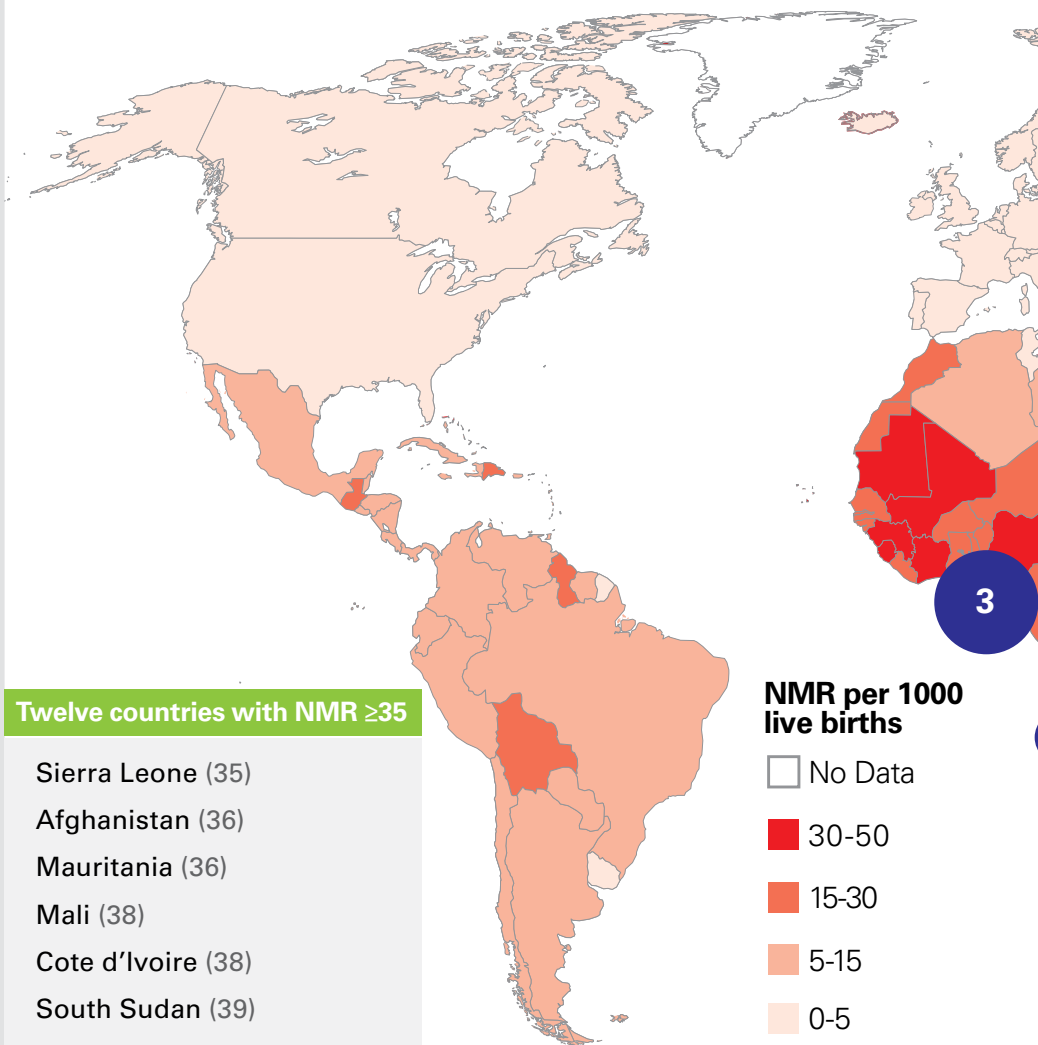
Bhutta ZA, Das JK, Bahl R, et al. Can available interventions end preventable deaths in mothers, newborn babies, and stillbirths, and at what cost? Lancet 2014, 384(9940):347-70.

6 WHO, UNICEF. *Home visits for the newborn child: a strategy to improve survival – WHO/UNICEF Joint Statement*. Geneva, Switzerland: WHO; 2009. www.unicef.org/spanish/health/files/WHO_FCH_CAH_09.02_eng.pdf

7 Bhutta ZA, Das JK, Bahl R, et al. Can available interventions end preventable deaths in mothers, newborn babies, and stillbirths, and at what cost? *Lancet* 2014, 384(9940):347-70

Figure 2.1.

Neonatal mortality rates (NMR) across the globe in 2015

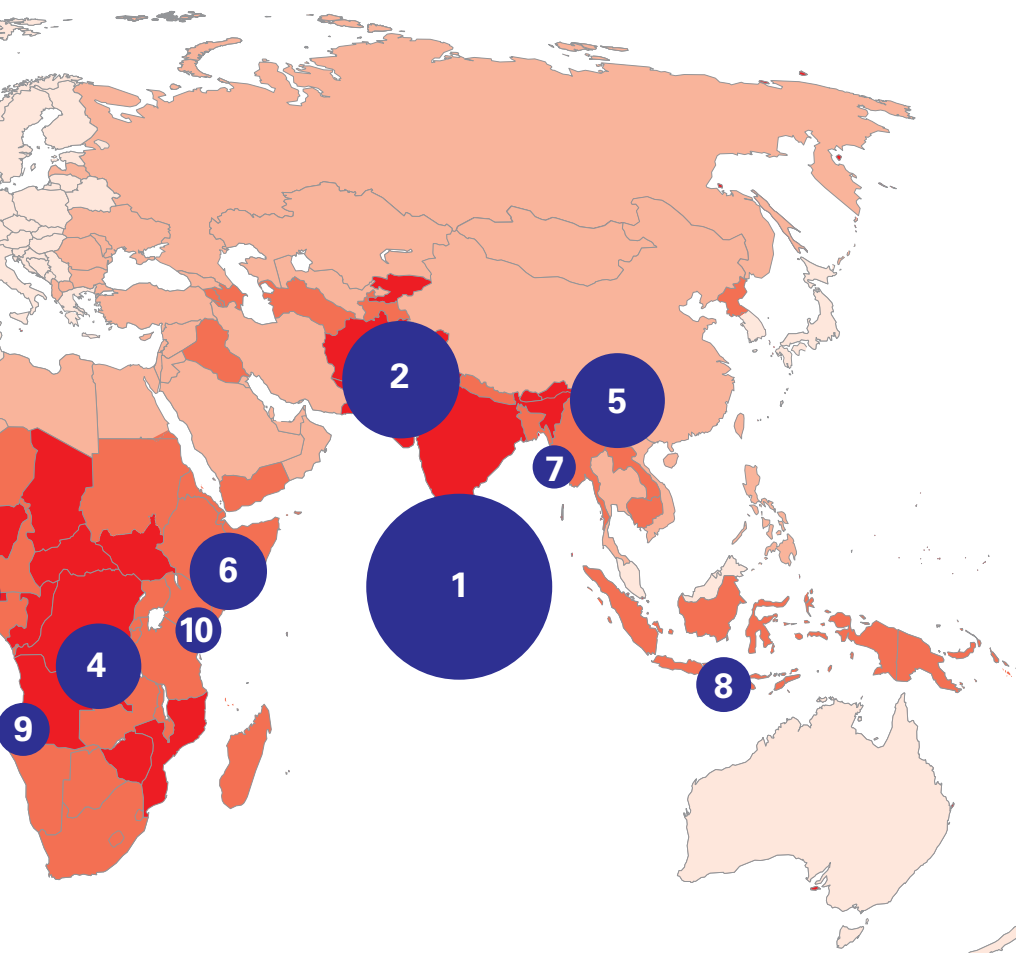


Twelve countries with NMR ≥ 35

- Sierra Leone (35)
- Afghanistan (36)
- Mauritania (36)
- Mali (38)
- Cote d'Ivoire (38)
- South Sudan (39)
- Chad (39)
- Guinea-Bissau (40)
- Somalia (40)
- Central African Republic (43)
- Pakistan (46)
- Angola (49)

Updated from Lawn JE, Blencowe H, Oza S, et al. Progress, priorities, and potential beyond survival. Lancet 2014, 384(9938): 189–20.

UNICEF, WHO, The World Bank, United Nations. Levels and trends in child mortality: Report 2015. New York, USA: UNICEF, 2015. www.unicef.org/publications/files/Child_Mortality_Report_2015_Web_8_Sept_15.pdf

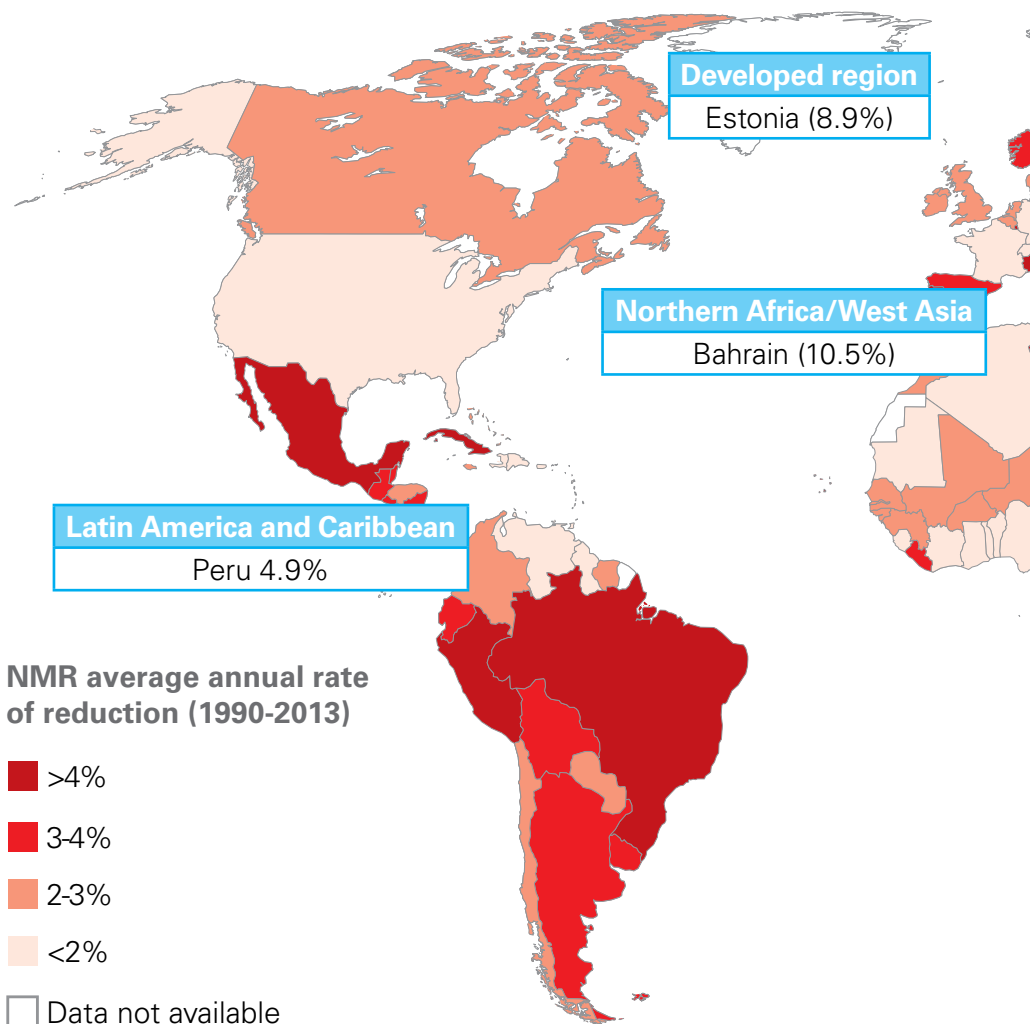


Ten countries with the highest neonatal death numbers

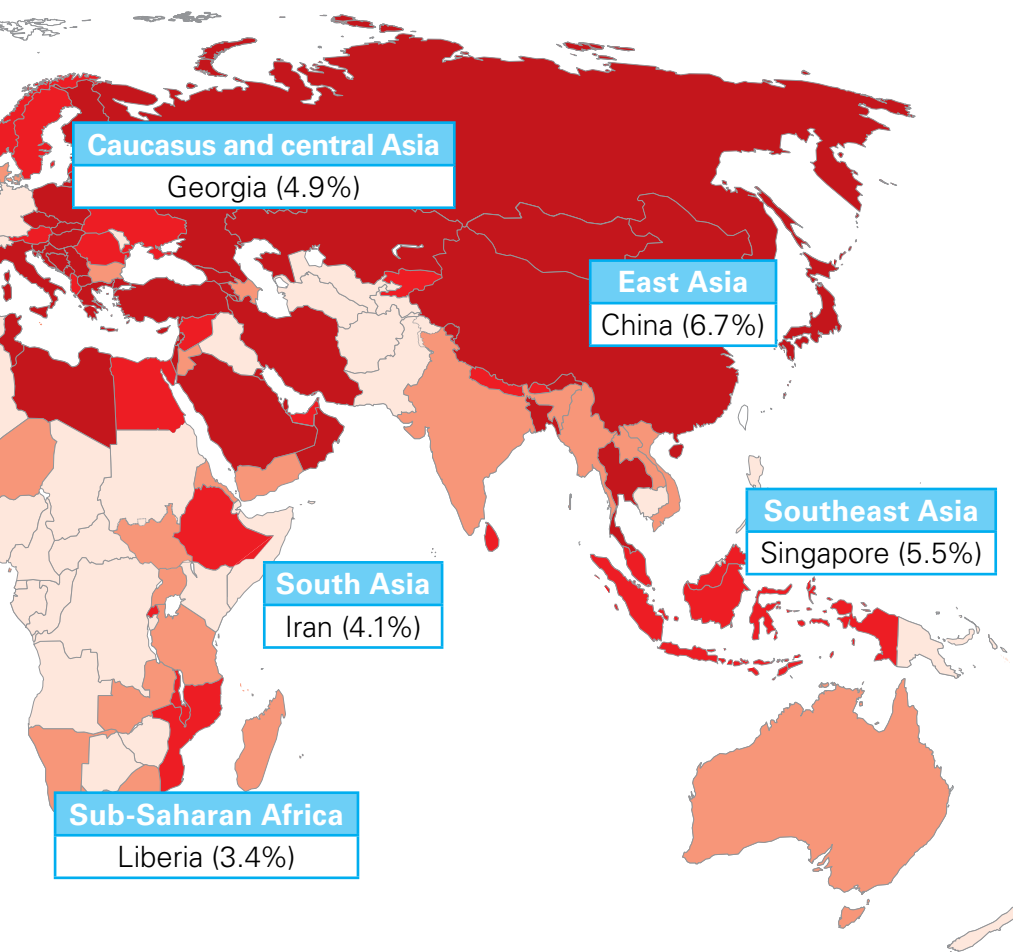
- | | |
|---------------------------------------------|-----------------------|
| 1 India (696,000) | 6 Ethiopia (87,000) |
| 2 Pakistan (245,000) | 7 Bangladesh (74,000) |
| 3 Nigeria (240,000) | 8 Indonesia (74,000) |
| 4 Democratic Republic of the Congo (94,000) | 9 Angola (53,000) |
| 5 China (93,000) | 10 Tanzania (39,000) |

Figure 2.2.

**Rates of progress for neonatal survival
across the globe in 2015**



Updated Lawn JE, Blencowe H, Oza S, et al. Progress, priorities, and potential beyond survival. Lancet 2014, 384(9938): 189–20.





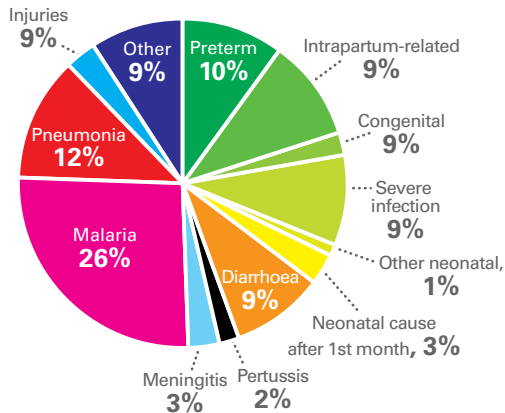
To further emphasize the importance of neonatal mortality as a contributor to overall under-5 mortality in diverse countries experiencing different humanitarian crises, *Figure 2.3.* displays the proportional contributions of different causes of child death in CAR, the Philippines and Syria. According to 2013 data, under 5-year mortality rates differ substantially in these countries. Yet, in each country, deaths in the neonatal period account for the largest proportion of the under 5-year mortality burden:⁸

- In the CAR, which has the highest under 5-year mortality rate among these three examples, neonatal causes account for around one third of all under 5 deaths.
- In the Philippines, deaths in the first month of life account for nearly one half of all under-5 deaths.
- In Syria, where under-5 mortality was relatively low, neonatal mortality accounts for one half of all under-5 deaths.

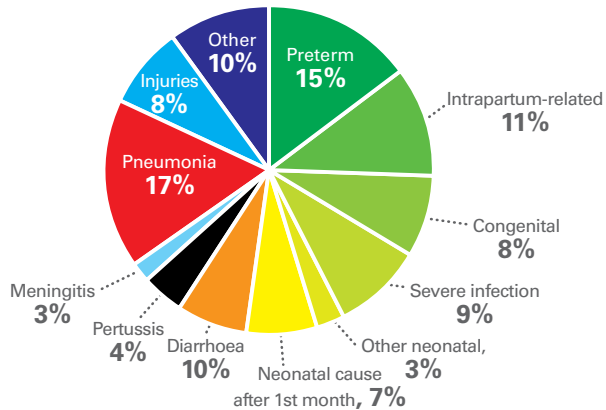
⁸ UNICEF. State of the World's Children 2015. New York City, NY: UNICEF; 2014. <http://sowc2015.unicef.org/>

Figure 2.3.**Causes of neonatal and under-5 deaths in three countries impacted by humanitarian crises.****Central African Republic**

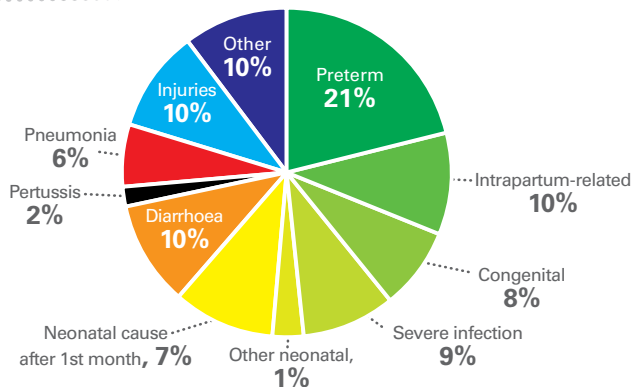
U5MR: 130
NMR: 43

**Philippines**

U5MR: 28
NMR: 13

**Syria**

U5MR: 13
NMR: 7



Liu L, Oza S, Hogan D, et al. Global, regional, and national causes of child mortality in 2000-13, with projections to inform post-2015 priorities: an updated systematic analysis. *Lancet* 2014 385(9966):430-40.

There has been little attempt to quantify the additional burden of deaths in the first month of life in emergency contexts but in all settings the proportion is significant. A comprehensive humanitarian response plan, in any region or nation, should incorporate newborn health services in order to ensure a safe and healthy start to life.

2.2.b. Principal causes of neonatal deaths

Globally, the three main causes of newborn deaths are direct preterm complications (36% of neonatal deaths worldwide), severe infection (23%), and intrapartum-related complications (23%).⁹ *Figure 2.4.* details the burden of neonatal mortality by cause.

- **Preterm complications**, which refers to babies born before 37 completed weeks of gestation, is among the causes of low birth weight (**LBW**) among newborns, and renders newborns at higher risk of complications and death. *Extremely preterm* babies are born before 28 weeks of gestation; *very preterm* babies are born between 28-32 weeks of gestation; *moderate to late preterm* babies are those born between 32-37 weeks of gestation. Although babies born before 28 weeks gestation are likely to require intensive care, these cases comprise only 5% of total preterm births globally. Over 80% of premature babies are born as moderate to late preterm births and most of these do not need intensive care in order to survive. Up to 58% of premature babies could be saved globally through the provision of cost-effective care that can be feasibly delivered in low-resource settings.¹⁰
- **Severe infections** include neonatal sepsis, pneumonia, diarrhea, meningitis and tetanus. Globally, approximately 630,000¹¹ newborns die each year as a result of severe infections. Most of these deaths could be averted through preventive measures such

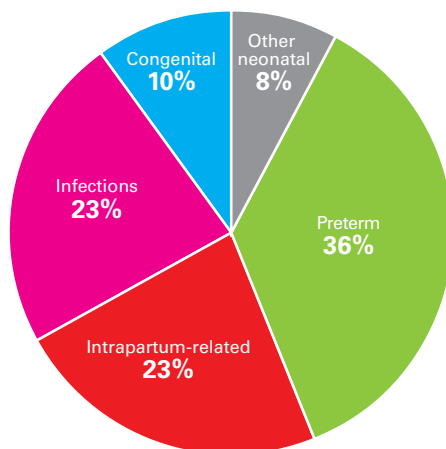
9 Liu L, Oza S, Hogan D, et al. Global, regional, and national causes of child mortality in 2000-13, with projections to inform post-2015 priorities: an updated systematic analysis. *Lancet* 2014.

10 Bhutta ZA, Das JK, Bahl R, et al. Can available interventions end preventable deaths in mothers, newborn babies, and stillbirths, and at what cost? *Lancet* 2014, 384(9940):347-70.

11 Liu L, Oza S, Hogan D, et al. Global, regional, and national causes of child mortality in 2000-13, with projections to inform post-2015 priorities: an updated systematic analysis. *Lancet* 2014 385(9966):430-40.



Figure 2.4. Major causes of newborn mortality



Liu L, Oza S, Hogan D, et al. Global, regional, and national causes of child mortality in 2000-13, with projections to inform post-2015 priorities: an updated systematic analysis. *Lancet* 2014 385(9966):430-40.



vaccination including tetanus toxoid, improving hygiene during labor and delivery and through clean cord care that incorporates the application of chlorhexidine; and by ensuring that curative care is available to sick newborns through transfers to higher-level facilities that are equipped to treat infections.

- **Intrapartum-related complications** includes conditions that occur during labor and delivery. Over 1800 newborns die every day due to complications of childbirth, plus many more stillbirths.¹² The time between a potentially catastrophic event during labor and death can be short, making the first minute a crucial time for the 10% of babies who do not breathe spontaneously at birth.

Most of the risk factors for three main causes of neonatal deaths are preventable or treatable. However, many cannot be predicted and rely on preparedness throughout pregnancy, birth and the postnatal period to access timely, quality care when needed, and the knowledge and ability to practice healthy behaviors at home. ■

¹² Liu L, Oza S, Hogan D, et al. Global, regional, and national causes of child mortality in 2000-13, with projections to inform post-2015 priorities: an updated systematic analysis. *Lancet* 2014 385(9966):430-40.

Key resources to accompany Chapter 2

Humanitarian Settings:

- Inter-agency Working Group on Reproductive Health in Crises. *Inter-agency Field Manual on Reproductive Health in Humanitarian Settings: 2010 Revision for Field Review*. IAWG, 2012. Available at: www.who.int/reproductivehealth/publications/emergencies/field_manual_rh_humanitarian_settings.pdf?ua=1
- Women's Commission for Refugee Women and Children. 2011. *Minimum Initial Service Package (MISP) for Reproductive Health in crisis Situations: A Distance Learning Module*. New York City, NY: UNFPA. Available at: www.unfpa.org/emergencies/manual/2.htm

Neonatal epidemiology:

- Lancet Every Newborn Series, 2014. www.thelancet.com/series/everynewborn
- Liu L, Oza S, Hogan D, et al. Global, regional, and national causes of child mortality in 2000-13, with projections to inform post-2015 priorities: an updated systematic analysis. *Lancet*. 2014 385(9966):430-40.
- Wang H, Liddell CA, Coates MM, et al. Global, regional, and national levels of neonatal, infant, and under-5 mortality during 1990-2013: a systematic analysis for the Global Burden of Disease Study. *Lancet* 2013 384(9947):957-79.
- The UN Inter-agency Group for Child Mortality Estimation, 2015. *Levels & trends in child mortality: Report 2015*. New York City, NY: UNICEF www.unicef.org/publications/files/Child_Mortality_Report_2015_Web_8_Sept_15.pdf
- UNICEF. *Committing to child survival: A Promise Renewed progress report, 2015*. New York City, NY: UNICEF. www.unicef.org/publications/files/APR_2015_9_Sept_15.pdf

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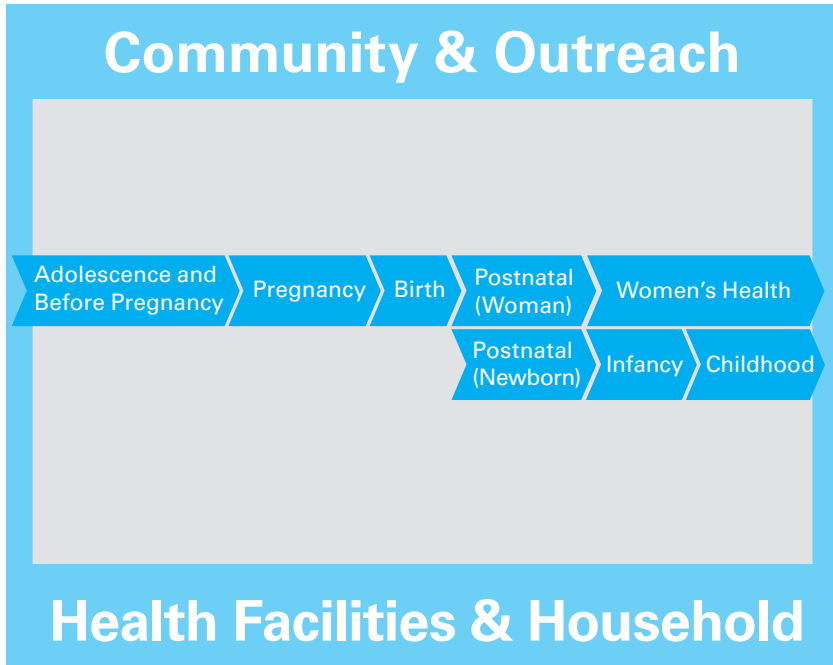
3.1 General Principles and Considerations

3.1.a. The Continuum of Care

The neonatal period is part of a continuum of care for mother and baby encompassing a spectrum of reproductive, maternal, newborn, child & adolescent health (RMNCAH) services (*Figure 3.1*). Beginning before pregnancy and continuing through labor and delivery, the immediate postnatal period, the extended postnatal period and childhood. Integrated service delivery extends from household to health facility, hospital and back home.

A safe birth and a healthy start in life are at the heart of thriving and stable communities.¹³ Accordingly, the neonatal period merits special attention within humanitarian settings, when health services and systems may be interrupted and emergency support is brought in through national and international mechanisms. The newborn health services described in this *Field Guide* are intended to complement the spectrum of services for women and their babies offered through governmental and non-governmental channels across the continuum of RMNCAH care.

¹³ Bhutta ZA, Das JK, Bahl R, et al. Can available interventions end preventable deaths in mothers, newborn babies, and stillbirths, and at what cost? *Lancet* 2014, 384(9940):347-70.

Figure 3.1.**Continuum of RHMCH services**

*Partnership for Maternal, Newborn & Child Health, 2011; available at: www.who.int/pmnch/about/continuum_of_care/en/
Adapted from WHO, 2005: Make every mother and child count*

3.1.b. Levels of Care

In humanitarian settings, staff working at all levels should deliver RMNCAH services across the continuum of care:

1. Households/Community Settings (including camps).

This care is provided to women and babies in their homes or in camp settings by community health workers (CHWs), traditional birth attendants (TBAs), outreach workers or other trained health workers. These workers may be linked to a health post or peripheral health facility. The care is mainly promotive and preventive, with outreach services including follow-up of women and newborns after discharge from the health facility.

2. **Peripheral health facilities.** This care includes clinics operating out of permanent structures, temporary clinics in camp settings and mobile clinics. Typically, these primarily outpatient services are delivered by mid-level staff such as nurses and midwives, with support for referral to hospital if needed, and connections to community structures after discharge.
3. **Hospitals.** Inpatient referral care is provided by midwives, nurses and physicians with pharmacy and laboratory support services.

3.1.c. Challenges to Newborn Health Service Delivery

Humanitarian settings are characterized by myriad challenges that threaten the health of communities, including newborns and their mothers:

- **Service disruption and facility destruction.** This could include the breakdown of prevention programs, such as vaccination, vector control, and disruption of supply chains, reducing access to medicines and other commodities; shortages of health care providers and other health staff; reduced access to other essential services such as water, sanitation and hygiene, and nutritious foods; unusable roads and lack of transport vehicles.
- **Population movements.** Inability to access services among mobile populations; crowding in locations housing internally displaced persons (IDP) and refugees.
- **Competing priorities.** Injuries and displacements overwhelm existing health facilities and programs, rendering them unable to cope with the additional strain of urgent newborn care; funding may be routed to other areas of acute need, such as injury treatment and prevention and management of life-threatening epidemics (e.g., cholera) within the child and adult populations.
- **Lack of safety.** Threats to the security and safety of affected populations and the staff working to support them hinder access to and delivery of health care to women and babies before, during and following childbirth. Curfews, lack of transport, and other logistical challenges prevent women from accessing skilled delivery care at health facilities when they need it.

Preventing excess illness and death among newborns requires that care be available and functional, and tailored to the local situation (Box 3.1). In humanitarian settings that require international responses, the coping capacity of the affected community is overwhelmed, and external assistance is brought to the affected area. Staff designing and managing humanitarian response programs have a responsibility to ensure that protocols are in place to provide appropriate newborn care. Service providers should offer basic emergency obstetric care (BEmOC), comprehensive emergency obstetric care (CEmOC) (or appropriate referral), skilled birth attendants, essential newborn care (ENC), and identification and basic care for sick or small babies (or appropriate referral).

BOX 3.1. Managing Newborn Health Care in High-Risk Settings

Threats to safety and security are an unfortunate reality for pregnant and postnatal women, their families and the humanitarian health workers serving them within crisis settings. Safe access to health services for the crisis-affected population must be prioritized:

- Establish temporary health outposts/facilities as close as possible to the crisis-affected communities
- Provide mobile services when feasible and when the security situation allows
- Deploy home visiting staff (CHWs or others) that can safely reach pregnant and postnatal women in their households
- Ensure that health workers have the supplies they need, and are trained to detect newborn danger signs, treat life-threatening newborn conditions to the greatest extent possible and transfer pregnant and postnatal women to referral facilities (or hospitals) when the security situation allows

See Chapter 4: Program Implementation Considerations (Community Level) and Chapter 5: Strategic Considerations (National Level) for guidance on developing and implementing newborn health services in crisis settings.

Although each humanitarian crisis presents different issues and challenges to responders, the life-saving interventions and commodities presented in this section have been defined according to WHO-approved standards for newborn care, and comprise a supplementary package of care to improve MNH outcomes in all humanitarian settings. Adapt these recommendations to local needs, and incorporate them within the health services offered through existing and donor-supported services to improve upon guidelines already in place outlining minimum care and supply requirements for RMNCAH care in crisis and refugee settings.

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3.2 Essential Newborn Care (ENC)

- **See Annex 1A** for a summary table of ENC services for all newborns, presented by level of care.
- **See Annex 2** for a summary table of newborn supply kit components, by level of care.

ENC is the basic care required for every baby (Box 3.2). Irrespective of where the birth takes place, essential care for all newborns comprises **thermal care** (delayed bathing, drying and keeping the baby warm through skin-to-skin contact); **infection prevention** (promoting and supporting hand washing for all caregivers, providing hygienic umbilical cord and skin care); **feeding support** (early and exclusive breastfeeding); and **postnatal care**, including monitoring of newborns for **danger signs** of serious infections and identifying babies requiring additional care.

Immediately following birth and throughout the neonatal period at every visit, examine newborns for indications of life-threatening conditions. Danger signs for severe illness in newborns that all families and CHWs should be aware of are listed in Box 3.3. The condition of a newborn, especially those who are small, can deteriorate quickly. Families and CHWs should have a plan for seeking extra care that accounts for possible changes in the logistical and security situation in the local area.

BOX 3.2. ENC Components: Services for All Newborns

- **Thermal care:** Drying, warming, skin-to-skin contact, delayed bathing
- **Infection prevention/hygiene:** Clean birth practices, hand washing, clean cord/skin/eye care. Chlorhexidine cord care is recommended for newborns born at home and in settings where the neonatal mortality rate is above 30 per 1000 live births (*Box 3.7*)
- **Feeding support:** Skin-to-skin contact, support for immediate and exclusive breastfeeding, not discarding colostrum (or first milk)
- **Monitoring:** Frequent assessment for danger signs of serious infections and other conditions that require extra care outside the household or health post
- **Postnatal care checks:** Women and babies should receive care at or as close to home as possible in the first week of life. The first 24 hours are the most critical time and should be prioritized for a postnatal visit. Every effort should be made to reach those babies born at home as soon as possible after delivery

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3.2.a. ENC at the household level

During pregnancy/antenatal period: Identify pregnant women early through outreach and community informants, or through an antenatal care register at the local health facility. Conduct an initial visit with pregnant women in their homes. At that visit, promote the use of formal health facilities for antenatal care, delivery, and postnatal care. Provide information about the closest facility, location, hours of operation and options for transport to the facility. In crisis settings where access to facilities is not safe or is not possible with additional resources, care can be provided through ongoing home visits. WHO recommends a minimum of four antenatal visits commencing early in pregnancy (first trimester). Key activities in this period center around birth preparedness and includes activities such as engaging community leaders.

BOX 3.3. Danger Signs of Serious Illnesses in Newborns

Note: The below danger signs can be used by CHWs and family members to refer a newborn to a health facility for further care. See Box 3.6 for danger signs of newborn infection that can be used by formally trained medical personnel.

- Not feeding well
- Fits or convulsions
- Reduced activity or lack of movement
- Fast breathing (more than 60 breaths per minute)
- Severe chest indrawing
- Temperature above 37.5 degrees C
- Temperature below 35.5 degrees C
- Very small size at birth (<2.5 kg)

Note: if any of the danger signs are present, immediately refer to a health facility.

These include engaging community leaders and members, and developing a birth plan with the woman and family that includes emergency transport, security, and monetary considerations. The family should be provided with a clean delivery kit, see contents as defined in Inter-agency Reproductive Health Kits for Crisis Situations, 5th edition, available at www.unfpa.org and newborn supply kit (*annex 2*). Women should be counseled on nutrition during pregnancy, reduced workload, and the importance of sleeping under an insecticide treated net (ITN) in malaria-endemic areas. They should also be counseled to visit the local health center as soon as possible in order to access HIV and malaria interventions, as well as vaccinations.

The importance of safe birth practices should also be introduced during pregnancy visits. One of the most critical interventions to prevent maternal and newborn death is the provision of care by skilled birth attendants in a health facility that is equipped with drugs and medical supplies needed to manage complications. Encourage delivery in a health facility, but inform families that if a birth happens to take place at home, they should go to the health facility as soon after birth as possible for an examination of both mother and baby. Discussions around early and exclusive breastfeeding and safe newborn care should also happen during this time.

During labor and delivery: No birth is without risk and therefore all should be supported by a skilled birth attendant with access to referral care if complications arise. During the birth, implement clean birth practices including maintaining clean hands, a clean perineum, a clean surface, clean cord and tying instruments, sterile cutting instruments and a clean cutting surface. Provide thermal care by immediately and thoroughly drying the baby and placing the baby on mother's chest. For babies who are not breathing at the time of delivery, dry and rub the back vigorously two to three times (tactile stimulation); if breathing is not initiated, refer to *Section 3.5. Intrapartum complications*. For term newborns who are breathing at birth and do not require resuscitation, do not clamp the cord for at least one minute after birth.¹⁴

During the immediate postnatal period (within the first hour of delivery): Continue thermal care by placing the baby, skin-to-skin, on the mother's chest, and covering with a blanket and hat. Delay bathing the newborn for at least 24 hours to prevent heat loss and hypothermia. Initiate exclusive breastfeeding as soon after delivery as possible (within one hour). Continue clean practices such as handwashing for those handling the newborn to prevent infections. Provide eye care by giving the baby a single dose of tetracycline hydrochloride 1% eye ointment in each eye. Provide cord care by applying 7.1% chlorhexidine (CHX) digluconate gel or liquid to the cord. The application of CHX to the umbilical cord stump once per day from the first to the seventh day of life has contributed to reduction in neonatal mortality¹⁵ in research studies that were conducted in Asian countries. WHO recommends the use of CHX for cord care for all babies delivered at home in settings where the neonatal mortality rate is greater than 30 per 1000 live births. Educate women and families to look for danger signs, and to seek care promptly when they are detected. Identify, support, and if necessary refer newborns that need additional care, refer to Sections 3.3, 3.4, and 3.5.

¹⁴ WHO. Delayed umbilical cord clamping for improved maternal and infant health and nutrition outcomes, 2014. Geneva, Switzerland: World Health Organization. www.who.int/nutrition/publications/guidelines/cord_clamping/en/

¹⁵ PATH. *Chlorhexidine for umbilical cord care: A new, low-cost intervention to reduce newborn mortality*. Seattle, WA: PATH: February 2014. www.path.org/publications/detail.php?i=1556

During the first week after delivery (second hour following delivery up to seven days): If the newborn kit has not yet been given to the family, it can be provided at first postnatal visit at home or hospital. Conduct home visits on days 1, 3 and 7 of the newborn's life, or at least 3 times during the first week with the first visit as close to the first 24 hours as possible. Three-quarters of newborn deaths take place during the first week of life, so it is important that visits take place in this key window for saving lives. Continue health promotion activities including promotion of exclusive breastfeeding, thermal care for the baby, hand washing for people touching the baby and hygienic cord and skin care. Continue to examine the baby for danger signs of serious illnesses, and continue to encourage the family to look for these danger signs. If danger signs are detected, facilitate access for the mother and baby to the closest health facility or hospital. Encourage HIV-positive mothers to access HIV testing and other care for their newborns. Inform women and families of the importance of an immunization visit for the newborn at 6 weeks.

Consult *Annex 2A* for a list of newborn supply kit components for caring for newborns at home (or in the community), including a hat, towel, blanket and other items discussed above to promote health and protect against infections.

3.2.b. ENC in peripheral health facilities

During the pregnancy/antenatal period: In addition to the activities conducted at the household level, provide counseling on complication readiness. In malaria endemic areas, distribute ITNs to pregnant women to sleep under during pregnancy and with the newborn after delivery. Provide intermittent preventive treatment in pregnancy for malaria (IPTp) according to national guidelines. Provide two doses of tetanus toxoid vaccine at the appropriate interval; provide folate, iron and other micro-nutrient supplements as needed. Diagnose and promptly treat urinary tract infections, syphilis, other maternal illnesses and complications like pre-eclampsia and diabetes.

During labor and delivery: In addition to the activities described above at household level, if the peripheral health facility is equipped to do normal deliveries, monitor labor with the use of the partogram, documenting critical maternal and fetal statistics (e.g., cervical dilation, fetal heart rate, duration of labor). Manage maternal complications, and fetal distress; and be prepared to manage newborn complications such as asphyxia and take appropriate action if the need arises (*see Sections 3.3, 3.4, and 3.5*).

During the immediate postnatal period (within the first hour of delivery): In addition to the activities described for the household level, perform a complete physical examination within two hours of birth. Weigh the newborn baby and record birth weight appropriately. In addition to the activities described above, provide the newborn with 1 mg of vitamin K intramuscularly (IM) and provide immediate vaccination according to national vaccination protocol. Commonly used vaccines for newborns immediately after birth are Hepatitis B, Polio and BCG. The Hepatitis B vaccine should be especially encouraged in areas of high Hepatitis B endemicity.¹⁶ Provide birth certificate or record of birth card to the mother or family, in accordance with national practice.

During the first week after delivery (second hour following delivery up to seven days): Prior to discharge, assess mothers and their new babies for danger signs of serious infections and for other problems (e.g., congenital malformations, such as cleft palate). Coordinate with field staff to organize a first home visit with mothers and families within 24 hours after the birth. Instruct women to return to the facility on the 7th day after birth if possible, especially if there is no mechanism for home visits in place. Emphasize the importance of a return visit, even if everything is going well. Advise women to return immediately to the facility if they notice any danger signs. For babies born to HIV positive mothers, initiate antiretroviral therapy (ART) as per local protocol.

The newborn care supply kit for peripheral health facilities includes all components identified for the household level; additionally, include an

16 Newborn vaccinations such as oral polio, BCG and Hepatitis B are **NOT** included in the ENC supply kit because they are typically procured through UNICEF as part of the vaccination programs. Close collaboration with organizations working with child health and the procurement of and management of vaccinations is essential to ensure the provision of vaccinations in the postnatal period.

injectable pediatric vial of Vitamin K (2mg/0.2 ml); dressing trays¹⁷ (for labor, delivery and newborn care materials; and a mobile examination lamp. See *Annex 2B* for a complete list of supply kit contents.

3.2.c. Essential newborn care in hospitals

During the immediate postnatal period (within the first hour of delivery): Follow the same guidance detailed at peripheral level facilities, with accommodations for complications such as assisted delivery or birth by cesarean section. Preterm and low-birth-weight babies should be identified immediately after birth and should be provided special care. All postpartum women should have regular assessment of vaginal bleeding, uterine contraction, fundal height, temperature and heart rate (pulse) routinely during the first 24 hours starting from the first hour after birth.

During the first week of life (second hour following delivery up to seven days): When newborns are sick, manage their conditions. See *Section 3.3.*, *3.4.* and *3.5.* for information about managing prematurity, infections and intrapartum complications.

The newborn care supply kit for hospitals includes all components identified for the household level, as well as additional items included in the second-level kit (e.g., Vitamin K, dressing trays¹⁸ and mobile examination lamps). See *Annex 2C* for a complete list of supply kit contents. Also, for advanced care in the hospital setting, see additional medicines and commodities needed to treat prematurity (*Section 3.3.*) severe infections (*Section 3.4.*) and intrapartum-related complications (*Section 3.5.*). Consult WHO's guidance on managing problems in newborns.¹⁹

17 Dressing trays for labor and delivery are not part of the ENC supply kit and must be ordered separately.

18 Dressing trays for labor and delivery are not part of the Newborn Care Health Kit and will need to be ordered separately.

19 WHO. Managing Newborn Problems, 2003. Geneva, Switzerland: World Health Organization. www.who.int/reproductivehealth/publications/maternal_perinatal_health/9241546220/en/

3.3 Prematurity

- **See Annex 1B** for a summary table of services to manage prematurity, presented by level of care.
- **See Annex 2** for a summary table of newborn supply kit components, by level of care.

Prematurity refers to babies born before 37 weeks of gestation, and is among the causes of LBW among newborns, rendering these newborns at higher risk of complications and death. *Extremely preterm* babies are born before 28 weeks of gestation; *very preterm* babies are born between 28-32 weeks of gestation; *moderate to late preterm* babies are those born between 32-37 weeks of gestation. Morbidity and mortality associated with prematurity can be reduced through prevention and care for preterm babies and their mothers. Being born small might be due to prematurity or a baby may be small for gestational age, or a combination of both. Low birthweight (less than 2500g) has been used as a marker for the highest mortality and morbidity risk for babies. However, risks alter with birth size and gestational age, and it's important to understand the reasons for a baby's low birthweight, as much as is possible in each case.

- **Prevention:** There is a lack of highly-effective interventions to prevent preterm birth from occurring. The mechanisms causing preterm birth and in-utero growth restriction are not yet well understood and known prevention strategies are often long-term (e.g. multi-generational) and complex. For women at risk of preterm birth, known preventive interventions during pregnancy include identification and treatment of hypertension, close monitoring of multiple pregnancies, and identification and management of underlying conditions like malaria and sexually transmitted infections such as syphilis and HIV.

Once preterm labor has commenced, administering antenatal corticosteroids (ACS) to women has been shown to minimize newborn mortality and reduce respiratory distress among preterm newborns with gestational ages between 24-34 weeks. ACS should only be administered once preterm labor has started, at a health facility with the ability to confirm that the gestational age of the fetus is between 24-34 weeks; adequate care is available for preterm newborns; and reliable, timely and appropriate treat-

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ment for maternal infections is available²⁰. ACS can be delivered as betamethasone (12 mg intramuscularly, 2 doses 24 hours apart) or dexamethasone (6 mg intramuscularly, 4 doses 12 hours apart). WHO has released preterm care guidelines which include more detail on the use of ACS.²¹ Other medicines manage complications when they arise. For instance, the administration of antibiotics for preterm premature rupture of membranes (pPROM) has been shown to reduce neonatal morbidity. Tocolytics (also known as anti-contraction medications) can be used to delay preterm births, but there is not yet evidence showing an impact on neonatal mortality. If tocolytics are used to facilitate ACS administration or transfer of a laboring mother in emergent situations, nifedipine is the preferred agent, although impact on neonatal mortality has not been established.

- **Care/management:** Thermal care, breastfeeding support, infection prevention and management and, if needed, neonatal resuscitation are the foundational interventions to manage conditions that arise related to prematurity. These interventions can be enhanced with extra care for small babies, including Kangaroo Mother Care, or KMC, in which the baby is carried with skin-to-skin contact (*see Box 3.4.*). Other methods include additional support for breastfeeding [including the use of a breast pump, administering the milk by cup or another utensil (or by oral/nasogastric tube) and supplementary nursing techniques]; treating infections, including with antibiotics as per guidelines; safe oxygen management and monitoring of newborns for saturation, supportive care for respiratory distress syndrome and, if appropriate and available, continuous positive airway pressure (CPAP) and/or surfactant. Surfactant is recommended for intubated and ventilated infants with respiratory distress syndrome, and should only be used in facilities where intubation, ventilator care, blood gas analysis, newborn nursing care, and monitoring are available. For extremely preterm babies with apnea, consider

20 Segre J, Lawn J, Hodgins S, Smith J, Litch J, Barker P, Crowther C. Notes on the Antenatal Corticosteroids Trial (ACT)—October 15, 2014. UN Commission of Life Saving Commodities Antenatal Corticosteroids Working Group.

21 World Health Organization. *Recommendations on interventions to improve preterm birth outcomes*. Geneva: Switzerland: WHO, 2015. Available at: www.who.int/reproductivehealth/publications/maternal_perinatal_health/preterm-birth-guidelines/en/

BOX 3.4. KMC: Helping Small Babies Survive and Thrive

KMC is one of the most promising ways to save preterm and low birth weight (LBW) babies in all settings. This form of care, initiated in health facilities, involves teaching health workers and caregivers how to keep newborns warm through continuous, 24 hours per day, skin-to-skin contact on the mother or caregiver's chest.

Getting started with KMC:

- Not much is needed to start KMC other than designated beds with infection and access control and access to extra care if complications arise
- Health workers should counsel mothers and families with stable small babies to initiate KMC as soon as possible after birth, particularly in the absence of intensive neonatal care

Positioning:

- Dress baby in only socks, nappy, and hat
- Place baby between mother's breasts, in vertical position, with head turned to side, slightly extended to protect airway
- Flex hips in frog position
- Flex arms
- Wrap/tie baby securely with cloth to mother

Feeding:

- Mother provides exclusive breastfeeding 2 to 3 hourly, and on-demand
- If baby unable to latch/suckle, feed expressed breastmilk with cup or spoon

Duration:

- LBW and premature babies should remain in KMC for at least 20 hrs/day (with mother or surrogate) until baby no longer tolerates KMC positioning
- Mother should sleep in a half-sitting position, with baby tied in KMC
- If baby needs to be out of KMC position, care should be taken to keep baby warm

Follow-up:

- Mother and baby should be sent home in KMC position with counseling prior to discharge and follow-up monitoring as clinically indicated

Visit www.who.int/maternal_child_adolescent/documents/9241590351/en/ to download WHO's *Kangaroo Mother Care: A Practical Guide*



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caffeine administration as per WHO guidelines. Employ incubators if needed (where KMC is not an option); in settings where the affected population has access to hospital care, neonatal intensive care provides additional support.^{22,23}

LBW can be a consequence of preterm birth or small size for gestational age (SGA, defined as weight for gestation < 10th percentile), or both.²⁴ Small babies are vulnerable to temperature instability, feeding difficulties, low blood sugar, infections and breathing difficulties. Being born with LBW is recognized as a disadvantage for the infant, who will be at higher risk of early growth restriction, infectious disease, developmental

22 World Health Organization, et. al. *Born Too Soon—The Global Action Report on Preterm Birth*. Geneva, Switzerland: WHO; 2012 (p. 6).

23 World Health Organization, 2013. *Pocket Book of Hospital Care for Children*. Geneva, Switzerland: WHO; 2005 (p. 61). Available at: www.who.int/maternal_child_adolescent/documents/9241546700/en/

24 World Health Organization. *Guidelines on Optimal feeding of low birth-weight infants in low- and middle-income countries*. Geneva, Switzerland: WHO; 2011. Available at: www.who.int/maternal_child_adolescent/documents/9789241548366.pdf

delay and death during infancy and childhood.²⁵ Improving the care of LBW infants through feeding, temperature maintenance, hygienic cord and skin care, and early detection and treatment of complications, can substantially reduce infant mortality rates among this vulnerable group.

While basic essential newborn care can be provided in the home and community through trained health workers, small newborns will require some in-patient care. Whenever possible, transfer small babies to a hospital for support with thermal care, feeding and growth monitoring. After the newborn's health is stable, support outside the health facility has been established, and mothers and caregivers have learned and initiated KMC, many small babies can be discharged to continue KMC at home.

In humanitarian settings where access may be limited, prioritize activities such as KMC, breastfeeding, CHX for cord care, strict hygienic practices with hand washing for caretakers and health workers, and if infection is suspected, ATB (antibiotic) treatment.

3.3.a. Managing prematurity at the household level

During the pregnancy/antenatal period: In addition to the recommendations in 3.2.a., Provide health education on prematurity, preterm labor and care for small babies. Identify women in preterm labor and refer to nearest health facility for care.

During delivery: If labor begins at home, support transfer to a health facility. If transfer is not possible and the delivery is taking place at home, provide care as outlined in Section 3.2.

During the immediate postnatal period (within the first hour of delivery): Refer all babies born before 37 weeks gestation and all LBW newborns (< 2500g) to more advanced care (ideally, in a formal hospital setting; see below). Identify small babies that have been born at home using a newborn weighing scale or a foot length card that has been calibrated to the local setting. All babies weighing less than 2500g should be placed in KMC position with their mother or a surrogate and taken immediately to a health facility for follow up.

²⁵ Katz J, Lee AC, Kozuki N, et al: Mortality risk in preterm and small-for-gestational-age infants in low-income and middle-income countries: a pooled country analysis. *Lancet* 2013, 382:417-425.

During the first week after delivery (second hour following delivery up to seven days): Preterm and LBW babies should be followed up carefully after delivery at home or discharge from the health facility through extra postnatal visits, preferably at home. These should occur on days 1, 3 and 7 after birth, at a minimum. Ensure immediate referral to facility-based care for newborns showing any danger signs (*Box 3.3*).

3.3.b. Managing prematurity in peripheral health facilities

During the pregnancy/antenatal period: In addition to activities performed at the household level, for malaria endemic areas or for refugees or IDPs from malaria endemic areas, provide pregnant women with intermittent preventive treatment (IPTp). Diagnose and treat other infections including sexually transmitted infections (STIs), such as syphilis and HIV/AIDS. Provide asymptomatic bacteriuria screening and treatment. For women who have completed less than 34 weeks of pregnancy and have one of the four conditions associated with preterm delivery (i.e., preterm labor, pPROM, antepartum hemorrhage, multiple pregnancy, severe pre-eclampsia), refer to a hospital for ACS and further monitoring. ACS should only be administered as described in section 3.3.

During delivery: In the case of known preterm labor, implement clean birth practices as outlined in *Section 3.2.a*. For newborns that do not start breathing on their own after tactile stimulation within one minute after birth, provide basic newborn resuscitation (*Section 3.5*). Refer to *Section 3.5* for guidance on managing intrapartum-related complications.

During the immediate postnatal period (within the first hour of delivery): Perform a complete physical examination within two hours of birth. Weigh the newborn baby and record birth weight appropriately. Ensure availability of heel lancets and rapid blood sugar testing sticks. Provide extra thermal care for small babies through KMC (*Box 3.4*). Encourage early breastfeeding to prevent hypoglycemia, as small babies are more susceptible. Employ strict infection-prevention measures through strict hand washing, ensuring a clean environment, and avoiding sharing of incubators. Provide feeding support (e.g., cup and spoon; nasogastric tube) if the baby is unable to breastfeed. Medical supplies needed at the facility level include: bag and mask for resuscitation; digital infant weighing scale; digital infant thermometer; mobile examination lamp; syringes (2, 5, 10 cc) and needles (16,18); alcohol swabs; and oxygen concentration. Additional/ optional items include breast pump (battery powered or manual),

phototherapy lamp and fluorescent tubes. For more details of supply kit contents, see *Annex 2B*.

During the first week after delivery (second hour following delivery up to seven days): Observe and monitor newborn vital signs for a minimum of 24 hours. Continue KMC with careful monitoring of feeding, weight gain and signs of illness. For newborns that are having difficulty breastfeeding ensure mothers are comfortable hand-expressing breast milk; emphasize the importance of hand washing before expressing breast milk and of keeping all feeding cups and utensils clean. Provide antibiotic prophylaxis for newborns at risk of infection due to pPROM or meconium aspiration during delivery [intravenous (IV)/intramuscular (IM) ampicillin powder for injection 500 mg vial (250mg/ml); IV/IM gentamicin, 40mg/ml (20mg/ml, if available)].

3.3.c. Managing prematurity in hospitals

During the pregnancy/antenatal period: Follow recommendations in 3.2.c. and 3.3.b. Monitor labor closely and prepare the delivery room for anticipated complications such as hypothermia and asphyxia.

At delivery: Deliver services per facility-level care guidelines, in section 3.2.c. and 3.3.b.

During the immediate postnatal period (within the first hour of delivery): If the baby is stable, follow guidelines as per 3.2.c. and 3.2.b. If the baby is not stable, provide immediate newborn resuscitation, outlined in section 3.5. If the baby is unstable requiring frequent ventilatory support, and a functional, clean incubator is available, use the incubator until the baby is stable enough to transition to KMC. If the mother is not available to perform KMC, try to enlist the support of another caregiver to perform KMC.

During the first week after delivery (second hour following delivery up to seven days): In addition to measures recommended in 3.3.b., measure the newborn's body temperature every four hours. Weigh the newborn at least once per day. Continue providing ENC (*Section 3.2.*) and feed breast milk every 2 to 3 hours for about 20 minutes per session until

the baby is tolerating feeds, alert, and has no issues with hypoglycemia.²⁶ Many preterm babies will not feed on demand and should be woken up to feed on schedule to ensure they are eating enough in order to gain weight and prevent hypoglycemia. If intensive care equipment is available, provide incubator care for preterm babies not yet stable enough for KMC. Provide advanced care for respiratory distress: employ therapeutic use of surfactant for intubated and ventilated infants with respiratory distress syndrome²⁷; provide CPAP and monitor oxygen levels; prevent and treat prematurity apnea. Manage newborns with jaundice with phototherapy, or exchange blood transfusion based on bilirubin cut-off points.

Medicines for inclusion at the hospital level, depending on local capacity, include:

1. **benzylpenicillin** (injectable 5 million IU/vial)
2. **caffeine citrate** (20mg/ml oral/injectable solution)
3. **cefotaxime** (injectable 125mg/vial)
4. **ceftriaxone** (injectable 250mg/vial)
5. **cloxacillin** (injectable 250mg/vial)
6. **diazepam** (injectable 5mg/ml)
7. **epinephrine** (1:10000 solution: 1 mg/ml, vial 1 ml);
8. **glucose hyper**, (50%, 50 ml vial)
9. **gentamycin doses** (injectable 40mg/ml)
10. **IV/IM Phenobarbital Sodium** (injection 200g/ml, vial 1 ml)
11. **sterile water for injections that require dilution**
12. **dexamethazone** (4mg Injections)
13. **surfactant doses** (suspension for intratracheal instillations 25mg/ml or 80mg/ml)

Supplies at the hospital level should include a breast pump (battery powered), phototherapy lamp and fluorescent tubes. See *Annex 2C* for a complete list of supply kit contents to support the management of prematurity at the hospital level.

²⁶ Edmond K, Bahl R. Optimal feeding of low-birth-weight infants : technical review. World Health Organization. 2006.

²⁷ WHO recommendations on interventions to improve preterm birth outcomes. 2015.

3.4 Newborn Infections

- **See Annex 1C** for a summary table of newborn health services (including ENC and services to prevent and treat prematurity, infections and intrapartum birth complications), presented by level of care.
- **See Annex 2** for a summary table of newborn supply kit components, by level of care.

Use preventive measures during the antenatal period and labor/delivery to protect the health of the mother and reduce the risk of congenital and newborn infections. Clean birth practices, including hand washing before, during and after delivery, are critical.

Timely management and treatment of birth complications are important factors in reducing newborn and maternal mortality. To give women access to life-saving care, standard guidelines recommend that all births take place in a health facility under the care of a skilled provider. Yet, because of the logistical challenges and resource limitations of crisis settings, many women might give birth at home, and require household-level care. Task CHWs and other field workers with conducting community outreach and postnatal follow-up at the household level to identify and transfer newborns with infections to health facilities equipped to treat them.

BOX 3.5. Basic preventive measures to reduce the risk of early neonatal infections

- Employ clean birth practices at delivery
- Wash hands before and throughout delivery
- Ensure that the mother and family wash hands before handling the baby
- Emphasize hygienic cord care (use CHX)
- Antibiotics to women with prolonged rupture of membrane
- Treat any maternal infections during pregnancy and labor

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See *Box 3.3.* for a list of clinical signs and symptoms of newborn infections that can be used by CHWs and family members, and *Box 3.6* for signs and symptoms that can be identified by trained healthcare workers. Equip peripheral health facilities as well as hospitals to manage newborn infections by incorporating necessary preparations into the region's humanitarian response plan, including equipment, medicines and referral plans for household to health facility transfers.

BOX 3.6. Signs of Serious Bacterial Infection in Neonates

The following danger signs can be used by formally trained medical staff to induce treatment of neonatal infection. See *Box 3.3* for danger signs for use by CHWs and family members.

Critical illness: no movement/unconscious, history of convulsions, unable to feed, severe bleeding, or bulging fontanelle

Clinically severe infection: Fever (temperature greater than or equal to 38°C), hypothermia (temperature less than 35.5°C), poor feeding, reduced movement, severe chest in-drawing

Isolated fast breathing: Respiratory rate >60 breaths per minute

For more information, see *Pocket Book of Hospital Care for Children*, World Health Organization, 2013. www.who.int/maternal_child_adolescent/documents/9241546700/en/

At the peripheral health facility and hospital levels, train staff to be especially vigilant in investigating clinical indications of infections in newborns, giving special attention to malaria, pneumonia, meningitis and sepsis:

- **Malaria:** In a malaria-endemic area, test for malaria prior to performing a lumbar puncture. Use a malaria smear as a rapid diagnostic test; the HRP-2 protein may be transmitted from a malaria-infected mother to her baby during pregnancy.
- **Sepsis, meningitis, and pneumonia:** The most common infections in the newborn are sepsis, meningitis, and pneumonia. Signs of these infections, which may be bacterial, require

treatment with antibiotics. These infections present as critical illness, clinically severe infection, or isolated rapid breathing.

Sepsis, meningitis, and pneumonia in neonates can be difficult to detect in crisis settings, where diagnosis is typically clinical. If laboratory diagnosis and x-ray are available, blood culture, blood count and differential, and lumbar puncture may help in the diagnosis of sepsis and meningitis. X-ray may help in the diagnosis of pneumonia. However, in most settings, diagnosis is based on clinical signs (*Box 3.6*) that can be used to differentiate critical illness (e.g., meningitis), clinically severe infections (e.g., sepsis), and isolated rapid breathing (e.g., pneumonia).

The recommendations below provide guidance on infection prevention and treatment based on clinical diagnosis.

3.4.a. Managing infections at the household level

During the pregnancy/antenatal period: Implement ENC per *Section 3.2*. In malaria endemic areas, distribute ITN to pregnant women for use during pregnancy and after birth, and educate women and families how to use the ITNs (e.g., after delivery, the newborn sleeps with the mother under the ITN). Provide TT vaccination as required and screening and treatment for STIs.

During delivery: Implement ENC clean birth practices (clean hands, clean perineum, clean surface, clean cord and tying instruments, clean cutting instrument and clean cutting surface).

During the immediate postnatal period (within the first hour of delivery): Implement ENC. Perform a complete physical examination within two hours of birth. Weigh the newborn baby and record birth weight appropriately. Continue to look for signs of serious bacterial infections (*Box 3.6*). If any signs are detected, immediately refer and facilitate transfer to the nearest hospital for advanced care. Where hospitalization is not possible, recent guidelines from WHO provide recommendations for antibiotic regimens provided by trained health care providers in outpatient settings at a peripheral health facility. Note that critical illness should always be treated in hospital and not outpatient facilities. If families refuse hospitalization or referral is not possible, the following recommendations should be considered by trained health provider to provide an outpatient treatment of infection.

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- For infants with isolated fast breathing, treat at home with oral amoxicillin, 50 mg/kg per dose twice daily for 7 days, by an appropriately trained health worker.
- For infants with clinical severe infection, provide one of two regimens:

BOX 3.7. CHX for Clean Cord Care at Home

Application of 7.1% chlorhexidine digluconate (CHX) to the umbilical cord, especially on the day of birth, is a low-cost intervention that has been shown to reduce newborn mortality. Use CHX as a standard part of ENC to prevent newborn morbidity and mortality related to infections and sepsis.

Chlorhexidine has an excellent safety record and is an acceptable, feasible, and cost-effective intervention. It can be easily administered by health professionals, including community health workers, as well as family members.

CHX was added to the 2013 WHO List of Essential Medicines for Children, specifically for umbilical cord care. In January 2014, WHO issued a new recommendation for umbilical cord care that prioritized daily CHX application to the umbilical cord stump during the first week of life for newborns born at home in settings with high neonatal mortality (30 or more neonatal deaths per 1000 live births).

- Clean, dry cord care is recommended for newborns born in health facilities and at home in low neonatal mortality settings. Use of CHX in these situations may be considered only to replace application of a harmful traditional substance (cow dung, to the cord stump).

Adapted from: *Chlorhexidine for umbilical cord care: A new, low-cost intervention to reduce newborn mortality*. PATH, February 2014.

Available at: <http://www.path.org/publications/detail.php?i=1556>

- Intramuscular gentamicin 5-7.5 mg/kg once daily for seven days and twice daily oral amoxicillin, 50 mg/kg per dose for seven days. Close follow-up is essential.
- Intramuscular gentamicin 5-7.5 mg/kg once daily for two days and twice daily oral amoxicillin, 50 mg/kg per dose

However, national guidelines for implementation in individual settings should be followed.²⁸ While these new indications provide recommendations for treatment at home, treatment in a health facility should always been encouraged.

During the first week after delivery (second hour following delivery up to seven days): Continue to implement ENC. Provide tetracycline eye ointment. Promote vaccination against hepatitis B, oral polio and BCG vaccines. Continue to look for danger signs and indications of sepsis, pneumonia and other infections (*Box 3.6*). If problems are detected, assist the family to seek advanced care for the newborn in the nearest peripheral health facility or hospital. Encourage HIV-positive mothers to access HIV testing and other care for their newborns.

3.4.b. Managing infections in peripheral health facilities

During the pregnancy/antenatal period: Where feasible, test and treat women for syphilis. Vaccinate pregnant women against tetanus. In malaria endemic areas or for mothers who are arriving from a malaria endemic area, provide intermittent preventive therapy (IPTp) to prevent malaria. For women from high HIV prevalence countries, determine HIV status. Follow prevention of mother-to-child transmission guidelines for women who are HIV positive.²⁹ Identify and treat urinary tract infections.

²⁸ World Health Organization. *Managing possible serious bacterial infection in young infants when referral is not feasible*. Geneva, Switzerland: WHO, 2015. Available at: www.who.int/maternal_child_adolescent/documents/bacterial-infection-infants/en/

²⁹ Medicines and medical commodities for HIV are not included in the newborn care kits. Access HIV care kits through UNFPA. See the *Inter-Agency Reproductive Health Kits for Crisis Situations*, 2011. www.unfpa.org/webdav/site/global/shared/procurement/06_for_customers/02_gccp-erhkits/RH%20Kits%20Manual%202011.pdf



At delivery: Provide standard care as described in section 3.2.b. Administer antibiotics to newborns that are born with the following risks (even if no signs of clinical infection): the mother has or had a uterine infection or fever any time from the onset of labor to three days after birth; mother had premature rupture of membranes for more than 18 hours before birth and/or foul smelling amniotic fluid. Duration of antibiotics should be at least 48 hours if laboratory studies and exam are normal. Longer treatment duration is required if laboratory results suggest infection or if clinical signs are present.

During the immediate postnatal period (within the first hour of delivery): If danger signs (*Box 3.3.*) or indicators of neonatal infection (*Box 3.6.*) are present, immediately administer an initial dose of antibiotics, provide respiratory support or anti-convulsant (phenobarbital)

if needed, and refer mother and baby to the nearest hospital for advanced care.³⁰ Provide tetracycline eye ointment and administer hepatitis B, polio and BCG vaccine. Antibiotic doses should be given as follows:

- In the first week of life: ampicillin (IV/IM) 50/mg/kg/day divided every 12 hours if and gentamycin (IV/IM) 3 mg/kg/dose daily for low birth weight babies or 5 mg/kg/dose daily for normal birth weight babies
- For weeks 2-4 of life: ampicillin (IV/IM) 50/mg/kg/day divided every 8 hours and gentamycin 7.5 mg/kg/dose once daily

During the first week after delivery (second hour following delivery up to seven days): Continue to monitor for danger signs and indicators of infection. For babies born to HIV-positive mothers, initiate anti-retroviral therapy (ART).

Supplies at the facility level should include an infant weighing scale and digital thermometer for infants. For a complete list of supply kit contents to prevent and treat infections at the facility level, including medicines, medical commodities and laboratory supplies, see *Annex 2B*.

3.4.c. Managing infections in hospitals

During the pregnancy/antenatal period: Follow recommendations as given in 3.4.b.

At delivery: Follow recommendations as given in 3.3.b. and 3.4.b.

During the immediate postnatal period (within the first hour of delivery): As above, if danger signs (*Box 3.3.*) or indicators of neonatal infection (*Box 3.6.*) are present, immediately administer an initial dose of antibiotics (IM/IV). Provide tetracycline eye ointment and administer hepatitis B, polio and BCG vaccine.

³⁰ WHO. Pocket book of hospital care for children: Guidelines for the management of Common Childhood Illness. Second edition, 2013. Geneva, Switzerland: World Health Organization. www.who.int/maternal_child_adolescent/documents/child_hospital_care/en/

During the first week after delivery (second hour following delivery up to seven days): In additions to guidance in 3.4.b., provide case management of neonatal infections including sepsis, meningitis and pneumonia. For pneumonia and sepsis, continue the regimen recommended in 3.4.b. for 10 days. If meningitis is suspected or diagnosed, continue antibiotic treatment for 21 days. In addition to antibiotics, management includes:

1. If cyanosed or in severe respiratory distress, administer oxygen by nasal prongs or nasal catheter, and monitor oxygen levels
2. If respiratory distress syndrome is diagnosed, provide CPAP early and monitor oxygen levels³¹
3. Administer IV/IM ampicillin and gentamicin dosage based on weight of baby for 7-10 days
4. If drowsy, unconscious or convulsing, check blood glucose:
 - If glucose <20mg/100ml, give IV glucose; if \geq 20mg/100ml, feed immediately and increase feeding frequency
 - If the blood glucose level cannot be checked, assume hypoglycemia and treat with IV glucose and initiate feeding
5. If convulsions are present, administer phenobarbital (loading dose for phenobarbital 20 mg/kg IV. If convulsions persist, give further doses of phenobarbital 10 mg/kg up to a maximum of 40 mg/kg. If needed, continue phenobarbital at a maintenance dose of 5 mg/kg per day)
6. Continue to provide supportive care, reinforce hygienic practice, and closely monitor
7. Administer Vitamin K

See *Annex 2C* for a complete list of medicines, medical commodities and laboratory supplies to include in the supply kit for managing infections at the hospital level.

If ampicillin is not available, benzyl-penicillin can be used. If meningitis is suspected, or the baby is not improving on the initial ATB, consider using a broader spectrum cephalosporin such as ceftriaxone or cloxacillin.

Cloxacillin is also indicated if there is a high suspicion for staphylococcus infection.

31 WHO recommendations on interventions to improve preterm birth outcomes. 2015.

3.5 Intrapartum Complications

- **See Annex 1D** for a summary table of newborn health services (including ENC and services to prevent and treat prematurity, infections and intrapartum birth complications), presented by level of care.
- **See Annex 2** for a summary table of newborn supply kit components, by level of care.

Intrapartum complications occur during the time of labor and delivery and cannot always be predicted, though much can be done to prevent them. Ensuring quality antenatal care and skilled care at delivery with timely action when needed are much more effective in preventing intrapartum complications than known strategies for management. All delivery areas should be prepared to provide management of intrapartum complications, such as breathing support. Supplies should be prepared and available before a delivery occurs so that safe and timely treatment can be given if the baby is born not breathing or in distress.

If this is not possible, encourage referral for any woman that has prolonged labor, as there is a higher risk for fetal distress. In most cases, if a baby is born not breathing, respiration can be stimulated with tactile stimulation (rubbing the back, drying the baby). These interventions should be performed to initiate and sustain breathing within the “golden minute” after birth. However, within this first minute after birth, for a baby who is not breathing and does not respond to tactile stimulation, assist the baby to breathe with a bag and mask. For more guidance, refer to *Helping Babies Breathe (HBB)*, a program that offers guidelines for responding to respiratory problems in low-resource settings (Box 3.8, Figure 3.2).

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3.5.a. Managing intrapartum complications at the household level

At delivery: All women at risk of intrapartum complications should deliver at a health facility with a skilled attendant. If a birth occurs at home, there is clear amniotic fluid, and the baby starts breathing on their own, do not bulb suction the mouth and nose. In the presence of meconium-stained amniotic fluid, intrapartum suctioning of the mouth and nose at the delivery of the head is not recommended. For babies that don't start spontaneous breathing, immediately start tactile stimulation by rubbing the back and drying. Refer to Helping Babies Breathe (HBB) program for more guidance on warming, stimulating and resuscitating the newborn (*Box 3.8*).

BOX 3.8. Helping Babies Breathe (HBB)

Helping Babies Breathe (HBB) promotes the timely delivery of essential interventions to manage babies not breathing at birth within the first “golden minute” of life: clearing the airway, stimulating breathing, and using bag and mask ventilation where necessary.

HBB was developed by the American Academy of Pediatrics (AAP), in collaboration with WHO, the United States Agency for International Development (USAID), Saving Newborn Lives, the National Institute of Child Health and Development and a number of other global health organizations. Particularly in humanitarian settings, HBB is a useful complement to RMNCAH services, providing evidence-based neonatal resuscitation techniques tailored to the needs of low-resource environments.

See Figure 3.2. below for an HBB action plan and guide. Consult the HBB website for training materials and techniques

www.helpingbabiesbreathe.org

www.helpingbabiesbreathe.org/implementationguide.html



During the immediate postnatal period (within the first hour of delivery): Transfer newborns with any evidence of complications, including breathing difficulties, for more advanced care as soon as logistically feasible. If CHWs or other cadres are trained to assist in home deliveries, they should have knowledge of the referral system and where advanced care is available nearest to the household before the delivery, in case complications arise (*see Chapter 4, Section 4.2. Developing a Referral System*). Also, if danger signs (*Box 3.3.*), (*Box 3.6.*) are present, refer mother and baby to the nearest hospital for advanced care.

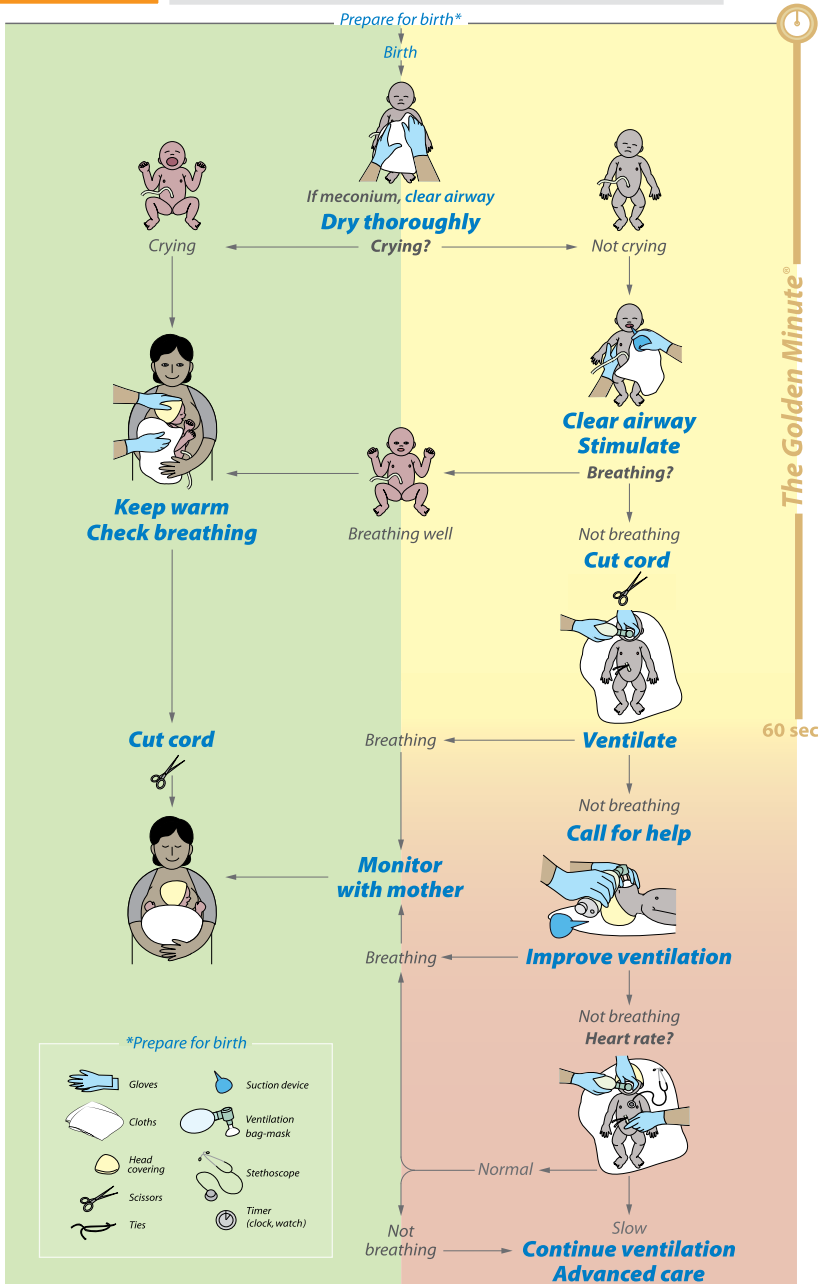
During the immediate postnatal period (within the first hour of delivery): If danger signs (*Box 3.3.*) or additional signs of sepsis (*Box 3.6.*) are present, refer mother and baby to the nearest hospital for advanced care.

3.5.b. Managing intrapartum-related complications in peripheral health facilities

Intrapartum care (labor): Use the partograph to monitor labor including assessing the fetal heartrate at least every half hour. If maternal or fetal distress is recognized, identify an ambulance/vehicle and use established referral systems to get the woman to a health facility that has Basic or Comprehensive Emergency Obstetric Care (BEmOC or CEmOC).

At delivery: Follow the HBB flow chart (Figure 3.2) for immediate action steps at birth. For newborns that do not start breathing within one minute after birth despite thorough drying, cleaning of the airway and additional stimulation, initiate ventilation using a newborn-sized self-inflating ambubag and mask. Assess adequacy of ventilation by observing chest rise and fall. If normal breathing has not started, use the bag and mask for oxygen administration and monitor oxygen levels with a battery-operated pulse oximeter with probes for neonates. In addition, have a mucus trap (HBB Penguin) available for suction, or a suction machine. If continued oxygen administration is needed, and equipment for providing oxygen monitoring saturation is available, use nasal prongs. See Annex 2B for a list of supply kit contents for peripheral health facilities.

Figure 3.2. Helping Babies Breathe (HBB) Action Plan



Source: American Academy of Pediatrics, Helping Babies Breathe. www.helpingbabiesbreathe.org

3.5.c. Managing intrapartum-related complications in hospitals

Intrapartum care (labor): Use the partograph to monitor labor including assessing the fetal heartrate at least every half hour. If there are signs of maternal or fetal distress, follow guidelines for providing BEmOC or CEmOC services.

At delivery: If the newborn does not start breathing spontaneously, follow the steps of HBB and outlined above until breathing is established.

During the immediate postnatal period (within the first hour of delivery): Provide advanced care for respiratory distress syndrome such as CPAP support with ability to monitor oxygen saturation levels. Continue to assess for danger signs. In addition to respiratory issues, the newborn may have other complications such as convulsions or hypoglycemia. Convulsions can be due to perinatal asphyxia, hypoglycemia, or infection. If the newborn is convulsing, provide IV phenobarbital.³⁰ Check glucose for hypoglycemia (<45 mg/dl or 2.5 mmol/l) and treat with glucose by IV or nasogastric tube as indicated.³² See *Annex 2C* for a complete list of supply kit contents. ■

32 WHO. Pocket book of hospital care for children: Guidelines for the management of Common Childhood Illness. Second edition, 2013. Geneva, Switzerland: World Health Organization. www.who.int/maternal_child_adolescent/documents/child_hospital_care/en/

Key resources to accompany Chapter 3

Planning newborn health services:

- *2010 Inter-agency Field Manual on Reproductive Health in Humanitarian Settings*. Inter-agency Working Group on Reproductive Health In Crisis, 2012. www.iawg.net/resources/field_manual.html
- *Essential Interventions, Commodities and Guidelines for Reproductive, Maternal, Newborn and Child Health (RMNCH)*. Partnership for Maternal, Newborn & Child Health, 2011. www.who.int/pmnch/knowledge/publications/201112_essential_interventions/en/
- *Every newborn: an action plan to end preventable deaths* (draft). WHO, 2014. www.who.int/maternal_child_adolescent/topics/newborn/enap_consultation/en/

Key resources to accompany Chapter 3 (cont'd)

- *Helping Babies Breathe*. AAP. www.helpingbabiesbreathe.org
- *Kangaroo Mother Care*. WHO. www.who.int/maternal_child_adolescent/documents/9241590351/en/
- *Newborn Health Guidelines approved by the WHO Guidelines Review Committee 2009-2012*. WHO, 2012. www.mchip.net/node/1191
- *Pocket Book of Hospital Care for Children*, WHO, Geneva 2013. www.who.int/maternal_child_adolescent/documents/9241546700/en/
- *Recommendations on Postnatal Care of the Mother and Newborn*. WHO, 2014. http://apps.who.int/iris/bitstream/10665/97603/1/9789241506649_eng.pdf
- Recommendations on interventions to improve preterm birth outcomes. WHO, 2015. www.who.int/reproductivehealth/publications/maternal_perinatal_health/preterm-birth-guidelines/en/
- Managing possible serious bacterial infection in young infants when referral is not feasible. WHO, 2015. www.who.int/maternal_child_adolescent/documents/bacterial-infection-infants/en/

Essential medicines and medical supply kits:

- *Essential Medicines and Medical Supplies Policy and Guidance 2013*, UNHCR. www.unhcr.org/527baab09.html
- *Inter-agency Reproductive Health Kits for Crisis Situations*, 5th edition. UNFPA. www.unfpa.org
- *Inter-agency Emergency Health Kit 2006: Medicines and medical devices needed to treat 10,000 people for approximately 3 months – an interagency document*. WHO, 2006. <http://apps.who.int/medicinedocs/en/d/Js13486e/>
- *UNICEF Midwifery Kit*. www.unicef.org/supply/files/Midwifery_Kit.pdf
- *WHO Essential Medicines List – Adults (18th edition) and Children (4th edition)*, 2013. (www.who.int/medicines/publications/essentialmedicines/en/)
- *Sources and Prices of Selected Medicines for Children*. UNICEF/WHO. Geneva, April 2010. [www.unicef.org/supply/files/SOURCES_AND_PRICES_2010\(2\).pdf](http://www.unicef.org/supply/files/SOURCES_AND_PRICES_2010(2).pdf)
- *Priority life-saving medicines for women and children 2012: Improving health and saving lives by ensuring access to priority medicines*. WHO, Geneva, May 2012. www.who.int/medicines/publications/emp_mar2012.1/en/index.html



To effectively deliver the newborn health services described in *Chapter 3* at the local level, a number of support activities must be carried out in the community. This chapter outlines key components of field-based program development and implementation to improve newborn care in humanitarian settings.

4.1 Developing and Disseminating Key Messages/Behavior Change Communication (BCC) Materials

During a crisis, the affected population may not consider the need to seek MNH care, particularly as increased numbers of injuries and new epidemics may impact the adult and child populations and mobility is constrained. In this context, communicating essential information about and offering quality services for pregnancy, delivery and basic postnatal care is critical to saving maternal and newborn lives. At a minimum, pregnant women need to know

where and when health services are available, and must be given basic information about the appropriate care of newborns, including the identification of danger signs that indicate the need to seek care.

Work with local staff from the affected population to formulate clear, evidence-based, culturally relevant messages to the affected population at the outset of the crisis response. Incorporate messages communicating critical facts about ENC, danger signs and the need to safeguard babies' lives within all trainings, communication materials and policy development, and function as tools to promote MNH care within the crisis setting.

Without formal healthcare services operating at full capacity in an emergency, families may be more likely to rely on traditional practices. Support those practices that are beneficial (such as increased family support and household support for the mother), and address those with potentially harmful effects (e.g. cow dung or other substances applied to the cord).

In more protracted humanitarian situations, work with affected populations to foster community ownership for the design and implementation of BCC materials and community mobilization strategies. Once the immediate emergency response phase has concluded, adapt BCC materials to incorporate culturally relevant examples of recommended practices; add or change illustrations based on the context of the population served; and suggest specific alternatives to known harmful practices.³³

33 World Health Organization. *Caring for newborns and children in the community: caring for the newborn at home*. Geneva, Switzerland: WHO; 2012. www.who.int/maternal_child_adolescent/documents/caring_for_newborn/en/ See *Mother and Baby Card*.

4.2 Developing a Referral System

The majority of newborns thrive with basic care and support. Newborns who are sick or small are more vulnerable and may require additional care at formal health services to survive. Newborns are vulnerable and need prompt, responsive care quickly to survive. A well-organized and functional referral system includes protocols, procedures and practical guidance to facilitate the transfer of newborns to the appropriate level of care when danger signs are detected (Box 4.1).

Even in stable environments, transferring newborns to a higher level of care danger is one of the most challenging aspects of delivering newborn health services. During humanitarian crises, this challenge becomes particularly complex. Avoiding delays in the management of serious newborn illnesses is essential; thus, the referral system must responsive and able to adapt to any emerging changes in the security and/or logistical status of various health facilities providing RMNCAH care.

To facilitate the implementation of an efficient, safe, effective referral system, immediately establish relationships with local health facilities and local groups active in the region. Establishing relationships with local actors and determining referral pathways is a particular concern when a conflict or disaster has obstructed essential roadways or transport

BOX 4.1. The Newborn Care Referral System in a Crisis Setting: Principles

- Every newborn should have access to care with the potential for safe and timely referral if needed.
- Priority must be given to newborns exhibiting any one of the danger signs so that they receive timely care.
- Referral criteria and protocols should be established at every level of care.
- A triage system should be in place to address the most severe danger signs especially in small babies.
- Transport should be organized for referral from facilities that are not easily accessed.

corridors. Collaborate with local health officials and facility staff. Use the inventory of services and the map of functional facilities developed as part of the planning process to determine which facilities are prepared to manage sick newborns, and to identify additional resources that may be needed to support referrals. In some settings, basic support, such as personnel to manage the sick newborn during a transfer or usage of a standardized transfer note, may need to be established. In some cases, however, more advanced inputs may be needed; for instance, transport and/or communication systems may need to be developed or re-established.

Humanitarian health staff working in temporary clinics and in refugee/IDP camps and local health personnel working as non-facility based staff (e.g., outreach workers, CHWs) are most likely to need up-to-date information about the facility:

- In camp settings, where the capacity to care for mothers and their newborns may be limited or non-existent, transfer women and their babies to a peripheral health facility or district hospital whenever possible. Be sure that health workers have up-to-date information about the availability of RMNCAH services at these potential referral sites before women and their babies are transferred, in order to avoid unnecessary delays in care delivery. Use the camp's emergency transport vehicles to move the mother and her newborn to higher-level health facilities.
- In village and other local (non-camp) settings where women and families are served by CHWs or outreach workers through home visits, up-to-date information about MNH services and supply availability is essential.



4.3 Home Visits for Mothers and Babies

Delivery and immediate postnatal care in a health facility or hospital is recommended for all women and their babies, in all situations – including humanitarian settings. However, during and immediately following a crisis, women may not be able to leave their residences

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to access care in health facilities. In addition, many cultures advocate a seclusion period where mothers and newborns do not go outdoors. This can range from 7-40 days, making seeking care outside the home a difficult negotiation. CHWs and other field staff can be trained to provide postnatal care at the household level in these settings, ensuring that linkages to the formal health system (whether through the local system, camp-based services or those established as part of the humanitarian response) are maintained through an effective referral network (*Box 4.2*).

Train CHWs and other field-based staff to advise women to seek care at a facility as soon as possible following a home birth through the referral network, while simultaneously preparing field staff for the possibility that women will need care in their homes throughout the immediate and longer-term postnatal periods. WHO and UNICEF recommend at least two home visits for all home births. Develop a CHW home visiting deployment plan that includes a first visit during the 24 hours following birth, and the second visit on the third day following birth. If possible, schedule a third

BOX 4.2. Postnatal care for mothers and their newborns

In crisis settings, women who give birth outside of a health care facility without skilled care, and in areas where continuous professional care cannot be assured, face an increased risk of newborn morbidity and mortality.

Home visits in the first week of life are a proven strategy to reduce newborn deaths in high mortality settings, and link women and their babies to ongoing services. Especially in settings where women cannot access health care due to logistical or security reasons, deploy trained CHWs or other skilled health staff to provide postnatal care through home visits. Promote a return to the health facility for a well-baby postnatal visit within the first week as services, security and local customs allow.

World Health Organization/UNICEF Joint Statement, *Home visits for the newborn child: a strategy to improve survival*, Geneva, 2009.

visit before the end of the first week of life (day 7).³⁴ Train all staff present at deliveries in HBB techniques (*Box 3.8*), and to use birth registers to track pregnancies, births (in facilities and in households), postnatal care and referrals within the population segment to which they are assigned.



4.4 Procuring Newborn Care Supply Kits

Newborn care supply kits include the medicines, medical commodities and support items to support safe births and newborn survival in the immediate postnatal period. Annex 2 details the contents of supply kits that are recommended for ENC as well as for the prevention and management of the three top causes of newborn mortality discussed in Chapter 3: prematurity, severe infections and intrapartum complications.

To compile the kits, coordinate with government agencies and INGOs/NGOs leading humanitarian response efforts to assess necessary quantities of supplies needed. See *Chapter 5: Strategic Considerations* for more information about coordinating with governmental and development partners.



4.5 Newborn Deaths in Crisis Settings³⁵

When a baby is stillborn or dies in the days and weeks after birth, care and support for the mother and family are needed; but in a crisis setting, professional counseling options for women will be limited, if not nonexistent. Train health workers

³⁴ WHO/Department of Maternal, Newborn, Child and Adolescent Health, *Newborn Health Guidelines approved by the WHO Guidelines Review Committee 2009-2012*. Geneva, Switzerland: WHO; 2012.

³⁵ Extracted from *Neonatal Guidelines: Kangaroo Mother Care*. Kwazulu-Natal, South Africa: Province of Kwazulu-Natal Health Services, Department of Pediatrics; 2007. www.kznhealth.gov.za/chrp/documents/Guidelines/Guidelines%20Neonates/KMC/KMC%20ChERP%202007.pdf

to provide culturally acceptable, appropriate support. Some tips for counseling mothers, fathers, and families dealing with stillbirth and neonatal death:

- Behave and speak with sensitivity.
- If possible, ask if the mother and/or father want to hold their baby.
- Find out what the mother/family wishes to do with the baby's body.
- Explain to the mother/family:
 - The mother will need rest, support and good nutrition.
 - The mother should not return to a full workload too early.
 - The mother's breasts will fill with milk, beginning the 2nd or 3rd day postpartum:
 - Bind the mother's breasts with a tight bra or cloth until no milk remains.
 - Do not express breast milk or stimulate the breasts.
- Educate the mother and family about the normal changes in a woman's hormones after pregnancy, which can make her feel sad, worried or irritable. Normally, postpartum women are extremely emotional, and may cry often. Given the baby's death and the compounded stress of the crisis situation, these feelings of sadness may be intense.
- Ensure that the mother knows she did not cause the baby's death. Provide information, when available, to the mother/family about the cause of the baby's death.
- Encourage the mother to use a family planning method to postpone versus avoid a subsequent pregnancy and to resist having a 'replacement' child for the one that was lost.
- Link the mother to available reproductive health and family planning services.
- Link the mother to grief counselling services. Although specific services to support women facing the death of newborns may not be available, grief counselling for victims of humanitarian crises will likely be available in camp, temporary or mobile clinic and hospital settings. ■



Key resources to accompany Chapter 4

Humanitarian Settings:

- *Caring for newborns and children in the community: caring for the newborn at home.* World Health Organization, 2012. www.who.int/maternal_child_adolescent/documents/caring_for_newborn/en/
- *Home visits for the newborn child: a strategy to improve survival (WHO/UNICEF Joint Statement).* World Health Organization, 2009. www.unicef.org/spanish/health/files/WHO_FCH_CAH_09.02_eng.pdf
- *IASC Guidelines on Mental Health and Psychosocial Support in Emergency Settings.* IASC, 2007. www.who.int/mental_health/emergencies/guidelines_iasc_mental_health_psychosocial_june_2007.pdf
- *K4 Health Essential Knowledge Toolkits.* www.k4health.org/toolkits/htsp/essential-knowledge
- *Taking Care of a Baby at Home After Birth: What Families Need to Do.* CORE Group et al., 2011. www.healthynewbornnetwork.org/sites/default/files/resources/CORE%20ENC%2011-08-2011.pdf

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Integrating newborn health care into a humanitarian response plan requires prioritization, planning and persistence on the part of the national government and health and development agencies. This chapter describes the issues and questions to be considered at the national level (or, where appropriate, the inter-country level) to support the effective development, implementation, monitoring and evaluation of newborn health services in humanitarian settings. Ideally, incorporating newborn health services into a humanitarian response plan should begin prior to a crisis. However, the steps outlined below may be implemented at any point during the humanitarian response (before, during or immediately following a crisis).

5.1 Developing a Working Group³⁶

Working with governmental and other development partners in productive, cooperative partnerships is critical to designing a practical and comprehensive humanitarian response plan that integrates RMNCAH services alongside urgent care, and avoids duplication of efforts.

³⁶ For more information on developing a working group, see <http://iawg.net/resources2013/misp-implementation/>

Determine which government ministries, UN agencies, INGOs and local NGOs are working in RMNCAH care: these agencies and staff will be essential partners to advocate for and integrate newborn health services within the humanitarian response to any crisis. Be sure to account for government programs and international initiatives that pre-date the crisis, as well as humanitarian agencies that enter at the onset of, or immediately after, a crisis. Note that one of the key objectives in the *Minimum Initial Services Package (MISP)*, a standard of care in humanitarian emergencies, calls for the identification of a lead agency and focal point to establish a RMNCAH working group.

It is recommended that newborn care issues are prioritized on the agenda of the RMNCAH working group rather than establishing a parallel working group for newborn health. Task the working group with identifying priority newborn health services, and coordinating with the broader group of governmental and humanitarian responders in the country to ensure that MNH services are integrated into the humanitarian response plan. Whenever possible, work with the government as the convener of the working group; and develop a formal plan for meetings, and for coordination with the wider humanitarian response group.



5.2 Conducting a Situation Analysis

5.2.a. Review national policies and protocols

Carefully examine the existing national policies and protocols related to RMNCAH care, including PMTCT. Avoid reinventing programs and protocols that already exist, or developing new recommendations that may conflict with current standards. These findings will inform the adaptation of existing newborn health services, and/or the introduction of new services, within the humanitarian response plan.

If national policies related to newborn care are lacking, use international standards as a starting point. Be sure to consult and collaborate with the government throughout this process. In countries where communication between the government and INGOs/NGOs is challenging, invite UN organizations, such as WHO, to initiate and facilitate dialogue with appropriate government ministries or agencies that will lead to an alignment of national policies with international standards for RMNCAH care.

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5.2.b. Review existing clinical guidelines, key messages/BCC materials, tools and training materials

Similarly, review the clinical guidelines currently in place for newborn care within the country's health facilities to ensure that they are up to date, and review the BCC materials used to communicate with women, families and communities about ENC and newborn danger signs. Also, assess the availability and appropriateness of tools and training available for health personnel. Update these clinical resources as needed, and prioritize dissemination to humanitarian response partners, including governmental ministries, UN organizations, INGOs and local NGOs. Be sure to respect and work within national health policies.

5.2.c. Incorporate questions about newborn health services within a rapid health assessment

A rapid health assessment (RHA) is conducted at the outset of the humanitarian response planning process. In addition to assessing service availability, an RHA provides an estimation of the population needing services, thus forming the basis for service development and implementation. For this reason, integrating questions into the RHA about newborn health care and about the population requiring newborn health services is critical (*Box 5.1*).

Work with the government agency or other partner responsible for completing the RHA to ensure that the assessment includes these questions and basic population estimates. For example, ensure that MNH-related figures included in the RHA comprise: the total population prior to the crisis; the total number of the affected population; the number of women of childbearing age, pregnant women and newborns within this population; and the number of deliveries per month. Also demographic indicators about the MNH status of the affected population prior to the crisis such as the maternal mortality ratio (MMR), the total fertility rate (TFR); crude birth rate (CBR), contraceptive prevalence rate (CPR), and percentage of births with a skilled attendant and/or facility-based births should be included ³⁷.

In addition, review the RHA to ensure that the assessment process is gender- sensitive, involving men and women from the affected

37 Inter-agency Working Group on Reproductive Health in Crises. *Inter-agency Field Manual on Reproductive Health in Humanitarian Settings*: 2010 Revision for Field Testing. IAWG; 2012. (p. 126).

community as assessors and translators whenever possible. This ensures that information collected is accurate, up to date, and actionable, and that acceptance and ownership of the assessment results are maximized.

BOX 5.1. Plan and deliver coordinated health services

Avoid creating “silos” of health care, in which information is collected through separate entities rather than a unified system. Ideally, information about newborn health services will be collected in coordination with reproductive or broader health assessments to maximize the coordination of health care services.

5.2.d. Assess resource availability: facilities, supplies and staff

Perform a health facility assessment to survey service, supply and personnel availability in the affected region. First, identify existing/ functioning health facilities, highlighting which facilities deliver newborn health services, and which ones require additional inputs as part of a newborn health service expansion plan. If the affected region contains multiple communities, or an entire country, assess facility and service availability for each locality based on national or traditional community divisions. If feasible, map the existing facilities and/or programs, to form part of the basis for service planning, and examine community access to and utilization of these available health services.

Once a clear picture of the facilities has been established, use the comprehensive newborn supply kit list to assess the availability of medicines and medical supplies within each facility. Take note of facilities that appear particularly well equipped to provide RMNCAH care and could serve as effective referral sites for newborns in danger. Conversely, if facilities lack essential supplies, help staff to procure the needed medicines, medical commodities and laboratory supplies.

Finally, assess staff availability and competencies at the facility or community level. Assess the number and type of skilled health care providers available in each locality, and to identify where they work – within a mobile clinic, as outreach workers, within an existing HC

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or in a temporary clinic set up by an NGO to respond to the crisis. Once an estimate of the number of providers has been established, evaluate provider competencies to deliver RMNCAH care. Providers of all backgrounds – physicians, nurses, CHWs, etc. – must be assessed. Ensure that staff are prepared to provide ANC and PNC for newborns, and to transition babies and their mothers into MCH care following the neonatal period. The information gathered during this process will not only contribute to a comprehensive picture of available RMNCAH care in the affected region, but will also inform the development of training programs for health workers and professional medical staff.

Annex 3A provides a list of indicators to be collected through routine data systems. *Annex 3B* presents a list of indicators and questions to measure facility capacity to provide ENC and key interventions to address the major causes of newborn deaths. It also shows which ones are included in two standard facility assessment tools: the Service Provision Assessment (SPA), developed and administered by MEASURE DHS, and WHO's Service Availability and Readiness Assessment (SARA). Conduct on-site assessments of providers, and conduct interviews to complement these observations.³⁸

Once these components of the healthcare landscape have been assessed and recorded, a comprehensive map of newborn health service availability will begin to emerge. This will serve as the basis for the newborn referral network (see Chapter 4, Section 4.2).

Include the following:

- Distances from each affected community to various types of local health facilities that offer ENC (existing/permanent clinics and hospitals, mobile clinics, temporary clinics);
- Distances from peripheral health facilities of various types to district hospitals with more advanced newborn care capabilities, including EmONC;
- Feasible transport options to cover these distances that are accessible to pregnant and postnatal women;

38 Newborn Indicators Technical Working Group. *Newborn Services Rapid Health Facility Assessment*. Washington, D.C.: TWG;2012.
www.healthynewbornnetwork.org/sites/default/files/resources/Newborn%20Services%20Rapid%20HFA_HNN_25June2012.pdf

- Functioning communication systems, including cell phone coverage;
- Staff to patient ratios (e.g., numbers of physicians, nurses, etc., per sick newborn) in functioning facilities;
- Availability of protocols for managing newborn referrals at the facility level, and
- Security risks and safety issues that may impact travel and service delivery for pregnant and postnatal women.



5.3 Developing a Response Strategy

Use findings from the situation analysis to inform the development of a unified strategy and response plan to deliver newborn health services. Summarize key findings from the assessment, identify services to be developed and implemented in response to those findings, and designate government and/or international partner leads for types of services and geographic zones of delivery. Once finalized and approved by the interagency working group, the strategy document will serve as an internal guide for the working group partners, as well as a tool for external advocacy, which the lead agency may use in working with the broader humanitarian response group.

5.3.a. Prioritizing newborn interventions

Based on the situational analysis and available local capacity and resources, it may be necessary to prioritize which newborn health interventions to implement during the acute response phase.

The 2014 Lancet Every Newborn Series described interventions that showed substantial evidence to be effective in reducing neonatal mortality such as essential newborn care, neonatal resuscitation, kangaroo mother care for LBW babies, and infection management for sick babies.³⁹

39 Cite Bhutta ZA, Das JK, Bahl R, Lawn JE, Salam RA, Paul VK, Sankar JM, Blencowe H, Rizvi A, Chou VB *et al*: Can available interventions end preventable deaths in mothers, newborn babies, and stillbirths, and at what cost? Lancet 2014, 26;384:347-70.

It is recommended that at the initial phase, these interventions are prioritized for implementation, and that other interventions to complete the newborn package can be added in later phases based on the local context.

5.3.b. Develop proposals to secure additional funding

Additional funding may be needed to support the activities that form components of the response plan, such as training, material development and procurement of medicines and supplies.

Because timeframes for developing, submitting, and receiving funds can be protracted, identifying funding needs and potential donors as early as possible in the response process is critical. Utilize experienced grant writers and other staff whenever feasible to prepare and submit proposals.

5.3.c. Identify and train staff

Using the results of the staff assessment (Section 5.2.d.), develop, implement and evaluate training for health staff. Develop training content based on the competencies expected for each type of provider (CHWs, nurses/mid-level staff, physicians) at each level of care (household, peripheral health facilities, hospitals) and the identified gaps in those

BOX 5.2. Plan and deliver coordinated health services Work with local providers and systems

Employ Local Health Providers

If the situation allows, identify and train local health care providers. Avoid recruiting providers from outside the region. Local providers have the advantage of being familiar with the culture and language of the affected community, increasing the likelihood that MNH services will be delivered effectively, efficiently and successfully.

Coordinate with Government Efforts

Work with the host country government to design and deliver training programs. Ministry of Health staff will know what curricula and other training materials are available in country, and can often assign trainers to deliver the training content, as well as managers to support the training and supervision of trainees.

competencies. Incorporate approved national and/or community-level MNH key messages, referral system protocols and other foundational information into training, as appropriate.

In crisis settings, training courses must be practical. Most situations will require the condensation of extensive information and education into brief trainings that health staff can complete within the restrictions of their work schedules and of the crisis situations surrounding them. Types of training may include on-the-job sessions, practical or theoretical lessons in a classroom-type setting, structured training courses addressing a specific task or need, and refresher courses for longer-term/experienced staff (Box 5.2).

Where possible, integrate newborn health service delivery training into other established medical/health training program topics, per national policy. Examples of such topics include safe motherhood, maternal health, the Integrated Management of Childhood Illnesses (IMCI) and Integrated Community Case Management (ICCM). Integration of these topics requires a high level of coordination with various organizations within the country. However, this approach is recommended because it maximizes available training resources, including training personnel, funds and the time health professionals have available to participate in training courses.

Finally, review and evaluate trainees to ensure that new knowledge and skills are being applied in practice in household, camp and clinical settings. Although challenging to implement and sustain within crisis settings, supervision and evaluation of provider practices is essential to the delivery of high-quality MNH services. Engage supervisors from the local health system early on and invite their input to develop a plan for conducting timely follow-up visits with trainees. Assessments may include visits to observe, coach and solve problems with trainees, as well as to gather data and identify gaps in performance to strengthen providers' skills on the job. Provide transport and other material support for local supervisors to ensure their active engagement in the supervisory process over time. When logistical challenges arise, such as impassable roads or security alerts that prevent local visits, on-site supervision may be suspended, but must resume as soon as feasible.

For an outline of the assessment process and sample tools see Jhpiego's *Guidelines for Assessment of Skilled Providers After Training in Maternal and Newborn Healthcare* (www.jhpiego.org/files/GdlnsSkillProvEN.pdf).

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5.3.d. Procure essential medicines and supplies

Consult the supply kit contents in *Annex 2* for a list of essential items to distribute to health facilities and non-facility based local health staff (e.g., CHWs, outreach workers and camp or camp-like settings).

5.3.e. Print and distribute clinical guidelines and protocols

Use findings from the Situation Analysis (*Section 5.2.*) to inform the selection and dissemination of key training materials, including clinical guidelines.

5.3.f. Distribute supply kits

Clearly define the process for distributing medicines, medical commodities and supplies to support newborn care. To effectively distribute kits, up-to-date, accurate information about the supply chain will be essential. Utilize information gathered as part of the RHA and the resource assessment process (*Section 5.2.d.*) to coordinate the distribution of supply kits. Document the distribution process and monitor needs regularly.



5.4 Developing and Implementing a Monitoring and Evaluation (M&E) Plan

From among the RMNCAH working group, work with the government to identify a partner with expertise in M&E. Task that partner with developing an overall M&E plan for the delivery of MNH services throughout the affected region that utilizes standardized methods of data collection, reporting for assessments and ongoing monitoring. In some cases, this agency may be the MNH lead agency.

Tracking program progress and outcomes requires data from a variety of sources, including pre-crisis mortality and morbidity statistics, facility-related data and process and outcomes data related to health program implementation. Use standardized indicators to collect population-level data to the extent possible; *Annex 3A* presents a list of health indicators, how to calculate them, and how to use them in program M&E. The indicators are organized into four domains: service readiness (supplies), outcomes, service utilization and intervention coverage, and quality of care. These indicators are based on demographic data typically



collected through national and sub-national systems that are routinely aggregated from agency/field level up to the national level, and published in governmental reports.

Use indicators to inform health managers at the local, regional and national levels about the extent of MNH service coverage and the quality of services being provided. Require program managers to review and apply the information to identify gaps in service provision and define necessary program modifications. If managers do not possess adequate data analysis skills to carry out data review, then consult the agency designated as the monitoring and evaluation lead for the MNH working group for help with staff training support or tools, as needed.

BOX 5.3. Using standard health indicators in a crisis setting

Always adapt suggested health indicators to the local context. Depending on the crisis situation, some indicators may be inappropriate, and others may need to be adapted or added. depending on the context.

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BOX 5.4. Tracking Vital Statistics Through Local Monitoring Efforts

During humanitarian crises, many births and deaths occur outside of health facilities. As a result, standard data collection systems and analysis methods may not be effective. Furthermore, during protracted humanitarian situations, standard survey and data review processes may be compromised, and vital records may be lost or damaged at both community and national levels.

To compensate for these challenges, employ the following tactics:

- Implement local maternal and perinatal mortality audits, using methods such as mortality surveillance, or verbal and social autopsy;
- Track numbers and causes of deaths in the community/at the household level;
- Extrapolate lessons from preventable deaths to improve future practices;
- Where possible, share results with communities and the health workers serving them.

As, routine information systems and data flow may be compromised during a crisis. Develop a reduced set of critical indicators to aggregate and route upwards from the agency or community level to regional or national program managers. However, continue to capture additional indicators at lower levels to allow for quality assurance and service improvement. If possible, aggregate agency-level data in an overall M&E process. In addition to identifying gaps in service, highlight success stories to share with staff. These successes encourage persistence under difficult circumstances. Furthermore, sharing successful strategies and encouraging their uptake from one health worker or health facility to the next will contribute to improved processes and outcomes. ■

Key resources to accompany Chapter 5

- *Global Health Media Project*. <http://globalhealthmedia.org/>
- *Health Cluster Guide*. WHO, 2011. www.who.int/hac/global_health_cluster/guide/en/
- *Household-to-Hospital Continuum of Maternal and Newborn Care*. Jhpiego, USAID/The Access Program, 2005.
- *Guidelines for Assessment of Skilled Providers After Training in Maternal and Newborn Healthcare*. Jhpiego, 2004. www.jhpiego.org/files/GdlnsSkillProvEN.pdf
- *Newborn Services Rapid Health Facility Assessment*. Newborn Indicators Technical Working Group, 2012. www.healthynewbornnetwork.org/sites/default/files/resources/Newborn%20Services%20Rapid%20HFA_HNN_25June2012.pdf
- *Rapid health assessment of refugee or displaced populations* (3rd edition). Médecins Sans Frontières, 2006. http://refbooks.msf.org/msf_docs/en/rapid_health/rapid_health_en.pdf
- *Site Assessment and Strengthening for Maternal and Newborn Health Programs*. Jhpiego, USAID/Maternal & Neonatal Health Program, 2004. <http://reprolineplus.org/resources/site-assessment-and-strengthening-maternal-and-newborn-health-programs>
- WHO Health Resource Availability Mapping System (HeRAMS) www.who.int/hac/global_health_cluster/guide/tools/en/

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Newborn Health Services Summary Tables, by Level of Care

Annex 1 is divided into four sections, presenting the following critical services:

- 1A:** Essential Newborn Care (ENC) Services for all Newborns
- 1B:** Services to Prevent and Manage Prematurity
- 1C:** Services to Prevent and Manage Newborn Infections and Sepsis
- 1D:** Services to Prevent and Manage Intrapartum Complications



Within each section, tables are separated by level of care to facilitate easy reference:

- TABLE 1:** Household-level care delivery
- TABLE 2:** Peripheral facility-level care delivery
- TABLE 3:** Hospital-level care delivery

TABLE 1: ENC for all Newborns

HOUSEHOLD LEVEL

Typically delivered by CHWs

PREGNANCY	<p>Identify pregnant women in refugee, IDP and crisis affected populations</p> <p>Provide pregnant women and families (or others in the community) with information regarding the nearest health facility for skilled care. Encourage women/families to give birth at the health facility</p> <p>If women are unable to go to a health facility for antenatal care and/or labor/delivery:</p> <ul style="list-style-type: none"> • Provide education on danger signs, need for referral, and referral pathways • Provide family with a clean delivery kit and information about safe birth practices and newborn care • If home delivery occurs, encourage women and caretakers to visit a health facility as soon as possible after birth to examine mother/baby • Distribute newborn care supplies intended for household use as listed in Annex 2A <p>In settings with high HIV prevalence, encourage women to get tested and seek care at a health facility for themselves before delivery, and for their newborns after birth</p>
LABOR / DELIVERY	<p>Employ clean birth practices (clean hands, clean perineum, clean surface, clean cord and tying instruments, sterile cutting instrument and clean cutting surface)</p> <p>Thoroughly dry the baby</p> <p>Stimulate babies who are not breathing by drying and rubbing the back vigorously 2 -3 times</p> <p>For term newborns who do not require resuscitation, do not clamp the cord for at least 1 minute after birth</p>

TABLE 1: ENC for all Newborns (cont'd)

HOUSEHOLD LEVEL

Typically delivered by CHWs

IMMEDIATE POSTNATAL

(within the 1st hour of delivery)

Place baby skin-to-skin on the mother's chest, cover with a blanket or cloth and delay bathing for at least 24 hours to prevent heat loss and hypothermia

Initiate exclusive breastfeeding as soon as possible after delivery, or at least within 1 hour after birth

Provide hygienic umbilical cord and skin care including applying chlorhexidine gel to the baby's umbilical cord stump and base of the stump immediately after cutting the cord. Counsel mother to repeat application once daily through the first week of life or until the cord separates, whichever comes earlier

Provide eye care: single-dose tetracycline eye ointment

Assess for danger signs and counsel on prompt recognition and care-seeking by the family (not feeding well, reduced activity, difficult breathing, fever or feels cold, fits or convulsions)

Identify and support newborns who need additional care (e.g., LBW, sick, mother is HIV-infected)

LATER POSTNATAL

Distribute newborn care kit intended for household use, to families that did not receive it during pregnancy (see **Annex 2A**)

Promote basic newborn care, including:

- Exclusive breastfeeding
- Keeping the baby warm
- Hand washing for people handling the baby
- Hygienic cord and skin care

For home visits on days 1, 3 and 7, examine the newborn for danger signs of sepsis or pneumonia (or other illnesses):

- **Critical illness:** No movement/unconscious, history of convulsions, unable to feed, severe bleeding, or bulging fontanelle
- **Clinically severe infection:** Fever (temperature greater than or equal to 38°C), hypothermia (temperature less than 35.5°C), poor feeding, reduced movement, severe chest in-drawing
- **Isolated fast breathing:** Respiratory rate >60 breaths per minute

Encourage HIV-positive mothers to access testing and care for their newborns. Promote exclusive breastfeeding and observe newborns for danger signs. Assist families of newborns identified to have danger signs or severe illness during home visits to seek peripheral/hospital care immediately

Promote week 6 visit for immunizations

TABLE 2: ENC for all Newborns**FACILITY LEVEL (Camp, Temporary or Mobile Clinics and Local Health Services)**

Delivered by Auxiliary Nurse Midwives, Nurses, Clinical Officers

PREGNANCY

Identify pregnant women in crisis affected populations

Provide pregnant women and families (or others in the community) with information regarding the nearest health facility for skilled care. Encourage women/families to give birth at the health facility

Counsel women on birth preparedness:

- Provide education on danger signs, need for referral, and referral pathways
- Provide family with a clean delivery kit and information about safe birth practices and newborn care
- If home delivery occurs, encourage women and caretakers to visit a health facility as soon as possible after birth to examine mother/baby
- Distribute newborn care supplies intended for household use, to families who did not receive it at the community level, as listed in **Annex 2A**

In settings with high HIV prevalence, encourage women to get tested and seek care at a health facility for themselves before delivery, and for their newborns after birth

In malaria endemic areas, distribute insecticide-treated bed nets (ITN) to pregnant women for their use during pregnancy and after pregnancy (with the newborn baby)

Provide the following:

- Tetanus toxoid immunization (minimum 2 doses at recommended interval)
- Iron and folate supplementation
- Syphilis screening and treatment
- Screening and treatment for urinary tract infections
- Screening and treatment of hypertension, diabetes mellitus, and other chronic conditions

Encourage women/families to complete at least 4 ANC visits with the first visit as early as possible, preferably in the first trimester

TABLE 2: ENC for all Newborns (cont'd)

FACILITY LEVEL (Camp, Temporary or Mobile Clinics and Local Health Services)

Delivered by Auxiliary Nurse Midwives, Nurses, Clinical Officers

<p>LABOR / DELIVERY</p>	<p>Employ clean birth practices (clean hands, clean perineum, clean surface, clean cord and tying instruments, sterile cutting instrument and clean cutting surface) and ensure a hygienic environment</p> <p>Monitor labor progress and document using the partograph. Take prompt action when indicated</p> <p>Monitor fetal heart beat to detect fetal distress. If distress detected, prepare for referral</p> <p>Keep labor room warm</p> <p>Thoroughly dry the baby</p> <p>Stimulate babies who are not breathing by drying and rubbing the back vigorously 2 -3 times</p> <p>For term newborns who do not require resuscitation, do not clamp the cord for at least 1 minute after birth</p>
<p>IMMEDIATE POSTNATAL (within the 1st hour of delivery)</p>	<p>Place baby skin-to-skin on the mother's chest, cover with a blanket or cloth and delay bathing for at least 24 hours to prevent heat loss and hypothermia</p> <p>Initiate exclusive breastfeeding as soon as possible after delivery, or at least within 1 hour after birth</p> <p>Provide hygienic umbilical cord and skin care</p> <p>Provide eye care: single-dose tetracycline eye ointment</p> <p>Assess for danger signs and counsel on prompt recognition and care-seeking by the family (not feeding well, reduced activity, difficult breathing, fever or feels cold, fits or convulsions)</p> <p>Identify and support newborns needing additional care (e.g., LBW, sick, mother is HIV-infected)</p> <p>Provide 1 mg of vitamin K IM within the first hour of birth</p> <p>Provide vaccination according to local protocols.¹</p> <p>Weigh the baby</p> <p>Provide birth certificate or record of birth</p>

¹ Newborn vaccinations such as oral polio, Hepatitis B and BCG are NOT included in the newborn care kit as they are typically procured through UNICEF as part of the child health response. Close collaboration with organizations working with child health and the procurement of and management of vaccinations is essential to ensure the provision of vaccinations in the postnatal period.

TABLE 2: ENC for all Newborns (cont'd)

FACILITY LEVEL (Camp, Temporary or Mobile Clinics and Local Health Services)

Delivered by Auxiliary Nurse Midwives, Nurses, Clinical Officers

LATER POSTNATAL

Distribute newborn care kit intended for household use, to families who did not receive it during pregnancy (see **Annex 2A**)

Promote basic newborn care, including:

- Exclusive breastfeeding
- Keeping the baby warm
- Hand washing for people handling the baby
- Hygienic cord and skin care

Assess mother and baby for problems before discharge. If no problems:

- Release mother/baby to return home
- Give the mother/family a specific date to return to the facility (even if everything is going well) OR organize a first home visit with mothers/families as soon as possible after the baby is home
- Advise mother/baby to return immediately if they notice any danger signs
- Remaining visits should follow the same schedule as home births

For home visits on days 1, 3 and 7, examine the newborn for danger signs of illness:

- **Critical illness:** No movement/unconscious, history of convulsions, unable to feed, severe bleeding, or bulging fontanelle
- **Clinically severe infection:** Fever (temperature greater than or equal to 38°C), hypothermia (temperature less than 35.5°C), poor feeding, reduced movement, severe chest in-drawing
- **Isolated fast breathing:** Respiratory rate >60 breaths per minute

Promote week 6 visit for immunizations

For HIV-positive mothers:

- Encourage mothers to access HIV testing and other care for their newborns
- Promote exclusive breastfeeding and observe newborns for danger signs as they are particularly vulnerable to infections
- Provide HIV treatment to mother and baby as per local protocol

TABLE 3: ENC for all Newborns

HOSPITAL LEVEL (Referral Care)

Delivered by Nurses, Clinical Officers, Nurse-Midwives, Doctors

PREGNANCY

Identify pregnant women in crisis-affected populations

Provide pregnant women and families (or others in the community) with information regarding the nearest health facility for skilled care. Encourage women/families to give birth at the health facility

If women are unable to go to a health facility for antenatal care and/or labor/delivery:

- Provide education on danger signs, need for referral, and referral pathways
- Provide family with a clean delivery kit and information about safe birth practices and newborn care
- If home delivery occurs, encourage women and caretakers to visit a health facility as soon as possible after birth to examine mother/baby
- Distribute newborn care supplies intended for household use, to families who did not receive it at the community level, as listed in **Annex 2A**

In settings with high HIV prevalence, encourage women to get tested and seek care at a health facility for themselves before delivery, and for their newborns after birth. Provide ANC including counseling on birth preparedness and complication readiness

In malaria endemic areas, distribute insecticide-treated bed nets (ITN) to pregnant women for their use during pregnancy and after pregnancy (with the newborn baby)

Provide the following:

- Ultrasound in the first trimester to accurately estimate gestational age
- Tetanus toxoid immunization (minimum 2 doses at recommended interval)
- Iron and folate supplementation
- Syphilis screening and treatment
- Screening and treatment for urinary tract infections
- Screening and treatment of hypertension, diabetes mellitus, and other chronic conditions

Encourage women/families to complete at least 4 ANC visits, with the first visit as early as possible, preferably during the first trimester

TABLE 3: ENC for all Newborns (cont'd)**HOSPITAL LEVEL (Referral Care)**

Delivered by Nurses, Clinical Officers, Nurse-Midwives, Doctors

LABOR / DELIVERY	<p>Employ clean birth practices (clean hands, clean perineum, clean surface, clean cord and tying instruments, sterile cutting instrument and clean cutting surface) and ensure a hygienic environment</p> <p>Monitor labor progress and document using the partograph. Take prompt action when indicated.</p> <p>Monitor fetal heart beat to detect fetal distress. If distress detected, prepare for assisted delivery or cesarean section</p> <p>Keep labor room warm</p> <p>Thoroughly dry the baby</p> <p>Stimulate babies who are not breathing by drying and rubbing the back vigorously 2 -3 times</p> <p>For term newborns who do not require resuscitation, do not clamp the cord for at least 1 minute after birth</p>
IMMEDIATE POSTNATAL (within the 1 st hour of delivery)	<p>Place baby skin-to-skin on the mother's chest, cover with a blanket or cloth and delay bathing for at least 24 hours to prevent heat loss and hypothermia</p> <p>Initiate exclusive breastfeeding as soon as possible after delivery, or at least within 1 hour after birth</p> <p>Provide hygienic umbilical cord and skin care</p> <p>Provide single-dose tetracycline eye ointment</p> <p>Assess for danger signs and counsel on prompt recognition and care-seeking by the family (not feeding well, reduced activity, difficult breathing, fever or feels cold, fits or convulsions)</p> <p>Identify and support newborns needing additional care (e.g., LBW, sick, mother is HIV-infected)</p> <p>Provide 1 mg of vitamin K IM within the first hour of birth</p> <p>Provide vaccination according to local protocols.²</p> <p>Weigh the baby</p> <p>Provide birth certificate or record of birth</p> <p>Identify and manage newborns with danger signs</p>

² Newborn vaccinations such as oral polio and Hepatitis B and BCG are NOT included in the newborn care kit as they are typically procured through UNICEF as part of the child health response. Close collaboration with organizations working with child health and the procurement of and management of vaccinations is essential to ensure the provision of vaccinations in the postnatal period.

TABLE 3: ENC for all Newborns (cont'd)

HOSPITAL LEVEL (Referral Care)

Delivered by Nurses, Clinical Officers, Nurse-Midwives, Doctors

**LATER
POSTNATAL**

Distribute newborn care kit intended for household use, to families who did not receive it at the community level (see **Annex 2A**)

Promote basic newborn care, including:

- Exclusive breastfeeding
- Keeping the baby warm
- Hand washing for people handling the baby
- Hygienic cord and skin care

Assess mother and baby for problems before discharge. If no problems:

- Release mother/baby to return home
- Give the mother/family a specific date to return to the facility (even if everything is going well) OR organize a first home visit with mothers/families as soon as possible after the baby is home
- Advise mother/baby to return immediately if they notice any danger signs OR organize a first home visit with mothers/families as soon as possible after the baby is home
- Remaining visits should follow the same schedule as home births

For home visits on days 1, 3 and 7, examine the newborn for danger signs of sepsis or pneumonia (or other illnesses):

- **Critical illness:** No movement/unconscious, history of convulsions, unable to feed, severe bleeding, or bulging fontanelle
- **Clinically severe infection:** Fever (temperature greater than or equal to 38°C), hypothermia (temperature less than 35.5°C), poor feeding, reduced movement, severe chest in-drawing
- **Isolated fast breathing:** Respiratory rate >60 breaths per minute

Promote week 6 visit for immunizations

For HIV-positive mothers:

- Encourage mothers to access HIV testing and other care for their newborns
- Promote exclusive breastfeeding and observe newborns for danger signs as they are particularly vulnerable to infections
- Initiate ART in babies if possible

Consult **Annex 1B** and **Annex 1C** for more information on preventing and managing preterm birth and infections.

TABLE 1: Prematurity/LBW Care

HOUSEHOLD LEVEL

Typically delivered by CHWs

Provide ENC as per **Annex 1A**

PREGNANCY	<p>During ANC, counsel the mother on good nutrition during pregnancy and breastfeeding</p> <p>Encourage immediate and exclusive breastfeeding for the newborn for the first 6 months</p> <p>Provide education on risk factors for preterm labor and care for preterm babies</p>
LABOR / DELIVERY	<p>Identify women in preterm labor and accompany if possible to nearest health facility for care</p> <p>Employ clean birth practices (clean hands, clean perineum, clean surface, clean cord and tying instruments, clean cutting instrument and clean cutting surface)</p>
IMMEDIATE POSTNATAL (within the 1 st hour of delivery)	<p>Provide extra thermal care through continuous skin-to-skin contact and using a hat and blanket to cover the baby.</p> <p>Refer all LBW or preterm newborns (babies less than 2500g or born before 37 weeks gestation) to more advanced care for a physical examination and for KMC if indicated</p>
LATER POSTNATAL	<p>Follow small babies who are home very carefully during the postnatal period; provide support for KMC and breastfeeding, and monitor weight gain</p> <p>For newborns showing any danger signs (see Annex 1A), accompany mother and baby if possible to facility-based care</p>

TABLE 2: Prematurity/LBW Care

FACILITY LEVEL (Camp, Temporary or Mobile Clinics and Local Health Services)

Delivered by Auxiliary Nurse Midwives, Nurses, Clinical Officers

Provide ENC as per **Annex 1A**

<p>PREGNANCY</p>	<p>During ANC, counsel the mother on good nutrition during pregnancy and breastfeeding</p> <p>Encourage immediate and exclusive breastfeeding for the newborn for the first 6 months</p> <p>Provide education on prematurity, preterm labor and care for preterm babies</p> <p>For malaria endemic areas or for refugees or IDPs from malaria endemic areas, treat pregnant women for malaria using IPTp</p> <p>Provide treatment of other infections including syphilis, HIV/AIDS and other STIs</p> <p>Screen and treat for asymptomatic bacteriuria</p>
<p>LABOR / DELIVERY</p>	<p>Identify women in preterm labor and refer to nearest health facility for care</p> <p>For women who are less than 34 completed weeks gestation and for whom preterm labor appears imminent, they should be accompanied to a hospital that can provide ACS</p> <p>Employ clean birth practices (clean hands, clean perineum, clean surface, clean cord and tying instruments, clean cutting instrument and clean cutting surface) and maintain hygienic environment</p> <p>For newborns that do not start breathing on their own within 1 minute after birth after tactile stimulation, provide basic newborn resuscitation (ambu bag and suction device)</p>

TABLE 2: Prematurity/LBW Care (cont'd)**FACILITY LEVEL (Camp, Temporary or Mobile Clinics and Local Health Services)**

Delivered by Auxiliary Nurse Midwives, Nurses, Clinical Officers

Provide ENC as per **Annex 1A**

IMMEDIATE POSTNATAL (within the 1 st hour of delivery)	<p>Complete physical examination performed within two hours of birth</p> <p>Provide extra thermal care through continuous skin-to-skin contact and using a hat and blanket to cover the baby.</p> <p>Provide immediate treatment of hypoglycemia if identified</p> <p>Provide extra infection-prevention measures</p> <p>Provide support for feeding (cup and spoon) if unable to breastfeed</p>
LATER POSTNATAL	<p>Observe and monitor vital signs of at risk newborns for a minimum of 24 hours. Monitor for danger signs and refer if necessary</p> <p>Continue KMC for preterm babies with careful monitoring of feeding, weight gain and signs of illness</p> <p>For newborns that are having difficulty breastfeeding support the mother in hand expressing breast milk for her newborn baby; emphasize the importance of hand washing before expressing breast milk and keeping all feeding cups and utensils clean</p>

TABLE 3: Prematurity/LBW Care

HOSPITAL LEVEL (Referral Care)

Delivered by Nurses, Clinical Officers, Nurse-Midwives, Doctors
Provide ENC as per **Annex 1A**

PREGNANCY	<p>During ANC, counsel the mother on good nutrition during pregnancy and breastfeeding</p> <p>Encourage immediate and exclusive breastfeeding for the newborn for the first 6 months</p> <p>Provide education on prematurity, preterm labor and care for preterm babies</p> <p>For malaria endemic areas or for refugees or IDPs from malaria endemic areas, treat pregnant women for malaria using IPTp</p> <p>Provide treatment of other infections including syphilis, HIV/AIDS and other STIs</p> <p>Screen and treat for asymptomatic bacteriuria</p>
LABOR / DELIVERY	<p>Give ACS to women at risk of preterm birth from 24 weeks to 34 weeks of gestation when the following conditions are met:</p> <ul style="list-style-type: none"> • gestational age is known • preterm birth is considered imminent • there is no clinical evidence of maternal infection • adequate childbirth care is available • the preterm newborn can receive adequate care if needed (including resuscitation, thermal care, feeding support, infection treatment and safe oxygen use) <p>Employ clean birth practices (clean hands, clean perineum, clean surface, clean cord and tying instruments, clean cutting instrument and clean cutting surface) and maintain hygienic environment</p> <p>For newborns that do not start breathing on their own within 1 minute after birth, provide basic newborn resuscitation (ambu bag and suction device)</p>
IMMEDIATE POSTNATAL (within the 1 st hour of delivery)	<p>Complete physical examination performed within two hours of birth</p> <p>Provide extra care for preterm babies through provision of KMC; extra infection-prevention measures; and support for feeding with cup and spoon, or nasogastric tube feeding</p> <p>Immediate treatment of hypoglycemia if identified</p>

TABLE 3: Prematurity/LBW Care (cont'd)**HOSPITAL LEVEL (Referral Care)**

Delivered by Nurses, Clinical Officers, Nurse-Midwives, Doctors

**LATER
POSTNATAL**

Monitor vital signs of at risk newborns for a minimum of 24 hours

If baby is unstable and incubators are available, consider incubator care until the baby can stay with mother in continuous skin-to-skin care (i.e. KMC). Continue KMC for preterm babies with careful monitoring of feeding, weight gain and signs of illness

For newborns that are having difficulty breastfeeding support mother in hand expressing breast milk for her newborn baby; emphasize the importance of hand washing before expressing breast milk and keeping all feeding cups and utensils clean

Provide blood glucose measurement before each feeding.

- If not yet feeding, provide blood glucose at least every 3 hours until blood glucose remains stable and treat accordingly

Measure temperature every 4 hours

Weigh the newborn at least 1x/day (ideally, 2x/day)

Continue extra care for preterm babies and special feedings

Continue monitoring temperature and weight

Where supplies and the ability to monitor oxygen saturation and cardiorespiratory status are available, provide advanced care for respiratory distress:

- Surfactant therapy to intubated and ventilated newborns
- Continuous positive airway pressure (CPAP)
- Prevent and treat apnea of prematurity

Manage newborns with jaundice

TABLE 1: Newborn Infections

HOUSEHOLD LEVEL

Typically delivered by CHWs

Provide ENC as per **Annex 1A**

PREGNANCY	In malaria endemic areas, distribute insecticide-treated bed nets (ITN) to pregnant women for use during and after pregnancy. Advise mothers/family that newborn also sleeps under ITN
LABOR / DELIVERY	Employ clean birth practices (clean hands, clean perineum, clean surface, clean cord and tying instruments, clean cutting instrument and clean cutting surface)
IMMEDIATE POSTNATAL (within the 1 st hour of delivery)	<p>Initiate exclusive breastfeeding as soon as possible after delivery or at least within 1 hour after birth</p> <p>Employ hygienic skin care and umbilical cord care (including CHX, see Annex 1A)</p> <p>Provide eye care (single dose tetracycline eye ointment)</p> <p>Assess for danger signs and counsel on their prompt recognition and care-seeking by the family (not feeding well, reduced activity, difficult breathing, fever or feels cold, fits or convulsions)</p> <p><i>If any signs of sepsis are present, immediately refer women/babies to hospital</i></p>

TABLE 1: Newborn Infections (cont'd)**HOUSEHOLD LEVEL**

Typically delivered by CHWs

Provide ENC as per **Annex 1A****LATER
POSTNATAL**

- Exclusive breastfeeding
- Drying and keeping the baby warm
- Hand washing before handling the baby
- Hygienic cord and skin care

Examine the newborn for danger signs of sepsis or pneumonia (or other illnesses):

- Not feeding well
- Fits or convulsions
- Reduced activity or lack of movement
- Fast breathing (more than 60 breaths per minute)
- Severe chest indrawing
- Temperature above 37.5 degrees C
- Temperature below 35.5 degrees C
- Very small size at birth (<2.5 kg)

If danger signs or severe illness detected during home visits, assist mothers/families to seek peripheral or hospital care immediately

Encourage HIV-positive mothers to access testing and care for their newborns. Promote exclusive breastfeeding and observe newborns for danger signs

TABLE 2: Newborn Infections

FACILITY LEVEL (Camp, Temporary or Mobile Clinics and Local Health Services)

Delivered by Auxiliary Nurse Midwives, Nurses, Clinical Officers
Provide ENC as per **Annex 1A**

<p>PREGNANCY</p>	<p>In malaria endemic areas, distribute insecticide-treated bed nets (ITN) to pregnant women for use during and after pregnancy. Advise mothers/family that newborn also sleeps under ITN</p> <p>Where feasible, test and treat women for syphilis</p> <p>Vaccinate pregnant women against tetanus</p> <p>In malaria endemic areas or for displaced populations coming from endemic areas, treat mothers for malaria using IPT</p> <p>For women from high HIV prevalence countries, determine their HIV status. Follow prevention of mother-to-child transmission guidelines for women who are HIV positive.¹</p>
<p>LABOR / DELIVERY</p>	<p>Employ clean birth practices (clean hands, clean perineum, clean surface, clean cord and tying instruments, clean cutting instrument and clean cutting surface)</p> <p>Provide antibiotics for management of pPROM</p>
<p>IMMEDIATE POSTNATAL (within the 1st hour of delivery)</p>	<p>Initiate exclusive breastfeeding as soon as possible after delivery or at least within 1 hour after birth</p> <p>Employ hygienic skin care and umbilical cord care (see Annex 1A)</p> <p>Provide eye care (single dose tetracycline eye ointment)</p> <p>Assess for danger signs and counsel on their prompt recognition and care-seeking by the family (not feeding well, reduced activity, difficult breathing, fever or feels cold, fits or convulsions)</p> <p><i>If any signs of sepsis are present, immediately refer women/babies to hospital. If referral is not possible, provide treatment for fast breathing and severe infection as per the latest WHO recommendation. See Section 3.4.a.</i></p>

¹ Medicines and medical commodities for HIV are not included in the newborn care kits. These are prepackaged and are procured through UNFPA. See the *Inter-Agency Reproductive Health Kits for Crisis Situations*, 2011.

TABLE 2: Newborn Infections (cont'd)**FACILITY LEVEL (Camp, Temporary or Mobile Clinics and Local Health Services)**

Delivered by Auxiliary Nurse Midwives, Nurses, Clinical Officers
Provide ENC as per **Annex 1A**

**LATER
POSTNATAL**

- Exclusive breastfeeding
- Drying and keeping the baby warm
- Hand washing before handling the baby
- Hygienic cord and skin care

Examine the newborn for danger signs of sepsis or pneumonia (or other illnesses):

- Not feeding well
- Fits or convulsions
- Reduced activity or lack of movement
- Fast breathing (more than 60 breaths per minute)
- Severe chest indrawing
- Temperature above 37.5 degrees C
- Temperature below 35.5 degrees C
- Very small size at birth (<2.5 kg)

If danger signs or severe illness detected during home visits, assist mothers/families to seek peripheral or hospital care immediately

Encourage HIV-positive mothers to access testing and care for their newborns. Promote exclusive breastfeeding and observe newborns for danger signs. Treat HIV in mother and baby according to local protocols

Provide prophylactic antibiotics to a neonate with risk factors for infection (i.e. membranes ruptured >18 hours before delivery, mother had fever >38 °C before delivery or during labour, or amniotic fluid was foul smelling or purulent)

Observe and monitor vital signs of at-risk newborns for a minimum of 24 hours

TABLE 3: Newborn Infections

HOSPITAL LEVEL (Referral Care)

Delivered by Nurses, Clinical Officers, Nurse-Midwives, Doctors
Provide ENC as per **Annex 1A**

<p>PREGNANCY</p>	<p>In malaria endemic areas, or for displaced populations coming from endemic areas, treat mothers for malaria using IPTp, and distribute insecticide-treated bed nets (ITN) to pregnant women for use during and after pregnancy. Advise mothers/family that newborn also sleeps under ITN</p> <p>Where feasible, test and treat women for syphilis</p> <p>Vaccinate pregnant women against tetanus</p> <p>For women from high HIV prevalence countries, determine their HIV status. Follow prevention of mother-to-child transmission guidelines for women who are HIV positive.²</p>
<p>LABOR / DELIVERY</p>	<p>Employ clean birth practices (clean hands, clean perineum, clean surface, clean cord and tying instruments, clean cutting instrument and clean cutting surface)</p> <p>Provide antibiotics for management of pPROM</p>
<p>IMMEDIATE POSTNATAL (within the 1st hour of delivery)</p>	<p>Initiate exclusive breastfeeding as soon as possible after delivery or at least within 1 hour after birth</p> <p>Employ hygienic skin care and umbilical cord care (see Annex 1A)</p> <p>Provide eye care (single dose tetracycline eye ointment)</p> <p>Assess for danger signs and counsel on their prompt recognition and care-seeking by the family (not feeding well, reduced activity, difficult breathing, fever or feels cold, fits or convulsions)</p>

² Medicines and medical commodities for HIV are not included in the newborn care kits. These are prepackaged and are procured through UNFPA. See the *Inter-Agency Reproductive Health Kits for Crisis Situations*, 2011.

TABLE 3: Newborn Infections/Sepsis (cont'd)**HOSPITAL LEVEL (Referral Care)**

Delivered by Nurses, Clinical Officers, Nurse-Midwives, Doctors
Provide ENC as per **Annex 1A**

**LATER
POSTNATAL**

- Exclusive breastfeeding
- Drying and keeping the baby warm
- Hand washing before handling the baby
- Hygienic cord and skin care

Examine the newborn for danger signs of sepsis or pneumonia (or other illnesses):

- Not feeding well
- Fits or convulsions
- Reduced activity or lack of movement
- Fast breathing (more than 60 breaths per minute)
- Severe chest indrawing
- Temperature above 37.5 degrees C
- Temperature below 35.5 degrees C
- Very small size at birth (<2.5 kg)

Encourage HIV-positive mothers to access testing and care for their newborns. Promote exclusive breastfeeding and observe newborns for danger signs. Treat HIV in mother and baby according to local protocols

Provide prophylactic antibiotics to a neonate with risk factors for infection (i.e. membranes ruptured >18 hours before delivery, mother had fever >38 °C before delivery or during labour, or amniotic fluid was foul smelling or purulent)

Observe and monitor vital signs of at-risk newborns for a minimum of 24 hours. Provide case management for neonatal infections including sepsis, meningitis and pneumonia

Provide antibiotic first line treatment to newborns under 2 months of age:

TABLE 3: Newborn Infections (cont'd)

HOSPITAL LEVEL (Referral Care)

Delivered by Nurses, Clinical Officers, Nurse-Midwives, Doctors

LATER POSTNATAL

- In the first week of life: ampicillin (IV/IM) 50/mg/kg/day divided every 12 hours and gentamycin (IV/IM) 3 mg/kg/dose daily for low birth weight babies or 5 mg/kg/dose daily for normal birth weight babies
- For weeks 2-4 of life: ampicillin (IV/IM) 50/mg/kg/day divided every 8 hours and gentamycin 7.5 mg/kg/dose once daily

For suspected sepsis or pneumonia, treat for 10 days. If meningitis is suspected, treat for 21 days. Consider benzylpenicillin as an alternative for ampicillin if necessary; cloxacillin and ceftriaxone may be used for broader coverage in case of skin infection or meningitis, respectively

If cyanosed or in severe respiratory distress, administer oxygen by nasal prongs or nasal catheter

If respiratory distress syndrome is diagnosed, provide CPAP and monitor oxygen levels

If drowsy, unconscious or convulsing, check blood glucose and Provide care for hypoglycemia as needed

If convulsions are present, administer phenobarbital

Newborn Care Supply Kits For Humanitarian Settings

Annex 2 is divided into three sections, presenting the following components of newborn supply kits:

2A: Community Newborn Kit

2B: Clinic Newborn Kit

2C: Hospital Newborn Kit



To order Newborn Care Supply Kits:

- Order kits along with the reproductive health kit for emergencies (available at www.rhrc.org/resources/rhrkit.pdf) Kits described in Annexes A, B and C correspond to Block 1, Block 2 and Block 3 respectively.
- Kit contents may be procured through IMRES (www.imres.nl), IDA (www.ida.nl) or UNICEF (www.unicef.org/supply/)

Community Newborn Kit

Use: Individual newborn kits for use by families at home or in health facilities. The kits are packaged to be distributed to every pregnant woman (Part A), or immediately after delivery by a Community Health Worker or at the health facility. Part B are items to be held and used by Community Health Workers.

Instructions: the kit should be distributed with illustrative instructions on how to use the kit contents and easy-to-use educational materials for essential newborn care.

Target Population: Part A: kit content is based on the assumption that in a population of 10,000 people with crude birth rate of 4% there will be 100 deliveries in 3 months. 100 individual newborn kits will be distributed to women delivering during the first 3 months, and 100 individual newborn kits will be distributed to women who are 6-9 months pregnant. Each kit will have 200 individual newborn kits. Part B: is for community health workers and is calculated on the assumption that there will be 10 CHWs for a population of 10,000 people.

Complementary Reproductive Health kit: the Community Newborn Kit is complementary to the Clean Delivery Kit (Kit 2) of the inter-agency reproductive health kit (UNFPA).

Community Newborn Kit

Part A: Community family care kit content.

One kit contains 100 individual packages.

Item	Amount per kit	Notes
blanket, baby, 50 x 75 cm, polyester fleece	100	
cap, newborn, cotton	100	
romper suit, newborn, cotton	100	
socks, baby, size extra small, cotton	100	
towel, 60 x 80 cm, cotton	100	
chlorhexidine digluconate 7.1 % (4 % base) gel, 10 ml	100	Contextual. See Guidance Box 3.7. Can also be held and given by Community Health Workers (see Part B).
tetracycline hydrochloride 1 % eye-ointment, 5g	100	Can also be held and given by Community Health Workers (see Part B).

Part B: Community Health Worker kit content.

One complete kit contains 10 individual packages

Item	Amount per kit	Notes
gloves, examination, latex, size medium, pre-powdered, disposable, non-sterile	400	
respiration rate timer, for ARI programmes, with batteries	10	
weighing scale, baby, tubular, hanging model, 5 kg/50 g graduation	10	
sling for baby weighing scale 5 kg/100 gram (hanging model)	10	Ensure sling is appropriate for newborn and low birth weight baby sizing and not pediatric size
tape measure, 150 cm	10	
thermometer, electronic, digital display	10	
tetracycline hydrochloride 1 % eye-ointment, 5g	100	

Clinic or Primary Health Facility Newborn Kit

Use: to provide essential newborn care for uncomplicated live births, to provide newborn resuscitation, to stabilize newborns with serious infection prior to referral, and to care for preterm babies.

Instructions: for use by trained personnel: midwives, nurses, medical doctors. The kit should be distributed with illustrative materials on how to use the kit contents and educational materials for mothers and caregivers.

Target population: the kit contents are based on the assumptions that 300 deliveries will occur in a 3 month period for a population of 30,000 people and crude birth rate of 4%, and of which 15% may be preterm and/or low birth weight and 20% may develop complications.

Complementary Reproductive Health kit: the Clinic Newborn Kit is complementary to the Clinical Delivery Kit (6A and B) of the inter-agency reproductive health kit, UNFPA

Content of the Clinic Newborn Kit

One complete kit is designed for one facility that serves a population of 30,000 people.

Item	Amount per kit	Notes
acyclovir 5 % cream, 5 g	15	
amoxicillin 125 mg/5 ml powder for suspension, 100 ml	300	
ampicillin 500 mg	400	
artesunate 60 mg with 2 solvents (sodium chloride 5 ml & sodium bicarbonate 5 % 1 ml)	150	Context specific; malaria-endemic regions only.
baby carrying wrap (kangaroo wrap), 50 cm x 3 m, 100 % cotton	30	
battery alkaline, 1.5V, 13 x 50 mm, type AA / LR6	12	
benzathine penicillin G 1.2 M I.U.	120	
benzylpenicillin sodium 5 M I.U.	75	
blanket, baby, 50 x 75 cm, polyester fleece	30	Specific for preterm baby care

Clinic or Primary Health Facility Newborn Kit (cont'd)

Item	Amount per kit	Notes
blood glucose meter, range 40-600 mg/dl, LCD display 35 x 31.5 mm, 360 memory positions	9	
blood glucose test strips, suitable for visual reading	150	
blood lancets, sterile	1,200	
cap, newborn, cotton	30	Specific for preterm baby care
dextrose 10 % intravenous infusion, 500 ml (nipple head)	600	
doppler apparatus, pockettype, LCD display, FHR display, interchangeable 2 Mhz probe	3	
flexible plastic cup for feeding expressed breastmilk, 100 ml	30	Specific for preterm baby care
gentamycin sulphate 40 mg/ml, 2 ml	1,200	
gloves, examination, latex, size medium, pre-powdered, disposable, non-sterile	900	
I.V. stand, 2 hooks, on 5 castors, adjustable from 115-210 cm, epoxycoated steel	6	
infusion set, paediatric, 60 drops/ml, 120-140 cm, filter 15-20 micron, needle 23 G x 1", sharp airway	150	
light, examination, floortype, flexible neck, 220V lamp, on castors	3	
malaria rapid test (cassette), detection P. falciparum, 25 determinations (SD Bioline Malaria Ag Pf 05FK50)	6	Context specific; malaria-endemic regions only.
paracetamol 100 mg (store below 25°C)	150	
paracetamol 120 mg/5 ml oral solution, 100 ml	300	
phenobarbitone 54 mg/ml oral solution, 30 ml	15	Import license required
phenobarbitone sodium 100 mg/ml, 2 ml	150	Import license required
respiration rate timer with batteries	6	
resuscitation bag, with mask (Laerdal NeoNatalie Resuscitator 846030)	9	

Clinic or Primary Health Facility Newborn Kit (cont'd)

Item	Amount per kit	Notes
scalp vein infusion set 23 G (0.60 mm)	150	
scalp vein infusion set 25 G (0.50 mm)	300	
socks, baby, size extra small, cotton	30	Specific for preterm baby care
sodium chloride 0.9% intravenous infusion, 500 ml (nipple head)	150	
sodium chloride 0.9%, 10 ml	900	
suction device, penguin-model, silicone, autoclavable (Laerdal 986000)	9	
syringe, hypodermic, Luer, 2-part, 10 ml, sterile, disposable	150	
syringe, hypodermic, Luer, 2-part, 5 ml, sterile, disposable	300	
syringe, hypodermic, Luer, 3-part, 1 ml, sterile, disposable	300	
table for newborn resuscitation with overhead heater, mattress, skin/air temperature control, trolley	3	
tape measure, 150 cm	30	
tetracycline hydrochloride 1% eye-ointment, 5 g	300	
thermometer, electronic, digital display	6	
towel, 60 x 80 cm, cotton	300	
tube, feeding (nasogastric), CH 5, 40 cm, disposable, sterile	150	
tube, feeding (nasogastric), CH 6, 40 cm, disposable, sterile	150	
tube, feeding (nasogastric), CH 8, 40 cm, disposable, sterile	200	
ultrasound gel, 250 ml	30	
urine teststrips, 10 detections	1,200	
vitamin K-1 (phytomenadione) 1 mg/ml, 1 ml (oily)	300	
water for injection 10 ml (plastic ampoules)	1,500	
weighing scale, baby, electronic, digital, 20 kg, graduation 5 g, excluding batteries (4 x AA batteries needed)	3	
zinc oxide plaster 2.5 cm x 5 m	90	

Hospital Newborn Kit

Use: referral level for newborn kit. To be used to treat newborn infections, provide newborn resuscitation, and care for preterm babies with complications.

Instructions: for use by trained personnel: midwives, nurses, medical doctors. Part A items should be applicable for most hospital settings. Some items (Part B) need advanced newborn training for use and should not be included in the kit if these competencies are not available.

Target population: the kit contents are based on the assumptions that 1,500 deliveries will occur in 3 month period for a population of 150,000 people and crude birth rate of 4%, and of which 15% may be preterm and/or low birth weight and 20% may develop complications.

Complementary Reproductive Health Kit: the Hospital Newborn Kit is complementary to Referral Emergency Obstetric Kit (11A, 11B, and 12) of the inter-agency reproductive health kit (UNFPA).

Content of the Hospital Newborn Kit

Part A: One complete kit is designed for one referral facility that serves a population of 150,000 people.

Item	Amount per kit	Notes
acyclovir 5 % cream, 5 g	250	
amoxicillin 125 mg/5 ml powder for suspension, 100 ml	150	
ampicillin 500 mg	7,000	
artesunate 60 mg with 2 solvents (sodium chloride 5 ml & sodium bicarbonate 5% 1 ml)	100	Context specific; malaria-endemic regions only.
baby carrying wrap (kangaroo wrap), 50 cm x 3 m, 100 % cotton	150	Specific for preterm baby care
battery alkaline, 1.5V, 13 x 50 mm, type AA / LR6	60	

Hospital Newborn Kit (cont'd)

Part A: One complete kit is designed for one referral facility that serves a population of 150,000 people. (cont'd)

Item	Amount per kit	Notes
benzathine penicillin G 1.2 M I.U.	250	
benzylpenicillin sodium 5 M I.U.	500	
blanket, baby, 50 x 75 cm, polyester fleece	150	Specific for preterm baby care
blood glucose meter, range 40-600 mg/dl, LCD display 35 x 31.5 mm, 360 memory positions (BG-102)	20	
blood glucose test strips, suitable for visual reading	750	
blood lancets, sterile	7,000	
cable, extension, for pulse oxymeter sensor	5	
caffeine 12.5 mg/ml, 2 ml (oral/injectable)	1,250	
calcium gluconate 100 mg/ml, 10 ml	500	
cap, newborn, cotton	150	Specific for preterm baby care
catheter, I.V., with wings and injection port, 24 G x 3/4" (yellow)	1,500	
cefotaxime sodium 1 g	1,250	
ceftriaxone 250 mg	400	
cloxacillin 250 mg	2,500	
cloxacillin sodium 500 mg	250	
dextrose 10 % intravenous infusion, 500 ml (nipple head)	3,000	
dextrose 50 % in water, 50 ml	250	
diazepam 5 mg/ml, 2 ml	250	Import license required
doppler apparatus, pockettype, LCD display, FHR display, interchangeable 2 Mhz probe	15	
flexible plastic cup for feeding expressed breastmilk, 100 ml	150	Specific for preterm baby care
gentamycin sulphate 40 mg/ml, 2 ml	1,000	
gloves, examination, latex, size medium, pre-powdered, disposable, non-sterile	7,500	

Hospital Newborn Kit (cont'd)

Part A: One complete kit is designed for one referral facility that serves a population of 150,000 people. (cont'd)

Item	Amount per kit	Notes
Hartmann's solution (Ringer's lactate) intravenous infusion, 500 ml (nipple head)	250	
I.V. stand, 2 hooks, on 5 castors, adjustable from 115-210 cm, epoxycoated steel	50	
infusion set, paediatric, 60 drops/ml, 120-140 cm, filter 15-20 micron, needle 23 G x 1", sharp airway	3,000	
light, examination, floortype, flexible neck, 220V lamp, on castors	25	
malaria rapid test (cassette), detection <i>P. falciparum</i> , 25 determinations (SD Bioline Malaria Ag Pf 05FK50)	30	Context specific; malaria-endemic regions only.
needle, hypodermic, Luer, 16 G x 1.5" (1.60 x 40 mm), disposable (white)	150	
needle, hypodermic, Luer, 18 G x 1.5" (1.20 x 40 mm), disposable (pink)	150	
needle, hypodermic, Luer, 22 G x 1.25" (0.70 x 30 mm), disposable (black)	1,500	
needle, hypodermic, Luer, 24 G x 1" (0.55 x 25 mm), disposable (purple)	1,500	
oxygen concentrator, flowrate up to 5 l/m, visual/audible alarms (Sunrise /DeVilbiss Compact 525)	5	
paracetamol 120 mg/5 ml oral solution, 100 ml	150	
paracetamol 125 mg (blister) (store below 25°C)	250	
phenobarbitone 54 mg/ml oral solution, 30 ml	75	Import license required
phenobarbitone sodium 100 mg/ml, 2 ml	750	
procaine penicillin 1 M I.U.	400	
pulse oxymeter, portable, battery operated, with universal finger clip	5	

Hospital Newborn Kit (cont'd)

Part A: One complete kit is designed for one referral facility that serves a population of 150,000 people. (cont'd)

Item	Amount per kit	Notes
respiration rate timer, with batteries	50	
resuscitation bag, with mask no. 0 and 1 (Laerdal NeoNatalie Resuscitator 846030)	25	
scalp vein infusion set 23 G (0.60 mm)	750	
scalp vein infusion set 25 G (0.50 mm)	500	
sensor, infant (< 3 kg), for OXY-50 pulse oxymeter, reusable	5	
socks, baby, size extra small, cotton	150	Specific for preterm baby care
sodium bicarbonate 8.4 %, 10 ml	25	
sodium chloride 0.9 % intravenous infusion, 500 ml (nipple head)	750	
sodium chloride 0.9 %, 10 ml	12,500	
stopcock, 3-way, sterile, disposable	625	
suction device, penguin-model, silicone, autoclavable (Laerdal 986000)	50	
syringe, hypodermic, Luer, 2-part, 10 ml, sterile, disposable	500	
syringe, hypodermic, Luer, 2-part, 5 ml, sterile, disposable	1,500	
syringe, hypodermic, Luer, 3-part, 1 ml, sterile, disposable	1,500	
table for newborn resuscitation with overhead heater, mattress, skin/air temperature control, trolley	10	
tape measure, 150 cm	100	
tetracycline hydrochloride 1% eye-ointment, 5 g	1,500	
thermometer, electronic, digital display	50	
towel, 60 x 80 cm, cotton	1,500	
tube, feeding (nasogastric), CH 5, 40 cm, disposable, sterile	250	
tube, feeding (nasogastric), CH 6, 40 cm, disposable, sterile	500	
tube, feeding (nasogastric), CH 8, 40 cm, disposable, sterile	400	

Hospital Newborn Kit (cont'd)

Part A: One complete kit is designed for one referral facility that serves a population of 150,000 people. (cont'd)

Item	Amount per kit	Notes
tube, oxygen, nasal, newborn (weight 1000-2500 g)	100	
ultrasound gel, 250 ml	150	
vitamin K-1 (phytomenadione) 1 mg/ml, 1 ml (oily)	1,500	
water for injection 10 ml (plastic ampoules)	10,000	
weighing scale, baby, electronic, digital, 20 kg, graduation 5 g, excluding batteries (4 x AA batteries needed)	15	
zinc oxide plaster 2.5 cm x 5 m	1,000	

Part B: These are additional items to consider for hospitals capable of providing advanced newborn care and/or access to advanced laboratory facilities.

Item
dexamethasone, injectable 4 mg/ml
endotracheal tubes sizes 2.5, 3.0, 3.5
incubator
laryngoscope (0, 1 blades)
laryngoscope light bulb
pcv centrifuge and capillary tubes
phototherapy lamp and fluorescent tubes
portable hemoglobin photometer (battery operated)
standard or bubble CPAP machine
surfactant

Indicators and Measurement

3A: List of Indicators Collected through Routine Data Systems

3B: List of Indicators and Questions to Measure Facility Capacity to Provide Newborn Health Services

List of Indicators Collected through Routine Data Systems

Introduction

This list of indicators was developed by the Inter-agency Newborn Indicators Technical Working Group convened by Save the Children's *Saving Newborn Lives* program. Use the country's policies and standards to inform adoption of these indicators for each level of care to develop national level reporting requirements (note that these recommended indicators are not all the indicators needed for service monitoring at the point of care). Integrate maternal and newborn indicators within data collection tools and reports to support data analysis and use.

Several indicators require projected numbers as the denominator. For these calculations, use the most recent population level data available, from household surveys, census, or vital statistics registration. By including an accurate count in the numerator, this proportion will allow for estimation of health system caseload and tracking of trends.

Note that this list includes indicators to measure both maternal and newborn health. Although indicators that primarily affect women's health are equally important to capture, they are not listed here; please refer to the IAFM for additional maternal health indicators.

Newborn Health Indicators for Routine Data Systems

*Incorporate key indicators (marked with a *) into national reporting systems.*

Other indicators are suggested to provide additional information, where feasible.

Indicator	Numerator
Service Readiness	
* % of facilities with delivery services with no stock-outs in the past 3 months of: <ul style="list-style-type: none"> • Dexamethasone (corticosteroid) • Magnesium sulfate (anticonvulsant) • Bag & mask (newborn size) 	# of facilities with delivery services with no stock-outs in the past 3 months of: <ul style="list-style-type: none"> • Dexamethasone • Magnesium sulfate • Bag & mask
* % of facilities with ANC services with no stock-outs in the past 3 months ² of: <ul style="list-style-type: none"> • Iron/Folate • Sulfadoxine-Pyrimethamine (IPTp-SP if policy) • Tetanus Toxoid Vaccine 	# of facilities with ANC services with no stock-outs in the past 3 months of: <ul style="list-style-type: none"> • Iron/Folate • IPTp-SP • Tetanus Toxoid Vaccine
* % of facilities with newborn care services with no stock-outs in the past 3 months ^m of injectable: <ul style="list-style-type: none"> • Gentamicin • X-Penicillin (or procaine penicillin) • Ampicillin 	# of facilities with newborn care services with no stock-outs in the past 3 months of injectable: <ul style="list-style-type: none"> • Gentamicin • X-Penicillin • Ampicillin

Denominator	Utility and limitations of indicators
Total # of health facilities with delivery services	<p>Provides information on whether commodities are available, but not if they are used as intended or if commodities are functional/unexpired.</p> <p>A stock-out is defined as the complete absence of a commodity or supply at a delivery point for at least one day during the reporting period. Data should be extracted from the national logistics management information system (LMIS) if the system provides details on pharmacy supply availability at the health facility level.</p>
Total # of health facilities with ANC services	Key commodities may vary by country; adapt indicators based on national essential drug/commodity lists.
Total # of health facilities with newborn care services	

Indicator	Numerator
Outcomes	
* Neonatal mortality rate	# of deaths in the first month of life recorded at a facility, disaggregated by early neonatal (<7 days after birth), late neonatal death (8-28 days after birth)
* % of newborn deaths due to: <ul style="list-style-type: none"> • Complications from preterm birth • Intrapartum-related complications • Infections (including tetanus, sepsis/ meningitis, pneumonia) • Congenital • Other 	# of newborn deaths due to: <ul style="list-style-type: none"> • Preterm birth • Intrapartum complications • Infections • Congenital • Other
* Stillbirth rate	# of late fetal deaths (≥ 1000 g birthweight or ≥ 28 completed weeks gestation) recorded at a facility, disaggregated by intrapartum and antepartum, or fresh and macerated.
% of live births at a facility where the newborn had trouble breathing at birth (or was not breathing at birth)	# of live births at a facility where the newborn had trouble breathing at birth (or was not breathing at birth)
% babies born with low birthweight (<2500g)	# babies born weighing <2500g
* % of live births at a facility where newborn was: <ul style="list-style-type: none"> • Moderate to late preterm (32 to <37 weeks) • Very preterm (28 to <32 weeks) • Extremely preterm (<28 weeks) 	# of live births at a facility where newborn was: <ul style="list-style-type: none"> • Moderate to late preterm • Very preterm • Extremely preterm

Denominator	Utility and limitations of indicators
1,000 live births	Reports should indicate whether deaths that occur in the community are recorded at a facility.
# of newborn deaths recorded at a facility	This indicator is not meant to be interpreted as a case fatality rate but rather provides information on cause of death among known, reported deaths. Reports should indicate whether causes of deaths that occur in the community are recorded at a facility.
1,000 total births	Reports should indicate whether stillbirths that occur in the community are recorded at a facility.
# of live births at a facility	<p>This indicator serves as the denominator for % of newborns having trouble breathing at birth (or was not breathing at birth) where resuscitation techniques were used (see below)</p> <p>Interpret this indicator with extreme caution. If non-breathing babies are often misclassified as stillbirths, introduction of a resuscitation program and training may lead to the apparent increase in the number of babies not breathing at birth. At the same time, high numbers of non-breathing newborns can indicate poor quality of intrapartum care.</p>
# of live births at a facility	<p>Important especially where gestational age measurement is unreliable.</p> <p>While specific birthweight should be taken and recorded for each individual baby, if reporting is weak, one category capturing babies weighing <2500g with a yes/no response can be used in registers instead.</p>
# of live births at a facility	<p>If gestational age for births outside a facility is recorded at the facility, the denominator can be changed to all live births.</p> <p>Gestational age is often obtained by asking the pregnant woman for the date of LMP rather than by clinical measurement, and is therefore subject to reliability issues.</p>

Indicator	Numerator
Service utilization, coverage and quality of care	
% of total births where the woman attended 1 st ANC visit before 4 months gestation	# of total births where the woman attended 1 st ANC visit before 4 months gestation
* % of live births at a facility delivered by cesarean section	# of live births at a facility delivered by cesarean section
% of newborns having trouble breathing at birth (or was not breathing at birth) where resuscitation techniques were used	# of newborns having trouble breathing at birth (or was not breathing at birth) where resuscitation techniques were used
% of newborns with chlorhexidine (CHX) applied on the cord on day of birth ⁵	# of newborns with chlorhexidine applied on the cord on day of birth
Ratio of the # of pregnant women in preterm labor at facilities who received at least one dose of antenatal corticosteroids to the number of total births at a facility	# of pregnant women in preterm labor at facilities who received at least one dose of antenatal corticosteroids
% of babies admitted to Kangaroo Mother Care (KMC) services	# of newborns admitted to KMC

Denominator	Utility and limitations of indicators
# of total births	Marker for women having contact with a provider early enough in pregnancy to permit delivery of essential pregnancy services and early identification of problems that can be addressed to improve outcomes for women and newborns.
# of live births at a facility	Marker of comprehensive emergency obstetric care. Large numbers can mean use of non-indicated cesarean sections. Could be disaggregated by urban/rural and/or private versus public sector to capture inequities as well as inappropriate use.
# of live births at a facility where the newborn had trouble breathing at birth (or was not breathing at birth)	While important to monitor implementation of resuscitation programs, this indicator needs to be interpreted with extreme caution. See notes above for the indicator % of live births at a facility where the newborn had trouble breathing at birth (or was not breathing at birth).
# of live births	A measure of CHX use for clean cord care, as prevention of infection. In some countries, where other antiseptics are used according to standard guidelines or as routine clinical practice, the indicator may be modified to capture the antiseptic being used.
# of total births at a facility	The total number of pregnant women meeting eligibility criteria for antenatal corticosteroids is difficult to determine, so this indicator uses a ratio of the number of women who received corticosteroids to the number of total births at a facility. Other information (causes of newborn death, special studies, etc) should be used in conjunction with this indicator to estimate whether most preterm births are receiving corticosteroids at facilities.
# of live births	<p>Does not measure the quality of KMC services or whether the newborn received KMC for a sufficient length of time.</p> <p>The total number of preterm or eligible babies is difficult to determine, so this indicator uses a ratio of the number of KMC admissions to the number of live births. Other information (causes of newborn death, special studies, etc) should be used in conjunction with this indicator to estimate whether most preterm/LBW births are receiving KMC at facilities.</p>

Indicator	Numerator
% of live births at a facility where newborn died before discharge	# of early newborn deaths (deaths before discharge)
* % of total births at a facility where the outcome was fresh stillbirth	# of total births at a facility where the outcome was fresh stillbirth
<p>% of pregnant women attending ANC who received:</p> <ul style="list-style-type: none"> • 2+ tetanus injections (TT2+) or a lifetime 5+ doses • 2+ doses of intermittent preventive therapy (IPTp2+), where policy • Syphilis screening & treatment • HIV testing 	<p># of pregnant women attending ANC who received:</p> <ul style="list-style-type: none"> • TT2+ • IPTp2+ • Syphilis screening & treatment • HIV testing
% of neonatal PSBI cases completing treatment	# of neonatal PSBI cases completing treatment

Denominator	Utility and limitations of indicators
# of live births at a facility	Marker for quality of care around the time of birth.
# of total births at a facility	<p>Marker for quality of care around the time of birth.</p> <p>In some settings it is possible to track intrapartum deaths (i.e. fetal heart rate detected on admission but dead at birth) rather than “fresh still births.” Macerated, or antepartum stillbirths, should also be tracked</p>
# of pregnant women attending ANC	<p>Tracking the number of ANC visits is insufficient – this indicator measures whether important components are delivered, many of which can prevent newborn deaths.</p> <p>Longitudinal registers are preferred for tracking these indicators.</p>
# of newborn (<28 days old) with possible severe bacterial infection (PSBI) cases initiating treatment at a health facility	<p>Measure of quality of care because newborns with PSBI must complete treatment (based on national guidelines) to maximize chance of survival. Does not include newborn cases initiating treatment in community settings; denominator could be adapted to national treatment policy if sepsis treatment initiation at community level is included. Best used at local level to monitor and improve quality of care.</p>

List of Indicators and Questions to Measure Facility Capacity to Provide Key Newborn Health Services

Adapted from Newborn Indicators Working Group, Newborn Services Rapid Health Facility Assessment, June 2012.

Indicator	Numerator
Service Availability	
24/7 Skilled birth attendance	# of facilities with delivery services with a provider skilled in conducting deliveries present at the facility or on call at all times (24 hours a day, 7 days per week) and schedule observed
Basic EmOC	# of facilities with delivery services that are able to provide all the following services: <ul style="list-style-type: none"> • parenteral administration of antibiotics • parenteral administration of oxytocic • parenteral administration of anticonvulsants • assisted vaginal delivery • manual removal of placenta • removal of retained products after delivery
Neonatal Resuscitation	# of facilities with delivery services that are able to provide neonatal resuscitation
Corticosteroids (ACS) for preterm labor	# of facilities with delivery services that are able to provide corticosteroids for preterm labor
Kangaroo mother care	# of facilities that provide kangaroo mother care* (KMC)

Denominator	Disaggregate by
# of visited facilities with delivery services	Type of facility (e.g, hospital versus health center)
# of visited facilities with delivery services	Type of facility Type of service Facility caseload (e.g., facilities with <10 births per month versus facilities with ≥10)
# of visited facilities with delivery services	Type of facility
# of visited facilities with delivery services	Type of facility
# of visited facilities	Type of facility

Equipment and Supplies

Newborn bag & mask	# of facilities with delivery services with newborn bag & mask available and functioning in delivery area (observed)
Resuscitation table	# of facilities with delivery services with resuscitation table with a heat source available and functioning in delivery area (observed)
Infant scale	# of facilities with delivery services with infant scale available and functioning in delivery area (observed)
Soap or hand disinfectant	# of facilities with delivery services with soap or hand disinfectant in delivery area (observed)
Towel for drying	# of facilities with delivery services with towels for drying babies in delivery area (observed)
Injectable gentamicin	# of facilities with injectable gentamicin available (observed and at least one dose valid)
PMTCT drug	# of facilities with nevirapine (or other drug recommended for PMTCT) available (observed and at least one dose valid)
ACS	# of facilities with corticosteroids available (observed and at least one dose valid)
Injectable uterotonic	# of facilities with delivery services and injectable uterotonic available (observed and at least one dose valid)
Magnesium sulfate	Number of facilities with delivery services and magnesium sulfate available (observed and at least one dose valid)
Protocols or guidelines	<p># of facilities with each of the following protocols or guidelines available (observed):</p> <ul style="list-style-type: none"> • Integrated management of pregnancy and childbirth (all facilities) • Referral of sick newborns (all facilities) • Comprehensive emergency obstetric care (facilities with delivery services) • Management of preterm labor (facilities with delivery services)

# of visited facilities with delivery services	Type of facility
# of visited facilities with delivery services	Type of facility
# of visited facilities with delivery services	Type of facility
# of visited facilities with delivery services	Type of facility
# of visited facilities with delivery services	Type of facility
# of visited facilities	Type of facility
# of visited facilities	Type of facility
# of visited facilities	Type of facility
# of visited facilities with delivery services	Type of facility
# of visited facilities with delivery services	Type of facility
# of visited facilities (with delivery services)	Type of facility

Documentation	
Up-to-date delivery register	# of facilities with delivery services with up- to-date delivery register (birth outcome for the infant and birth weight recorded for the last 10 births) (observed)
Training	
Trained providers	<p># of interviewed providers of delivery/newborn services trained in the past 12 months in each of the following areas:</p> <ul style="list-style-type: none"> • Neonatal resuscitation using bag and mask • Breastfeeding (early and exclusive) • Newborn infection management (including injectable antibiotics) • Thermal care (including immediate drying and skin-to-skin care) • Sterile cord cutting and appropriate cord care • KMC for low birth weight babies • Special delivery care practices for PMTCT of HIV • Use of ACS for preterm labor
Facilities with trained providers	<p># of facilities with at least half of interviewed providers ** trained in the past 12 months in each of the following areas:</p> <ul style="list-style-type: none"> • Neonatal resuscitation using bag and mask • Breastfeeding (early and exclusive) • Newborn infection management (including injectable antibiotics) • Thermal care (including immediate drying and skin-to-skin care) • Sterile cord cutting and appropriate cord care) • KMC for low birth weight babies • Special delivery care practices for PMTCT of HIV • Use of corticosteroids for preterm labor

of visited facilities with delivery services

Type of facility

of interviewed providers of delivery/
newborn services

Type of facility

of facilities with interviewed providers of
delivery/newborn services

Type of facility

Supervision	
Facilities with routine personal supervision	# of facilities with routine personal supervision (at least half of interviewed providers reported being personally supervised at least once during the 6 months preceding the survey.)
Monitoring postnatal care	# of facilities with documentation of monitoring*** of postnatal care for newborns
Review deaths or near misses	# of facilities with delivery services with facility reviews of stillbirth and newborn (perinatal) deaths or near misses

* Kangaroo Mother Care (KMC) is early, prolonged and continuous skin-to-skin contact between the mother (or substitute) and her baby, both in hospital and after early discharge, with support for positioning, feeding (ideally, exclusive breastfeeding), and prevention and management of infections and breathing difficulties.

** If only one provider interviewed at a facility, then criteria met if that provider was trained in each area.

*** Observed register, report, wall chart/ graph or other documentation of monitoring service data.

# of facilities with interviewed providers of delivery/newborn services	Type of facility
-------------------------------------------------------------------------	------------------

# of visited facilities	Type of facility
-------------------------	------------------

# of facilities visited with delivery services	Type of facility
------------------------------------------------	------------------

[illegible]

[illegible]

[illegible]

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World Health Organization (WHO)

U.S. Centers for Disease Control and Prevention (CDC)

Women's Refugee Commission (WRC)

World Vision International (WVI)

