



# Newborn Health in Humanitarian Settings

FIELD GUIDE

Baby Ismil\* is comforted by his mother Azida\* and grandmother Fatima\*. Four week-old Ismil\* was born in a makeshift settlement for displaced Rohingya people in Cox's Bazar, Bangladesh.

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\*Names have been changed to protect identities.

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## FIELD GUIDE

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**Save the Children**



**World Health  
Organization**



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This *Field Guide* is a companion to the *Inter-agency Field Manual on Sexual and Reproductive Health in Humanitarian Settings* (2018), providing information related specifically to newborn care during the neonatal period (days 0-28). The interim *Field Guide* was originally published in 2015. After field-testing in two humanitarian crises (South Sudan and Somalia) and soliciting extensive feedback from practitioners, it was revised in 2017 and published in January 2018.

The *Field Guide* 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).<sup>1</sup> 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. The *Field Guide* can also be used for the development of the neonatal component of national emergency preparedness and response plans. Our ultimate aim is to improve the survival and wellbeing of newborns in humanitarian settings.

An Implementation Toolkit, which includes practical resources, guidance and job aids to support the application of the *Field Guide*, is available at [www.healthynewbornnetwork.org](http://www.healthynewbornnetwork.org).

We welcome your feedback. Please send comments and questions to [info@iawg.net](mailto:info@iawg.net)

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<sup>1</sup> WHO, UNICEF. *Every Newborn Action Plan*. Geneva, Switzerland: WHO; 2014. [www.everynewborn.org/Documents/Every\\_Newborn\\_Action\\_Plan-ENGLISH\\_updated\\_July2014.pdf](http://www.everynewborn.org/Documents/Every_Newborn_Action_Plan-ENGLISH_updated_July2014.pdf)

# ABBREVIATIONS

<b>ACS</b>	Antenatal Corticosteroids
<b>ANC</b>	Antenatal Care
<b>ART</b>	Antiretroviral Therapy
<b>BCC</b>	Behavior Change Communication
<b>BCG</b>	Bacillus Calmette–Guérin (vaccine for tuberculosis)
<b>BEmOC</b>	Basic Emergency Obstetric Care
<b>CAR</b>	Central African Republic
<b>CDC</b>	U.S. Centers for Disease Control and Prevention
<b>CEmOC</b>	Comprehensive Emergency Obstetric Care
<b>CHW</b>	Community Health Worker
<b>CHX</b>	Chlorhexidine
<b>CPAP</b>	Continuous Positive Airway Pressure
<b>CSF</b>	Cerebral Spinal Fluid
<b>DRC</b>	The Democratic Republic of the Congo
<b>ENAP</b>	Every Newborn Action Plan
<b>ENC</b>	Essential Newborn Care
<b>GBS</b>	Group B Streptococci
<b>HFA</b>	Health Facility Assessment
<b>HIV</b>	Human Immunodeficiency Virus
<b>IAFM</b>	<i>Inter-Agency Field Manual on Sexual and Reproductive Health in Humanitarian Settings</i>
<b>IAWG</b>	Inter-agency Working Group on Reproductive Health in Crises
<b>IDP</b>	Internally Displaced Person
<b>IM</b>	Intramuscular
<b>IPTp</b>	Intermittent Preventive Treatment of Malaria

	during pregnancy
<b>ITN</b>	Insecticide Treated Net
<b>IV</b>	Intravenous
<b>KMC</b>	Kangaroo Mother Care
<b>LBW</b>	Low Birth Weight
<b>MISP</b>	Minimum Initial Service Package for Sexual and Reproductive Health
<b>M&amp;E</b>	Monitoring and Evaluation
<b>MNH</b>	Maternal and Newborn Health
<b>NMR</b>	Neonatal Mortality Rate
<b>NGO</b>	Non-Governmental Organization
<b>PMTCT</b>	Prevention of Mother-To-Child Transmission (of HIV)
<b>pPROM</b>	Preterm Premature Rupture of Membranes
<b>PSBI</b>	Possible Severe Bacterial Infection
<b>RHA</b>	Rapid Health Assessment
<b>SRH</b>	Sexual and Reproductive Health
<b>STI</b>	Sexually Transmitted Infection
<b>TT</b>	Tetanus Toxoid
<b>U5MR</b>	Under-five Mortality Rate
<b>UN</b>	United Nations
<b>UNFPA</b>	United Nations Population Fund
<b>UNICEF</b>	United Nations Children's Fund
<b>WHO</b>	World Health Organization



## Key Points

- The *Field Guide* provides guidance and tools to support implementation of good quality newborn health services in humanitarian settings in order to reduce neonatal mortality and morbidity. It is a programming and advocacy tool, not a clinical guide.
- The *Field Guide* complements the 2018 *Inter-agency Field Manual on Sexual and Reproductive Health in Humanitarian Settings*.
- The *Field Guide* is intended for health staff from humanitarian and development agencies including field-level program managers and surge responders as well as health policy staff and program directors at the national, regional and global levels.
- The *Field Guide* includes background information, technical content, strategic and programmatic considerations, resource lists and annexes with practical tools and templates.
- 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 of HIV; water, sanitation and hygiene; nutrition interventions; immunization; early childhood development; and protection services.

## 1.1 What is the Purpose of this Field Guide?

The *Newborn Health in Humanitarian Settings: Field Guide (Field Guide)* provides guidance and tools to reduce neonatal mortality and morbidity in humanitarian crisis situations that result from natural disasters, armed conflict, political turmoil and other social and systemic upheavals. It is designed as a programming and advocacy tool to aid humanitarian and development actors in ensuring the provision of critical newborn health services in a crisis response; it is not a clinical guide.

The *Field Guide* focuses on the unique challenges surrounding the 28-day neonatal period following birth. It complements guidance provided by the 2018 *Inter-agency Field Manual on Sexual and Reproductive Health in Humanitarian Settings*<sup>2</sup> (*IAFM*) for building sexual and reproductive health (SRH<sup>3</sup>), including maternal and newborn health, along a comprehensive care continuum. The field-test version of the *IAFM* was first published in 1996 (as the *Reproductive Health in Refugee Settings: An Inter-agency Field Manual*), calling the attention of the international community to the urgent need to prioritize reproductive health within health responses to humanitarian crises. The *IAFM* includes the Minimum Initial Service Package (MISP) for Sexual and Reproductive Health, which describes essential services to be implemented at the onset of an emergency response with recommendations and guidelines for the establishment of more comprehensive SRH services as situation stabilizes. The provision of critical newborn health services is part of the MISP, yet humanitarian health actors have historically neglected newborn care.

The *Field Guide* seeks to address this gap by building on the *IAFM* guidance and focusing on field implementation of the most critical newborn health services, prioritizing lifesaving activities that can be

2 Inter-agency Working Group on Reproductive Health in Crises. *Inter-agency Field Manual on Sexual and Reproductive Health in Humanitarian Settings*. IAWG; 2018.

3 Sexual and reproductive health (SRH) is an essential component of humanitarian response. Sexual and reproductive health is a state of complete physical, mental and social well-being (not merely the absence of disease and infirmity) in all matters relating to the reproductive system and its functions and processes. SRH therefore implies that people are able to have a satisfying and safe sex life and that they have the capability to reproduce and the freedom to decide if, when, and how often to do so. Implicit in this last condition are people's rights to be informed and to have access to safe, effective, affordable, and acceptable contraceptive methods of their choice. People should also have the right to access appropriate health care services that will enable women to go safely through pregnancy and childbirth and provide individuals and couples with the best chance of having a healthy infant.

introduced relatively quickly, without specialist training in advanced newborn care. It provides guidance 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 *Field Guide* can also be used for the development of the neonatal component of national emergency preparedness and response plans. Ensuring newborn health is integrated into emergency preparedness efforts is critical to ensure that newborn health needs are addressed during the response phase.

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 newborn babies, and services to prevent and manage the three main causes of newborn mortality: prematurity, severe infections and intrapartum-related complications. Globally, prematurity is the largest contributor to under-5 mortality.

Yet the provision of this care in a humanitarian setting presents distinct challenges. By definition, humanitarian crises entail difficult operating environments, frequently involving logistical challenges, inadequate supplies, limited staff and insecurity. Field staff are faced with complex situations requiring difficult decisions. In addition, advocacy is critical to ensure newborn needs are prioritized by humanitarian responders, and successful program implementation is contingent on effective coordination with partners. This *Field Guide* provides practical guidance on advocacy, programming, coordination and strategy to help field staff make informed decisions and thus make a positive impact on newborn health.



## 1.2 Who is the Field Guide Intended For?

The *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 health and SRH coordinators, general program staff and surge responders deployed for emergency response. The information presented here may also be useful to health policy staff and program leaders at the global, regional and national levels advocating for, prioritizing and scaling up existing newborn care interventions in crisis situations. The *Field Guide* is intended for staff





from both development and humanitarian agencies including host governments, local and international non-governmental organizations (NGOs), United Nations agencies, donor organizations or private voluntary organizations.

The *Field Guide* is not a clinical guide; rather, the guidance and tools presented here are designed to assist humanitarian responders to initiate and implement newborn health services, as well as to support the expansion of newborn health care within existing humanitarian health services. 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 emergency preparedness plan of a local, regional or national health program; during a crisis, as acute health care needs arise; and/or following a crisis, when health services are being re-established.



### 1.3 How is the Field Guide Organized?

**CHAPTER 2: 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 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.

**CHAPTER 3: Technical Content: Newborn Health Services.** This section includes abridged clinical and technical guidance for providing newborn care in humanitarian settings, centered around preventing and treating the three main causes of newborn mortality. The outlined services and required commodities are relevant whether crisis-affected populations are accessing health services through UN/NGO supported services (such as mobile or camp clinics) or via local health care systems.

**CHAPTER 4: Strategic Considerations.** This section presents considerations for broader program development, service integration and coordination within humanitarian settings. Areas addressed include working with governments, development 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.

**CHAPTER 5: 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 the community level, procuring medicines and commodities for Newborn Care Supply Kits, and providing support for neonatal loss.

**Resource List.** Resources to complement the *Field Guide* are presented at the end of each chapter.

**Annexes.** A set of annexes containing practical tools and templates to facilitate newborn health interventions is included at the end of the *Field Guide*. Note that an Implementation Toolkit, which includes additional resources, guidance and job aids to support the application of the *Field Guide*, is available at [www.healthynewbornnetwork.org](http://www.healthynewbornnetwork.org).

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

- **BLUE BOXES**, included throughout the text, contain examples, good practices, 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 of vulnerability to death and disability in the neonatal period and high mortality of newborns in humanitarian settings. However, all services should be situated within a system that cares for women and older children as well. The *Field Guide*, therefore, is not a “stand-alone” package. Rather, this guide may be applied as an essential component within a comprehensive national approach to SRH, complementing government services, the *IAFM* and other relevant 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; immunization; and protection services. ■



### Key Points

- Humanitarian crises result from armed conflict, natural and technological disasters, and other causes of social upheaval and forced displacement.
- Neonatal mortality is highest in low-income settings, fragile states and countries that have recently experienced a humanitarian crisis, where risks of complications and infections are high.
- Challenges to newborn health service delivery in humanitarian settings include service disruption and facility destruction, population movement, competing priorities and insecurity.
- Globally, the three main causes of newborn deaths are direct preterm complications, severe infection and intrapartum-related complications.
- Ensuring access to respectful maternal and newborn health services and commodities during humanitarian crises is critical to improve outcomes for women and their newborns.
- Most interventions to save newborn lives can be successfully implemented in humanitarian settings.

## 2.1

## Humanitarian Settings Across the Globe

A humanitarian crisis may result from a natural disaster, such as an earthquake or epidemic, a technological disaster, such as an oil spill or nuclear explosion, or from political turmoil, an armed conflict or other types of social upheaval and forced displacement (Box 2.1). They may occur suddenly or develop slowly over time. If the affected communities are unable to recover, the crisis may become protracted, meaning that the population remains vulnerable to death and disease, and systems and institutions are disrupted without a durable solution in the foreseeable future (*Figure 2.1*). Humanitarian crises often generate mass population displacement, namely refugees and internally displaced persons (IDPs). Globally, around one-fourth of refugees and less than 20% of IDPs reside in camp settings; most live in urban areas. The average length of displacement for a refugee is ten years.

### BOX 2.1. Humanitarian Settings Include:

- Urban contexts with refugees or IDPs
- Refugee or IDP camps
- Informal rural or peri-urban settlements with refugees or IDPs
- Settings affected by slow onset disasters, e.g., drought, climate change, famine
- Settings affected by sudden onset disasters, e.g., typhoon, earthquake, fire
- Settings affected by technological disasters, e.g., nuclear explosion, chemical spill, radiation leak
- Settings affected by armed conflict
- Settings affected by an epidemic/pandemic
- Post-conflict settings
- Protracted crisis settings
- Transit areas for populations fleeing violence and persecution
- Settings affected by complex emergencies, which are characterized by significant socio-political disruption, often in conjunction with armed conflict, and a substantial increase in mortality above the population baseline

**Figure 2.1.**

**Protracted crises are fundamentally different from acute disasters**



Walker P. *How to think about the future: history, climate change and conflict*. Presentation to the Harvard Humanitarian Summit, Cambridge, September 2009.

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, which exacerbates the toll associated with the usual causes of morbidity and mortality in the affected area.

Humanitarian crises can have devastating impacts on newborn health. Neonatal mortality is associated with poor quality maternal and newborn care, weak governance and political instability, and is highest in fragile states and countries that have recently experienced a humanitarian crisis. With decreased access to health services, unsafe deliveries rise, putting both newborns and mothers at risk. Sociocultural factors, particularly gender-related norms, may present additional barriers to mothers seeking care for their newborns.

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



## BOX 2.2. The DRC: A Humanitarian Crisis with No End in Sight

Since 1998, hunger, disease and armed conflict have killed more than 5 million people in the Democratic Republic of the Congo (DRC). Millions have been displaced, and the health system has been severely damaged. It is 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. DRC's neonatal mortality rate is 30 deaths per 1,000 live births.

Neonatal mortality is highest in fragile states and countries that have recently experienced a humanitarian crisis. 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.** *The State of the World's Children 2015: Reimagine the Future.* UNICEF, 2014. <http://sowc2015.unicef.org/>

- 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<sup>4</sup>
- Newborn deaths accounted for 46% of all under-five deaths in 2016, increasing from 41% in 2000<sup>5</sup>

Rebuilding health facilities and systems, providing emergency care and training health workers form critical components of any humanitarian response, and maternal and newborn health (MNH) services comprise key components within that process. However, advocacy to health actors is often necessary to ensure newborn services are prioritized from the beginning of an emergency response. (See *Section 4.1* for more information about advocacy and coordination.)

Response and recovery efforts should, to the extent possible, build on existing health structures, promote resiliency and support long-term

<sup>4</sup> Save the Children. *The State of the World's Mothers 2014: Saving Mothers and Children in Humanitarian Crises.* Save the Children, 2014. [www.refworld.org/docid/53d60c3f4.html](http://www.refworld.org/docid/53d60c3f4.html)

<sup>5</sup> UN Inter-agency Group for Child Mortality Estimation. *Levels and Trends in Child Mortality: Report 2017.* UNICEF; WHO; World Bank Group; United Nations; 2017.

recovery of health systems. Respectful partnerships with development organizations, particularly local organizations and governmental agencies, as well as crisis-affected communities, are essential for a successful response and recovery (*Box 4.1*). Identifying and addressing local political and governance barriers can also facilitate program implementation. To promote accountability and support a rapid and effective response, newborn health considerations should be integrated into emergency preparedness and disaster risk reduction efforts before a crisis occurs.

### 2.1.a. 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 IDPs 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 birth care at health facilities when they need it.

Preventing serious illness and death among newborns requires that care be available, functional and tailored to the local situation (*Box 2.3*). In humanitarian settings that require international responses,



## BOX 2.3. 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 (community health workers or others) who can safely reach pregnant and postnatal women in their households
- Engage communities and ensure they have up-to-date information regarding how to access providers, such as a list of health providers in the camp or area and phone numbers for providers on call, including midwives and doctors from the affected community who are able to provide care
- 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: Strategic Considerations and Chapter 5: Program Implementation Considerations for guidance on developing and implementing newborn health services in crisis settings.*

the coping capacity of the affected community is overwhelmed, and external assistance is brought to the affected area. Staff designing and managing humanitarian health programs have a responsibility to ensure that, where available, national protocols in line with WHO guidance are followed; otherwise protocols based on WHO guidance should be put in place to guide the provision of appropriate newborn care. Service providers should be competent and enabled to offer basic emergency obstetric and newborn care (BEmONC), comprehensive emergency obstetric care and newborn (CEmONC) (or appropriate referral), essential newborn care (ENC), postnatal care, and identification and basic care for sick or small babies (or appropriate referral).

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## 2.2 Newborn Health: Epidemiology

“Newborn” and “neonatal” are terms that refer to the first 28 days after birth. 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.<sup>6</sup> This period is also when most maternal deaths occur, rendering labor and birth, and the early postnatal period, a dangerous time for both mothers and their babies.

Increasing access to MNH services and to lifesaving medical commodities may be the single most important way to improve maternal and newborn survival and health. Around one third (32%) of all mothers and newborns globally do not receive skilled care at birth<sup>7</sup>, and evidence has shown that about three quarters of all babies born outside a health facility do not receive an early postnatal care visit following birth.<sup>8</sup> 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. Newborn care cannot be provided in isolation: the provision of good quality maternal care is just as essential to save lives (*Box 2.4*).<sup>9</sup> This is why ensuring access to respectful, good quality maternal and newborn health services and commodities during humanitarian crisis is critical to improve outcomes for women and their newborns.

### 2.2.a. Global burden of newborn mortality

Every year, an estimated 2.7 million babies die within the newborn period,<sup>10</sup> and another 2.6 million babies are stillborn<sup>11</sup>. Deaths in the

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6 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.

7 UNICEF. *The State of the World's Children 2015: Reimagine the Future*. UNICEF, 2014. [www.unicef.org/sowc/](http://www.unicef.org/sowc/)

8 WHO, UNICEF. Home Visits for the Newborn Child: A Strategy to Improve Survival – WHO/UNICEF Joint Statement. WHO, 2009. [www.unicef.org/spanish/health/files/WHO\\_FCH\\_CAH\\_09.02\\_eng](http://www.unicef.org/spanish/health/files/WHO_FCH_CAH_09.02_eng).

9 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.

10 The Inter-agency Group for Child Mortality Estimation. Levels and Trends in Child Mortality: Report 2015. UNICEF, 2015.

11 Blencowe H, Cousens S, Jassir FB, et al. National, regional, and worldwide estimates of stillbirth rates in 2015, with trends from 2000: a systematic analysis. *Lancet Global Health* 2016, 4(2):e98-e108.

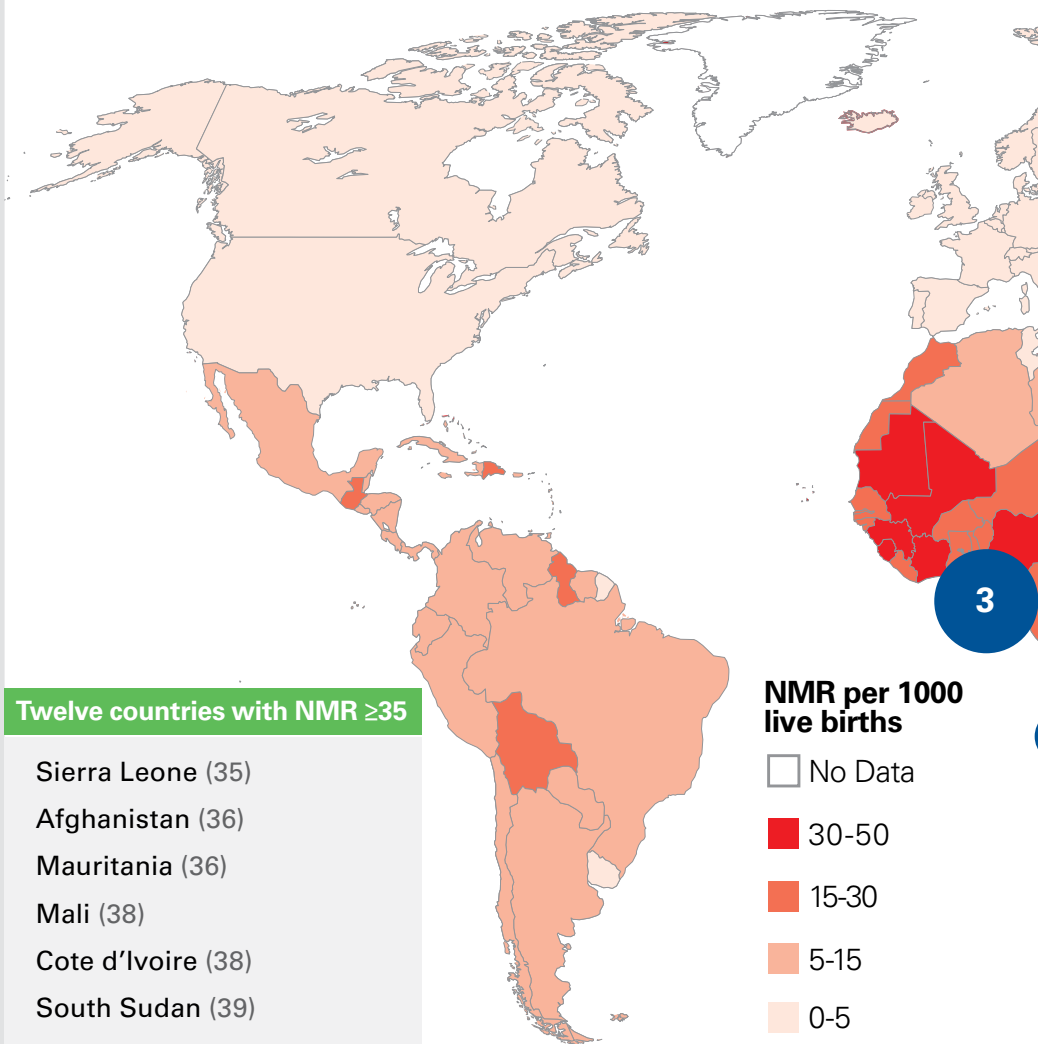
**BOX 2.4.****Available Interventions Scaled Up Can Improve Outcomes for Every Newborn and Nations**

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.*

**Figure 2.2.**

## Neonatal mortality rates (NMR) across the globe in 2015

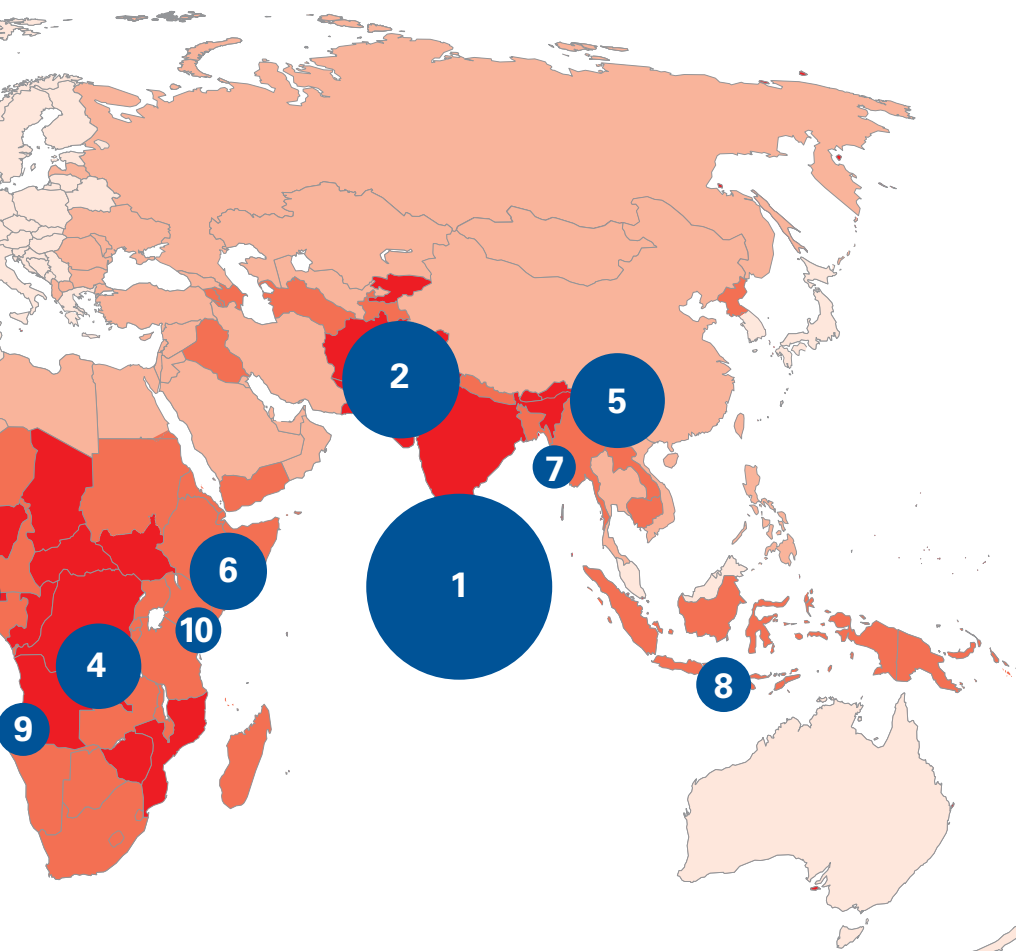


### Twelve countries with NMR $\geq 35$

- 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*. UNICEF, 2015. [www.unicef.org/publications/files/Child\\_Mortality\\_Report\\_2015\\_Web\\_8\\_Sept\\_15.pdf](http://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)  |



first month of life account for an increasing proportion of all deaths amongst children under 5 in every region of the world: now 46%<sup>12</sup>. Yet up until recently these newborn deaths have received comparatively little attention to their causes and solutions. Further, crisis-affected countries are shouldering an increasing proportion of the burden of newborn deaths. Urgent attention is not only needed for newborns broadly, but particularly in settings impacted by conflict and other crises. *Figure 2.2* presents a map of global neonatal mortality; note that many countries with a neonatal mortality rate (NMR) of 35 and above are experiencing or have recently been affected by crisis. *Figure 2.3* presents actual and projected mortality trends, highlighting the important contribution of newborn deaths to total under-5 mortality globally.

To emphasize the importance of neonatal mortality as a contributor to overall under-5 mortality in diverse countries experiencing humanitarian crises, *Figure 2.4* displays the proportional contributions of the causes of child death in the Central African Republic (CAR), Myanmar and Yemen.

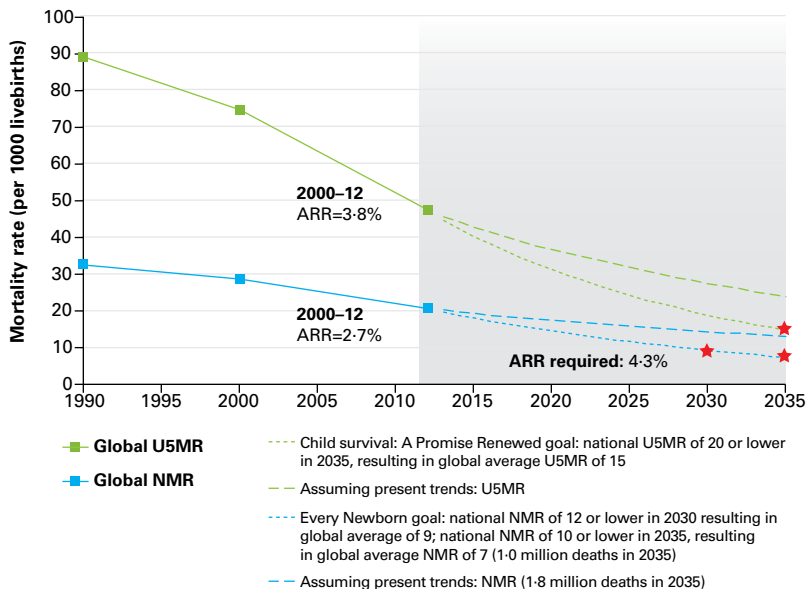
- In the CAR, neonatal causes account for around one third of all under 5 deaths.

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<sup>12</sup> UN Inter-agency Group for Child Mortality Estimation. Levels and Trends in Child Mortality: Report 2017. UNICEF et al. 2017.

Figure 2.3.

## Global under-5 and neonatal mortality trends from 1990 and targets by 2035



**Source:** Lawn JE, Blencowe H, Oza S, et al. Every newborn: progress, priorities, and potential beyond survival. *Lancet* 2014, 384(9938):189-205.

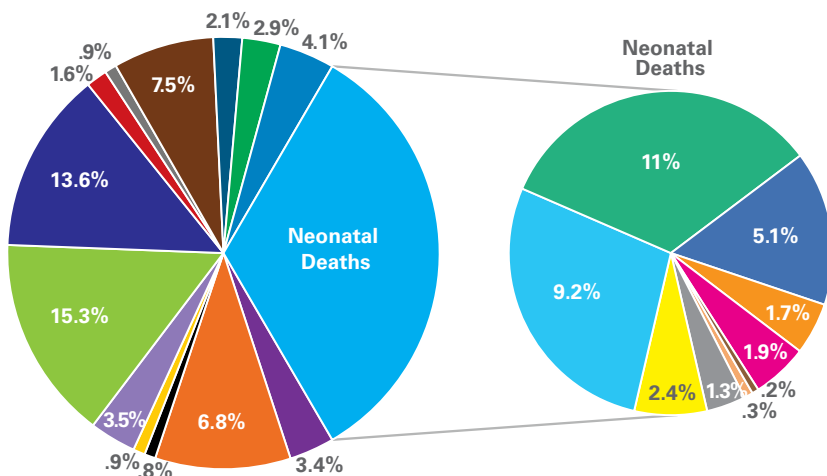
- In Myanmar and Yemen, deaths in the first month of life account for more than half of all under-5 deaths.

There has been little attempt to quantify the additional burden of deaths in the first month of life in humanitarian contexts but in all settings the proportion is significant. A comprehensive emergency preparedness and response plan, in any region or nation, should incorporate newborn health services in order to promote a safe and healthy start to life. *Every Woman, Every Child's* Global Strategy for Women, Children, and Adolescents' Health (2016-2030) aims to reduce newborn mortality to at least as low as 12 per 1,000 live births in every country by 2030; efforts to decrease neonatal deaths in humanitarian settings are critical to achieving this target.

**Figure 2.4.a**

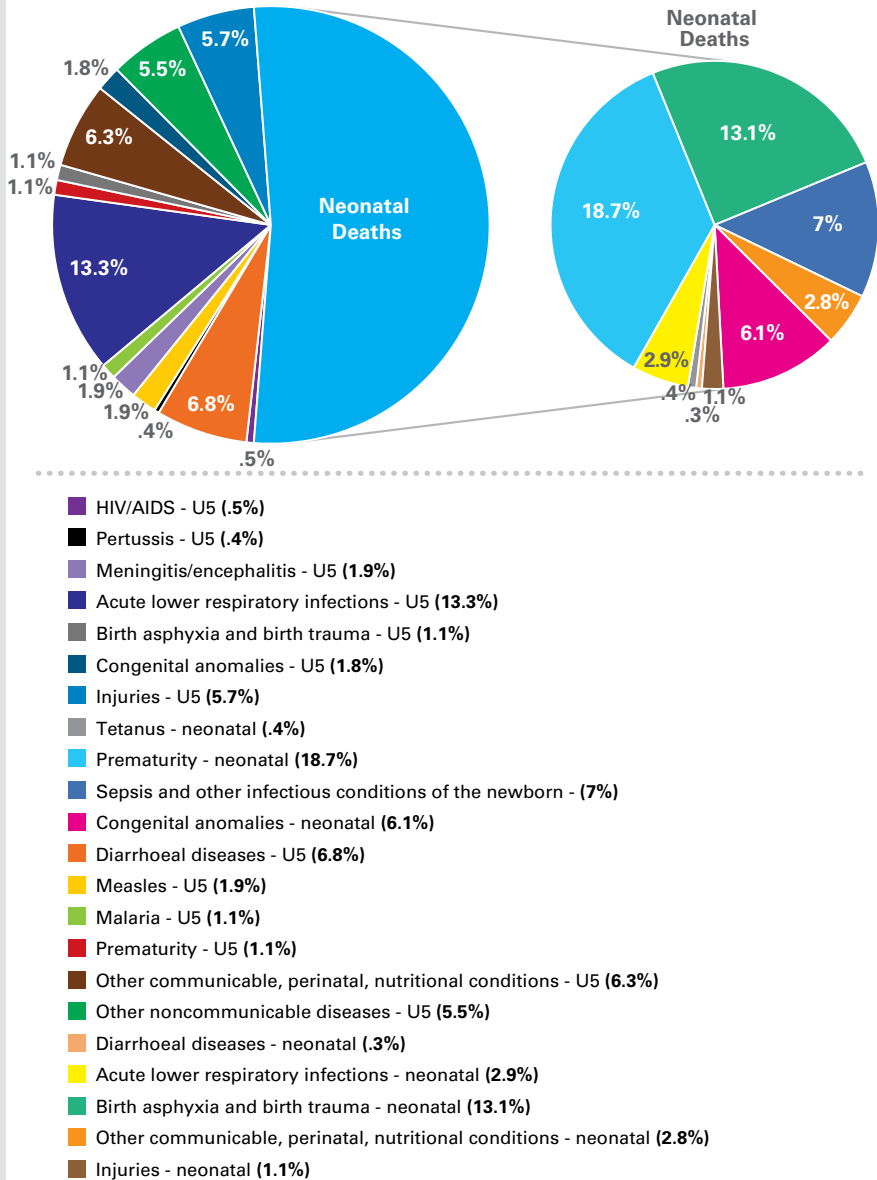
## Causes of neonatal and under-5 deaths in three countries impacted by humanitarian crises (2015)

**Central African Republic 2015:** Deaths in months 1-59 (66.8%); Neonatal death (33.0%)



- HIV/AIDS - U5 (3.4%)
- Pertussis - U5 (.8%)
- Meningitis/encephalitis - U5 (3.5%)
- Acute lower respiratory infections - U5 (13.6%)
- Birth asphyxia and birth trauma - U5 (.9%)
- Congenital anomalies - U5 (2.1%)
- Injuries - U5 (4.1%)
- Tetanus - neonatal (1.3%)
- Prematurity - neonatal (9.2%)
- Sepsis and other infectious conditions of the newborn (5.1%)
- Congenital anomalies - neonatal (1.9%)
- Diarrhoeal diseases - U5 (10.1%)
- Measles - U5 (.9%)
- Malaria - U5 (15.3%)
- Prematurity - U5 (1.6%)
- Other communicable, perinatal, nutritional conditions - U5 (7.5%)
- Other noncommunicable diseases - U5 (2.9%)
- Diarrhoeal diseases - neonatal (.3%)
- Acute lower respiratory infections - neonatal (2.4%)
- Birth asphyxia and birth trauma- neonatal (11%)
- Other communicable, perinatal, nutritional conditions - neonatal (1.7%)
- Injuries - neonatal (.2%)

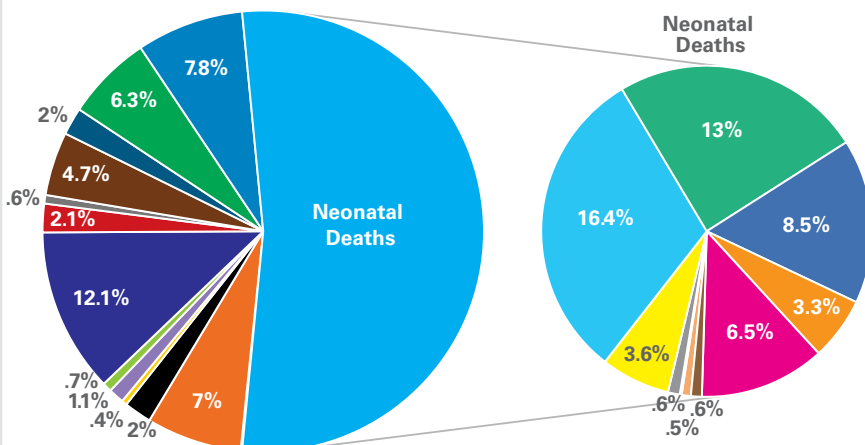


**Figure 2.4.b****Causes of neonatal and under-5 deaths in three countries impacted by humanitarian crises (2015)****Myanmar 2015: Deaths in months 1-59 (47.5%); Neonatal death (52.5%)**

**Figure 2.4.c**

## Causes of neonatal and under-5 deaths in three countries impacted by humanitarian crises (2015)

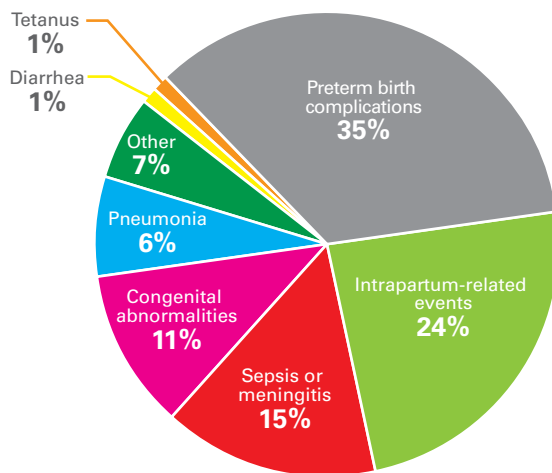
**Yemen 2015:** Deaths in months 1-59 (47.0%); Neonatal death (53.0%)



- HIV/AIDS - U5 (.1%)
- Pertussis - U5 (2%)
- Meningitis/encephalitis - U5 (1.1%)
- Acute lower respiratory infections - U5 (12.1%)
- Birth asphyxia and birth trauma - U5 (.6%)
- Congenital anomalies - U5 (2%)
- Injuries - U5 (7.8%)
- Tetanus - neonatal (.6%)
- Prematurity - neonatal (16.4%)
- Sepsis and other infectious conditions of the newborn (8.5%)
- Congenital anomalies - neonatal (6.5%)
- Diarrhoeal diseases - U5 (7%)
- Measles - U5 (.4%)
- Malaria - U5 (.7%)
- Prematurity - U5 (2.1%)
- Other communicable, perinatal, nutritional conditions - U5 (4.7%)
- Other noncommunicable diseases - U5 (6.3%)
- Diarrhoeal diseases - neonatal (.5%)
- Acute lower respiratory infections - neonatal (3.6%)
- Birth asphyxia and birth trauma - neonatal (13%)
- Other communicable, perinatal, nutritional conditions - neonatal (3.3%)
- Injuries - neonatal (.6%)
- Pertussis - neonatal (.1%)



**Figure 2.5.** Major causes of newborn mortality, 2016



**Source:** UN Inter-agency Group for Child Mortality Estimation. *Levels and Trends in Child Mortality: Report 2017*. UNICEF; WHO; World Bank Group; United Nations; 2017.

## 2.2.b. Principal causes of neonatal deaths

Globally, the three main causes of newborn deaths are direct preterm complications (35% of neonatal deaths worldwide), severe infection (23%) and intrapartum-related complications (24%).<sup>13</sup> *Figure 2.5.* details the burden of neonatal mortality by cause. For stillbirths, almost half of these deaths occur during labor. Many newborn deaths are preventable with appropriate, good quality care, including in humanitarian settings.

- **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. More than 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.<sup>14</sup> Most of these interventions can be delivered in humanitarian settings and will save lives.

- **Severe infections** include neonatal sepsis, pneumonia, diarrhea, meningitis and tetanus. Globally, approximately 630,000<sup>15</sup> newborns die each year as a result of severe infections. Most of these deaths could be averted through preventive measures such as vaccination including tetanus toxoid; improving hygiene during labor and birth and through clean cord care that incorporates the application of

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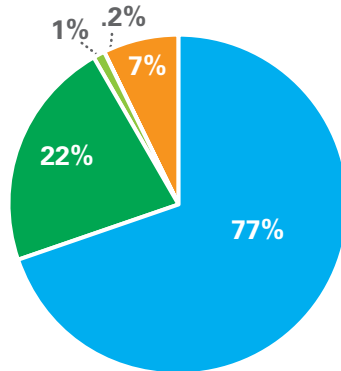
**13** UN Inter-agency Group for Child Mortality Estimation. *Levels and Trends in Child Mortality: Report 2017*. UNICEF et al. 2017.

**14** 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.

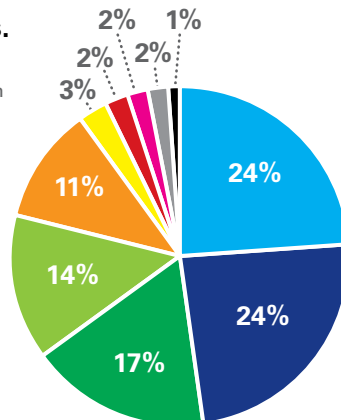
**15** Liu L, Oza S, Hogan D, et al. Global, regional, and national causes of child mortality in 2000-13, with projections to inform post-2015 priorities: an updated systematic analysis. *Lancet* 2014 385(9966):430-40.

**Figure 2.6.****Estimated effect of interventions on the three largest causes of neonatal deaths****A Intrapartum-related neonatal deaths.**

- Labour and delivery management
- Neonatal resuscitation
- Case management of intrapartum-related events
- Immediate assessment and stimulation
- Antenatal care interventions with effect on small for gestational age babies

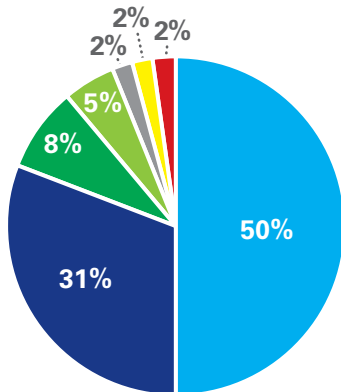
**B Infection-related neonatal deaths.**  
(sepsis, meningitis, pneumonia)

- Case management of severe neonatal infection
- Clean postnatal practices
- Clean birth practices
- Chlorhexidine
- Breastfeeding
- Balanced energy supplementation
- Micronutrient supplementation (multiple micronutrients plus iron folate)
- Syphilis detection and treatment
- Antibiotics for PPROM
- Intermittent preventive treatment in pregnancy

**C Infect Preterm-related direct complications.**

(mainly &lt;32 weeks gestation)

- Hospital care of preterm babies including kangaroo mother care
- Antenatal steroids for preterm labour
- Neonatal resuscitation
- Labour and delivery management
- Antibiotics for PPROM
- Balanced energy supplementation
- Micronutrient supplementation (multiple micronutrients plus iron folate)



**Source:** Bhutta et al. Can available interventions end preventable deaths in mothers, newborn babies, and stillbirths, and at what cost? Lancet 2014, 384(9940):308.

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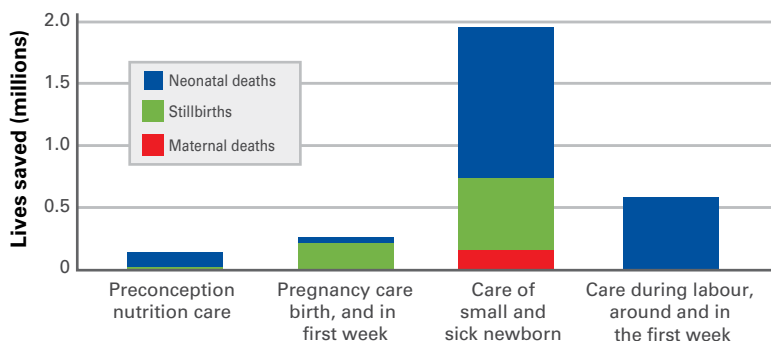
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Background

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**Figure 2.7.****Potential impact of intervention packages by time period**

Chou D, Daelmans B, Jolivet RR, Kinney M, Say L. Ending preventable maternal and newborn mortality and stillbirths. *BMJ* 2015; 351:h4255.

chlorhexidine if the newborn is born at home in a high mortality setting; promoting early breastfeeding within one hour of birth; and by ensuring that curative care is available to sick newborns through transfers to health facilities that are equipped to treat infections.

- **Intrapartum-related complications** includes conditions that occur during labor and birth. More than 1800 newborns die every day due to complications of childbirth, plus twice as many stillbirths.<sup>16</sup> The time between a potentially catastrophic event during labor and death can be short, making the first minute a crucial time for the up to 10% of babies who may require resuscitation.

**Most of the risk factors for the three main causes of neonatal deaths as well as stillbirths are preventable or treatable,** including in humanitarian settings (*Figure 2.6*). However, many causes are unpredictable and rely on preparedness throughout pregnancy, birth and the postnatal period to access timely, respectful, good quality care when needed (*Figure 2.7*). In humanitarian settings, comprehensive emergency preparedness, such as ensuring health providers are competent in ENC including basic neonatal resuscitation, is particularly critical because referral may not always be feasible. ■

<sup>16</sup> 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 Sexual and Reproductive Health in Humanitarian Settings*. IAWG, 2018. [www.iawg.net](http://www.iawg.net)
- UNHCR. *Operational Guidelines on Improving Newborn Health in Refugee Operations*. UNHCR, 2014. [www.unhcr.org/54bd0dc49.pdf](http://www.unhcr.org/54bd0dc49.pdf)
- Women's Refugee Commission. *Minimum Initial Service Package (MISP) for Reproductive Health in Crisis Situations: A Distance Learning Module*. WRC, 2011. <http://iawg.net/minimum-initial-service-package/>

### Neonatal epidemiology:

- Chou D, Daelmans B, Jolivet RR, et al. Ending preventable maternal and newborn mortality and stillbirths. *BMJ* 2015, 351:h4255.
- Every Newborn Series. *Lancet* 2014. [www.thelancet.com/series/everynewborn](http://www.thelancet.com/series/everynewborn)
- Liu L, Oza S, Hogan D, et al. Global, regional, and national causes of child mortality in 2000-15: an updated systematic analysis with implications for the Sustainable Development Goals. *Lancet* 2016, 388(10063):3027-35.
- UN Inter-agency Group for Child Mortality Estimation. *Levels and Trends in Child Mortality: Report 2017*. UNICEF, 2017. [www.unicef.org/publications/files/Child\\_Mortality\\_Report\\_2017.pdf](http://www.unicef.org/publications/files/Child_Mortality_Report_2017.pdf)
- UNICEF. *Committing to Child Survival: A Promise Renewed Progress Report*. UNICEF, 2015. [www.unicef.org/publications/files/APR\\_2015\\_9\\_Sep\\_15.pdf](http://www.unicef.org/publications/files/APR_2015_9_Sep_15.pdf)
- 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.
- WHO. *MCEE-WHO Methods and Data Sources for Child Causes of Death 2000-2015*. WHO, MCEE; 2016. [www.who.int/healthinfo/global\\_burden\\_disease/ChildCOD\\_method\\_2000\\_2015.pdf](http://www.who.int/healthinfo/global_burden_disease/ChildCOD_method_2000_2015.pdf)



### Key Points

- Newborn services are part of the lifecycle continuum of care for SRH, including integrated service delivery for mothers and children from pre-pregnancy to birth, the postnatal period, childhood and throughout the lifecycle.
- In humanitarian settings, staff should provide maternal and newborn health services across the health system continuum of care, including community-based services, primary health care and hospital-based care.
- Essential newborn care is basic care to be provided to every baby, including thermal care, infection prevention, initiation of breathing, feeding support, monitoring for danger signs and postnatal care.
- Common newborn causes of morbidity and mortality include infections, prematurity and intrapartum complications, which can be prevented and/or treated in humanitarian settings with appropriate, good quality health programming.



## 3.1 General Principles and Considerations

### 3.1.a. The Continuum of Care

Neonatal services are part of a lifecycle continuum of care for mother and baby encompassing a spectrum of SRH services, including maternal and newborn care (*Figure 3.1*), that begin before pregnancy and continue through labor and birth, the immediate postnatal period, the extended postnatal period and childhood. Integrated service delivery extends from household to health facility, hospital and back home, along with a health system continuum of care.

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* should be provided by governmental and non-governmental channels during a crisis response.

Although each humanitarian crisis presents different issues and challenges to responders, the life-saving interventions and commodities presented in this chapter have been defined according to WHO-approved standards for newborn care and, when systematically implemented, will improve MNH outcomes in humanitarian settings. These recommendations should be adapted to local needs and used to improve guidelines already in place outlining minimum care and supply requirements for MNH care in crisis and displaced settings.

### 3.1.b. Levels of Care

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

#### 1. Community-based services (camp and non-camp settings).

This care is provided to women and babies in their homes or in camp settings by community health workers (CHWs) or other lay community members, traditional birth attendants (TBAs), outreach workers or other trained health workers. These workers may be linked to a health post or primary care facility. The care is mainly promotive and preventive, with outreach

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Health Services

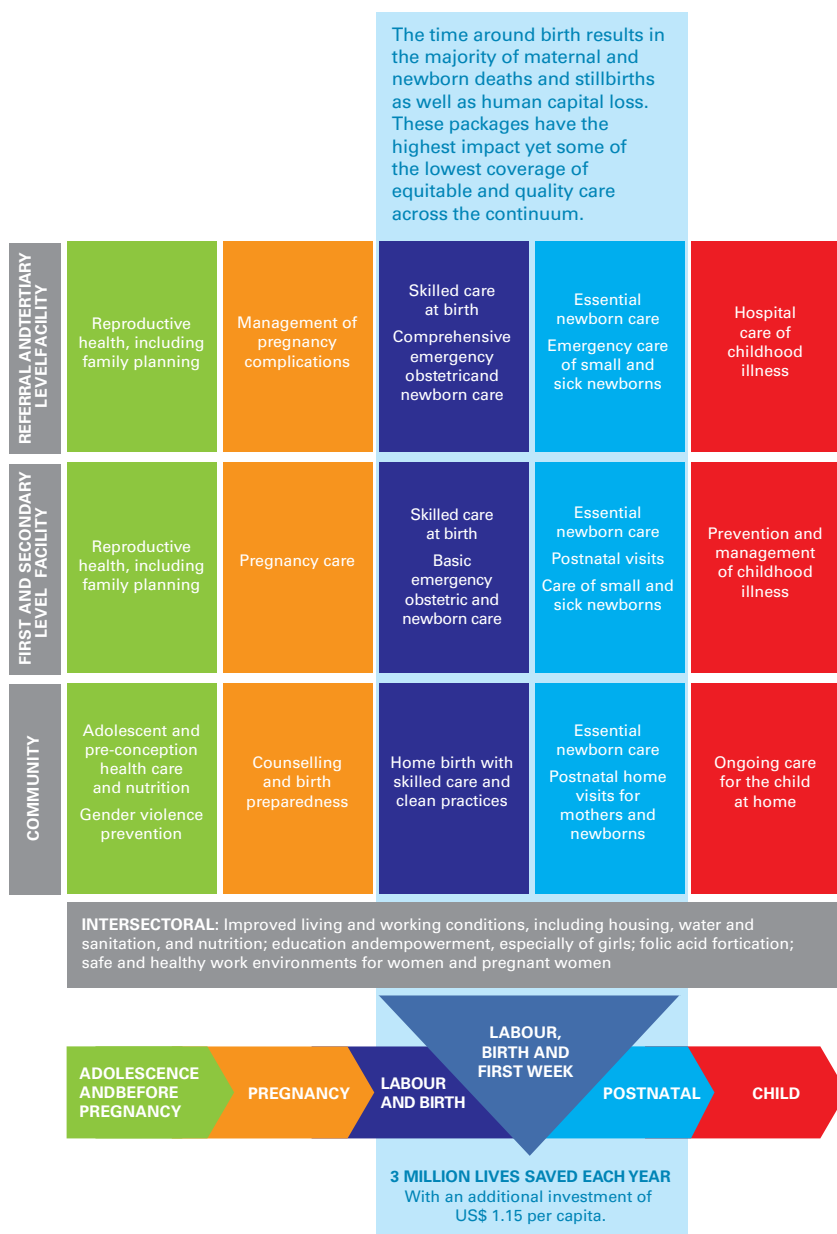
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# Figure 3.1.

## Packages in the Continuum of Care



Source: WHO, UNICEF. Every Newborn: An Action Plan to End Preventable Deaths. WHO, 2014.

services including follow-up of women and newborns after discharge from the health facility.

2. **Primary health care facilities.** These facilities include existing host community primary care facilities and other clinics operating out of permanent structures, which can be supplemented with temporary clinics in camp settings and mobile clinics. Services are typically 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.** These may include rural district hospitals, national referral hospitals and temporary field hospitals. Inpatient referral care is provided by midwives, nurses and physicians with pharmacy and laboratory support services. Hospitals have the ability to provide more advanced MNH care, such as comprehensive emergency obstetric care and advanced neonatal respiratory support.



### 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 doses of common drugs for neonates.
- **See Annex 3** for resources on advanced newborn care.
- **See Annex 4** for tools to support neonatal referrals.
- **See Annex 5** for a summary table of Newborn Care Supply Kit contents, by level of care.

ENC is the basic care required for every baby that should always be prioritized in a humanitarian setting (*Box 3.1*). Irrespective of where the birth takes place, essential care for all newborns comprises **thermal care** (drying and keeping the baby warm through skin-to-skin contact, and delayed bathing); **infection prevention** (promoting and supporting hand washing for all caregivers, providing

hygienic umbilical cord and skin care); **initiation of breathing** (drying, stimulation and resuscitation, when required); **feeding support** (early and exclusive breastfeeding); and **postnatal care**, including monitoring and assessment of newborns for **danger signs** of serious infections (and prompt referral when danger signs are present) and identifying babies requiring additional care. All women and babies should receive three postnatal checks during the first month: within the first 24 hours, which are the most critical; on the third day after birth; and sometime between 7 to 14 days after birth. Delayed cord clamping, the provision of vitamin K and tetracycline eye ointment should be initiated within the first 24 hours after birth, and provision of vaccinations within the first week.

For the first hour following birth, the newborn should be placed skin to skin with her/his mother to ensure warmth, encourage early feeding and promote bonding. Following this, and throughout the neonatal period at every visit, newborns should be examined for indications of life-threatening conditions. Danger signs for severe illness in newborns, which all families, CHWs and service providers should be aware of, are listed in *Box 3.2*. 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.

It is critical that the mother and baby are not separated, particularly immediately after birth and including during referral, unless medically necessary. This simple action can save lives, particularly in humanitarian settings where newborns may be more exposed to hypothermia, infections and delayed breastfeeding.

### 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, birth and postnatal care.

### BOX 3.1. 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 3.8*)
- **Initiation of breathing:** Thorough drying, clearing the airway only if needed, stimulation through rubbing the back, basic neonatal resuscitation using a self-inflating bag and mask for babies who do not spontaneously breathe
- **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:** All women and babies should receive three postnatal checks during the first month: on Day 1 (the first 24 hours, which are the most critical), Day 3 and between Days 7-14. Every effort should be made to reach those babies born at home as soon as possible after birth
- **Delayed cord clamping immediately after birth,** vitamin K and tetracycline eye ointment within the first 24 hours, and vaccinations within the first week should be provided as part of essential care for all newborns.

- 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 (*Section 5.3*). While WHO recommends eight antenatal visits commencing early in pregnancy (first trimester), a minimum of four is recommended in humanitarian settings.

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### BOX 3.2. 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 3.7 for danger signs of newborn infection that can be used by formally trained medical personnel.

- Not feeding well
- Fits or convulsions
- No movement or reduced activity
- Fast breathing (more than 60 breaths per minute)
- Severe chest indrawing
- Feels too hot or too cold to the touch (temperature above 37.5°C or below 35.5°C)
- Small size at birth (<2.5 kg)
- Yellow skin, eyes, palms or soles

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

Key activities in this period center around birth preparedness. 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.

- Provide the family with a clean birth kit; see contents as defined in Inter-agency Reproductive Health Kits for Crisis Situations, available at [www.unfpa.org](http://www.unfpa.org) and the Newborn Care Supply Kit (*Annex 5A*).
- Counsel women on nutrition during pregnancy, reduced workload, and the importance of sleeping under an insecticide-treated net (ITN) in malaria-endemic areas.
- Counsel women to visit the local health center as soon as possible in order to access HIV and malaria interventions, as well as vaccinations.
- Provide community leaders with information about mobile clinics and emergency transport.

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.

### BOX 3.3. Good Practice: Puntland, Somalia

In Bosaso, Puntland, Save the Children trained local health staff in the use of the Field Guide and supported the provision of newborn care services at four health facilities serving IDPs. Health facilities had recently begun charging a fee for deliveries, which was cost-prohibitive for a number of women. After undergoing training on birth planning and readiness, health staff worked with pregnant women to develop individual birth plans, emphasizing the importance of saving money for the birth and a possible emergency. Women were thus able to effectively save funds and access a facility at the time of delivery.

- Encourage birth 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.
- Emphasize that mother and baby should not be separated, particularly immediately after birth.
- Discuss early and exclusive breastfeeding, cleanliness and safe newborn care.

**During labor and birth:** No birth is without risk and therefore all should be supported by a skilled birth attendant with access to referral care if complications arise.

- Where access to a health facility is not possible, provide clean birth kits to visibly pregnant women and skilled birth attendants to promote clean home deliveries.
- 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 until the first breastfeeding.
- For babies who are not breathing at the time of birth, dry and rub the back vigorously two to three times (tactile stimulation);

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if breathing is not initiated, refer to *Section 3.5*.

*Intrapartum complications.*

- For all newborns who are breathing at birth and do not require resuscitation, do not clamp the cord for at least one minute after birth.<sup>17</sup>

### **During the immediate postnatal period (within the first hour of birth):**

- Continue thermal care by placing the baby, skin-to-skin, on the mother's chest, and covering with a blanket and hat, for at least 60 minutes.
- Allow the baby to be in skin-to-skin contact until initiation of exclusive breastfeeding (usually within one hour).
- Delay bathing the newborn for at least 24 hours to prevent heat loss and hypothermia.
- Monitor for danger signs.
- 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 mortality in research studies that were conducted in Asian countries.<sup>18</sup> 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. This recommendation should be contextualized for the setting; note that a number of countries have made adaptations to this standard.

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**17** WHO. *Guidelines on Basic Newborn Resuscitation*. WHO, 2012. [www.who.int/maternal\\_child\\_adolescent/documents/basic\\_newborn\\_resuscitation/en/](http://www.who.int/maternal_child_adolescent/documents/basic_newborn_resuscitation/en/)

**18** PATH. *Chlorhexidine for Umbilical Cord Care: A New, Low-cost Intervention to Reduce Newborn Mortality*. PATH, July 2013. [www.path.org/publications/detail.php?i=1556](http://www.path.org/publications/detail.php?i=1556)



- 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 who need additional care, refer to *Sections 3.3, 3.4 and 3.5*.

### **During the first week after birth (second hour following birth up to seven days):**

- For home births, ensure the birth is recorded, inform health workers about the home birth and arrange for a visit to provide immunizations and vitamin K prophylaxis.
- For facility-based births, if the newborn kit has not yet been given to the family, provide it during the 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 5A* for a list of Newborn Care Supply Kit contents 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.

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### 3.2.b. ENC in primary care 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 birth.
- 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 birth:** In addition to the activities described above at household level:

- Provide respectful, supportive care to the woman: encourage her to have a birth companion, to move around and drink fluids; ensure that all information is communicated clearly to her.
- If the primary care 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, progress of labor).
- Manage maternal complications and fetal distress, and be prepared to manage newborn complications such as asphyxia at every birth 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 birth):** 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.
- Assess breastfeeding and provide support where needed.

- 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 for tuberculosis.
- Encourage hepatitis B vaccine in areas of high Hepatitis B endemicity.<sup>19</sup>
- Provide birth certificate or record of birth card to the mother or family, in accordance with national practice.

### During the first week after birth (second hour following birth 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).
- Where possible, keep the mother and baby together under observation for 24 hours. Otherwise, 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 3<sup>rd</sup> and 7<sup>th</sup> day after birth if possible, or organize home visits as feasible.
- 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) per local protocol.

The Newborn Care Supply Kit for primary care facilities includes all components identified for the household level; additionally, include an

**19** Newborn vaccinations such as oral polio, BCG and hepatitis B are **NOT** included in the Newborn Care 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 (2 mg/0.2 ml); dressing trays<sup>20</sup> (for labor, birth and newborn care materials); and a mobile examination lamp. See *Annex 5B* 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 birth):**

- Follow the same guidance detailed at peripheral level facilities, with accommodations for complications such as assisted delivery or birth by cesarean section.
- Identify preterm and LBW babies immediately after birth and provide special care.
- Regularly assess all postpartum women for 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 birth up to seven days):**

- Manage sick newborn conditions. See *Sections 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 newborn kit for primary health care facilities (e.g., vitamin K, dressing trays<sup>21</sup> and mobile examination lamps). See *Annex 5C* 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*), intrapartum-related complications (*Section 3.5*) and *Annex 3* on advanced newborn care. Consult WHO's guidance on hospital care for children including newborns.<sup>22</sup>

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**20** Dressing trays for labor and birth are not part of the Newborn Care Supply Kit and must be ordered separately.

**21** Dressing trays for labor and birth are not part of the Newborn Care Supply Kit and must be ordered separately.

**22** WHO. *Pocket Book of Hospital Care for Children*. Second edition. WHO, 2013. [www.who.int/maternal\\_child\\_adolescent/documents/9241546700/en/](http://www.who.int/maternal_child_adolescent/documents/9241546700/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 doses of common drugs for neonates.
- **See Annex 3** for resources on advanced newborn care.
- **See Annex 4** for tools to support neonatal referrals.
- **See Annex 5** for a summary table of Newborn Care Supply Kit contents, 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 birth weight (less than 2500g) has been used as a marker for the highest mortality and morbidity risk for babies. However, risk alters with birth size and gestational age, and it's important to understand the reasons for a baby's low birth weight, as much as is possible in each case. Note that gestational age may be estimated using clinical signs and other proxy measures, but these are often unreliable, particularly in settings with less skilled providers. Providers should always ask if a woman has received an early ultrasound.

**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 (STIs) 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 pre-term 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 their mothers; and reliable, timely and appropriate treatment for maternal infections is available.<sup>23</sup> 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.<sup>24</sup>

Other medicines may be included for management of specific complications. 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 emergency 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 (*Box 3.4*);

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**23** 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.

**24** WHO. *Recommendations on Interventions to Improve Preterm Birth Outcomes*. WHO, 2015.: [www.who.int/reproductivehealth/publications/maternal\\_perinatal\\_health/preterm-birth-highlights/en/](http://www.who.int/reproductivehealth/publications/maternal_perinatal_health/preterm-birth-highlights/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
- The environment where KMC is practiced should be kept warm, above 25°C if possible

### 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

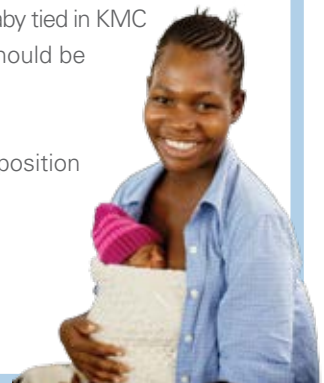
### Duration:

- 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/](http://www.who.int/maternal_child_adolescent/documents/9241590351/en/) to download WHO's *Kangaroo Mother Care: A Practical Guide*



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- additional support for breastfeeding, including the use of a breast pump and/or manual expression, 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 oxygen saturation using pulse oximetry, supportive care for respiratory distress syndrome and, if appropriate and available, continuous positive airway pressure (CPAP).

For extremely preterm babies with apnea, caffeine administration as per WHO guidelines should be considered. Where KMC is not an option, incubators can be used. In settings where the affected population has access to hospital care, neonatal intensive care provides additional support (see Annex 3).<sup>25,26</sup> Surfactant is recommended for intubated and

**25** WHO, et. al. *Born Too Soon—The Global Action Report on Preterm Birth*. WHO, 2012, p. 6.

**26** WHO. *Pocket Book of Hospital Care for Children*. Second edition. WHO, 2013, p. 61. [www.who.int/maternal\\_child\\_adolescent/documents/9241546700/en/](http://www.who.int/maternal_child_adolescent/documents/9241546700/en/)



ventilated infants with severe respiratory distress syndrome and should only be used in facilities where intubation, mechanical ventilators and associated ventilation equipment and expertise, blood gas analysis and/or basic laboratory facilities, vital sign monitoring, advanced emergency equipment, and highly specialist newborn nursing, medical and support staff are available.

Low birth weight can be a consequence of preterm birth or small size for gestational age, defined as weight for gestation < 10<sup>th</sup> percentile, or both.<sup>27</sup> 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 delay and death during infancy and childhood.<sup>28</sup> 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 and sick newborns will require inpatient care. Whenever possible, small and sick babies should be transferred to a hospital for care in a dedicated ward or space, staffed by health workers with specialist training and skills that can provide thermal support (KMC wherever possible), feeding support, infection prevention and treatment, jaundice treatment 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, 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, antibiotic treatment should be prioritized.

**27** WHO. *Guidelines on Optimal Feeding of Low Birth-Weight Infants in Low- and Middle-income Countries*. WHO, 2011. [www.who.int/maternal\\_child\\_adolescent/documents/9789241548366.pdf](http://www.who.int/maternal_child_adolescent/documents/9789241548366.pdf)

**28** 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.

### 3.3.a. Managing prematurity at the household level

**During the pregnancy/antenatal period:** In addition to the recommendations in *Section 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 birth is taking place at home, provide care as outlined in *Section 3.2*.

#### **During the immediate postnatal period (within the first hour of birth):**

- 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.
- Place all babies weighing less than 2500g in KMC position with their mother or a surrogate and take them immediately to a health facility for follow up.

#### **During the first week after birth (second hour following birth up to seven days):**

- Follow-up on all preterm and LBW babies after birth 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 3.2*) as well as signs of jaundice (*Box 3.5*).

### 3.3.b. Managing prematurity in primary care 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 IPTp.
- Diagnose and treat other infections including STIs, such as syphilis and HIV.
- Provide asymptomatic bacteriuria screening and treatment.
- For women who have completed less than 34 weeks of pregnancy and have one of the five conditions associated with preterm birth (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 who 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 birth):**

- 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:

- two sizes of bag and mask (for term and preterm babies) and simple suction for resuscitation;
- digital infant weighing scale;
- digital infant thermometer;
- mobile examination lamp;
- syringes (2, 5, 10 cc) and needles (16,18);
- alcohol swabs;
- phototherapy;
- oxygen concentrator plus consistent oxygen source;
- nasal prong;
- and pulse oximetry.

Additional/optional items include breast pump (battery powered or manual), phototherapy lamp and fluorescent tubes. The Clinic/Primary Care Facility Newborn Kit contains these and other supplies; see *Annex 5B*.

### **During the first week after birth (second hour following birth up to seven days):**

- Observe and monitor newborn vital signs for a minimum of 24 hours.
- Monitor for signs of jaundice (*Box 3.5*).
- Continue KMC with careful monitoring of feeding, weight gain and signs of illness, especially infection.
- For newborns who 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 birth [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 and:

- Monitor labor closely.
- Prepare the delivery room for anticipated complications such as hypothermia and asphyxia.

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

**During the immediate postnatal period (within the first hour of birth):** 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, 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, is alert and has no signs of hypoglycemia.<sup>29</sup> 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 syndrome;<sup>30</sup>
  - provide CPAP and monitor oxygen saturation levels and vital signs;
  - prevent and treat apnea of prematurity with caffeine.
- Monitor and manage newborns with jaundice with phototherapy or exchange blood transfusion based on bilirubin cut-off points (Box 3.5).

### **BOX 3.5. Identifying and Managing Jaundice**

Jaundice is common in newborns, especially preterm and LBW babies. Although jaundice is not harmful in most cases, jaundice in premature and/or LBW babies, or babies with other risk factors such as infection, can be serious and requires immediate attention.

Signs of jaundice include yellow skin and eyes, and sometimes yellow palms and soles. All newborns should be monitored for jaundice and, when present, preterm babies, babies where jaundice appears on the first day of life, and babies of any age with yellow palms and soles should be referred immediately. Jaundice should be confirmed by bilirubin measurement and managed with phototherapy or exchange transfusion.

**29** Edmond K, Bahl R. *Optimal Feeding of Low-Birth-Weight Infants: Technical Review*. WHO, 2006. [who.int/maternal\\_child\\_adolescent/documents/9241595094/en/](http://who.int/maternal_child_adolescent/documents/9241595094/en/)

**30** WHO. *WHO Recommendations on Interventions to Improve Preterm Birth Outcomes*. WHO, 2015. [www.who.int/reproductivehealth/publications/maternal\\_perinatal\\_health/preterm-birth-highlights/en/](http://www.who.int/reproductivehealth/publications/maternal_perinatal_health/preterm-birth-highlights/en/)

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. **gentamicin 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 an oxygen concentrator plus consistent oxygen source, pulse oximetry, nasal prong, a breast pump (battery powered or manual), phototherapy lamp and fluorescent tubes. See *Annex 3* for more information on advanced newborn care, and *Annex 5C* for a complete list of supply kit contents to support the management of prematurity at the hospital level.

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### 3.4 Newborn Infections

- **See Annex 1C** for a summary table of services to prevent and manage newborn infections and sepsis, presented by level of care.
- **See Annex 2** for doses of common drugs for neonates.
- **See Annex 3** for resources on advanced newborn care.
- **See Annex 4** for tools to support neonatal referrals.
- **See Annex 5** for a summary table of Newborn Care Supply Kit contents, by level of care.

Preventive measures during the antenatal period and labor/delivery protect the health of the mother and reduce the risk of congenital and newborn infections (*Box 3.6*). Clean birth practices, including hand washing before, during and after birth, 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. CHWs and other field workers should be tasked 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 3.6.** Basic Preventive Measures to Reduce the Risk of Early Neonatal Infections

- Employ clean birth practices at birth
- Wash hands before and throughout birth
- Use sterilized gloves and supplies
- Ensure that the mother and family wash hands before handling the baby
- Emphasize hygienic cord care (use CHX)
- Administer antibiotics to women with prolonged rupture of membrane
- Treat any maternal infections during pregnancy and labor
- Encourage early initiation of exclusive breastfeeding

See *Box 3.2* for a list of clinical signs and symptoms of newborn infections that can be used by CHWs and family members, and *Box 3.7* for signs and symptoms that can be identified by trained healthcare workers. It is important to ensure that primary care facilities as well as hospitals are sufficiently equipped to manage newborn infections, including equipment, medicines and referral plans for household to health facility transfers. Health staff should be trained to manage newborns with possible serious bacterial infections.

### BOX 3.7. 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 3.2 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*, WHO, 2013 and *Pregnancy, Childbirth, Postpartum and Newborn Care: A guide for essential practice* (3rd edition), WHO/UNFPA/UNICEF, 2015.

At the primary care facility and hospital levels, staff must 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, testing for malaria should be undertaken prior to performing a lumbar puncture. A malaria smear can be used as a rapid diagnostic test as 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 3.7) that can be used to differentiate critical illness (e.g., meningitis), clinically severe infections or complications of 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 birth, the newborn sleeps with the mother under the ITN).
- Provide tetanus toxoid (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 birth):

- 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 3.7*).
- If any signs are detected, **immediately refer and facilitate transfer to the nearest hospital** for advanced care. Timely referral is critical to reduce mortality and morbidity.

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 primary care 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.

- 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 the following regimen based on weight band:

### **BOX 3.8.** 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 in high mortality settings.

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.  
[www.path.org/publications/detail.php?i=1556](http://www.path.org/publications/detail.php?i=1556)

### Amoxicillin - desired range 75-100 mg/kg/day, divided into twice daily oral doses

Weight band (kg)	Daily dose (mg)
1.5-2.4	250
2.5-3.9	250
4.0-5.9	500

### Gentamicin - desired range 5-7.5 mg/kg/day (in LBW 3-4 mg/kg/day), single daily injection

Weight band (kg)	Daily dose (mg)
1.5-2.4	8
2.5-3.9	16
4.0-5.9	24

However, national guidelines for implementation in individual settings should be followed.<sup>31</sup> While these new indications provide recommendations for treatment at home, treatment in a health facility should always been encouraged.

### During the first week after birth (second hour following birth 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 3.7*).
- If problems are detected, assist the family to seek advanced care for the newborn in the nearest primary care facility or hospital.
- Encourage HIV-positive mothers to access HIV testing and other care for their newborns.

<sup>31</sup> WHO. *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/](http://www.who.int/maternal_child_adolescent/documents/bacterial-infection-infants/en/)

### 3.4.b. Managing infections in primary care facilities

#### During the pregnancy/antenatal period:

- Test and treat women for syphilis, where feasible.
- Vaccinate pregnant women against tetanus.
- In malaria-endemic areas or for mothers who are arriving from a malaria endemic area, provide 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.<sup>32</sup>
- Identify and treat urinary tract infections.

#### At delivery:

- Provide standard care as described in *Section 3.2.b*.
- Administer antibiotics to newborns who 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;
  - The mother had premature rupture of membranes for more than 18 hours before birth and/or foul smelling amniotic fluid.
- Encourage health staff to review maternal records to assess the need for antibiotics and other newborn health interventions.

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.

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**32** Medicines and medical commodities for HIV are not included in the Newborn Care Supply Kit. Reach out to the HIV Working Group or the National HIV/AIDS Program to procure ARVs.

## During the immediate postnatal period (within the first hour of birth):

- If danger signs (*Box 3.2*) or indicators of neonatal infection (*Box 3.7*) 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.<sup>33,34</sup>
- Provide tetracycline eye ointment.
- 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 gentamicin (IV/IM) 3 mg/kg/dose daily for LBW 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 gentamicin 7.5 mg/kg/dose once daily
- As good practice, ensure dosing tables for gentamicin and ampicillin by weight band are posted in the labor ward in settings where health workers have difficulty calculating dosages.

## During the first week after birth (second hour following birth 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 in accordance with national protocols.

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 5B*.

**33** WHO. *WHO Recommendations on Newborn Care: Guidelines approved by the WHO Guidelines Review Committee*. WHO, May 2017. [www.who.int/maternal\\_child\\_adolescent/documents/newborn-health-recommendations/en/](http://www.who.int/maternal_child_adolescent/documents/newborn-health-recommendations/en/)

**34** WHO/UNFPA/UNICEF. *Pregnancy, Childbirth, Postpartum and Newborn Care: A guide for essential practice*. 3rd edition. WHO, 2015. [http://www.who.int/maternal\\_child\\_adolescent/documents/imca-essential-practice-guide/en/](http://www.who.int/maternal_child_adolescent/documents/imca-essential-practice-guide/en/)

### 3.4.c. Managing infections in hospitals

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

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

#### **During the immediate postnatal period (within the first hour of birth):**

- As above, if danger signs (*Box 3.2*) or indicators of neonatal infection (*Box 3.7*) are present, immediately administer an initial dose of antibiotics (IM/IV).
- Provide tetracycline eye ointment and administer hepatitis B, polio and BCG vaccine.

#### **During the first week after delivery (second hour following delivery up to seven days):**

- In addition to guidance in *Section 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 (blue or purplish discoloration of the skin and/or mucous membranes) or in severe respiratory distress, administer oxygen by nasal prongs or nasal catheter and monitor oxygen levels with pulse oximetry
  2. If respiratory distress syndrome is diagnosed, provide CPAP early and monitor oxygen levels with pulse oximetry<sup>35</sup>

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**35** WHO. *WHO Recommendations on Interventions to Improve Preterm Birth Outcomes*. WHO, 2015. [www.who.int/reproductivehealth/publications/maternal\\_perinatal\\_health/preterm-birth-highlights/en/](http://www.who.int/reproductivehealth/publications/maternal_perinatal_health/preterm-birth-highlights/en/)



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  $<20\text{mg}/100\text{ml}$ , give IV glucose;
  - if  $\geq 20\text{mg}/100\text{ml}$ , 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  $20\text{ mg/kg}$  IV. If convulsions persist, give further doses of phenobarbital  $10\text{ mg/kg}$  up to a maximum of  $40\text{ mg/kg}$ . If needed, continue phenobarbital at a maintenance dose of  $5\text{ mg/kg}$  per day)
6. Continue to provide supportive care, reinforce hygienic practice, and closely monitor
7. Administer vitamin K

See *Annex 5C* 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, benzylpenicillin can be used. If meningitis is suspected, or the baby is not improving on the initial antibiotic, consider using a broader spectrum cephalosporin such as ceftriaxone or cloxacillin.

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

## 3.5 Intrapartum Complications

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- **See Annex 1D** for a summary table of newborn health services to prevent and manage intrapartum birth complications, presented by level of care.
  - **See Annex 2** for doses of common drugs for neonates.
  - **See Annex 3** for resources on advanced newborn care.
  - **See Annex 4** for tools to support neonatal referrals.
  - **See Annex 5** for a summary table of Newborn Care Supply Kit contents, 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, including in humanitarian settings. Ensuring quality antenatal care and skilled care at birth 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 birth 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, any woman who has prolonged labor should be referred 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, thoroughly 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, a bag and mask should be used to assist the baby to breathe (Box 3.9). For more guidance, refer to WHO’s *Guidelines on Basic Newborn Resuscitation* (2012) and *Early Essential Newborn Care: Clinical Practice Pocket Guide*, (2014) (Figure 3.2).

### 3.5.a. Managing intrapartum complications at the household level

**At delivery:** All women are advised to deliver at a health facility with a skilled attendant.

- If a birth occurs at home and the baby starts breathing on their own, do not bulb suction the mouth and nose.
- For babies who don't start spontaneous breathing (*Box 3.9*), clear the airway and immediately start tactile stimulation by rubbing the back and thorough drying. Keep the baby warm.

#### **BOX 3.9.** Helping Newborns Who Don't Spontaneously Breathe

Up to 10% of newborns do not spontaneously breathe within the first "golden minute" after birth and require some type of assistance. Most of these babies can be helped by opening the airway, rubbing the back and thorough drying. However, some babies will require positive-pressure ventilation with the use of a self-inflating bag and mask. Ventilation should be stopped once the baby starts breathing or crying. Skilled birth attendants who are trained to recognize a non-breathing baby and immediately begin resuscitation can save newborn lives.

Note that without regular practice, health providers' bag and mask ventilation skills quickly deteriorate. The establishment of "practice corners" with practice mannequins to support intermittent practice can help providers maintain their skills.

#### **During the immediate postnatal period (within the first hour of birth):**

- 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 birth, in case complications arise (*see Section 5.2. Developing a Referral System*).
- If danger signs (*Box 3.2 and Box 3.7*) are present, refer mother and baby to the nearest hospital for advanced care.

1

2

3  
Newborn  
Health Services

4

5

6



### 3.5.b. Managing intrapartum-related complications in primary care facilities

#### Intrapartum care (labor):

- Use the partograph to monitor labor including assessing the fetal heartrate at least once an 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 Newborn Resuscitation Flowchart (*Figure 3.2*) for immediate action steps at birth.
- For newborns who do not start breathing within one minute after birth despite thorough drying, clearing of the airway and additional stimulation, initiate ventilation using a newborn-sized self-inflating bag and mask (*Box 3.9*).
- 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.
- Have a mucus trap (e.g., Penguin Suction Device) 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 5B* for a list of supply kit contents for primary care facilities.

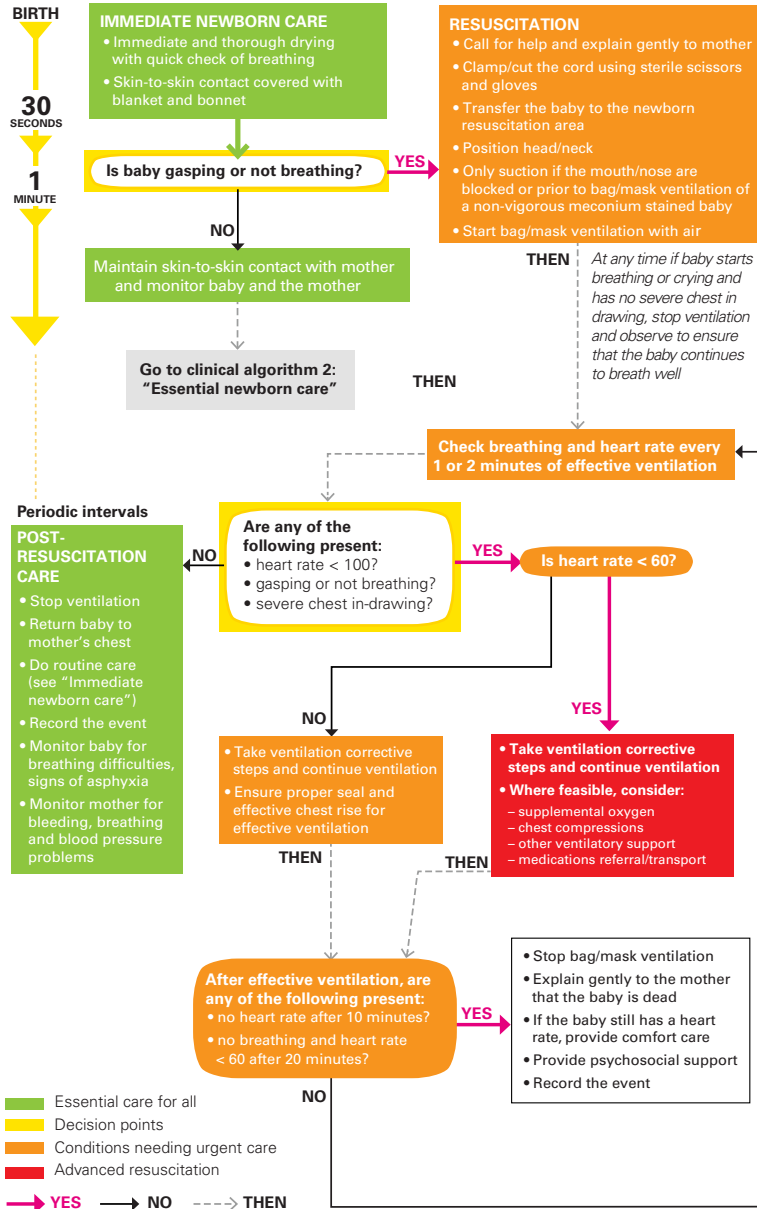
### 3.5.c. Managing intrapartum-related complications in hospitals

#### Intrapartum care (labor):

- Use the partograph to monitor labor including assessing the fetal heartrate at least once an hour.
- If there are signs of maternal or fetal distress, follow guidelines for providing BEmOC or CEmOC services.

**Figure 3.2.**

## Newborn Resuscitation Flowchart



WHO. Early Essential Newborn Care: Clinical Practice Pocket Guide. WHO, 2014, p. 51. Available at: <http://apps.who.int/iris/handle/10665/208158>



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Newborn  
Health Services

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**At delivery:** If the newborn does not start breathing spontaneously, follow the steps of the Newborn Resuscitation Flowchart (Figure 3.2) until breathing is established.

**During the immediate postnatal period (within the first hour of birth):**

- 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.
- Check glucose for hypoglycemia ( $<45$  mg/dl or  $2.5$  mmol/l) and treat with glucose by IV or nasogastric tube as indicated.<sup>36</sup>

See *Annex 5C* for a complete list of supply kit contents. ■

<sup>36</sup> WHO. *Pocket Book of Hospital Care for Children: Guidelines for the Management of Common Childhood Illness. Second edition.* WHO, 2013. [http://www.who.int/maternal\\_child\\_adolescent/documents/child\\_hospital\\_care/en/](http://www.who.int/maternal_child_adolescent/documents/child_hospital_care/en/)

## Key resources to accompany Chapter 3

### Planning newborn health services:

- *Early Essential Newborn Care: Clinical Practice Pocket Guide*, WHO, 2014. [http://apps.who.int/iris/bitstream/10665/208158/1/9789290616856\\_eng.pdf](http://apps.who.int/iris/bitstream/10665/208158/1/9789290616856_eng.pdf)
- *Essential Interventions, Commodities and Guidelines for Reproductive, Maternal, Newborn and Child Health. Partnership for Maternal, Newborn & Child Health*, 2011. [www.who.int/pmnch/knowledge/publications/20112\\_essential\\_interventions/en/](http://www.who.int/pmnch/knowledge/publications/20112_essential_interventions/en/)
- *Every Newborn: An Action Plan to End Preventable Deaths*. WHO, 2014. [http://www.who.int/maternal\\_child\\_adolescent/documents/every-newborn-action-plan/en/](http://www.who.int/maternal_child_adolescent/documents/every-newborn-action-plan/en/)
- *Guidelines on Basic Newborn Resuscitation*. WHO, 2012. [www.who.int/maternal\\_child\\_adolescent/documents/basic\\_newborn\\_resuscitation/en/](http://www.who.int/maternal_child_adolescent/documents/basic_newborn_resuscitation/en/)
- *Helping Babies Breathe 2<sup>nd</sup> Edition*. AAP. [hbs.aap.org](http://hbs.aap.org)
- *Inter-agency Field Manual on Sexual and Reproductive Health in Humanitarian Settings*. Inter-agency Working Group on Reproductive Health in Crisis, 2018. [www.iawg.net](http://www.iawg.net)
- *Integrated Management of Childhood Illness*. WHO. [www.who.int/maternal\\_child\\_adolescent/documents/imci/en/](http://www.who.int/maternal_child_adolescent/documents/imci/en/)
- *Kangaroo Mother Care*. WHO, 2003. [www.who.int/maternal\\_child\\_adolescent/documents/9241590351/en/](http://www.who.int/maternal_child_adolescent/documents/9241590351/en/)
- *Management of Sick and Small Newborns: Trainee Manual, Field-test Version*. Save the Children et. al., 2011. [www.kznhealth.gov.za/kinc/Trainee\\_manual.pdf](http://www.kznhealth.gov.za/kinc/Trainee_manual.pdf)
- *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/](http://www.who.int/maternal_child_adolescent/documents/bacterial-infection-infants/en/)
- *Newborn Health Guidelines approved by the WHO Guidelines Review Committee 2009-2012*. WHO, 2012. [www.mchip.net/node/1195](http://www.mchip.net/node/1195)
- *Pregnancy, Childbirth, Postpartum and Newborn Care: A Guide for Essential Practice (3rd edition)*. WHO, 2015. [www.who.int/maternal\\_child\\_adolescent/documents/imca-essential-practice-guide/en/](http://www.who.int/maternal_child_adolescent/documents/imca-essential-practice-guide/en/)
- *Pocket Book of Hospital Care for Children*. WHO, 2013. [www.who.int/maternal\\_child\\_adolescent/documents/child\\_hospital\\_care/en/](http://www.who.int/maternal_child_adolescent/documents/child_hospital_care/en/)



## Key resources to accompany Chapter 3 (cont'd)

- *Recommendations on Postnatal Care of the Mother and Newborn.* WHO, 2013. [www.who.int/maternal\\_child\\_adolescent/documents/postnatal-care-recommendations/en/](http://www.who.int/maternal_child_adolescent/documents/postnatal-care-recommendations/en/)
- *Recommendations on Interventions to Improve Preterm Birth Outcomes.* WHO, 2015. [www.who.int/reproductivehealth/publications/maternal\\_perinatal\\_health/preterm-birth-guideline/en/](http://www.who.int/reproductivehealth/publications/maternal_perinatal_health/preterm-birth-guideline/en/)
- *Standards for Maternal and Neonatal Care.* WHO, 2007. [www.who.int/reproductivehealth/publications/maternal\\_perinatal\\_health/a91272/en/](http://www.who.int/reproductivehealth/publications/maternal_perinatal_health/a91272/en/)
- *WHO Recommendations on Newborn Care: Guidelines approved by the WHO Guidelines Review Committee.* WHO, May 2017. [www.who.int/maternal\\_child\\_adolescent/documents/newborn-health-recommendations/en/](http://www.who.int/maternal_child_adolescent/documents/newborn-health-recommendations/en/)

### Essential medicines and medical supply kits:

- *Essential Medicines and Medical Supplies Policy and Guidance 2013.* UNHCR, 2013. [www.unhcr.org/527baab09.html](http://www.unhcr.org/527baab09.html)
- *Inter-agency Reproductive Health Kits for Crisis Situations.* UNFPA. [www.unfpa.org](http://www.unfpa.org)
- *Interagency Emergency Health Kit 2011: Medicines and Medical Devices Needed to Treat 10,000 people for Approximately 3 Months.* WHO, 2011. [www.who.int/medicines/publications/emergencyhealthkit2011/en/](http://www.who.int/medicines/publications/emergencyhealthkit2011/en/)
- *UNICEF Midwifery Kit.* UNICEF, 2016. <https://supply.unicef.org> (under Medical Kits)
- *WHO Essential Medicines List – Adults (20th edition) and Children (6<sup>th</sup> edition),* WHO, 2017. [www.who.int/medicines/publications/essentialmedicines/en/](http://www.who.int/medicines/publications/essentialmedicines/en/)
- *Sources and Prices of Selected Medicines for Children.* UNICEF/WHO, April 2010. [www.who.int/medicines/publications/sources\\_prices/en/](http://www.who.int/medicines/publications/sources_prices/en/)
- *Priority Life-saving Medicines for Women and Children 2012: Improving Health and Saving Lives by Ensuring access to Priority Medicines.* WHO, May 2012. [www.who.int/medicines/publications/emp\\_mar2012.1/en/](http://www.who.int/medicines/publications/emp_mar2012.1/en/)
- *Operational Guidance on Infant Feeding in Emergencies, Version 3.0.* Interagency Working Group on Infant and Young Child Feeding in Emergencies, October 2017. [www.enonline.net/operationalguidance-v3-2017](http://www.enonline.net/operationalguidance-v3-2017)



### Key Points

- At the onset of a humanitarian response, the health sector/cluster should identify an organization to lead the SRH response; if this does not occur, attend the health/cluster meeting and advocate the establishment of a SRH working group under a lead agency.
- Undertake a situation analysis to develop a comprehensive understanding of newborn health related needs, services, programs and gaps in the crisis-affected setting. This involves familiarizing yourself with relevant national policies, protocols, clinical guidelines, tools and training materials; advocating for the inclusion of newborn health into health assessments; and assessing the availability and capacity of facilities, supplies and staff.
- Use the findings from the situation analysis to inform the development of a coordinated strategy and response plan to deliver newborn health services; identify, engage and partner with government, local, development and other agencies, including those supporting maternal health initiatives.
- Identify and support a partner with expertise in monitoring and evaluation (M&E) to develop an overall M&E plan that utilizes 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.

Integrating newborn health care into a humanitarian response requires prioritization, planning and persistence. 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, newborn health services should be integrated into national emergency preparedness and response plans 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).



## 4.1 Mainstreaming Newborn Health in Humanitarian Coordination

Working with governmental, humanitarian and development partners in productive, cooperative partnerships is critical to a practical and comprehensive humanitarian response. When a crisis warranting an international response occurs, humanitarian agencies immediately establish a coordination system to facilitate cooperation and avoid duplication of efforts. This coordination system is based on an internationally agreed framework that includes designated lead agencies, in collaboration with the relevant government agencies, to coordinate each sector of humanitarian action.<sup>39</sup> For example, WHO and the Ministry of Health lead the health sector/cluster, and UNICEF and the Ministry of Health lead the nutrition sector/cluster. WHO and the Ministry of Health, as heads of the health sector/cluster, are ultimately accountable for ensuring the provision of newborn care.

At the beginning of a humanitarian response, the health sector/cluster should identify an organization to lead the SRH, including MNH, response. This can be any national or international NGO or UN agency that has the capacity to effectively lead the SRH response in collaboration with the Ministry of Health. The nominated agency immediately dedicates a full-time SRH coordinator for a minimum of three to six months to provide operational and technical support to the health partners. This coordinator

<sup>39</sup> These sectors may also be called clusters, depending on the context of the crisis. For more information about the humanitarian coordination system, see [www.humanitarianresponse.info/en/about-clusters/what-is-the-clusterapproach](http://www.humanitarianresponse.info/en/about-clusters/what-is-the-clusterapproach).

## **BOX 4.1.** Engaging Local and International Development Partners

Establishing respectful partnerships with development agencies that were working in-country before the crisis is important for an effective response. These agencies can include international, national and community-based organizations, women's groups, faith-based agencies, and other advocacy and service delivery organizations working on MNH. Partnering with development actors is useful because they can provide deeper understanding of the local context and culture, which can help inform the design of a more appropriate response. These agencies can also help identify pre-existing resources and capacities, and provide insights into which communities are most in need of assistance. Development agencies may not be familiar with the humanitarian coordination system. When feasible, support these organizations, particularly local groups, to meaningfully participate in the SRH working group meetings. Linking with the national ENAP action plan, where in place, may also be useful.

convenes the SRH working group, operating under the health cluster/sector, and facilitates coordinated planning to ensure the prioritization of SRH care and effective provision of MISP services.

- If the health cluster/sector does not identify a lead agency for the SRH response, raise this issue in a health sector/cluster meeting and advocate the establishment of a SRH working group under a lead agency.

Although newborn health services are part of the MISP, humanitarian health actors may not prioritize them. Advocacy and inter-agency coordination are key to ensuring that newborn health is adequately addressed.

- Participate in the SRH working group meetings and, where necessary, advocate to include newborn care issues (integrated with maternal health) on the agenda.
- Work with the SRH coordinator to task the working group with identifying priority newborn health services and coordinating with the broader group of governmental, development and humanitarian responders in the country to ensure that MNH services are integrated into the humanitarian response.



- Determine which government ministries, UN agencies, INGOs and local NGOs are working in SRH care: these agencies and staff will be essential partners to advocate and integrate newborn health services within the humanitarian response (*Box 4.1*).
- Ensure government and other partners are appropriately vetted to establish legitimacy.
- Identify and engage government programs and international and local initiatives that pre-date the crisis, as well as humanitarian agencies that enter at the onset of, or immediately after, a crisis response.

#### **BOX 4.2. Good Practice: South Sudan**

In 2016, interagency partners monitored the rollout of the *Field Guide* in South Sudan and, after six months, held a newborn health technical workshop to share lessons learned and generate feedback on how to address bottlenecks to service delivery. The workshop was co-hosted by the Ministry of Health and UNICEF, and the SRH Working Group members as well as other humanitarian and development actors were invited. By bringing together key partners from across the development-humanitarian continuum and ensuring leadership by the government, the workshop helped facilitate the development of a national strategy on newborn health.

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## 4.2 Conducting a Situation Analysis

Undertaking a situation analysis is important to develop a comprehensive understanding of newborn health related needs, services, programs and gaps in the crisis-affected setting. This involves familiarizing yourself with relevant national policies, protocols, clinical guidelines, tools and training materials; advocating for the inclusion of newborn health into health assessments; and assessing the availability and capacity of facilities, supplies and staff. In addition, it is important to work with the SRH coordinator and SRH partners to identify and address local political and governance barriers in order to facilitate program implementation. The security situation should be assessed, including security risks and safety issues that may impact travel and service delivery for pregnant and postnatal women. Population movements, malnutrition, food security and water scarcity are common in humanitarian settings and should be taken into consideration as they impact maternal and newborn survival.

### 4.2.a. Examine national policies and protocols

- Carefully examine the existing national policies and protocols related to SRH care, including PMTCT, to ensure they align with WHO guidance.
- If national policies related to newborn care are lacking, use WHO guidance.
- Where discrepancies between national and WHO protocols are identified, raise these in the SRH working group meetings to address with government, UN and other partners.
- If the SRH working group is unable to facilitate alignment between national and international MNH standards, raise the issue in a health sector/cluster meeting and request WHO to initiate and facilitate a dialogue with appropriate government ministries.
- Avoid reinventing programs and protocols that already exist, or developing new recommendations that may conflict with current standards.

#### 4.2.b. Examine existing clinical guidelines, key messages/ BCC materials, tools and training materials

- Similarly, examine 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 behavior change communication (BCC) materials used to communicate with women, families and communities about ENC and newborn danger signs.
- 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.

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

At the outset of a humanitarian response, the health sector/ cluster will undertake a rapid health assessment (RHA). In addition to assessing service availability, the health sector/cluster's 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 health sector/cluster's RHA about newborn health care and about the population requiring newborn health services is critical (*Box 4.3*).

- Work with the health sector/cluster to ensure that the RHA 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; the number of deliveries per month;

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- demographic indicators about the MNH status of the affected population prior to the crisis such as the maternal mortality ratio, the total fertility rate, crude birth rate, contraceptive prevalence, and percentage of births with a skilled attendant and/or facility-based births.<sup>40</sup>
- Review the RHA to ensure that the assessment process is gender-sensitive, involving men and women from the affected 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.

Note that the MISP does not include undertaking assessments until the situation has stabilized. However, a situation analysis may be conducted at the onset of a SRH response; newborn care should be included. For more information, see the MISP chapter of the *Inter-agency Field Manual on Sexual and Reproductive Health in Humanitarian Settings* (2018).

### **BOX 4.3.** Planning and Delivering Coordinated Health Services

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

#### **4.2.d. Assess resource availability: facilities, supplies and staff**

- Work closely with the health sector/cluster and SRH working group to ensure that newborn health is integrated into any health facility assessment.
- 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.

<sup>40</sup> Inter-agency Working Group on Reproductive Health in Crises. *Inter-agency Field Manual on Sexual and Reproductive Health in Humanitarian Settings*. 2018. [www.iawg.net](http://www.iawg.net)



- If the crisis-affected area 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. Ensure the inclusion of community-based facilities in this mapping.
- Once a clear picture of the facilities has been established, use the comprehensive newborn supply kit list (*see Annex 5*) to assess the availability of medicines and medical supplies within each facility.
- Take note of facilities that appear particularly well equipped to provide SRH care and could serve as effective referral sites for newborns in danger.
- If facilities lack essential supplies, help staff to procure the needed medicines, medical commodities and supplies.
- 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 identify where they work – within a mobile clinic, as outreach workers, within an existing health center 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 SRH care. Assess providers of all backgrounds – physicians, nurses, CHWs, etc.
- Ensure that staff are prepared to provide antenatal and postnatal care for newborns, and to transition babies and their mothers into MCH care following the neonatal period.

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The information gathered during this process will not only contribute to a comprehensive picture of available SRH care in the affected region, but will also inform the development of training programs for health workers and professional medical staff.

*Annex 6A* provides a list of indicators to be collected through routine data systems. *Annex 6B* 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.

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 5, Section 5.2*).

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 primary care facilities of various types to district hospitals with more advanced newborn care capabilities, including EmOC;
- Feasible transport options to cover these distances that are accessible to pregnant and postnatal women;
- 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.

**BOX 4.4.****Case Study: Earthquake in Nepal**

Working with the Local Government and Communities

In April 2015, a devastating earthquake struck Nepal, destroying or damaging more than 1000 health facilities. Pregnant women and families with newborns didn't know which health facilities were functional, sometimes traveling very far to receive care. Transport costs were also prohibitive for many families.

Save the Children worked with local government authorities in 31 villages across 5 districts to address some of the key barriers to accessing maternal and newborn care. In coordination with the local Health Facility Management Committees and health facilities themselves, they mapped and helped strengthen the existing newborn health services. To raise awareness among affected communities, local partners developed pictorial posters, crafted radio jingles and engaged female health volunteers to hold discussions in the community about where, why and how to access newborn care from the closest facility. As a result of these and other efforts, utilization of facility-based maternal and newborn health services increased significantly.

Save the Children also piloted an innovative seed fund to support maternal and newborn transport and referral in the district of Dolakha. In partnership with local Village Development Committees and health facilities, they established a community-owned fund to provide financial support for families in need of immediate referral. Community health workers conducted awareness-raising with families on the availability of the funds, on newborn danger signs and the importance of facility-based delivery. Although some fund managers were hesitant to provide cash assistance for fears of being accused of corruption, the project helped a number of women and newborns access life-saving care.

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## 4.3 Developing a Response Strategy

The findings from the situation analysis should be used to inform the development of a unified strategy and response plan to deliver newborn health services. The strategy and response plan should include a summary of the key findings and services and programs to be developed and implemented based on those findings. The SRH coordinator should be engaged to designate government and/or international partner leads for types of services and geographic zones of delivery. Once finalized and approved by the SRH working group, the strategy document will serve as an internal guide for the working group partners, as well as a tool for external advocacy.

### 4.3.a. Prioritizing newborn interventions

Based on the situation analysis and available local capacity and resources:

- Plan for the implementation of newborn health interventions during the acute response phase.
- Prioritize interventions outlined in the 2014 *Lancet Every Newborn Series* that showed substantial evidence in reducing neonatal mortality:
  - Essential newborn care comprising thermal care, infection prevention, feeding support, monitoring for danger signs and postnatal care (*Section 3.2*)
  - Neonatal resuscitation
  - Kangaroo mother care for LBW babies
  - Infection management for sick babies.<sup>41</sup>

It is recommended that during the initial phase of a humanitarian response, 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.

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**41** 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.

In addition, the establishment of referral systems for sick and small babies is essential to save newborn lives.

- Use the results of the situation analysis to guide the development of a referral system, including assessing the quality of the receiving facility. (See *Section 5.2* for more information on developing a referral system.)

#### 4.3.b. Develop proposals to secure additional funding

Using the results of the staff assessment (*Section 4.2.d.*), staff training materials should be developed or adapted, implemented and evaluated.

- Develop/adapt training content for your context based on the competencies expected for each type of provider (CHWs, nurses/mid-level staff, physicians) at each level of care (household, primary care facilities, hospitals) and the identified gaps in those competencies.
- Incorporate approved national and/or community-level MNH key messages, referral system protocols and other foundational information into training materials, as appropriate.

#### BOX 4.5.

#### Planning and Delivering Coordinated Health Services: Working 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.

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In crisis settings, training courses must be practical. Most situations will require the abridging of extensive information and education into brief trainings that health staff can complete within the restrictions of their work schedules and of the crisis situation. 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 experienced staff.

- Where possible, integrate MNH into relevant humanitarian health trainings in the crisis setting. Examples of MNH topics include safe motherhood, maternal health, the Integrated Management of Childhood Illnesses (IMCI) and Integrated Community Case Management (ICCM)<sup>42</sup>. Integration of these topics requires a high level of coordination with other organizations. However, this approach is recommended because it maximizes available training resources, including training personnel, funding and the time health professionals have available to participate in training courses.
- Review and evaluate trainees to ensure that new knowledge and skills are being applied in practice in household and clinical settings. Although challenging to implement and sustain within crisis settings, supervision and evaluation of provider practices are 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.
- Where possible, identify peer-practice coordinators to facilitate ongoing practice, which promotes retention of learning and changes in provider behavior.
- Where possible, 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.

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<sup>42</sup> Helping Mothers Survive and Helping Babies Survive are evidence-based learning suites designed to facilitate on-site, team-based skill “boosters” for knowledge and competency refresher that are hands-on and aligned with best practices in the learning literature. For more info: [www.helpingmotherssurvive.org](http://www.helpingmotherssurvive.org) and [www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/helping-babies-survive/Pages/About.aspx](http://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/helping-babies-survive/Pages/About.aspx).

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* (2004).

#### 4.3.c. Procure essential medicines and supplies

Consult the Newborn Care Supply Kit contents in *Annex 5* for a list of essential items to distribute to health facilities and non-facility based local health staff (e.g., CHWs, outreach workers). See *Section 5.4* for further information on procuring newborn supplies.

#### 4.3.d. Update and distribute clinical guidelines, protocols and other essential materials

- Use findings from the situation analysis (*Section 4.2*) to inform the selection and dissemination of key materials, including clinical guidelines and protocols.
- Ensure staff are equipped with a birth readiness check-list to support health facility readiness and birth preparedness. See Jhpiego's *Monitoring Birth Preparedness and Complication Readiness: Tools and Indicators for Maternal and Newborn Health Programs* (2004).

#### 4.3.e. 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 is essential.
- Utilize information gathered as part of the RHA and the resource assessment process (*Section 4.2.d.*) to coordinate the distribution of supply kits.
- Document the distribution process and monitor needs regularly.

#### 4.3.f. Establish partnerships

- Identify and establish partnerships with other agencies addressing MNH. These may include UN agencies, government authorities, local and international NGOs, community-based organizations and the private sector.
- Use the SRH working group meetings to identify and approach potential partners. Note that not all agencies working on MNH will attend the working group meetings.







- Where relevant, use the findings from the situation analysis to identify and partner with agencies not participating in humanitarian coordination mechanisms, particularly local and development organizations.

#### 4.3.g. Promote quality improvement

Poor quality of care contributes to maternal and neonatal mortality and morbidity. Quality improvement-related interventions are important and feasible in humanitarian settings.

- Establish supportive supervision for health providers. Identify a dedicated clinical supervisor who can conduct supportive supervision regularly and can mentor/coach providers on newborn care.
- Use quality checklists on a regular basis to identify areas that need improvement.
- Ensure clinical guidelines and protocols integrate quality improvement standards and measures.
- Ensure availability and usage of newborn register and data collection sheets; review the data every month and develop an action plan to address issues and gaps identified from the data.
- Integrate newborn indicators into trainings for M&E officers.

For further information, see WHO's *Standards for Improving Quality of Maternal and Newborn Care in Health Facilities* (2016).

#### 4.3.h. 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 lengthy, identify funding needs and potential donors as early as possible.
- Utilize experienced grant writers and other staff whenever feasible to prepare and submit proposals.
- Include key program indicators in funding proposals (*Section 4.4*).

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

It is important to work with the SRH coordinator to identify a partner with expertise in M&E. The SRH coordinator should task that partner with developing an overall M&E plan for the delivery of MNH services throughout the affected area that utilizes standardized methods of data collection, reporting for assessments and ongoing monitoring.

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 6A* 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. Collection of key programmatic indicators may also be useful for fundraising purposes.

### BOX 4.6. Good Practice: Za'atari Camp, Jordan

The Health Information System in Za'atari, a large refugee camp in Jordan, detected an increase in neonatal death. In response, UNHCR established a neonatal death audit process that helped expose two key contributors to the rise in newborn mortality: poor provider knowledge of danger signs and a weak referral system.

UNHCR. *Operational Guidelines on Improving Newborn Health in Refugee Operations*. UNHCR, 2014, p. 5.



- 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, consult the agency designated as the monitoring and evaluation lead for the SRH working group for help with staff training support or tools, as needed.

#### **BOX 4.7.** 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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During a crisis, routine information systems and data flow may be compromised. As such:

- Develop a reduced set of critical indicators to aggregate and channel upwards from the agency or community level to regional or national program managers.
- Continue to capture additional indicators at lower levels to allow for quality assurance and service improvement.
- Aggregate agency-level data in an overall M&E process, if possible.
- Highlight success stories to share with staff. These successes encourage persistence under difficult circumstances. Further, sharing successful strategies and encouraging their uptake from one health worker or health facility to the next will contribute to improved processes and outcomes.

To assess overall program efficacy, facility-based case fatality rate along with birthweight and gestational age should be tracked. Case fatality rate alone is insufficient to assess programming. ■

#### **BOX 4.8.** 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 and ensure deaths are properly documented;
- Extrapolate lessons from preventable deaths to improve future practices;
- Where possible, share results with communities and the health workers serving them.

## Key resources to accompany Chapter 4

- *Guidelines for Assessment of Skilled Providers After Training in Maternal and Newborn Healthcare*. Jhpiego, 2004. [www.k4health.org/sites/default/files/MNH\\_Guidelines\\_SkilledProviders\\_screen.pdf](http://www.k4health.org/sites/default/files/MNH_Guidelines_SkilledProviders_screen.pdf)
- *Health Cluster Guide*. WHO, 2009. [www.who.int/hac/global\\_health\\_cluster/guide/en/](http://www.who.int/hac/global_health_cluster/guide/en/)
- *Health Resource Availability Mapping System (HeRAMS)*. WHO. [www.who.int/hac/herams/en/](http://www.who.int/hac/herams/en/)
- *Household-to-Hospital Continuum of Maternal and Newborn Care*. Jhpiego, USAID/The Access Program, 2005. [http://pdf.usaid.gov/pdf\\_docs/Pnade623.pdf](http://pdf.usaid.gov/pdf_docs/Pnade623.pdf)
- *Making Every Baby Count: Audit and Review of Stillbirths and Neonatal Deaths*. WHO, 2016. [www.who.int/maternal\\_child\\_adolescent/documents/stillbirth-neonatal-death-review/en/](http://www.who.int/maternal_child_adolescent/documents/stillbirth-neonatal-death-review/en/)
- *Monitoring Birth Preparedness and Complication Readiness: Tools and Indicators for Maternal and Newborn Health Programs*. Jhpiego, 2004. [http://pdf.usaid.gov/pdf\\_docs/Pnada619.pdf](http://pdf.usaid.gov/pdf_docs/Pnada619.pdf)
- *Newborn Services Rapid Health Facility Assessment*. Newborn Indicators Technical Working Group, 2012. [www.healthynewbornnetwork.org/hnn-content/uploads/Newborn-Services-Rapid-HFA\\_HNN\\_25June2012.pdf](http://www.healthynewbornnetwork.org/hnn-content/uploads/Newborn-Services-Rapid-HFA_HNN_25June2012.pdf)
- *WHO Application of ICD-10 to Deaths During the Perinatal Period: ICD-PM*. WHO, 2016. <http://www.who.int/reproductivehealth/publications/monitoring/icd-10-perinatal-deaths/en/>
- *Rapid Health Assessment of Refugee or Displaced Populations* (3<sup>rd</sup> edition). MSF, 2006. [http://refbooks.msf.org/msf\\_docs/en/rapid\\_health/rapid\\_health\\_en.pdf](http://refbooks.msf.org/msf_docs/en/rapid_health/rapid_health_en.pdf)
- *Resources on the International Humanitarian Coordination System*. Building a Better Response, 2017. [www.buildingabetterresponse.org](http://www.buildingabetterresponse.org)
- *Site Assessment and Strengthening for Maternal and Newborn Health Programs*. Jhpiego/USAID, 2004. <http://reprolineplus.org/system/files/resources/siteassessment.pdf>
- *Videos on Newborn Care*. Global Health Media Project. <http://globalhealthmedia.org/videos/>

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## Key Points

- Develop evidence-based, culturally relevant messages about where, why and how to access MNH services and communicate these messages to the affected community in contextually appropriate ways, such as through radio, flyers or social media.
- Establish a resilient, adaptable referral and counter-referral system that includes protocols, trained staff, reliable transportation and a communication system to facilitate the transfer of newborns to the appropriate level of care when danger signs are detected, or to provide remote support when referral isn't possible.
- Ensure the SRH coordinator works with SRH working group members to procure Newborn Care Supply Kits, which include medicines, medical commodities and other items to support safe births and newborn survival in the immediate postnatal period.
- Train CHWs or other lay health workers to provide postnatal care at the household level, ensuring that linkages to the formal health care are maintained through an effective referral network.
- Train health workers to provide culturally acceptable, appropriate support for women and families who suffer neonatal loss; register newborn deaths, including stillbirths.

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

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

During the acute phase of a crisis, at a minimum, pregnant women and communities need to know:

- where and when health services are available
- how to access these services
- the benefits of seeking care
- basic information about the appropriate care of newborns, including the identification of danger signs that indicate the need to seek further care.

It is important to:

- 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.
- Identify contextually appropriate ways to communicate these messages, such as through radio, posters or social media.

Once the situation has stabilized:

- Adapt BCC materials to incorporate culturally relevant examples of recommended practices, add/or change illustrations based on the context of the population served.
- Suggest specific alternatives to known harmful practices (e.g., cow dung or other substances applied to the cord)

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and support those practices that are beneficial (such as increased family and household support for the mother).

- Address broader issues such as newborn death, stillbirth and complications.

In protracted humanitarian situations:

- Work with affected populations to foster community ownership for the design and implementation of BCC materials and community mobilization strategies.



## 5.2 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. These newborns need prompt, responsive care quickly to survive. Referral pathways should be established from the community to primary care facilities and hospitals, as well as from lower level to higher level care. A well-organized and functional referral system includes clear protocols with defining criteria and pathways for referral, trained staff, reliable transportation and a communication system (*Box 5.1*). In humanitarian settings, the referral system must be responsive and able to adapt to any emerging changes in the security and/or logistical status of various health facilities providing SRH care. Systems should build on existing structures, where possible. Note that referral mechanisms are frequently designed for obstetric emergencies; additional effort may be necessary to tailor them for newborn referral. See *Annex 4* for tools to assist in the referral process.

To facilitate the implementation of an efficient, safe and effective referral and counter-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 corridors.



**BOX 5.1.****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 (Box 3.2 and 3.7) so that they receive timely care.
  - Referral criteria and protocols should be established and posted 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 and communities that are not easily accessed.
  - A communication system with the receiving facility should be established; this is particularly important in humanitarian settings where referral may be delayed or impossible due to insecurity and road blockages.
- 
- 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.
  - Ensure the availability of reliable transportation, 24 hours a day, 7 days a week; ensure that fuel is available and drivers are equipped with mobile phones or radios.
  - Establish or strengthen the communication system (e.g., mobile or satellite phones, radios) with the receiving facilities; ensure a designated provider is available to provide guidance at all times.
  - Adapt existing registers or develop a register to track referrals and counter-referrals.
  - Ensure availability of appropriate supplies and equipment to screen newborns for danger signs, including thermometers, scales, timers and job aids.

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- In collaboration with partners, develop clear protocols on when, why, where and how to refer. Post protocols in facilities.
- Train staff, including CHWs, on the protocols, including how to use the communication system, how to stabilize the newborn before transfer, and how to counsel the mother on care during transport.
- Instruct CHWs to conduct follow-up on referred cases.
- Monitor and conduct audits of the referral system, including identifying any patterns in the tracking data; address bottlenecks and explore ways to improve the use and efficiency of the system.

### 5.2.a. When Referral is Not Possible

Insecurity, population movements, road blockages and other challenges can delay or prevent the timely referral of vulnerable newborns. Planning for disruptions to the referral system is imperative to prevent unnecessary death and disability.

When referral is not possible:

- Train CHWs from the affected community in postnatal care, KMC and newborn danger signs.
- Establish a functioning communication system with providers at the receiving facility to provide remote technical guidance through mobile or satellite phones, radio or Skype.
- Ensure a designated provider is available 24 hours per day, 7 days a week to provide guidance.
- Train staff on the protocol for what to do when referral is not possible, including how to use the communication system.
- Prioritize the safety and security of staff, and consider that health workers and/or certain ethnic groups may be specifically targeted for violence.
- Conduct routine audits to identify and address obstacles.
- Consider other creative ways to strengthen the referral system during insecurity and upheaval (*Box 5.2*).

**BOX 5.2.****Case Study: South Sudan**

## Developing an Effective Referral System in an Insecure Setting

In South Sudan, International Medical Corps (IMC) rolled out the *Field Guide* in two IDP camps in Juba and Malakal and in one refugee camp in Maban County. IMC staff worked to strengthen the referral system for newborns, but unpredictable violence and large population movements impeded the timely referral of small and sick newborns and prevented skilled health staff from reaching health facilities.

To address these challenges, IMC developed innovative solutions to create an adaptable, resilient referral system that could cope with sudden insecurity and upheaval. IMC worked with TBAs from the community and conducted on-the-job training on *Field Guide* interventions, including how to identify newborn danger signs for referral and initiate KMC for small babies before referral. Communication systems between the primary care facility and hospital were improved by training TBAs to use satellite phones so they could receive timely guidance from skilled health staff who had restricted access to facilities. This was particularly critical when referral wasn't possible. Since many TBAs were pre-literate, pictorial referral slips were developed to ensure the receiving facility understood the cause for referral. Ethnically-motivated attacks on health workers were frequent; thus IMC specifically recruited and trained clinicians in the community from non-targeted ethnic groups to provide continuous care and supervision. Finally, staff advocated to local UN Peacekeepers to accompany and provide protection to patients being transferred during times of insecurity. By identifying bottlenecks and developing creative, locally appropriate solutions, IMC staff were able to develop a prompt and effective referral network that helped save the lives of women and newborns.

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### 5.3 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 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. Note that in some settings, community-based health programs do not exist, thus making it difficult to establish home visits. Mothers should be encouraged to access the health facility within the first week of life, where possible.

Nurses and midwives are not the only staff who can provide postnatal care: CHWs, Home Visitors and other lay health workers can be trained to provide postnatal care at the household level, ensuring that linkages to the formal health care are maintained through an effective referral network (*Box 5.3*). This type of task-shifting can be particularly useful in humanitarian settings, which frequently experience a shortage of local healthcare workers. Lay health workers can provide: promotion of essential newborn care, exclusive breastfeeding, postpartum care, KMC for LBW babies and immunization according to national guidelines.

- Train CHWs, Home Visitors 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.
- Simultaneously prepare 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 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 visit before the end of the first week of life (day 7).<sup>37</sup>
- Ensure that staff undertaking home visits highlight newborn danger signs that the mother and other household members should look out for (*Box 3.2*).

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**37** WHO. *Newborn Health Guidelines Approved by the WHO Guidelines Review Committee* 2009-2012. WHO, 2012.

### BOX 5.3. Life-saving Home Visits for Mothers and 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 maternal and 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. These Home Visitors can detect signs of serious illness in the mother and baby, and reinforce these dangers signs to the mother and other household members (*Box 3.2*). Counseling families on danger signs and available services can increase family-initiated referrals. Home Visitors can leave a poster or card listing the danger signs (including pictorially) and their phone number in case of an emergency. Where insecurity or destruction of roads impedes home visits, other ways to follow-up with mother and baby, such as structured phone calls, should be identified. It is important to promote a return to the health facility for a well-baby postnatal visit within the first week as services, security and local customs allow.

WHO/UNICEF Joint Statement, *Home Visits for the Newborn Child: A Strategy to Improve Survival*, 2009.

- Emphasize the importance of keeping the mother and baby together, especially immediately after birth.
- Train all staff present at deliveries in ENC techniques (*Box 3.1*), 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.

Maternity waiting homes have been successfully piloted in some humanitarian settings; however, the current evidence is insufficient to determine whether maternity waiting home improve maternal and neonatal outcomes in crises.

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## 5.4 Procuring Newborn Care Supply Kits

Newborn Care Supply Kits include the medicines, commodities and supplies to support safe births and newborn survival in the immediate postnatal period. *Annex 5* 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: prematurity, severe infections and intrapartum complications, as discussed in *Chapter 3*. Newborn Care Supply Kits can be procured through UNICEF (<https://supply.unicef.org>).

The Newborn Care Supply Kits are complementary to the Inter-agency Reproductive Health Kits in Crisis Situations, which contain only some newborn health items and are managed by UNFPA. Other humanitarian health kits include the Midwifery Kit, supplied by UNICEF, and the Interagency Emergency Health Kit, managed by WHO. (See *Essential medicines and medical supply kits* under *Key Resources* at the end of *Chapter 3*.) The SRH coordinator is responsible for ensuring coordinated procurement of the newborn and reproductive health kits.

- Ensure the SRH coordinator works with SRH working group members to assess supply needs and procure Newborn Care Supply Kits.

## 5.5 Newborn Deaths in Crisis Settings

### 5.5a. Support for neonatal loss<sup>38</sup>

Although much can be done to save the lives of newborns in humanitarian settings, some loss will occur. When a baby is stillborn or dies in the days and weeks after birth, care and support for the mother and family are needed. In a crisis setting, professional counseling options for women will be limited, if not nonexistent. Health workers should be trained 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 2<sup>nd</sup> or 3<sup>rd</sup> 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.

<sup>38</sup> WHO. *Pregnancy, Childbirth, Postpartum and Newborn Care: A Guide for Essential Practice*, 3rd ed. WHO, 2015.

- 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 SRH care including 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.

## 5.5b. Documenting neonatal loss

Documenting newborn loss is important to ensure that all neonatal deaths are captured and counted.

- Establish a clear system to document and report deaths at the community and facility levels.
- Ensure deaths are captured in a central register.
- Train health staff to register all newborn deaths, including stillborns. Information collected should include date of birth, date of death, place of death, weight at birth and cause of death.
- Provide a copy of the death certificate to the mother or family, in accordance with national practice. In settings where newborn death certificates are not yet available, work with the local health facilities to provide a facility death certificate. ■





## Key resources to accompany Chapter 5

### Humanitarian settings:

- *Behavioral Integration Guidance*. USAID, <https://acceleratorbehaviors.org>
- *Caring for Newborns and Children in the Community: Caring for the Newborn at Home*. WHO, 2015. [www.who.int/maternal\\_child\\_adolescent/documents/caring-for-the-newborn-at-home/en/](http://www.who.int/maternal_child_adolescent/documents/caring-for-the-newborn-at-home/en/)
- *Home Visits for the Newborn Child: A Strategy to Improve Survival (WHO/UNICEF Joint Statement)*. WHO, 2009. [www.unicef.org/spanish/health/files/WHO\\_FCH\\_CAH\\_09.02\\_eng.pdf](http://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](http://www.who.int/mental_health/emergencies/guidelines_iasc_mental_health_psychosocial_june_2007.pdf)
- *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/](http://www.who.int/maternal_child_adolescent/documents/bacterial-infection-infants/en/)
- *Taking Care of a Baby at Home After Birth: What Families Need to Do*. CORE Group et al., 2011. <https://hetv.org/pdf/taking-care-of-a-baby-after-birth.pdf>
- *UNHCR's Principles and Guidance for Referral Health Care for Refugees and Other Persons of Concern*. UNHCR, 2009. [www.unhcr.org/4b4c4fca9.html](http://www.unhcr.org/4b4c4fca9.html)

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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



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

- TABLE 1:** Household-level care delivery
- TABLE 2:** Primary 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 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/birth:</p> <ul style="list-style-type: none"> <li>• Provide education on danger signs, need for referral, and referral pathways</li> <li>• Provide family with a clean birth kit and information about safe birth practices and newborn care</li> <li>• If home birth occurs, encourage women and caretakers to visit a health facility as soon as possible after birth to examine mother/baby</li> <li>• Distribute newborn care supplies intended for household use as listed in <b>Annex 5A</b></li> </ul> <p>Encourage women to get tested and seek care at a health facility for themselves before birth, and for their newborns after birth</p>
LABOR / BIRTH	<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 babies who do not require bag and mask ventilation, delay clamping the cord for at least 1 minute</p>

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

## HOUSEHOLD LEVEL

Typically delivered by CHWs

### IMMEDIATE POSTNATAL (within the 1<sup>st</sup> hour of birth)

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 5A**)

Promote essential newborn care, including:

- Keeping the baby warm
- Exclusive breastfeeding
- 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 primary/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 birth kit and information about safe birth practices and newborn care
- If home birth 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 5A**

Encourage women to get tested and seek care at a health facility for themselves before birth, 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><b>LABOR / BIRTH</b></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>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 babies who do not require bag and mask ventilation, delay clamping the cord for at least 1 minute</p>
<p><b>IMMEDIATE POSTNATAL</b> (within the 1<sup>st</sup> hour of birth)</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 birth, 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<sup>1</sup></p> <p>Weigh the baby</p> <p>Provide birth certificate or record of birth</p>

<sup>1</sup> 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 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 5A**)

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/birth:

- Provide education on danger signs, need for referral, and referral pathways
- Provide family with a clean birth kit and information about safe birth practices and newborn care
- If home birth 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 5A**

Encourage women to get tested and seek care at a health facility for themselves before birth, 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

<b>LABOR / BIRTH</b>	<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>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 babies who do not require bag and mask ventilation, delay clamping the cord for at least 1 minute</p>
<b>IMMEDIATE POSTNATAL</b> (within the 1 <sup>st</sup> hour of birth)	<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 birth, 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<sup>2</sup></p> <p>Weigh the baby</p> <p>Provide birth certificate or record of birth</p> <p>Identify and manage newborns with danger signs</p>

<sup>2</sup> 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 5A**)

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**

<b>PREGNANCY</b>	<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>
<b>LABOR / BIRTH</b>	<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>
<b>IMMEDIATE POSTNATAL</b> (within the 1 <sup>st</sup> hour of birth)	<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>
<b>LATER POSTNATAL</b>	<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 <b>Annex 1A</b>), 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><b>PREGNANCY</b></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><b>LABOR / BIRTH</b></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, accompany them 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 who do not start breathing on their own within 1 minute after birth after tactile stimulation, provide basic newborn resuscitation (self-inflating bag and mask and suction device)</p> <p>For babies who do not require bag and mask ventilation, delay clamping the cord for at least 1 minute</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**

<b>IMMEDIATE POSTNATAL</b> (within the 1 <sup>st</sup> hour of birth)	<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>
<b>LATER POSTNATAL</b>	<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 who 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**

<b>PREGNANCY</b>	<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>
<b>LABOR / BIRTH</b>	<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"> <li>• gestational age is known</li> <li>• preterm birth is considered imminent</li> <li>• there is no clinical evidence of maternal infection</li> <li>• adequate childbirth care is available</li> <li>• the preterm newborn can receive adequate care if needed (including resuscitation, thermal care, feeding support, infection treatment and safe oxygen use)</li> </ul> <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 who do not start breathing on their own within 1 minute after birth, provide basic newborn resuscitation (self-inflating bag and mask and suction device)</p> <p>For babies who do not require bag and mask ventilation, delay clamping the cord for at least 1 minute</p>
<b>IMMEDIATE POSTNATAL</b> (within the 1 <sup>st</sup> hour of birth)	<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 who 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. Support mother to use a feeding cup; if skilled staff and sufficient equipment are available, providers may use a nasogastric tube

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**

<b>PREGNANCY</b>	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
<b>LABOR / BIRTH</b>	Employ clean birth practices (clean hands, clean perineum, clean surface, clean cord and tying instruments, clean cutting instrument and clean cutting surface)
<b>IMMEDIATE POSTNATAL</b> (within the 1 <sup>st</sup> hour of birth)	<p>Initiate exclusive breastfeeding as soon as possible after birth or at least within 1 hour after birth</p> <p>Employ hygienic skin care and umbilical cord care (including CHX, see <b>Annex 1A</b>)</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<sup>3</sup>, assist mothers/families to seek primary 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

**3** In settings where referral is not possible, see WHO's Managing Possible Serious Bacterial Infection in Young Infants When Referral is Not Feasible (2015). Available at: [www.who.int/maternal\\_child\\_adolescent/documents/bacterial-infection-infants/en/](http://www.who.int/maternal_child_adolescent/documents/bacterial-infection-infants/en/)

**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><b>PREGNANCY</b></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<sup>3</sup></p>
<p><b>LABOR / BIRTH</b></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><b>IMMEDIATE POSTNATAL</b> (within the 1<sup>st</sup> hour of birth)</p>	<p>Initiate exclusive breastfeeding as soon as possible after birth or at least within 1 hour after birth</p> <p>Employ hygienic skin care and umbilical cord care (see <b>Annex 1A</b>)</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>

**4** Medicines and medical commodities for HIV are not included in the newborn care kits. Reach out to the HIV Working Group or the National HIV/AIDS Program to procure ARVs.

**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 primary 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 birth, mother had fever >38°C before birth or during labor, 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><b>PREGNANCY</b></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.<sup>4</sup></p>
<p><b>LABOR / BIRTH</b></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><b>IMMEDIATE POSTNATAL</b> (within the 1<sup>st</sup> hour of birth)</p>	<p>Initiate exclusive breastfeeding as soon as possible after birth or at least within 1 hour after birth</p> <p>Employ hygienic skin care and umbilical cord care (see <b>Annex 1A</b>)</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>

**5** Medicines and medical commodities for HIV are not included in the newborn care kits. Reach out to the HIV Working Group or the National HIV/AIDS Program to procure ARVs.

**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 birth, mother had fever >38°C before birth or during labor, 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 gentamicin (IV/IM) 3 mg/kg/ dose daily for LBW 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 gentamicin 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

# Doses of Common Drugs for Neonates

**ANNEX 2:** Doses of Common Drugs  
for Neonates

DRUG	DOSAGE	FORM
<b>Aminophylline</b> to prevent apnoea	<p>Calculate the exact oral maintenance dose</p> <p><b>Loading dose:</b> Oral or IV over 30 minutes 6 mg/kg, then</p> <p><b>Maintenance dose:</b> <b>First week of life: Oral:</b> 2.5 mg/ kg every 12 h <b>Weeks 2–4 of life: Oral:</b> 4 mg/kg every 12h</p>	<p>250 mg/10 ml vial. Dilute loading dose to 5 ml with sterile water, give slowly over 15–30 min</p>
<b>Ampicillin</b>	<p>IM/IV: 50 mg/kg</p> <p><b>First week of life:</b> every 12 h</p> <p><b>Weeks 2–4 of life:</b> every 8 h</p>	<p>Vial of 250 mg mixed with 1.3 ml sterile water to 250 mg/1.5 ml</p>
<b>Caffeine citrate</b>	<p>Calculate the exact oral maintenance dose</p> <p><b>Loading dose:</b> Oral: 20 mg/kg (or IV over 30 min)</p> <p><b>Maintenance dose:</b> 5 mg/kg daily oral (or IV over 30 min)</p>	
<b>Cefotaxime</b>	<p>IV: 50 mg/kg</p> <p><b>Premature infants:</b> every 12 h</p> <p><b>First week of life:</b> every 8 h</p> <p><b>Weeks 2–4 of life:</b> every 6 h</p>	<p>Vial of 500 mg mixed with 2 ml sterile water to 250 mg/ml</p>



## WEIGHT OF INFANT IN KG

1-< 1.5	1.5-< 2	2-2.5	2.5-< 3	3-3.5	3.5-< 4	4-< 4.5
0.6 ml	0.8 ml	1.0 ml	Aminophylline is not usually used for term infants.			
0.1- 0.15 ml	0.15- 0.20 ml	0.20- 0.25 ml				
0.15- 0.2 ml	0.25- 0.3 ml	0.30- 0.4 ml				
0.3- 0.6 ml	0.6- 0.9 ml	0.9- 1.2 ml	1.2- 1.5 ml	1.5- 2.0 ml	2.0- 2.5 ml	2.5- 3.0 ml
20-30 mg	30-40 mg	40-50 mg	50-60 mg	60-70 mg	70-80 mg	80-90 mg
5-7.5 mg	7.5-10 mg	10-12.5 mg	12.5-15 mg	15-17.5 mg	17.5-20 mg	20-22.5 mg
0.3 ml	0.4 ml	0.5 ml	0.6 ml	0.7 ml	0.8 ml	0.9 ml

DRUG	DOSAGE	FORM
<b>Ceftriaxone For meningitis</b>	IV: 50 mg/kg every 12 h	1-g vial mix with 9.6 ml sterile water to 1 g/10 ml
	IM /IV: 100 mg/kg once a day	
	For pus draining from eye 50 mg/kg once IM (max, 125 mg)	
<b>Cloxacillin</b>	25–50 mg/kg per dose <b>First week of life:</b> every 12 h	25-mg vial mixed with 1.3 ml sterile water to 250 mg/1.5 ml
	<b>Weeks 2–4 of life:</b> every 8 h	
<b>Gentamicin</b>	Preferably calculate exact dose based on the infant's weight	
	<b>First week of life:</b>	Vial 20 mg/2 ml
	<b>Low-birth-weight infants:</b>	Vial 80 mg/2 ml
	IM /IV: 3 mg/kg once a day	Dilute to 8 ml with sterile water to 10 mg/ml
	<b>Normal birth weight:</b> IM /IV: 5 mg/kg per dose once a day	
	<b>Weeks 2–4 of life:</b> IM / IV: 7.5 mg/kg once a day	
<b>Note:</b> To use a vial of 80 mg/2 ml, dilute to 8 ml with sterile water to 10 mg/ml,		
<b>Kanamycin</b>	IM /IV: 20 mg/kg (one dose for pus draining from eyes)	2-ml vial to make 125 mg/ml

## WEIGHT OF INFANT IN KG

1-< 1.5	1.5-< 2	2-2.5	2.5-< 3	3-3.5	3.5-< 4	4-< 4.5
0.5-0.75 ml	0.75-1 ml	1-1.25 ml	1.25-1.5 ml	1.5-1.75 ml	1.75-2 ml	2-2.5 ml
1-1.5 ml	1.5-2 ml	2-2.5 ml	2.5-3 ml	3-3.5 ml	3.5-4 ml	4-4.5 ml
<b>25 mg/kg:</b> 0.15-0.3 ml	0.3-0.5 ml	0.5-0.6 ml	0.6-0.75 ml	0.75-1.0 ml	1.0-1.25 ml	1.25-1.5 ml
<b>50 mg/kg:</b> 0.3-0.6 ml	0.6-0.9 ml	0.9-1.2 ml	1.2-1.5 ml	1.5-2.0 ml	2-2.5 ml	2.5-3.0 ml
0.3-0.5 ml	0.5-0.6 ml	0.6-0.75 ml	1.25-1.5 ml	1.5-1.75 ml	1.75-2 ml	2-2.25 ml
0.75-1.1 ml	1.1-1.5 ml	1.5-1.8 ml	1.8-2.2 ml	2.2-2.6 ml	2.6-3.0 ml	3.0-3.3 ml
<i>then use exactly the same dose as in the table above.</i>						
0.2-0.3 ml	0.3-0.4 ml	0.4-0.5 ml	0.5-0.6 ml	0.6-0.7 ml	0.7-0.8 ml	0.8-1.0 ml

DRUG	DOSAGE	FORM
<b>Naloxone</b>	0.1 mg/kg	Vial 0.4 mg/ml
<b>PENICILLIN</b>		
<b>Benzylpenicillin</b>	50 000 U/kg per dose <b>First week of life:</b> every 12 h <b>Weeks 2–4 and older:</b> every 6 h	Vial of 600 mg (1 000 000 U) dilute with 1.6 ml sterile water to 500 000 U/ml
<b>Benzathine benzylpenicillin</b>	50 000 U/kg once a day	IM: vial of 1 200 000 U mixed with 4 ml sterile water
<b>Procaine benzylpenicillin</b>	IM: 50 000 U/kg once a day	3-g vial (3 000 000 U) mixed with 4 ml sterile water
<b>Phenobarbital</b>	<b>Loading dose:</b> IM /IV or oral: 20 mg/kg	Vial 200 mg/ml diluted with 4 ml sterile water
		30-mg tablets
	<b>Maintenance dose:</b> Oral: 5 mg/kg per day	30-mg tablets

**Source:** WHO. *Pocket Book of Hospital Care for Children*. Second edition. WHO, 2013.  
[www.who.int/maternal\\_child\\_adolescent/documents/9241546700/en/](http://www.who.int/maternal_child_adolescent/documents/9241546700/en/)

## WEIGHT OF INFANT IN KG

1-< 1.5	1.5-< 2	2-2.5	2.5-< 3	3-3.5	3.5-< 4	4-< 4.5
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0.25 ml	0.25 ml	0.5 ml	0.5 ml	0.75 ml	0.75 ml	1 ml
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0.2 ml	0.2 ml	0.3 ml	0.5 ml	0.5 ml	0.6 ml	0.7 ml
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0.2 ml	0.3 ml	0.4 ml	0.5 ml	0.6 ml	0.7 ml	0.8 ml
--------	--------	--------	--------	--------	--------	--------

0.1 ml	0.15 ml	0.2 ml	0.25 ml	0.3 ml	0.3 ml	0.35 ml
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Calculate the **exact** dose

$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2
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$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{3}{4}$
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# Advanced Care for Very Sick Newborns

**3A:** Requirements for Advanced Newborn Care

**3B:** Surveillance and Monitoring Form for Inpatient Newborns

**3C:** Resources for Advanced Newborn Care

## Requirements for Advanced Newborn Care

Very sick newborns require advanced, inpatient care to survive. This is often difficult to establish in a crisis response, but may be feasible in some settings. Advanced neonatal care includes safe oxygen therapy, phototherapy, provision of warmth, feeding support, and prevention and treatment of infections. Adequate infrastructure (a dedicated ward space), equipment and supplies, as well as specialized, dedicated health workers are needed.

<b>EQUIPMENT AND SUPPLIES</b>	<p><b>Safe oxygen therapy:</b> nasal prong 1 and 2 mm and oxygen tubing; suction catheter 5, 8, 10, 12, 14ch; suction pump with accessories; oxygen blenders, humidifiers and low flow device; pulse oximeter and neonatal probes; consistent oxygen source/supply; CPAP driver plus accessories</p> <p><b>Phototherapy:</b> phototherapy lamp and tubes/bulbs, TSB measurement</p> <p><b>Warmth:</b> radiant heater, infant warmer, incubator</p> <p><b>Feeding support:</b> nasogastric tubes 3.5-10ch; feeding syringes 2.5, 5, 10ml; IV tubing and infusion set (neonatal giving set); fluids including glucose</p> <p><b>Infection prevention and treatment:</b> alcohol hand lotion, antiseptic cleaning solution (e.g., povidone-iodine), disinfectant solutions (e.g., chlorine bleach), antibiotics, posted protocols strictly enforced</p> <p><b>Basic supplies:</b> see Annex 5c</p>
<b>STAFFING</b>	<p>Permanent, specialized nursing and midwifery staff, including at least one doctor with specialized neonatal training</p> <p>Minimum staff to newborn ratio:</p> <ul style="list-style-type: none"> <li>• Physicians: 1:20</li> <li>• Nurses/midwives: 1:5 to 10</li> <li>• Nurse Assistants: 1:5 to 10</li> </ul>
<b>SPACE</b>	<p>A dedicated space, room or ward in a facility with specific areas for KMC, resuscitation and stabilization</p> <p>Reliable source of energy, including functioning back-up generator, and consistent oxygen source</p>
<b>Additional support and supplies</b>	<ul style="list-style-type: none"> <li>• Neonatal observation chart</li> <li>• Post-exposure prophylaxis for PMTCT</li> <li>• Access to lab and x-ray, if possible</li> </ul>

Adapted from: Save the Children et al. *Management of Sick and Small Newborns: Trainee Manual, Field-test Version*. 2011. Moxon SG, et al. Inpatient care of small and sick newborns: a multi-country analysis of health system bottlenecks and potential solutions. *BMC Pregnancy and Childbirth* 2015; 15(2):S7. MSF. *Advanced Neonatal Care: Clinical and Therapeutic Guideline*. 2015.

## Surveillance & Monitoring Form for Inpatient Newborns

Surname: \_\_\_\_\_  
 First Name: \_\_\_\_\_  
 Date of Birth: \_\_\_\_\_  
 Time of birth: \_\_\_\_\_

Hospital: \_\_\_\_\_  
☐ Maternity Unit ☐ Neonatal Unit  
 Date: \_\_\_\_\_

Term Preterm GA: \_\_\_\_\_  
 Weight: ☐ > 2500g ☐ <2500g  
☐ < 1500g  
☐ Meconium ☐ Urine

Time		8	10																	
Temperature °C	≥38																			RED ZONE
	37.5 - 37.9																			ORANGE ZONE
	36 - 37.4																			GREEN ZONE
	35.1 - 35.9																			ORANGE ZONE
	≤35																			RED ZONE
Respiratory Rate	≥80																			RED ZONE
	60 - 79																			ORANGE ZONE
	31 - 59																			GREEN ZONE
	26 - 30																			ORANGE ZONE
	≤25																			RED ZONE
Grunting																				RED ZONE
Heart Rate	≥190																			RED ZONE
	150 - 189																			ORANGE ZONE
	100 - 149																			GREEN ZONE
	80 - 99																			ORANGE ZONE
	≤79																			RED ZONE
SpO2 Colour	≥ 94% Pink																			GREEN ZONE
	90-94%																			ORANGE ZONE
	≤90% Dusky																			RED ZONE
Neurology	Alert - Active - Awakes to feed																			GREEN ZONE
	Irritable - jittery																			ORANGE ZONE
	Poor feeding																			RED ZONE
	Floppy - difficult to awaken																			
	Seizure																			
Tetanic spasms																				
Glucose: ≥45mg/dl																				GREEN ZONE
Glucose: <45mg/dl																				RED ZONE
Others																				
Score	Green																			
	Orange																			
	Red																			

Response	All observations in <b>GREEN ZONE</b> continue observations as determined by doctor or midwife
	1 observation in <b>ORANGE ZONE</b> : Contact doctor or midwife. Management plan and review discussed. Repeat observation in 30 - 60 minutes
	≥2 observations in <b>ORANGE ZONE</b> : IMMEDIATELY contact doctor or midwife
	Any observation in the <b>RED ZONE</b> : IMMEDIATELY contact doctor or midwife

Source: MSF. Advanced Neonatal Care: Clinical and Therapeutic Guideline. 2015, p. 151.



## Resources for Advanced Newborn Care

- *Essential Care for Small Babies*. American Academy of Pediatrics. 2017. [hbs.aap.org](https://hbs.aap.org)
- *Guidelines on Optimal Feeding of Low Birth-weight Infants in Low- and Middle-income Countries*. WHO, 2011. [www.who.int/maternal\\_child\\_adolescent/documents/infant\\_feeding\\_low\\_bw/en/](http://www.who.int/maternal_child_adolescent/documents/infant_feeding_low_bw/en/)
- *Integrated Management of Childhood Illness*. WHO. [www.who.int/maternal\\_child\\_adolescent/documents/imci/en/](http://www.who.int/maternal_child_adolescent/documents/imci/en/)
- *Interagency List of Priority Medical Devices for Essential Interventions for Reproductive, Maternal, Newborn and Child Health*. WHO, 2016. [www.who.int/medical\\_devices/md\\_maternal\\_BOOK\\_May2016\\_D.pdf](http://www.who.int/medical_devices/md_maternal_BOOK_May2016_D.pdf)
- *Management of Sick and Small Newborns: Trainee Manual, Field-test Version*. Save the Children et. al., 2011. [www.kznhealth.gov.za/kinc/Trainee\\_manual.pdf](http://www.kznhealth.gov.za/kinc/Trainee_manual.pdf)
- *Managing Newborn Problems: A Guide for Doctors, Nurses and Midwives*. WHO, 2003. <http://apps.who.int/iris/bitstream/10665/42753/1/9241546220.pdf>
- *Newborn Care Charts: Management of Sick and Small Newborns in Hospital*. Save the Children. UNICEF, et al., 2009. [www.healthynewbornnetwork.org/hnn-content/uploads/Limpopo\\_Care-Charts.pdf](http://www.healthynewbornnetwork.org/hnn-content/uploads/Limpopo_Care-Charts.pdf)
- *Pocket Book of Hospital Care for Children*. WHO, 2013. [www.who.int/maternal\\_child\\_adolescent/documents/9241546700/en/](http://www.who.int/maternal_child_adolescent/documents/9241546700/en/)
- *Pregnancy, Childbirth, Postpartum and Newborn Care: A Guide for Essential Practice (3<sup>rd</sup> edition)*. WHO, 2015. [www.who.int/maternal\\_child\\_adolescent/documents/imca-essential-practice-guide/en/](http://www.who.int/maternal_child_adolescent/documents/imca-essential-practice-guide/en/)
- *Sick Newborn Care Unit (SNCU) Toolkit*. NCRC & IPGMER Kolkata. [www.in.undp.org/content/dam/india/docs/NIP/Resources/JobAidsAndFlipCharts\\_SNCUToolkit.pdf](http://www.in.undp.org/content/dam/india/docs/NIP/Resources/JobAidsAndFlipCharts_SNCUToolkit.pdf)
- *Toolkit for Setting Up Special Newborn Units, Stabilisation Units and Newborn Care Corners*. UNICEF. [https://nrhm.gujarat.gov.in/images/pdf/unice\\_scnu\\_toolkit.pdf](https://nrhm.gujarat.gov.in/images/pdf/unice_scnu_toolkit.pdf)
- *WHO Recommendations on Interventions to Improve Preterm Birth Outcomes*. WHO, 2015. [www.who.int/reproductivehealth/publications/maternal\\_perinatal\\_health/preterm-birth-guideline/en/](http://www.who.int/reproductivehealth/publications/maternal_perinatal_health/preterm-birth-guideline/en/)

# Tools to Support Neonatal Referrals

To ensure the safe, efficient transfer of newborns in humanitarian settings, use these simple tools:

**4A:** Job Aid: When to Refer a Newborn to the Hospital

**4B:** Job Aid: Transferring the Sick Newborn

**4C:** Sample Referral Note



Visit the Newborn Health in Humanitarian Settings Implementation Toolkit for more resources:

[www.healthynewbornnetwork.org](http://www.healthynewbornnetwork.org).

## When to Refer a Newborn to the Hospital

*For referrals from the household and primary health care (PHC) levels to the hospital*

### Ask

**Is the baby having difficulty feeding?**

**Has the baby had any convulsions (fits)?**

### Look, Listen, Feel

- Count the breaths in one minute. Repeat the count if more than 60 breaths per minute.
- Look for severe chest indrawing.
- Measure axillary temperature.
- Look at the umbilicus. Is it red or draining pus?
- Look for skin pustules.
- Look at the young infant's movements.
- If baby is sleeping, ask the mother to wake him/her. Does the baby move on his/her own?
- If the baby is not moving, gently stimulate him/her. Does the baby not move at all?

### Refer when ANY of the Following Signs are Present

- Not feeding well
- Convulsions
- Fast breathing (60 breaths per minute or more)
- Severe chest indrawing
- Fever (37.5°C\* or above)
- Low body temperature (less than 35.5°C\*)
- Movement only when stimulated or no movement at all

### Action Before Transfer

- Give first dose of intramuscular antibiotics
- Treat to prevent low blood sugar (**PHC level only**)
- Advise mother how to keep baby warm on the way to the hospital
- Refer **URGENTLY**

\* These thresholds are based on axillary temperature. The thresholds for rectal temperature readings are approximately .5°C higher.

**Ask**

**How much does the baby weigh?**

**How many weeks gestation was the pregnancy?**

**Refer when ANY of the Following Signs are Present****At household level:**

- <2.5 kg
- <37 weeks gestation

**At PHC level:**

- <2.5 kg plus another severe classification
- <2.0 kg

**Action Before Transfer**

- Place baby immediately in KMC position with mother or surrogate
- Refer URGENTLY

**Ask**

**Is the baby breathing normally, or is the baby gasping for breath?**

**Look, Listen, Feel**

- Look at the baby and observe the breathing.
- Count the breaths in one minute.
- Look to see if the baby's tongue is blue.
- Look to see if the baby is pale. Look at the tongue and palms.
- Feel the pulse and count the heart rate in 1 minute.

**Refer when ANY of the Following Signs are Present**

**First follow the Newborn Resuscitation Flowchart (*Figure 3.2*). Then refer if:**

- Not breathing at all
- Gasping
- Respiration < 20 breaths per minute
- Heart rate < 100 per minute
- Tongue is blue

**Action Before Transfer**

- Advise mother how to keep baby warm on the way to the hospital
- Refer URGENTLY

## Ask

**If jaundice is present, ask: when did the jaundice first appear?**

## Look, Listen, Feel

- Look for jaundice (yellow eyes or skin)
- Look at the baby's palms and soles. Are they yellow?

## Refer when ANY of the Following Signs are Present

- Any jaundice if age less than 24 hours
- Yellow palms and soles at any age

## Action Before Transfer

- Treat to prevent low blood sugar (**PHC level only**)
- Advise mother how to keep baby warm on the way to the hospital
- Refer URGENTLY

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\*\* A newborn has diarrhea if the stools have changed from usual pattern and are many and watery (more water than fecal matter). The normally frequent or semi-solid stools of a breastfed baby are not diarrhea.

Adapted from: WHO. *Integrated Management of Childhood Illness: Chart Booklet*. 2014, p. 41-42. [http://apps.who.int/iris/bitstream/10665/104772/16/9789241506823\\_Chartbook\\_eng.pdf?ua=1](http://apps.who.int/iris/bitstream/10665/104772/16/9789241506823_Chartbook_eng.pdf?ua=1). MSF. *Advanced Neonatal Care: Clinical and Therapeutic Guideline*. 2015.

## Ask

**Does the baby have diarrhea?\*\***

## Look, Listen, Feel

- Does the infant move on his/her own?
- Does the infant not move even when stimulated but then stops?
- Does the infant not move at all?
- Is the infant restless and irritable?
- Look for sunken eyes.
- Pinch the skin of the abdomen. Does it go back: Very slowly (longer than 2 seconds)? or slowly?

Refer when **TWO** of the Following Signs are Present

- Movement only when stimulated or no movement at all
- Sunken eyes
- Skin pinch goes back very slowly

## Action Before Transfer

- Advise mother how to keep baby warm on the way to the hospital
- Advise mother to continue breastfeeding
- Refer URGENTLY

**PHC Level Only:**

- If infant has no other severe classification:
- Give fluid for severe dehydration
- or —
- If infant has another severe classification:
- Refer URGENTLY to hospital with mother giving frequent sips of ORS on the way
- Advise mother to continue breastfeeding

## **Job Aid: Transporting the Sick Newborn**

### **Before transport:**

- Stabilize baby to the extent possible.
  - Note that trained Community Health Workers (CHWs) can provide the initial dose of antibiotics, per protocol.
- Call receiving facility to notify them of the referral.
- Counsel family to explain why referral is necessary. Mother should accompany baby whenever possible.
- Fill out referral note (see Annex 4C for sample) and give to the caregiver or health worker accompanying the baby to the receiving facility.
- Record referred case in register.

### **On the way to the health facility:**

- If the baby is able to breastfeed, feed the baby at least every two hours. Give only breast milk.
- Keep the baby warm. Keeping the baby skin-to-skin is best. Ensure the baby is:
  - Naked except for a nappy, hat and socks
  - Placed between the mother's breasts with the baby's legs along her ribs and the head turned to the side
  - Secured with a cloth
- If skin-to-skin care is not possible, wrap the baby well and keep her or him close to the mother.
- Where feasible, the health worker accompanying the caregiver and baby can provide counseling on care during transport, such as thermal care and breastfeeding.

### **After referral:**

- Where feasible, track counter-referral, including outcome of the referral and any follow-up actions required.
  - Trained CHWs can undertake follow-up visits for referred newborns.
- Monitor and address barriers to the referral process.



## Sample Referral Note

Note that pictorial referral slips can be developed in settings where community health workers are preliterate. See the Newborn Health in Humanitarian Settings Implementation Toolkit for samples: [www.healthynewbornnetwork.org](http://www.healthynewbornnetwork.org).

### CHW Referral Note

**Name of woman/baby:** \_\_\_\_\_

**Age of baby when referred:** (Day) \_\_\_\_\_

**Address:** \_\_\_\_\_

**Date referred:** \_\_\_\_\_

Reason referred (tick below):

**MOTHER** has:

- ☐ Heavy bleeding
- ☐ Fever
- ☐ Other problems: \_\_\_\_\_

**BABY** has/is:

- ☐ Not able to breastfeed or stopped breastfeeding
- ☐ Convulsions
- ☐ Chest in-drawing
- ☐ Temperature 37.5°C or more
- ☐ Signs of local infection
- ☐ Movement only on stimulation or no movement even on stimulation
- ☐ Fast breathing
- ☐ Temperature 35.4°C or less
- ☐ Yellow soles of feet
- ☐ Weight in red zone

**Name of CHW:** \_\_\_\_\_

**To be filled by health facility worker**

**Comments:** \_\_\_\_\_

**Seen at facility by:** \_\_\_\_\_

# Newborn Care Supply Kits for Humanitarian Settings

Annex 5 is divided into three sections, presenting the following components of newborn supply kits:

**5A:** Community Newborn Kit

**5B:** Clinic or Primary Health Facility Newborn Kit

**5C:** Hospital Newborn Kit



Order Newborn Care Supply Kits from UNICEF (<https://supply.unicef.org>).

Order Inter-agency Reproductive Health Kits for Crisis Situations from UNFPA ([www.unfpaprocurement.org/products](http://www.unfpaprocurement.org/products)). Newborn Care Supply Kits described in Annexes A, B and C correspond to Reproductive Health Kits Block 1, Block 2 and Block 3, respectively.

## Community Newborn Kit (Part A & B)

**Use:** Newborn kits for use at home. **Part A: Family Care Kit** should be distributed to pregnant women. **Part B: Community Health Work (CHW) Kit** are items to be used by CHWs.

**Instructions:** The kits (Part A & B) should be distributed with the enclosed illustrative instructions on how to use the kit contents and easy-to-use educational materials for essential newborn care.

**Target Population:** 10,000 people for 3 months

**Assumptions:** **Part A: Family Care Kit** 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 (3<sup>rd</sup> trimester). Where possible, align the distribution with the ANC visits. Each kit has 200 individual packages.

**Part B: CHW Kit** is calculated on the assumption that there will be 10 CHWs for a population of 10,000 people. The kit is designed to serve women and newborns whose needs are not addressed through other distribution mechanisms.

**Complementary RH Kit<sup>1</sup>:** The Community Newborn Kit is complementary to the RH Kit 2. Note that the Community Newborn Kit Part B: CHW Kit contains clean delivery kits, which is also included in RH Kit Part 2A. RH Kit 2B contains additional supplies for birth attendants, including a flashlight, plastic apron, and poncho; these are not included in the Community Newborn Kit and can be ordered separately from UNFPA. The SRH Coordinator should ensure complementary ordering of kits to avoid duplication.

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<sup>1</sup> *The Inter-agency Reproductive Health Kits for Crisis Situations: Manual*, which details the RH Kit contents, can be found on [www.unfpa.org](http://www.unfpa.org) and [www.iawg.net](http://www.iawg.net).

## Community Newborn Kit

### Content: **Part A: Family Care Kit**

200 of the following items, packed as separate packages

Item	Quantity per kit	Notes/Indications
<b>Medicines</b>		
Tetracycline hydrochloride, eye ointment, 1%, tube, 5 g	200	To prevent neonatal conjunctivitis (chlamydia/ gonococcal)
<b>Consumables: clothing and accessories</b>		
Blanket, baby, 50 x 75 cm, polyester fleece	200	
Cap, newborn, cotton	200	
Romper suit, newborn, cotton	200	
Socks, baby, size extra small, cotton	200	
Towel, 60 x 80 cm, cotton	200	For drying
<b>Resources</b>		
Generic pictograph, chlorhexidine, for families	200	
Generic pictograph, tetracycline hydrochloride, for families	200	

### Part B: Community Health Worker Kit

10 of the following items, packed as separate packages.

Item	Quantity per kit	Notes/Indications
<b>Medicines</b>		
Chlorhexidine digluconate, gel, 7.1% (4% base), 10 mL	100	See footnote <sup>2</sup> as well as enclosed job aid./To prevent sepsis and cord infections
Tetracycline hydrochloride, eye ointment, 1%, tube, 5 g	100	To prevent neonatal conjunctivitis (chlamydia/ gonococcal)
Zinc oxide, ointment, tube, 100 mg	100	To prevent diaper dermatitis

<sup>2</sup> WHO recommendation: "Daily chlorhexidine (7.1% chlorhexidine digluconate aqueous solution or gel, delivering 4% chlorhexidine) application to the umbilical cord stump during the first week of life is recommended for newborns who are 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 chlorhexidine in these situations may be considered only to replace application of a harmful traditional substance, such as cow dung, to the cord stump." See: [http://apps.who.int/iris/bitstream/10665/97603/1/9789241506649\\_eng.pdf](http://apps.who.int/iris/bitstream/10665/97603/1/9789241506649_eng.pdf)

Item	Quantity per kit	Notes/Indications
<b>Medical devices: consumable</b>		
Bag, shoulder	20	Provide 2 bag per CHW
Clean delivery kit (UNFPA) A: Individual Delivery Package (UNFPA), single kit	100	Each kit includes: 1 bar of soap, 100 mg; 1 clear plastic sheet, 100 x 100 cm; 1 plastic bag, for disposal of placenta, 18 x 28 cm; 1 razor blade, single-edged, disposable; 3 tape, umbilical, 3 mm x 15 cm; 2 cloth, cotton, 100 x 100 cm; 2 gloves, examination, medium, single use
Gloves, examination, latex, powder-free, medium, single use, box of 100	10	Total gloves: 1000
Scale, infant, spring, tubular, for use up to 5 kg with 25 g precision	10	
Sling, for use with scale, 80 cm x 80 cm	30	3 per CHW
Thermometer, clinical, digital, 32 - 43° C	10	
Timer, for acute respiratory infection (ARI), version: mark 2	10	
<b>Resources</b>		
Job aid, chlorhexidine, generic pictograph	10	
Job aid, clean delivery kit, generic pictograph	10	
Job aid, essential newborn care, generic pictograph	10	

**Remarks:** Parts A and B can be ordered separately in different quantities.

Clothes or blankets to protect the baby (in Part A: Family Care Kit) should be procured locally wherever possible. Locally procure reusable diapers. Local products are often less expensive and familiar to mothers.

## Clinic or Primary Health Facility Newborn Kit

**Use:** The Clinic or Primary Health Facility (PHC) Kit is for use in health facilities together with the Inter-agency Reproductive Health Kit 6 (Parts A and B). The kit contents can be used:

- To provide essential newborn care for uncomplicated live births
- To provide newborn resuscitation
- To stabilize newborns with serious infection prior to referral
- To care for preterm babies at the clinic or primary health care level

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

**Target population:** For one facility serving a population of 30,000 for 3 months

**Assumptions:** The kit contents are based on the assumptions that, for a population of 30,000 people, 300 deliveries will occur in a 3-month period with a crude birth rate of 4%.<sup>3</sup>

**Complementary Reproductive Health Kit:**<sup>4</sup> The Clinic or Primary Health Facility Newborn Kit is complementary to the RH Clinical Delivery Kit 6, which includes supplies for labor and delivery.

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<sup>3</sup> The anticipated 300 deliveries are at the PHC/clinic level only and do not capture deliveries at the community level.

<sup>4</sup> *The Inter-agency Reproductive Health Kits for Crisis Situations: Manual*, which details the RH Kit contents, can be found on [www.unfpa.org](http://www.unfpa.org) and [www.iawg.net](http://www.iawg.net).

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

### Content:

Item (PHC)	Quantity per kit	Notes/ Indication
<b>Medicines</b>		
Amoxicillin, dispersible tablets, 125 mg	6,000	To be reserved for completion of treatment upon discharge/To treat local bacterial infection
Ampicillin (as sodium salt), powder for IV/IM injection, 500 mg	400	To treat severe bacterial infection
Benzathine benzylpenicillin, powder for IM injection, 900 g, 5-mL vial (equivalent to 1.2 million IU)	150	To treat asymptomatic congenital syphilis
Benzylpenicillin (as sodium or potassium salt), sterile powder for IV/IM injection, 600-mg vial (equivalent to 1 million IU)	50	Use within 90 minutes of opening vial/To treat severe bacterial infection/pneumonia and symptomatic congenital syphilis
Chlorhexidine digluconate, gel, 7.1% (4% base), 10 mL	300	See footnote <sup>5</sup> as well as enclosed job aid./To prevent sepsis and cord infections
Gentamicin (as sulfate), sterile solution, for IM/IV injection or IV infusion, 10 mg/mL, 2-mL ampoules	1,200	To treat severe bacterial infection
Glucose, sterile solution for IV infusion, 10%, 500-mL bottle, non-PVC flexible or collapsible bags with nipple head + infusion-giving set	600	To manage neonatal hypoglycemia
Paracetamol, rectal suppositories, capsule form, 125 mg	150	To manage neonatal fever
Paracetamol, oral liquid, 120 mg/5 mL, bottle, 60 mL	300	To manage neonatal fever
Phenobarbital, elixir, 15 mg/5 mL	15	To treat seizures
Phenobarbital sodium, sterile solution for IM injection, 30 mg/mL, 1-mL ampoule	150	To treat neonatal seizures

**5** WHO recommendation: "Daily chlorhexidine (7.1% chlorhexidine digluconate aqueous solution or gel, delivering 4% chlorhexidine) application to the umbilical cord stump during the first week of life is recommended for newborns who are 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 chlorhexidine in these situations may be considered only to replace application of a harmful traditional substance, such as cow dung, to the cord stump." See: [http://apps.who.int/iris/bitstream/10665/97603/1/9789241506649\\_eng.pdf](http://apps.who.int/iris/bitstream/10665/97603/1/9789241506649_eng.pdf)

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

Item (PHC)	Quantity per kit	Notes/ Indication
<b>Medicines (cont'd)</b>		
Sodium chloride, solution for infusion, 0.9%, 200-mL bottle, non-PVC flexible or collapsible bags with nipple head + infusion-giving set	150	Replenishment of fluids, to treat dehydration
Sodium chloride, solution for injection, 0.9%, 10-mL ampoule	900	Flushing IV line after medication administration
Tetracycline hydrochloride, eye ointment, 1%, tube, 5 g	300	To prevent neonatal conjunctivitis (chlamydia/ gonococcal)
Phytomenadione (vitamin K1), sterile solution for injection, 1 mg/0.5 mL, 0.5-mL ampoule	300	To prevent vitamin K deficiency bleeding (hemorrhagic disease of the newborn)
Water, for injection, 10-mL ampoule	1,500	To reconstitute medications
Zinc oxide, ointment, tube, 100 mg	300	As protective barrier to promote healing of diaper dermatitis
<b>Medical devices: consumable</b>		
Battery alkaline, 1.5V, 13 x 50 mm, type AA / LR6	*	*Order as needed. Batteries must be ordered and shipped separately. Batteries for battery-operated items are not included with the product.
Cannula, IV, short, 24G, sterile, single use (yellow)	300	
Cup, flexible, plastic, 100 mL	30	For feeding expressed breastmilk
Cup, flexible, plastic, with lid, 30 mL	30	For feeding expressed breastmilk
Gel, ultrasound, 250 mL	30	
Gloves, examination, latex, powder-free, size: medium, single use, box of 100	9	900 gloves in total
Infusion set, pediatric, 60 drops/mL, 120-140 cm, filter 15-20 micron, needle 23 G x 1", sharp airway	150	
Lancet, blood, sterile, disposable	1,200	
Needle, disposable, 21 G, sterile, box of 100	7	700 needles in total
Needle, disposable, 25 G, sterile, box of 100	22	2,200 needles in total



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

Item (PHC)	Quantity per kit	Notes/ Indication
<b>Medical devices: consumable (cont'd)</b>		
Partograph	350	
Sanitizer, alcohol-based for hands, 60%, bottle with pump, 500-mL	200	
Scalp vein infusion set 23 G (0.60 mm)	150	Extra needles to accompany the infusion set
Swab, anti-septic, for skin preparation, 6 cm x 3 cm, box of 100	10	1,000 swabs in total
Syringe, hypodermic, luer, 2-part, 2 mL, sterile, disposable	1,750	
Syringe, hypodermic, luer, 2-part, 5 mL, sterile, disposable	750	
Syringe, hypodermic, luer, 3-part, 1 mL, sterile, disposable	300	
Tape, medical adhesive, 2.5 cm x 5 m, roll	90	
Test strip, rapid plasma reagin (RPR), for syphilis	300	For mothers
Test strip, for urine, multi-purpose (ketones, Ph, blood, glucose, protein), 10 detections	1,200	For mothers
Test strip, for whole blood glucose analysis	150	
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	

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

Item (PHC)	Quantity per kit	Notes/ Indication
<b>Equipment</b>		
Blood glucose meter, range 40-600 mg/dl, LCD display 35 x 31.5 mm, 360 memory positions (BG-102)	9	Point-of-Care meter, electro-chemical set; battery-operated; batteries are required but not supplied with product. Batteries must be ordered and shipped separately
Doppler apparatus, pocket-type, LCD display, FHR display, interchangeable 2 Mhz probe	3	Battery operated; batteries are required but not supplied with product. Batteries must be ordered and shipped separately. Power requirements: 1.5 V AA (LR6) commercial disposable batteries or 1.2 V Ni-MH commercial rechargeable batteries, 2 or 3 units depending on the available model./To monitor fetal heartbeat
Resuscitation bag, with mask	9	Includes 3 mask sizes: preterm, newborn, and infant up to 3 months (up to 10 kg)
Scale, baby, electronic, 10 kg	3	Battery operated; batteries are required but not supplied with product. Batteries must be ordered and shipped separately
Stand, for IV, 2 hooks on 5 castors, adjustable from 115 - 210 cm, epoxy-coated steel	6	
Suction device, penguin-model, silicone, autoclavable (986000)	9	
Tape measure, tailors, fibreglass, 1.5 m	30	
Thermometer, clinical, digital, 32 - 43° C	20	
Timer, for acute respiratory infection (ARI), version: mark 2	6	

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

Item (PHC)	Quantity per kit	Notes/ Indication
<b>Clothing and accessories</b>		
Blanket, baby, polyester fleece, 50 x 75 cm	30	
Cap, newborn, cotton	30	
Socks, baby, size: extra small, cotton	30	
Towel, cotton, 60 x 80 cm	300	For drying
Wrap, for baby carrying (kangaroo wrap), cotton, 50 cm x 3 m	30	For KMC
<b>Malaria Module</b>		
Artesunate, 60 mg with 2 solvents (sodium chloride 5 mL & sodium bicarbonate 5% 1 mL)	150	
Malaria rapid test (cassette), detection P falciparum, 25 determinations (SD Bioline Malaria Ag Pf 05FK50)	6	
Needle, disposable, 21 G, sterile, box of 100	3	300 needles in total
Syringe, hypodermic, luer, 2-part, 5 ml, sterile, disposable	300	
<b>Malaria Module</b>		
<i>Guidelines for the Treatment of Malaria</i> . Third edition WHO, 2015.		Included with the Malaria Module only
<i>Management of Severe Malaria: A Practical Handbook</i> . Third edition. WHO, 2013.		Included with the Malaria Module only
Newborn Health in Humanitarian Settings: Field Guide. UNICEF/Save the Children, 2018.	10	
Job aid, glucose 10%		
Job aid, Chlorhexidine digluconate, gel, 7.1%, for cord care		

**Remarks** Medicines, consumables, equipment, clothing and accessories and the malaria module can be ordered separately in different quantities.

Clothes or blankets to protect the baby should be procured locally wherever possible. Locally procure reusable diapers. Local products are often less expensive and familiar to mothers.

## Hospital Newborn Kit

**Use:** The Hospital Newborn Kit is for use in hospitals together with the Inter-agency Reproductive Health Kits 11 (Parts A and B) and 12. The kit contents can be used:

- To prevent and treat newborn infections
- To provide newborn resuscitation
- To care for preterm babies with complications at the referral level

**Instructions:** For use by trained personnel: midwives, nurses, medical doctors. Items should be applicable for most hospital settings. Annex A includes a list of items recommended for advanced newborn care.

**Target population:** For one referral facility serving a population of 150,000 for 3 months

**Assumptions:** 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%.<sup>6</sup>

**Complementary RH Kit:**<sup>7</sup> The Hospital Newborn Kit is complementary to the Referral Emergency Obstetric Kit (11A, 11B, and 12) of the Inter-agency Reproductive Health Kits in Crisis Situations. These kits contain supplies for comprehensive emergency obstetric care, including blood transfusion.

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<sup>6</sup> The anticipated 1,500 deliveries are at the hospital level only and do not capture deliveries at the PHC and community levels.

<sup>7</sup> *The Inter-agency Reproductive Health Kits for Crisis Situations: Manual*, which details the RH Kit contents, can be found on [www.unfpa.org](http://www.unfpa.org) and [www.iawg.net](http://www.iawg.net).

**Content:**

Item (Hospital)	Quantity per kit	Notes/Indication
<b>Medicines</b>		
Aciclovir, sterile powder for IV solution, (as sodium salt), 250-mg vial	30	To prevent herpetic conjunctivitis
Amoxicillin (as trihydrate), powder for oral suspension, 125 mg/5 mL, bottle, 100 mL	150	To be reserved for completion of treatment upon discharge/ To treat bacterial infection
Amoxicillin, dispersible tablets, 125 mg	3,000	To be reserved for completion of treatment upon discharge/ To treat local bacterial infection
Ampicillin (as sodium salt), powder for IV/IM injection, 500-mg vial	7,000	To treat severe infection
Benzathine benzylpenicillin, powder for IM injection, 900 g, 5-mL vial (equivalent to 1.2 million IU)	250	To treat asymptomatic congenital syphilis
Benzylpenicillin (as sodium or potassium salt), sterile powder for IV/IM injection, 600-mg vial (equivalent to 1 million IU)	500	To treat severe bacterial infection/ pneumonia and symptomatic congenital syphilis
Caffeine, oral, 12.5 mg/mL, 2 mL	1,250	To treat or prevent apnea
Cefotaxime (as sodium salt), sterile powder for injection, 500-mg vial	1,250	To treat bacterial infection
Ceftriaxone, sterile powder for solution, for deep IM/slow IV injection, 250-mg vial	400	To treat bacterial infection
Chlorhexidine digluconate, gel, 7.1% (4% base), 10 mL	1,500	To prevent sepsis and cord infections
Cholecalciferol (vitamin D3), oral drops, 10 micrograms/drop, 14,400 IU/mL (equivalent to 400 IU/drop)	1,200	Dose: for the mother, give between 1-2 drops
Cloxacillin (as sodium salt), powder for oral liquid, 125 mg/5 mL, bottle, 100 mL	2,500	To treat bacterial infection
Cloxacillin, sterile powder for IM/IV injection, 500-mg vial	250	To treat bacterial infection
Gentamicin (as sulfate), sterile solution for IM/IV injection or IV infusion, 10 mg/mL, 2-mL ampoules	1,000	To treat severe bacterial infection
Glucose, sterile solution for IV infusion, 10%, 500-mL bottle, non-PVC flexible or collapsible bags with nipple head + infusion-giving set	3,000	To manage neonatal hypoglycemia

## Hospital Newborn Kit (cont'd)

Item (Hospital)	Quantity per kit	Notes/Indication
<b>Medicines (cont'd)</b>		
Paracetamol, rectal capsules or suppositories, 125 mg	250	To manage neonatal fever
Phenobarbital, elixir, 15 mg/5 mL	75	To treat seizures
Phenobarbital sodium, sterile solution for IM injection, 30 mg/mL, 1-mL ampoule	750	To treat neonatal seizures
Sanitizer, alcohol-based for hands, 60%, bottle with pump, 500-mL	200	
Sodium chloride infusion, 0.9%, (equivalent to Na <sup>+</sup> 154 mmol/L, Cl <sup>-</sup> 154 mmol/L), 200-mL non-PVC flexible or collapsible bags with nipple head + giving set	750	Replenishment of fluids, to treat dehydration
Sodium chloride injection, 0.9%, (equivalent to Na <sup>+</sup> 154 mmol/L, Cl <sup>-</sup> 154 mmol/L), 10-mL ampoule	12,500	Flushing IV line after medication administration
Tetracycline hydrochloride, eye ointment, sterile, 1%, tube, 5 g	1,500	To prevent neonatal conjunctivitis (chlamydia/ gonococcal)
Phytomenadione, sterile solution for injection, 1 mg/0.5 mL, 0.5-mL ampoule	1,500	To prevent vitamin K deficiency bleeding (hemorrhagic disease of the newborn)
Water, for injection, 10-mL plastic ampoule	1,500	To reconstitute medications
Zinc oxide, ointment, tube, 100 mg	1,500	To prevent diaper dermatitis
<b>Medical devices: consumable</b>		
Battery, alkaline, 1.5V, 13 x 50 mm, type AA / LR6	*	*Order as needed. Batteries must be ordered and shipped separately. Batteries for battery-operated items are not included with the product.
Cannula, IV, short, 24G, sterile, single use (yellow)	4,500	
Cup, flexible, plastic, 100 mL	150	For feeding expressed breastmilk
Cup, flexible, plastic, with lid, 30 mL	150	For feeding expressed breastmilk
Gel, ultrasound, 250 mL	150	
Gloves, examination, latex, powder-free, size: medium, single use, box of 100	75	7,500 gloves in total
Infusion set, pediatric, 60 drops/ mL, 120-140 cm, filter 15-20 micron, needle 23 G x 1", sharp airway	3,000	

## Hospital Newborn Kit (cont'd)

Item (Hospital)	Quantity per kit	Notes/Indication
<b>Medical devices: consumable (cont'd)</b>		
Lancet, blood, sterile, single use, pack of 200	25	7,000 in total
Needle, 19 G x 1½" (1.1 x 40 mm), sterile, disposable, box of 100	132	13,200 in total
Needle, 22G x 1¼" (0.7x30mm) sterile, disposable, box of 100	15	1,500 in total
Needle, 25 G x 5/8" (0.5 x 16 mm), sterile, disposable, box of 100	85	8,500 in total
Partograph	1,600	
Prongs, nasal, oxygen, neonate, single use	100	
Pump, infusion, with accessories	6	
Stopcock, 3-way, sterile, disposable	625	
Swab, anti-septic, for skin preparation, 6 cm x 3 cm, box of 100	100	10,000 swabs in total
Syringe, hypodermic, luer, 2-part, 10 mL, sterile, disposable	500	
Syringe, hypodermic, luer, 2-part, 5 mL, sterile, disposable	13,200	
Syringe, hypodermic, luer, 3-part, 1 mL, sterile, disposable	3,500	
Tape, medical adhesive, 2.5 cm x 5 m, roll	1,000	
Test strip, rapid plasma reagin (RPR), for syphilis	1,500	For mothers
Test strip, for urine, multi-purpose (ketones, Ph, blood, glucose, protein), 10 detections	3,600	For mothers
Test strips, for whole blood glucose analysis, box of 100	8	800 in total
Tube, feeding (nasogastric), CH 5, 40 cm, disposable, sterile	150	
Tube, feeding (nasogastric), CH 6, 125 cm, disposable, sterile	500	
Tube, feeding (nasogastric), CH 8, 40 cm, disposable, sterile	400	

## Hospital Newborn Kit (cont'd)

Item (Hospital)	Quantity per kit	Notes/Indication
<b>Equipment</b>		
Blood glucose meter, range 40-600 mg/dl, LCD display 35 x 31.5 mm, 360 memory positions (BG-102)	20	Point-of-Care meter, electro-chemical set; batteries are required but not supplied with product. Batteries must be ordered and shipped separately.
Doppler apparatus, pocket-type, LCD display, FHR display, interchangeable 2 Mhz probe	15	Battery-operated; batteries are required but not supplied with product. Batteries must be ordered and shipped separately. Power requirements: 1.5 V AA (LR6) commercial disposable batteries or 1.2 V Ni-MH commercial rechargeable batteries, 2 or 3 units depending on the available model./To monitor fetal heartbeat
Flowsplitter, for oxygen concentrator	10	
Infusion pump, with accessories	20	
Light, examination, floor-type, flexible neck, 220V lamp, on castors	25	
Oxygen blender	15	
Oxygen concentrator set, flowrate up to 5 l/m, visual/audible alarms (Sunrise/DeVilbiss Compact 525)	5	
Phototherapy unit, overhead, mobile, with accessories	6	AC powered. Includes: <ul style="list-style-type: none"> <li>• 2 x spare blue light CFL tube, 20 W</li> <li>• 1 x spare white light CFL tube, 15 W</li> <li>• 1 x set of spare fuses</li> </ul>
Pulse oximeter, portable, battery operated, wrap-around, with accessories	5	Includes extension cable and sensor. Suitable to operate with 3 x AA (LR6) 1.5 V commercial disposable batteries. Supplied with battery charger/recharge station.
Resuscitation bag, with mask	25	Includes 3 mask sizes: preterm, newborn, and infant up to 3 months (up to 10 kg)



## Hospital Newborn Kit (cont'd)

Item (Hospital)	Quantity per kit	Notes/Indication
<b>Equipment (cont'd)</b>		
Resuscitation kit, basic	2	<p>For neonates, infants, and older babies. Includes:</p> <ul style="list-style-type: none"> <li>• 1 Pump, suction, foot-operated</li> <li>• 1 Resuscitator, hand-operated, neonate, set</li> <li>• 1 Resuscitator, hand-operated child, set</li> <li>• 1 Resuscitator, hand-operated, adult, set</li> <li>• 1 Airway guedel, sterile, single use, size 00</li> <li>• 1 Airway guedel, sterile, single use, size 0</li> <li>• 1 Airway guedel, sterile, single use, size 1</li> <li>• 1 Airway guedel, sterile, single use, size 2</li> <li>• 1 Airway guedel, sterile, single use, size 3</li> <li>• 1 Airway guedel, sterile, single use, size 4</li> </ul>
Scale, baby, electronic, 10 kg	15	Battery-operated; batteries are required but not supplied with product. Batteries must be ordered and shipped separately.
Stand, for IV, 2 hooks on 5 castors, adjustable from 115 - 210 cm, epoxy-coated steel	50	
Stethoscope, neonatal	10	
Suction device, penguin-model, silicone, autoclavable (986000)	50	
Tape measure, tailors, fibreglass, 1.5 m	100	
Thermometer, clinical, digital, 32 - 43° C	50	
Timer, for acute respiratory infection (ARI), version: mark 2	50	
<b>Clothing and accessories</b>		
Blanket, baby, 50 x 75 cm, polyester fleece	150	
Cap, newborn, cotton	150	

## Hospital Newborn Kit (cont'd)

Item (Hospital)	Quantity per kit	Notes/Indication
<b>Clothing and accessories (cont'd)</b>		
Cup, for breast milk collection, with cover	150	
Socks, baby, size extra small, cotton	150	
Towel, cotton, 60 x 80 cm	1,500	
Wrap, for baby carrying (kangaroo wrap), cotton, 50 cm x 3 m	150	
<b>Malaria Module</b>		
Artesunate, 60 mg with 2 solvents (sodium chloride 5 mL & sodium bicarbonate 5% 1 mL)	100	
Malaria rapid test (cassette), detection <i>P. falciparum</i> , 25 determinations (SD Bioline Malaria Ag Pf 05FK50)	30	
Needle, disposable, 21 G, sterile, box of 100	3	300 needles in total
Syringe, hypodermic, luer, 2-part, 5 mL, sterile, disposable	5	
<b>Resources</b>		
<i>Essential Care for Every Baby Action Plan, Provider Guide</i> . AAP, 2014.		
<i>Guidelines for the Treatment of Malaria</i> . Third edition WHO, 2015.		Included with the Malaria Module only
<i>Management of Severe Malaria: A Practical Handbook</i> . Third edition. WHO, 2013.		Included with the Malaria Module only
<i>Newborn Health in Humanitarian Settings: Field Guide</i> . UNICEF/Save the Children, 2018.	10	
<i>Pocket Book of Hospital Care for Children</i> . Second edition. WHO, 2013.		

**Remarks** Medicines, consumables, equipment, clothing and accessories and the malaria module can be ordered separately in different quantities.

Clothes or blankets to protect the baby should be procured locally wherever possible. Locally procure reusable diapers. Local products are often less expensive and familiar to mothers.

## Advanced Newborn Care

Advanced newborn care is difficult to establish in many humanitarian crises, but may be feasible in some settings. Adequate infrastructure as well as specialized, dedicated health workers are needed.

Items to be considered for advanced newborn care include:

1. Caffeine citrate, sterile solution for IV injection
2. Dexamethasone, injectable
3. Surfactant
4. Blades, for laryngoscope (0, 1)
5. Infusion pump, with accessories
6. Laryngoscope, neonate, set
7. 7Tubes, capillary, for centrifuge
8. Centrifuge, PCV
9. CPAP, bubble or standard
10. Incubator
11. Photometer

These can be ordered from the UNICEF supply catalogue:

<https://supply.unicef.org>. Only order items if the hospital is sufficiently equipped with a dedicated space for advanced neonatal care and skilled providers trained in advanced neonatal care.

## Indicators and Measurement

**6A:** List of Indicators Collected through Routine Data Systems

**6B:** 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 Inter-agency Field Manual on Sexual and Reproductive Health in Humanitarian Settings 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
<b>Service Readiness</b>	
<p>* % of facilities with delivery services with no stock-outs in the past 3 months of:</p> <ul style="list-style-type: none"> <li>• Dexamethasone (corticosteroid)</li> <li>• Magnesium sulfate (anticonvulsant)</li> <li>• Bag &amp; mask (newborn size)</li> </ul>	<p># of facilities with delivery services with no stock-outs in the past 3 months of:</p> <ul style="list-style-type: none"> <li>• Dexamethasone</li> <li>• Magnesium sulfate</li> <li>• Bag &amp; mask</li> </ul>
<p>* % of facilities with ANC services with no stock-outs in the past 3 months<sup>2</sup> of:</p> <ul style="list-style-type: none"> <li>• Iron/Folate</li> <li>• Sulfadoxine-Pyrimethamine (IPTp-SP if policy)</li> <li>• Tetanus Toxoid Vaccine</li> </ul>	<p># of facilities with ANC services with no stock-outs in the past 3 months of:</p> <ul style="list-style-type: none"> <li>• Iron/Folate</li> <li>• IPTp-SP</li> <li>• Tetanus Toxoid Vaccine</li> </ul>
<p>* % of facilities with newborn care services with no stock-outs in the past 3 months<sup>m</sup> of injectable:</p> <ul style="list-style-type: none"> <li>• Gentamicin</li> <li>• X-Penicillin (or procaine penicillin)</li> <li>• Ampicillin</li> </ul>	<p># of facilities with newborn care services with no stock-outs in the past 3 months of injectable:</p> <ul style="list-style-type: none"> <li>• Gentamicin</li> <li>• X-Penicillin</li> <li>• Ampicillin</li> </ul>

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 <b>stock-out</b> 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 if the system provides details on pharmacy supply availability at the health facility level.</p>
Total # of health facilities with ANC services	<p>Key commodities may vary by country; adapt indicators based on national essential drug/commodity lists.</p>
Total # of health facilities with newborn care services	

Indicator	Numerator
<b>Outcomes</b>	
* 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"> <li>• Complications from preterm birth</li> <li>• Intrapartum-related complications</li> <li>• Infections (including tetanus, sepsis/ meningitis, pneumonia)</li> <li>• Congenital</li> <li>• Other</li> </ul>	# of newborn deaths due to: <ul style="list-style-type: none"> <li>• Preterm birth</li> <li>• Intrapartum complications</li> <li>• Infections</li> <li>• Congenital</li> <li>• Other</li> </ul>
* Stillbirth rate	# of late fetal deaths ( $\geq 1000$ g birthweight or $\geq 28$ 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"> <li>• Moderate to late preterm (32 to &lt;37 weeks)</li> <li>• Very preterm (28 to &lt;32 weeks)</li> <li>• Extremely preterm (&lt;28 weeks)</li> </ul>	# of live births at a facility where newborn was: <ul style="list-style-type: none"> <li>• Moderate to late preterm</li> <li>• Very preterm</li> <li>• Extremely preterm</li> </ul>



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><b>Interpret this indicator with extreme caution.</b> 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 &lt;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 last menstrual period 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 <sup>st</sup> ANC visit before 4 months gestation	# of total births where the woman attended 1 <sup>st</sup> 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 <sup>5</sup>	# 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"> <li>• 2+ tetanus injections (TT2+) or a lifetime 5+ doses</li> <li>• 2+ doses of intermittent preventive therapy (IPTp2+), where policy</li> <li>• Syphilis screening &amp; treatment</li> <li>• HIV testing</li> </ul>	<p># of pregnant women attending ANC who received:</p> <ul style="list-style-type: none"> <li>• TT2+</li> <li>• IPTp2+</li> <li>• Syphilis screening &amp; treatment</li> <li>• HIV testing</li> </ul>
% of neonatal possible severe bacterial infection (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 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
<b>Service Availability</b>	
<b>24/7 Skilled birth attendance</b>	# 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
<b>Basic EmOC</b>	# of facilities with delivery services that are able to provide all the following services: <ul style="list-style-type: none"> <li>• parenteral administration of antibiotics</li> <li>• parenteral administration of oxytocic</li> <li>• parenteral administration of anticonvulsants</li> <li>• assisted vaginal delivery</li> <li>• manual removal of placenta</li> <li>• removal of retained products after delivery</li> </ul>
<b>Neonatal Resuscitation</b>	# of facilities with delivery services that are able to provide neonatal resuscitation
<b>Corticosteroids (ACS) for preterm labor</b>	# of facilities with delivery services that are able to provide corticosteroids for preterm labor
<b>Kangaroo mother care</b>	# 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	
<b>Newborn bag &amp; mask</b>	# of facilities with delivery services with newborn bag & mask available and functioning in delivery area (observed)
<b>Resuscitation table</b>	# of facilities with delivery services with resuscitation table with a heat source available and functioning in delivery area (observed)
<b>Infant scale</b>	# of facilities with delivery services with infant scale available and functioning in delivery area (observed)
<b>Soap or hand disinfectant</b>	# of facilities with delivery services with soap or hand disinfectant in delivery area (observed)
<b>Towel for drying</b>	# of facilities with delivery services with towels for drying babies in delivery area (observed)
<b>Injectable gentamicin</b>	# of facilities with injectable gentamicin available (observed and at least one dose valid)
<b>PMTCT drug</b>	# of facilities with nevirapine (or other drug recommended for PMTCT) available (observed and at least one dose valid)
<b>ACS</b>	# of facilities with corticosteroids available (observed and at least one dose valid)
<b>Injectable uterotonic</b>	# of facilities with delivery services and injectable uterotonic available (observed and at least one dose valid)
<b>Magnesium sulfate</b>	Number of facilities with delivery services and magnesium sulfate available (observed and at least one dose valid)
<b>Protocols or guidelines</b>	<p># of facilities with each of the following protocols or guidelines available (observed):</p> <ul style="list-style-type: none"> <li>• Integrated management of pregnancy and childbirth (all facilities)</li> <li>• Referral of sick newborns (all facilities)</li> <li>• Comprehensive emergency obstetric care (facilities with delivery services)</li> <li>• Management of preterm labor (facilities with delivery services)</li> </ul>



# 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	
<b>Up-to-date delivery register</b>	# of facilities with delivery services with up-to-date delivery register (birth outcome for the infant and birthweight recorded for the last 10 births) (observed)
Training	
<b>Trained providers</b>	<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"> <li>• Neonatal resuscitation using bag and mask</li> <li>• Breastfeeding (early and exclusive)</li> <li>• Newborn infection management (including injectable antibiotics)</li> <li>• Thermal care (including immediate drying and skin-to-skin care)</li> <li>• Sterile cord cutting and appropriate cord care</li> <li>• KMC for low birthweight babies</li> <li>• Special delivery care practices for PMTCT of HIV</li> <li>• Use of corticosteroids for preterm labor</li> </ul>
<b>Facilities with trained providers</b>	<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"> <li>• Neonatal resuscitation using bag and mask</li> <li>• Breastfeeding (early and exclusive)</li> <li>• Newborn infection management (including injectable antibiotics)</li> <li>• Thermal care (including immediate drying and skin-to-skin care)</li> <li>• Sterile cord cutting and appropriate cord care)</li> <li>• KMC for low birth weight babies</li> <li>• Special delivery care practices for PMTCT of HIV</li> <li>• Use of corticosteroids for preterm labor</li> </ul>

# 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	
<b>Facilities with routine personal supervision</b>	# 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.)
<b>Monitoring postnatal care</b>	# of facilities with documentation of monitoring*** of postnatal care for newborns
<b>Review deaths or near misses</b>	# 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
--	------------------

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United Nations Children's Fund (UNICEF)

United Nations High Commissioner for Refugees (UNHCR)

United Nations Population Fund (UNFPA)

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

Women's Refugee Commission (WRC)

World Health Organization (WHO)

World Vision International

