MATERNAL AND NEWBORN HEALTH DURING INFECTIOUS DISEASE OUTBREAKS

Operational Guidance for Humanitarian and Fragile Settings

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GLOBAL READINESS FOR MAJOR DISEASE OUTBREAK RESPONSE

IAWG Inter-Agency Working Group on Reproductive Health in Crises

Cover Photo: Sarah Waiswa / Save the Children
Trizer, three days old, with her mother Metrine outside their home in Bungoma, Kenya

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CONTENTS

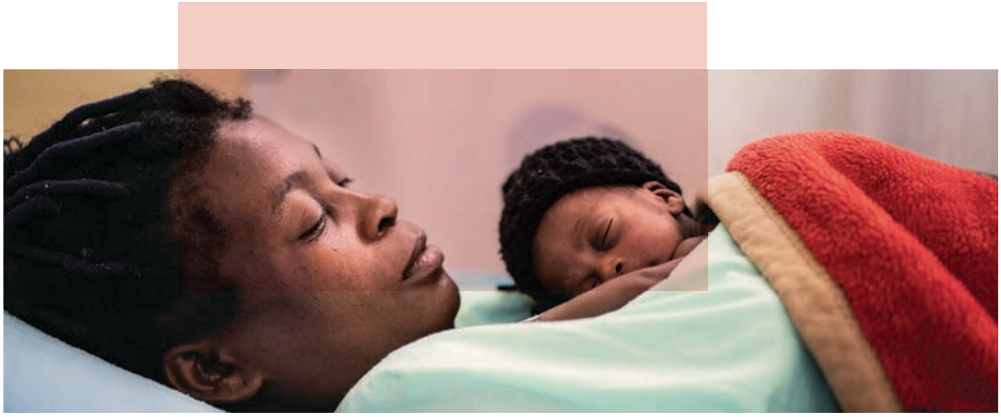
Source: Sarah Waiswa / Save the Children
Nurse Josephine prepares the supplies she needs to check the progress of Metrine's labour

ACRONYMS

ANC	Antenatal care
BEmONC	Basic emergency obstetric and newborn care
CEmONC	Comprehensive emergency obstetric and newborn care
CHW	Community health worker
COVID-19	Coronavirus disease 2019
CPAP	Continuous positive airway pressure
DRC	Democratic Republic of Congo
EmONC	Emergency obstetric and newborn care
ENC	Essential newborn care
EOC	Emergency operations center
EVD	Ebola virus disease
FP	Family planning
GBV	Gender-based violence
HCW	Healthcare worker
HEV	Hepatitis E virus
HIV	Human immunodeficiency virus
IAWG	Inter-Agency Working Group on Reproductive Health in Crises
IPC	Infection prevention and control
ITC	Isolation and treatment center
KMC	Kangaroo mother care
MISP	Minimum Initial Service Package (for sexual and reproductive health)
MHPSS	Mental health and psychosocial support
MNH	Maternal and newborn health
MOH	Ministry of health

MPDSR	Maternal and perinatal death surveillance and response
PAC	Post-abortion care
PNC	Postnatal care
PPE	Personal protective equipment
PPH	Postpartum hemorrhage
PSBI	Possible severe bacterial infection
RCCE	Risk communication and community engagement
RH	Reproductive health
SBA	Skilled birth attendant
SOP	Standard operating procedure
SRH	Sexual and reproductive health
SSC	Skin-to-skin contact
TBA	Traditional birth attendant
USAID	United States Agency for International Development
WASH	Water, sanitation, and hygiene
WG	Working Group
WHO	World Health Organization

INTRODUCTION



Source: Fredrik Lerneryd / Save the Children
Lilian, 32 holding her newborn baby in the Kangaroo Mother Care ward at a hospital in Bungoma, Kenya.

Globally, approximately 810 women and girls die from complications of pregnancy and childbirth every day; and this is the leading cause of death for adolescent girls aged 15 to 19 years.[1] Women and girls living in humanitarian and fragile settings bear a high burden of illness and mortality, with more than 500 deaths per day during pregnancy and childbirth.[2] In 2018, 29 million babies were born into conflict-affected areas, with 45% of newborn deaths occurring in countries affected by humanitarian crises and fragility.[3]

Complex humanitarian crises frequently involve the displacement of large numbers of people, especially women and girls, who are frequently settled in temporary locations with high population densities, inadequate food and shelter, unsafe water, poor sanitation, and lack of infrastructure.[4] These circumstances not only have a general negative effect on the health of affected populations (in part due to disruption of essential health services) but provide an environment for communicable disease transmission to thrive. Humanitarian settings also exacerbate other determinants of sexual and reproductive health (SRH) for women and girls such as gender-based violence (GBV); child, early, and forced marriage; and sexual violence, exploitation, and abuse.[5] The threat from climate change is also increasing the risk of disease outbreaks, as people live closer to animals and as severe flooding becomes more frequent, increasing the likelihood of waterborne illnesses such as cholera. The coronavirus disease 2019 (COVID-19) pandemic and other major disease outbreaks such as Ebola virus disease (EVD) have the potential to trigger humanitarian crises by themselves.

Large-scale infectious disease outbreaks have the potential to debilitate healthcare systems, particularly in humanitarian settings where the environment is volatile and insecure and where resources are already severely limited. This breakdown in the provision of primary and secondary healthcare systems has a distinct impact on maternal and newborn health (MNH) services. This can include restricted access to essential antenatal care (ANC), labor and birth care, and postnatal care (PNC) services, as well as a delay in lifesaving emergency obstetric and neonatal services, resulting in progression of disease, exposure to infection, and pregnancy complications that can cause high rates of maternal and newborn morbidity and mortality.

The potential indirect impacts of infectious disease on a mother and her newborn are also numerous and wide-ranging, exacerbated by social and structural factors. Examples of indirect impact to MNH include limited essential services due to closures and/or lack of staff, mothers' avoidance of MNH services for fear of increased risk of infection, health worker attitudes including the perception that pregnancy and birth are causes of increased risk of infection to health workers, disruption to immunization programs affecting newborn and maternal vaccinations, and separation of the mother–baby dyad, including interruption to breastfeeding. For these reasons, provision of MNH services during infectious disease outbreaks are essential lifesaving services. Humanitarian actors must be adequately prepared to ensure the continuation, quality, and safety of MNH services during infectious disease outbreaks.

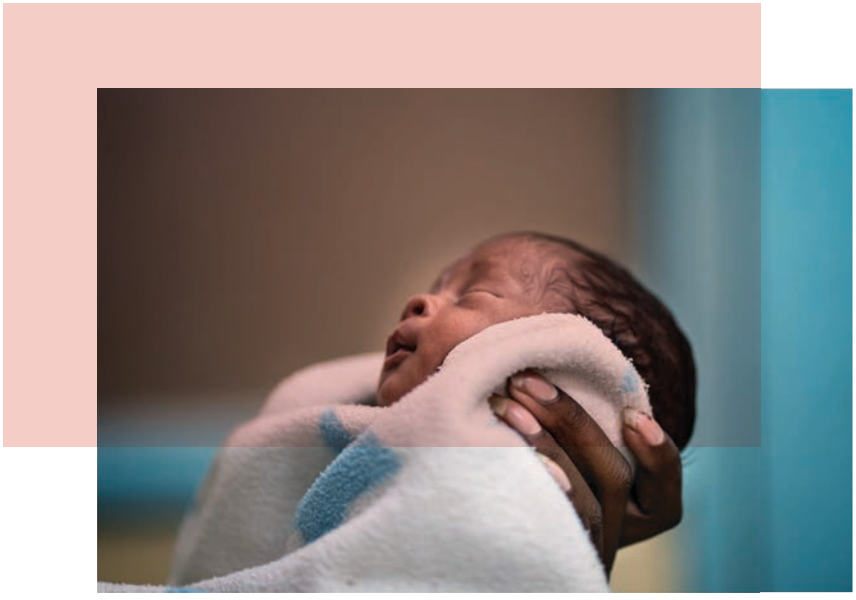
What Is the Purpose of This Guidance?

The aim of *Maternal and Newborn Health During Infectious Disease Outbreaks: Operational Guidance for Humanitarian and Fragile Settings* is to provide humanitarian actors responsible for MNH programming with actions to maintain the continuity, quality, and safety of health care for pregnant and postnatal women and adolescent girls[i] and their newborns (specifically in the 28-day postnatal period following birth) during an infectious disease outbreak response in a humanitarian or fragile setting. The guidance aims to address priority readiness and response actions within MNH service provision during infectious diseases of large-scale outbreak potential that are spread by respiratory, waterborne, and bodily fluids modes of transmission.

The guidance serves as a supplement to the Newborn Health in Humanitarian Settings Field Guide and Sexual and Reproductive Health and Rights During Infectious Disease Outbreaks: Operational Guidance for Humanitarian and Fragile Settings and to the Inter-Agency Field Manual on Reproductive Health in Humanitarian Settings as a specialized resource for MNH during infectious disease outbreaks.

Box 1: Maternal and newborn care includes:

1. Antenatal care
2. Care at the time of childbirth (labor, birth, and immediate PNC), and early essential newborn care (ENC) at birth for all babies
3. PNC for mother and baby, including ENC, breastfeeding support, care for small and sick newborns, and postpartum family planning (FP)
4. Emergency obstetric and newborn care (EmONC)



Source: Fredrik Lerneryd / Save the Children
Fatuma, 21, holding her new born baby Nathan in the Kangaroo Mother Care ward at a hospital in Bungoma, Kenya.

i Within this document, we use the terms "women" and "adolescent girls." However, individuals whose gender identity does not align with the sex they were assigned at birth may also need to access maternal health and reproductive services during outbreaks, to maintain their health and reproductive well-being.

SECTION 1. THE IMPACT OF INFECTIOUS DISEASE OUTBREAKS ON MATERNAL AND NEWBORN HEALTH

1.1 Direct Impacts of Infectious Diseases Outbreaks on Maternal and Newborn Health

Maternal Health

Pregnancy is associated with changes in physiology and immunity; therefore, certain infectious diseases place pregnant women and adolescent girls at risk of more severe and prolonged illness, pregnancy complications, and death.[6,7] For example, influenza and COVID-19 are associated with increased disease severity, hospitalization, and death in pregnant women.[8,9]

The risk of serious illness may vary by stage of pregnancy and whether the risk is to the mother and/or baby; for example, COVID-19, EVD, and hepatitis E virus (HEV) are associated with greater disease severity during the third trimester.[10,11] Furthermore, as the nature of the disease and complications varies by pathogen, these should be put into the context of maternal and newborn physiology. For example, pregnant or recently pregnant women with COVID-19 are more likely to need respiratory support, and HEV can cause severe liver failure with higher mortality in the pregnant population. Pregnant women with cholera are at increased risk of miscarriage and may need post-abortion care (PAC). Infection during pregnancy or at time of birth may also predispose the woman to higher risk of complications, such as thromboembolism due to systemic infection, immobility, and some infections (e.g., COVID-19); clotting abnormalities (e.g., hemorrhage, disseminated intravascular coagulation); increased bleeding from viral hemorrhagic fever, or HEV; and increased anesthetic risks (e.g., difficult airway management from respiratory illness such as COVID-19 or obstructive airway such as in diphtheria).[12,13,14]

Newborn Health

The direct impacts of outbreaks on fetal and newborn health are also multifold. Because newborns have immature immune systems, they are at risk for more severe disease from acute infection with most infectious agents. A notable exception is COVID-19, for which most newborns have a mild or asymptomatic disease course, but disease in the mother may cause stillbirths and preterm births. Some infectious agents acquired during pregnancy that can potentially cause outbreaks in humanitarian situations such as the rubella virus, a vaccine-preventable disease, may also cause severe birth defects.

Due to immaturity of the immune system, newborns, and especially preterm babies, are more vulnerable to infectious diseases and may be more severely affected during an outbreak. Outbreaks of some infectious diseases, such as EVD and Lassa fever, may be associated with higher perinatal mortality and morbidity. It is important to note that exclusive breastfeeding and kangaroo mother care (KMC) have been shown to be protective for severe infectious illnesses in newborns and in the first six months of life.[15]

1.2 Indirect Impacts of Infectious Diseases Outbreaks on Maternal and Newborn Care

In humanitarian and fragile contexts, social and structural factors often have an indirect impact on the availability and quality of maternal and newborn care services, exacerbating the risks to maternal, fetal, and newborn health. These factors are often further exacerbated during an infectious disease outbreak. For example:

1. The availability of health services may be altered or reduced, as health systems redirect human and financial resources to the outbreak response. Reduced ANC and PNC availability, barriers to accessing skilled birth attendants (SBAs) and safe childbirth care at health facilities, increases in home deliveries, and increased pregnancy complications all place both mothers and newborns at risk of morbidity and mortality.

2. Equipment, commodities and availability of MNH services might be reduced due to the need to increase use in the overall response to the outbreak (e.g., routine oxygen need for MNH services during the COVID-19 outbreak response) or due to breaks in supply chain due to road, border, or market closures.

3. Women may struggle to access routine and/or emergency MNH services (e.g., increasing delays in seeking, reaching and receiving EmONC and PAC due to movement restrictions, alterations to service schedule, appointment restrictions related to possible exposure, scaling down of available services from comprehensive to minimum (e.g., minimum ANC services resulting in decreased screening, treatment, and prevention for human immunodeficiency virus [HIV], sexually transmitted infections, syphilis, hypertension), and lack of information about where and how to seek care during the outbreak.

4. Disruptions in the Expanded Program on Immunization may lead to reduced tetanus vaccination coverage in women and reduced tuberculosis vaccination of newborns, placing newborns at risk of neonatal tetanus and tuberculosis.

5. Fear of becoming infected and societal stigma of people who have been infected during the outbreak may result in delays in care-seeking behavior during pregnancy, labor, and the postnatal period.[16]

6. The unnecessary separation of the mother–baby dyad and the interruption of breastfeeding or KMC when not indicated can increase complications in newborns.

7. The signs of pregnancy complications, such as vaginal bleeding, may be mistaken for a sign of infection (e.g., viral hemorrhagic fever), and women may be given inappropriate and/or harmful care or restricted care (no active obstetric interventions) or be exposed to disease by being admitted to the same ward as cases.

Socioeconomic impacts of an infectious disease outbreak also affect MNH in humanitarian settings where families are already facing threats such as economic stressors affecting household income and food insecurity that may lead to maternal and infant malnutrition; increased rates of adolescent pregnancies during lockdowns, as documented during EVD and COVID-19; and increased rates of transactional sex due to loss of employment or reduced income, leading to unplanned pregnancies. These may increase the demand for safe abortion care or increase the risk of unsafe abortion and the need for PAC. Infectious disease outbreaks in turn also create new socioeconomic impacts. For example, newborns orphaned by an outbreak face significant health, safety, and social risks.[17]

Box 2: Indirect impacts of infectious disease outbreaks on critical MNH services: Sierra Leone and the Democratic Republic of Congo

In Sierra Leone, one study estimated that there were 3,600 additional deaths, including maternal and neonatal deaths and stillbirths, related to the decrease in health service utilization during the 2014–2016 EVD outbreak, while in the 2018 EVD outbreak in the Democratic Republic of Congo (DRC), triage and isolation protocols caused potentially life-threatening delays for women requiring emergency obstetric care.[18,19]

SECTION 2. MAINTAINING THE SAFETY AND CONTINUITY OF MATERNAL AND NEWBORN CARE DURING INFECTIOUS DISEASE OUTBREAKS

2.1 Outbreak Response Pillars

Understanding and engaging with common outbreaks coordination mechanisms is essential for those responsible for maintaining the safety and continuity of maternal and newborn care.

Routinely, coordination of outbreaks involves the operational categorization of the response into pillars by the national government. The use of these pillars in a response guides the grouping of different activities and responders around thematic areas, ensuring clarity of actions, appropriate structures of teams, and a reduction in siloed action and redundancies. The emphasis and importance of specific pillars may change from outbreak to outbreak and will be dependent on the context, e.g., the existence of an available licensed and effective vaccine or whether the transmission mode of the given pathogen requires special attention to safe and dignified burials.

A set of core pillars that can be expected in any outbreak response are outlined in Table 1, together with examples of activities specific to MNH. Refer to Annex 1: Preparedness and Response Checklist: Maternal and Newborn Health During Infectious Disease Outbreaks in Humanitarian Settings, for specific recommended actions for all sections covered in this guidance.

Table 1: Core Pillars of an Outbreak Response with Examples of MNH Activities

Pillar	Illustrative activities
Case management	• Establish treatment centers and units designed in line with World Health Organization (WHO) standardized guidance in locations determined by risk and population ratios • Create and train a case management team • Start safe screening, triage, and isolation capacities within the facility or center • Establish patient referral system and transit structures **MNH example:** Ensure all isolation and treatment centers [ITCs] have basic emergency and obstetric and newborn care [BEmONC] provision and can adequately care for women in labor.
Coordination	• Review national policy and legislative frameworks. Coordinate visas, importation of goods, and vaccination • Establish or maintain emergency operations centers (EOCs) • Map a list of donors and partners **MNH example:** Ensure that there is integration of MNH needs with outbreak response strategies and EOC priorities.

Pillar	Illustrative activities
Epidemiological and outbreak analysis	• Ensure clear flow of data to and from each activity • Perform real-time analysis and timely dissemination of updated information **MNH example:** Integrate analysis of impacts of outbreak on pregnant and breastfeeding women and adolescent girls and newborns and timely dissemination of findings to MNH implementers. Consider integration of maternal and perinatal death surveillance and response [MPDSR] into infectious disease surveillance and response.
Infection prevention and control (IPC)	• Activate IPC taskforce • Disseminate standardized and evidence-based IPC guidelines, standard operating procedures (SOPs), and tools • Ensure appropriate supply and usage of personal protective equipment (PPE) • Conduct water, sanitation, and hygiene (WASH) assessments in communities, schools, and health facilities **MNH example:** Strengthen IPC precautions in all health facilities and community MNH services, ensuring MNH workers have adequate supplies and training.
Logistics	• Consolidate supply-need forecasts, and ensure pharmacy and supply management system is in place • Transport cargo, people, patients, and samples • Evaluate storage and warehouse capacity • Assess communication network capacity **MNH example:** Procure emergency reproductive health and newborn care kits.
Surveillance, case investigation, and contact tracing	• Start contact tracing • Establish community-based surveillance systems and rapid response teams • Train on case definitions, detection, and reporting • Reinforce integrated disease surveillance and response systems **MNH example:** Ensure that potential confounding MNH signs/symptoms are taken into consideration in infectious disease case definition, especially for viral hemorrhagic fevers.
Laboratory and diagnostics	• Assess national systems for sample collection, transport, testing, and tracking • Establish/strengthen testing networks to decentralize testing and diagnostic capacity • Begin a data management system for prompt dissemination of results **MNH example:** Ensure all MNH staff and community health workers [CHWs], where relevant, are trained in SOPs for screening and testing and provided with regular refresher training.

Pillar	Illustrative activities
Mental health and psychosocial support (MHPSS)	• Integrate MHPSS into assessment, preparedness, response, and recovery plans • Train frontline workers in each facility and activity • Map existing services **MNH example:** Train MNH staff on recognition of psychological distress, provision of psychological first aid, and referral to appropriate services.
Risk communication and community engagement (RCCE)	• Develop evidence-based key messages, and rapidly disseminate public information on the outbreak and prevention strategies • Conduct and collect social science and social listening data, including rumor tracking, and analyze and disseminate for decision-making • Establish RCCE coordination mechanism, and map RCCE activities • Provide guidance on participatory community engagement and community-led approaches, and conduct trainings with implementers, journalists, and other key stakeholders **MNH example:** Engage with trusted community leaders and groups—including women, adolescent girls, and traditional birth attendants [TBAs]—in two-way communication about MNH service planning during infectious disease outbreaks.
Vaccinations	• Register vaccines, assure quality, and monitor safety • Ensure preparedness for deployment and vaccination, including target population definition • Provide technical support for monitoring and evaluation of vaccine deployment and the impact of vaccination • Ensure the rapid deployment of vaccine and associated supplies/equipment in the right condition, right quantities, and the right place • Surveillance and monitoring of adverse advents • Work closely with RCCE for vaccine confidence and campaigns • Work closely with IPC pillar for safe vaccine disposal and waste management **MNH example:** Provide clear messaging on safety and availability of vaccine for pregnant and breastfeeding women.

2.2 Considerations for Infectious Disease Outbreaks Within the Minimum Initial Service Package and Comprehensive Maternal and Newborn Care

During a suspected or confirmed outbreak in humanitarian and fragile settings, specific considerations for the outbreak can be integrated into existing implementation of the Minimum Initial Service Package (MISP), according to the disease, geographical spread, and context. Or in the case of a new emergency, the MISP should be implemented immediately and integrated into the outbreak response. Please refer to Sexual and Reproductive Health and Rights During Infectious Disease Outbreaks: Operational Guidance for Humanitarian and Fragile Settings for detailed guidance on implementation of the MISP during infectious disease outbreaks.

During MISP implementation, conduct assessments to inform disease-specific adaptations necessary to maintain and expand comprehensive MNH services at every stage of the outbreak. Box 3 provides guidance on specific MNH questions to include in the assessments.

Box 3: Example assessment questions to inform disease-specific adaptations for maternal and newborn services

1. Is there population-level and service availability/readiness information related to MNH?

2. Is MNH included in the national and subnational infectious disease outbreak plans and guidelines?

    a. Do the clinical treatment guidelines, training packages, and social behavior change materials adequately include MNH?

    b. What are the gaps in policies and tools?
    Note: Advocate to the SRH WG or Health Cluster or ministry of health (MOH) as needed to address the gaps and update policies and tools.

    c. What are the gaps in health workforce knowledge?
    Note: Consider plan for training and information-sharing to address gaps.

3. What diagnostic tests are available, and what is the overall capacity for testing? Regularly follow updates on testing options. What are the sensitivity and specificity of the available diagnostic tests?
    Note: Testing availability and coverage and the sensitivity and specificity of tests must be considered when interpreting any epidemiological information.

4. Are vaccines available? If yes, are pregnant and breastfeeding women eligible? Adolescents? Newborns?

5. In the event of an outbreak, how should outpatient and inpatient maternity and newborn services be adapted to ensure IPC? Below are some key considerations:

    a. Changes to clinic/hospital layout, staffing, and patient flow

    b. Need for isolation area

    c. Additional WASH facilities

    d. PPE supply

    e. Additional ventilation

    Note: This is not an exhaustive list. Considerations must be adapted to the context and the type of infectious disease outbreak.

6. How and where should screening occur?

7. Where will suspected and confirmed pregnant women and adolescent girls be treated for outpatient care? Outpatient ANC? For women in labor? For childbirth services? EmONC services? Immediate and early PNC for mothers and newborns? Outpatient PNC?

8. Will companions or visitors be allowed? If so, where, and what process will be undertaken to ensure IPC?

9. Is a decision-making support/aid available regarding possible separation of mother and infant? Where possible, mothers and infants should not be separated.

Box 3: Example assessment questions to inform disease-specific adaptations for maternal and newborn services (cont.)

10. Is a decision-making support/aid available regarding continuation/discontinuation of breastfeeding?
11. How will women, adolescent girls, and communities be informed about risks of infection during pregnancy, birth, and the postnatal period, signs and symptoms of illness, warning signs, and how to seek care?
12. How will the concerns of pregnant and postnatal women, adolescent girls and their communities be heard and addressed?
13. Is there a need for adapted and/or increased MHPSS for pregnant and postnatal women and adolescent girls and for survivors of infection?
14. Where can health workers go to seek support for difficult MNH-related decisions? (Senior colleague, telemedicine, other.)
15. What are pregnant and postnatal women and adolescent girls' preferred methods for getting information on health? About the current infectious disease outbreak? What sources of information do they trust most? How do different groups access health-related information in this community? Is false information about the disease being spread in the community?

2.3 Ensuring the Continuation of Maternal and Newborn Service Provision in an Infectious Disease Outbreak

Ensuring the continuity of essential MNH services during an infectious disease outbreak requires more than maintaining existing services. It requires the preparedness of systems, structures, and people to effectively respond while maintaining real-time adaptability to an evolving infectious disease outbreak response. Given the criticality of adequate staffing, it is useful to develop a staffing plan to ensure MNH staff coverage 24/7. (Refer to WHO's Minimum Technical Standards and Recommendations for Reproductive, Maternal, Newborn and Child Health Care for Emergency Medical Teams for guidance by level of health facility.) Depending on type of outbreak, consider adapting MNH service provision (e.g., increasing the number of community providers and those able to support with self-care away from the facilities).

2.3.1 Preparedness for Provision of MNH Services During Infectious Disease Outbreak

The findings from the MNH assessment (see section 2.2) and ongoing monitoring should be used to determine if and how MNH service delivery approaches need to be adapted during an outbreak response. Outbreak preparedness planning should consider different modes of transmission, e.g., waterborne, airborne/droplet, and bodily fluids. Risks from diseases known to the setting, i.e., endemic/seasonal can often be adequately planned for and lessons from previous outbreaks incorporated, but unknown (novel) risks should also be considered based on mode of transmission, e.g., novel influenza.

All outbreak preparedness plans and response activities should be adapted to meet the unique needs of pregnant and postnatal women and adolescent girls and their newborns, including small and sick newborns, across all services to ensure that labor and birth care, ANC, and PNC services are all available for all women and newborns, including those with suspected or confirmed infection and those who require isolation. Outbreak preparedness plans should also consider issues related to staff-safety and well-being and RCCE strategies to help stop or slow transmission.

Annex 1: Preparedness and Response Checklist: Maternal and Newborn Health During Infectious Disease Outbreaks in Humanitarian Settings details the MNH priority actions to be taken during the preparedness and response stages of the outbreak, while addressing cross-cutting areas to effectively provide holistic care and services to pregnant and postnatal women and adolescent girls, and newborns.

2.3.2 Screening, Triage, Testing, and Patient Flow

The symptoms of an infectious disease may be difficult to differentiate from other common conditions that do not have an infectious process. This can make screening and triaging MNH patients challenging. For example, women presenting with vaginal bleeding secondary to an incomplete abortion met the case definition for EVD in the 2018 DRC outbreak. To avoid unnecessary isolation or delay in care for patients with MNH concerns, it is important to consider the full clinical picture and ensure staff understand and follow the outbreak case definition. Furthermore, MNH clinical services provision at health facilities must have protocols, and healthcare workers (HCWs) must be trained on screening, triage, testing, and patient flow during a disease outbreak in order to provide safe services and protect both health workers and patients. Table 2 defines screening, triage, testing, and patient flow and outlines the key considerations for MNH services.

Table 2: Screening, Triage, Testing, and Patient Flow During an Infectious Disease Outbreak

Definition	Considerations for maternal and newborn services
Screening: a rapid process to evaluate potential risk of infection, typically using basic clinical and historical information	Case definitions should be specific to the outbreak and include groupings of clinical features (signs, symptoms and relevant lab findings when known) and case history that makes an individual a suspect case. Where case definitions include specific symptoms associated with pregnancy and newborns, health workers should be trained to apply this in a holistic manner taking into account the full history and clinical picture, so that usual complications of pregnancy and newborns are identified and treated appropriately. Training of health workers with MNH experience, especially in obstetric complications, on the case definition: • Health workers should consider the clinical course, pregnancy history, contact history, and area from which the woman has traveled when evaluating whether her symptoms meet the disease case definition or can be explained by an obstetric complication (e.g., unexplained bleeding in a pregnant woman versus symptoms of placental abruption or known placenta previa) Sharing of experiences and data with pillar leads or working groups for continued adaptation of case definition.

Definition	Considerations for maternal and newborn services
Triage: a systematic method of sorting patients into priority groups based on the severity of their clinical syndrome	Setting up triage to follow infectious disease outbreak protocols at health facilities includes the following: • Triage for pregnant women should be undertaken by a HCW with knowledge of pregnancy complications and a HCW with knowledge of the infectious disease management. Care should be taken to apply pregnancy-specific parameters (e.g., vital sign limits differ in pregnancy; for COVID-19, oxygen saturations should be maintained at 95% or above, as opposed to 92% for the non-pregnant population). There should also be awareness of pregnancy-specific complications related to the infectious disease to form part of the triage assessment (e.g., presence of fetal movements, vaginal bleeding, preterm labor with EVD) • The HCW should take care to judge whether the woman's primary complaint is the infectious disease or pregnancy-related. If an obstetric concern is identified, the team should determine the safest place and method to provide the appropriate care, respecting IPC protocols • Conduct regular trainings on assessment of pregnant women in triage, including drills or "dry runs," such as transfer to the operating theatre for a woman in late stages of labor How will this happen in resource-poor/humanitarian settings? • Screening and triage should happen close to the facility entrance (at the "point-of-entry"); this is the same for large and small facilities • The space used should allow for a socially distanced queue or waiting area, a private area for questioning (maintaining patient confidentiality and dignity), and a system for further movement of a suspected case (or entry to facility as usual for non-case) • This will differ according to each facility and could be anything from a socially distanced chair to wait for transport to arrive or moving to an on-site isolation area
Testing: various diagnostics methods used to diagnose a condition, disease, or infection, often in people who are displaying specific signs or symptoms	Testing for infectious diseases includes: • Testing of suspect cases as quickly as it is safe to do so. Where rapid diagnostic tests are available, HCWs should be trained in how to use these • Waiting for a test result should not be a barrier to accessing timely EmONC. Protocols should be in place for providing EmONC to suspect cases before results are known, and staff should be trained in these protocols regularly

Definition	Considerations for maternal and newborn services
Patient flow: the movement of patients through a healthcare facility; involves the medical care, physical resources, and internal systems needed to get patients from the point of admission to the point of discharge	The adaptations to patient flow and care pathways include disease mitigation and containment measures that are aimed at keeping the environment safe and should be tailored to guidance from the national health authorities and the stage of the infectious disease outbreak. This may include adaptations in: • Admission, e.g., routine screening introduced for MNH service users and caregivers, while ensuring no delay in care • Facilities allocated for MNH care may change location or capacity or be reorganized to separate cases from non-cases • Discharge processes, e.g., prioritizing discharge to mitigate against nosocomial infection to newborns • Referral, e.g., change in comprehensive emergency obstetric and newborn care (CEmONC) referral pathway for suspected or confirmed cases • The movement of patients between services may decrease to reduce transmission, and remote consultation by phone may increase • Staff groups or organizations roles, e.g., key MNH personnel, may be needed in ITCs

2.3.3 Maintaining Respectful MNH Care and Maternal–Newborn Dyad During Infectious Disease Outbreaks

The provision of respectful maternity care underpins MNH service delivery, and this core tenet must be integrated into each outbreak response. During infectious disease outbreaks, adaptations to service provision should be made in a way that protects and maintains safe, respectful, and equitable access for women, adolescent girls, and newborns and avoids any unnecessary separation of mothers and infants. The Respectful Maternity Care Charter below details the rights of women and newborns and supports the dignity of both mother and baby.

Respectful care includes having a companion of choice. Birth companions should be screened using the case definition for the infectious disease of concern. If the companion has suspected or confirmed infection, another healthy birth companion should be identified in consultation with the pregnant woman or adolescent girl. Birth companions should be trained on the required IPC measures, including PPE they need to adhere to during labor and childbirth and throughout the postnatal stay of the woman and newborn at the health facility.

Separation of a mother and child is stressful for both the newborn and mother, is harmful to maternal mental health, and disrupts mother–baby attachment. Separation disrupts infant feeding and breast-milk production, which carries a risk of longer-term feeding difficulties, diarrhea, infant malnutrition, and mortality. Conversely, unrestricted skin-to-skin contact (SSC) after birth has been found to improve regulation of the newborn's body temperature, stabilize cardiorespiratory function, improve sleep patterns, nurture healthy neurophysiological development, and promote the establishment of breastfeeding. KMC—continuous SSC, exclusive breastfeeding, and close monitoring and follow-up—is particularly beneficial for low-birthweight and premature infants, reducing mortality, increasing weight gain, nurturing healthy neurodevelopment, and decreasing the risk of infectious diseases, making it even more important to implement in an outbreak setting, where infants born to infected mothers (e.g., with cholera or hepatitis E) are more likely to be born preterm.[20,21]

Box 4: Respectful Maternity Care Charter: The Universal Rights of Women and Newborns[22]

1. Everyone has the right to freedom from harm and ill-treatment.
2. Everyone has the right to information, informed consent, and respect for their choices and preferences, including companion of choice during maternity care and refusal of medical procedures.
3. Everyone has the right to privacy and confidentiality.
4. Everyone is their own person from the moment of birth and has the right to be treated with dignity and respect.
5. Everyone has the right to equality, freedom from discrimination, and equitable care.
6. Everyone has the right to healthcare and to the highest attainable level of health.
7. Everyone has the right to liberty, autonomy, self-determination, and freedom from arbitrary detention.
8. Every child has the right to be with their parents or guardians.
9. Every child has the right to an identity and nationality from birth.
10. Everyone has the right to adequate nutrition and clean water.

2.3.4 Feeding Support

During infectious disease outbreaks, the decision to separate may be required due to severe disease in the newborn and/or mother or due to infection-control protocols. However, it is important to remember that *breastfeeding is rarely contraindicated in maternal infection*. If physical contact between mother and baby is discouraged due to the risk of contagion and if there is no risk of infection through breast milk, expressing and feeding with alternative methods (cup, spoon, or nasogastric tube) is recommended (for the nutritional benefits for the baby and for maintaining milk production). If breastfeeding is known to be a risk for transmission of infection between mother and infant, or while evidence is pending, breastfeeding may be restricted, and appropriate alternatives need to be carefully considered and implemented. Please see Annex 2 for current breastfeeding recommendations by pathogen.

2.4 Provision of BEmONC and CEmONC Services During Infectious Disease Outbreaks

EmONC services are lifesaving and must be maintained and accessible during an infectious disease outbreak. Table 3 lists the requirements of BEmONC and CEmONC services and considerations for maintaining them during an outbreak.

Table 3: Maintaining BEmONC and CEmONC Services during an Infectious Disease Outbreak

BEmONC services: • Administer parenteral antibiotics • Administer parenteral uterotonic drugs (e.g., oxytocin) • Administer parenteral anticonvulsants for preeclampsia and eclampsia (e.g., magnesium sulphate) • Manual removal of retained placenta • Remove retained products of conception (e.g., manual vacuum aspiration) • Perform assisted vaginal birth (e.g., vacuum birth) • Perform basic neonatal resuscitation with bag and mask	**In an infectious disease outbreak, BEmONC services should be maintained with respect to:** • Screening, triage, and IPC precautions, which will differ according to infectious disease outbreak • Procedures should be performed by HCWs competent and confident to do so, with the added IPC restrictions (e.g., wearing PPE) • Practice "dry runs" of emergency procedures should be undertaken to identify challenges and familiarize the team • Care should be taken when managing obstetric complications that can mimic infectious disease symptoms (e.g., sepsis, hemorrhage, seizures)
CEmONC services: • All BEmONC services, plus: • Perform cesarean section • Provide blood transfusion	**In an infectious disease outbreak, CEmONC services should be maintained with respect to all of the above, plus:** • Operating theatre IPC must be respected during and between cases • Consider HCW comfort and operating conditions when choosing level of PPE (e.g., ability to see through goggles, heat exhaustion, handling of sharp instruments) • Screening and IPC precautions to be employed during blood donation and handling of blood products • Careful monitoring of women and newborns receiving blood products, and awareness that reactions to blood products can mimic symptoms of infectious disease (e.g., raised temperature)

2.5 Provision of Care for Small and/or Sick Newborns During Infectious Disease Outbreaks

Many causes of newborn deaths are unpredictable, but they are preventable and treatable when there is access to timely, respectful, and high-quality care. Table 4 lists actions that may be taken to maintain care for small and/or sick newborns during an infectious disease outbreak.

Source: Jonathan Hyams / Save the Children
Sundus Mohamed, a qualified midwife at the MCH in Xaabo (Habo), checks on pregnant Saynab*, 22

Table 4: Actions to Maintain Essential Care for Small and/or Sick Newborns

Small and/or sick newborn care actions:	**In an infectious disease outbreak, care for small and/or sick newborns should be maintained with respect to the following:**
1. KMC: continuous SSC, exclusive breastfeeding or expressed breast milk, and close monitoring and follow-up 2. Treatment for serious infections: • Gold standard: Parenteral antibiotics for 10 days in referral health facility or hospital (1st dose can be given before referral) • Treatment for possible severe bacterial infections (PSBIs): Management with simplified antibiotics regime when referral for facility-based care is not possible 3. Safe and appropriate oxygen treatment including bubble continuous positive airway pressure (CPAP) 4. Management of jaundice: Any baby within the first 24 hours and any small baby with any level of jaundice at any age needs to be referred immediately for management of jaundice. Any baby with jaundice (on palms and soles) at any age needs immediate referral 5. Administration of intravenous fluids 6. Appropriate infant feeding	• Scale up innovative low-cost no-electricity approaches such as the Vayu CPAP as part of preparedness.[23] • Early discharge and continue KMC and other supportive treatment at home as appropriate • Shift to home-based care by trained providers if feasible and when there is limited access to health facilities • Early identification and referral for hospital-based care. For example, ensure family is informed on signs of severe jaundice (on palms and soles) and where to refer • Promote and support exclusive breastfeeding or feeding with expressed breast milk, unless contraindicated for the infectious disease of concern

Box 5: Example of maternal and newborn services in the context of COVID-19: Cox's Bazar, Bangladesh

Through adapting routine programming and ensuring that COVID-19–specific health interventions included SRH considerations, Save the Children's response ensured the following:

1. Continued access to essential SRH services throughout the COVID-19 pandemic, including contraceptive services.

2. Continued access to EmONC through availability of BEmONC services at severe acute respiratory infection ITCs, with five designated maternity beds (four inpatient beds and one birthing bed).

Interventions included:

- Training for HCWs, including midwives, with an emphasis on IPC, and provision of adapted BEmONC training for maternity staff.

- Development of maternal healthcare guidelines, led by the Health Cluster, through the provision of technical support and later dissemination to healthcare providers.

- In primary healthcare facilities, dedicated maternity rooms were created for the care of suspect COVID-19 patients in case of obstetric emergencies. The rooms were equipped with obstetric emergency equipment necessary, while adhering to IPC measures.

- Referral pathways were reviewed and strengthened for SRH patients, ensuring that they were functional, safe (considering additional IPC measures), and appropriate (e.g., referral of SRH patients to severe acute respiratory infection ITCs with CEmONC capacity, as required).

2.6 Family Planning and Reproductive Health

Reproductive health (RH) services such as FP, PAC, prevention and response to GBV, prevention and treatment of sexually transmitted infections and HIV, and prevention of mother-to-child transmission of HIV are essential components of MNH services during infectious disease outbreaks. FP information, counseling, and services are an integral part of PNC and ANC, as well as PAC. To ensure continued access to these services as a part of MNH, HCWs need the knowledge and skills to safely maintain these services in an outbreak. Given that GBV frequently increases in humanitarian settings and infectious disease outbreaks, HCWs need to be trained and supported to respond to GBV including intimate partner violence through provision of care or effective referrals for medical and psychosocial support. Please refer to the READY Initiative's Sexual and Reproductive Health and Rights During Infectious Disease Outbreaks: Operational Guidance for Humanitarian and Fragile Settings for more detailed information and Annex 1 for recommended actions related to FP, RH, and GBV.

2.7 Case Management

Case management activities are primarily concerned with the treatment and care of those who are suspected or confirmed to have the outbreak disease; whether the patient remains in the community (e.g., self-isolation) or is isolated inside the health facility or is admitted to a dedicated ITC (e.g., EVD treatment center), there should be specific guidance on where and how EmONC and care for small and sick newborns can be provided. It is important to ensure that suspected and confirmed cases in pregnant and postnatal women and in newborns are identified so that the correct information can be given and preparations for complications made.

Box 6: Yemen Cholera Outbreak 2016–2018

Examples of MNH care integration into case management activities in Save the Children's diarrhea treatment center in Yemen:

1. Medical staff were trained in management of pregnant women with cholera and women with miscarriages with cholera.
2. A midwife and female doctor were always on call to manage pregnant women with cholera.
3. Each diarrhea treatment center had a trained counselor for infant and young child feeding to support breastfeeding mothers.

For some infections this care will be provided within the ITC, whereas for others, a system for transfer to another facility may be more suitable (e.g., from a cholera treatment center to a maternity facility). In other types of infectious disease outbreaks, there may be a dedicated room or area in the maternity or newborn unit or nursery. If self-isolating in the community, the woman may need to alert the EmONC facility in advance, or on arrival, so the correct IPC precautions are followed. The method of isolation and ways to access EmONC may differ between contexts and countries and should always be established within wider coordination groups together with the national health authorities. Where there is an active case management response pillar, it is important to remain consistently engaged to ensure coordination of case management activities, access to training on disease-specific case definitions, discharge protocols, and referral pathways.

Source: Jennifer Rincón
Johana, 25 years old and a native of Venezuela, crosses the border that separates Colombia from Venezuela every day to earn her keep, carrying her two-month-old daughter in her arms.

SECTION 3. STRENGTHENING COMMUNITY-BASED MNH SERVICES DURING INFECTIOUS DISEASE OUTBREAKS

Community health workers, TBAs, and other community engagement and service delivery platforms play a critical role in humanitarian contexts where there are frequent disruptions in facility-based services and access to these services. During infectious disease outbreaks, women and adolescent girls seeking MNH services may experience additional challenges in accessing services due to lockdowns, decreased availability of HCWs, rumors regarding safety of health facility services, and/or fears of contracting the infectious disease at the health facility. CHWs, TBAs, and other community volunteers play a pivotal role in linking communities to response services by addressing rumors, sharing public health information related to slowing or stopping disease transmission, and providing accurate information about symptoms of the infectious disease along with information about MNH services and danger signs for pregnant and postnatal women and adolescent girls and for newborns. CHWs may also be trained and/or supported to provide home-based PNC to the mother and newborn, identify danger signs and refer, and provide community-based FP/RH services including prevention and response to GBV.

3.1 Preparedness for Provision of Community-Based MNH Services

Given the critical role that CHWs, TBAs, and other community engagement and service delivery platforms play, establishing and supporting these platforms is an important action during preparedness. Recommended actions might include:

- Involving CHWs and TBAs in assessments to understand community attitudes and norms and challenges women and girls face to address their MNH concerns during the outbreak.
- Providing information to the community about the availability of safe childbirth care, EmONC, care for small and sick newborn services, the importance of seeking ANC, PNC, and care from health facilities, and any changes to the provision of services (e.g., location, timing, service availability) during the outbreak.
- Providing clean delivery kits and community newborn family care kits to visibly pregnant women and TBAs within the country's legal framework to promote clean home deliveries and provide newborn resuscitation steps (e.g., drying and stimulation, cleaning of secretions if blocking airway) when access to a health facility is not possible. Advocate for changes in policy or restrictions if indicated.
- Training CHWs on their roles and responsibilities during an outbreak, including community-based surveillance, contact tracing, monitoring oral rehydration points, and no-touch policy when assessing patients.
- Establishing community-referral mechanisms linking the community to health facilities for facility-based deliveries.

3.2 Role of CHW in MNH Care During Infectious Disease Outbreaks

During an infectious disease outbreak response, recommended actions include the following:

- Engage and work closely with CHWs to ensure they have the correct information to share with the community, understand identification of suspected cases and IPC measures. There should be national guidance for CHWs on their role in the outbreak response. Ensure MNH concerns are integrated where appropriate.

- Train CHWs and TBAs on IPC, community-based case definitions, community-based surveillance, and referral pathways. Community-based surveillance includes detection of maternal and newborn deaths that may be direct or indirect consequences of the outbreak and used to inform response implementation.
- Involve CHWs in rumor-tracking to reduce stigmatization of pregnant women, reduce fear of health facilities, and reduce misinformation on treatment and vaccines when pregnant women should be included.
- Support CHWs to conduct ANC and PNC visits (e.g., birth preparedness, messages on MNH healthy behaviors, identification of danger signs in pregnant and postnatal women and adolescents and in newborns for referral) if other services are not available or out of reach.

Source: Fredrik Lerneryd / Save the Children
Rezian, 19, practices Kangaroo Mother Care with her newborn baby in the maternity ward at a hospital in Bungoma, Kenya

SECTION 4. CROSS-CUTTING CONSIDERATIONS FOR MATERNAL AND NEWBORN CARE DURING INFECTIOUS DISEASE OUTBREAKS

4.1 RCCE for MNH

When new epidemics or pandemics emerge, people need immediate, practical, and accurate information about the disease, infection prevention, and outbreak control. The public health messages provided often ask people to change their behavior or adopt new norms, which may be difficult to do or contrary to certain beliefs they hold. Mistrust in governments and health systems, low perceptions of risk, the spread of rumors and misinformation, and stigma of certain people and groups are also common barriers to effective outbreak responses.

In the simplest terms, RCCE means involving communities to make outbreak communication as effective as possible. RCCE uses social science methods, two-way communication, rumor control, and participatory engagement to support communities in mitigating outbreaks and reducing their impact and is a key response pillar for public health emergencies.

RCCE is especially critical in MNH during infectious disease outbreaks because:

1. There may be myths and misconceptions around the prevention and spread of the disease. Some frontline health workers may separate children from mothers suspected of having or confirmed to have the disease when not recommended.

2. There is often a misunderstanding of whom the disease can affect. E.g., host populations may suspect that the outbreak is only affecting populations of internally displaced persons, resulting in certain communities' and service providers' not following the required prevention measures.

3. Caregivers/mothers may not be aware that they should continue breastfeeding resulting in poor newborn health outcomes.

4. Caregivers may be unsure whether to keep taking their children for routine immunizations and regular growth monitoring and promotion sessions and what to do if/when a child falls sick.

5. New mothers may not know the recommended precautions to take to avoid exposure to the disease, resulting in unnecessary actions such as avoidance of ANC and PNC visits.

Communities are an essential partner in outbreak responses in all settings and effective RCCE activities are key to a well-managed and effective outbreak response. Through meaningful engagement with the community, program implementers should identify the best communication channels to reach women and girls and ensure that they:

1. Understand the signs and symptoms of illness, when and where to find care, the safety of treatments and vaccines (depending on what is available), risks, and actions that can be taken to reduce exposure to risks.

2. Understand that when an outbreak occurs and until the pathogen has been identified, pregnant women need to take precautions to avoid infection wherever possible and to seek medical advice if infection occurs.

3. Understand how to slow the transmission of the disease and address concerns, needs, and drivers of behavior.

4. Understand mitigation measures (e.g., quarantine, isolation, and lockdowns) and any changes in MNH service provision or advice.

5. Understand how to access additional information and be aware of community feedback mechanisms.

Recommended RCCE actions for MNH are provided in Annex 1: Preparedness and Response Checklist: Maternal and Newborn Health During Infectious Disease Outbreaks in Humanitarian Settings. It is important to ensure consistent engagement with the RCCE response pillar to ensure awareness, training on and adoption of disease specific RCCE strategies and messaging.

4.2 Referral

While the location of ongoing care and referral pathways may differ depending on the specific pathogen and protocols, all facilities need to be prepared to offer lifesaving treatment (e.g., in case of imminent birth or need for PAC) while awaiting referral and transfer to the ITC (if these are operational), and respecting IPC protocols. In outbreaks where case management is within ITCs, routine healthcare facilities will need to establish referral mechanisms for suspected and confirmed cases. Depending on the pathogen and local protocols there should be either treatment centers with obstetric and pediatric capacity identified or clear referral policies back to an EmONC facility if required.

Referral and emergency transport procedures may need to be adapted to ensure access to emergency MNH services, especially in conflict or fragile settings. If patients with MNH requirements are to be transferred during care (e.g., from an MNH facility to an infectious disease treatment center, or from an infectious disease treatment center to an emergency obstetric referral center), the following protocols should be clearly established:

- Agreement on transfer system, route, and vehicle. Small and sick newborns should ideally be transferred with their mothers (KMC position for transfer is an alternative).
- Identification of staff with obstetric and newborn/pediatric experience to support with transfer.
- Necessary permissions from authorities for travel with communication to checkpoints including during the night. In some situations, there may be lockdowns imposed on communities affected by the outbreak that will also require negotiation and agreement with the relevant authorities.
- Confidential management of patient details between referring and receiving facility, including relevant MNH information.
- Adherence to necessary IPC requirements during transfer, which may involve increasing the number of vehicles due to transport decontamination procedures. Availability of appropriate transfer equipment (e.g., clean delivery kit for women in labor, community newborn kit, maternal and newborn resuscitation equipment).
- Agreement on how and when the transferred patient will be repatriated to the referring facility.

Even if transfer is the preferred clinical option, facilities must have emergency equipment and medication prepositioned in an isolation room that is equipped and ready to manage obstetric and newborn emergencies in case transfer is not feasible, e.g., childbirth equipment for imminent birth, newborn resuscitation equipment, postpartum hemorrhage (PPH) management supplies, manual vacuum aspiration kit and maintenance of respectful maternity care (e.g., private space) to the extent possible.

4.3 IPC

Infection prevention and control measures are particularly important for pregnant women and adolescent girls, as changes in hormonal and immune systems increase vulnerability to infection and development of serious complications. Women and girls are also more likely to be responsible for caregiving roles in their families, increasing their exposure to sick relatives. If the pregnant woman becomes infected, she may also transmit infection to the baby through the placenta or during birth. HCWs providing MNH services are also at increased risk of nosocomial infection, particularly for infections transmitted through infected bodily fluids and respiratory particles, due to prolonged one-on-one care during labor and birth.

To minimize these increased risks, essential IPC practices such as hand hygiene and standard precautions should always be maintained. Standard precautions aim to protect both health workers and patients by reducing the risk of transmission of disease organisms from both known and unknown sources. They are the minimum standard of IPC practices that should be used by all HCWs during the care of all patients, always, in all settings.

For some pathogens, such as EVD, cholera or COVID-19, additional precautions will need to be taken, requiring adaptation of routine IPC and/or additional measures such as extra PPE or decontamination processes. It is important to ensure consistent engagement with the IPC response pillar to ensure awareness of, training on, and adoption of disease-specific IPC measures within facilities and by healthcare providers.

Decisions related to use of PPE (e.g., gloves, gowns, mask/eye protection) are based on a risk assessment of exposure to bodily substances, contaminated surfaces, or airborne/droplet particles.[24] PPE supply, training, and safe disposal are important aspects to address when using PPE. Careful consideration should also be given to how additional IPC measures can be perceived by the community, and it is essential to collaborate with the RCCE pillar to mitigate negative impacts.

Any adaptations to IPC protocols will need to consider WASH interventions. WASH/IPC requirements may be even greater in MNH care due to need for close contact of HCWs, exposure to bodily fluids in birth, etc. For major diseases such as EVD and cholera, this often includes increased water supply and chlorination, operation, and maintenance of sanitation facilities, and/or safe and dignified burial. MNH personnel should work closely with IPC and WASH colleagues to establish needs and resource limitations to ensure safety and continuity of lifesaving MNH services.

For detailed recommendations for IPC actions, see Annex 1: Preparedness and Response Checklist: Maternal and Newborn Health During Infectious Disease Outbreaks in Humanitarian Settings.

4.4 MHPSS

Stress and mental health problems are associated with increased risk of complications in pregnancy and delivery, preterm delivery, growth restriction, poor mother–infant attachment due to IPC practices, maternal or newborn illness, breastfeeding restrictions, and altered SRH risks in women. Furthermore, increases in stress levels and the development or worsening of mental health problems during an infectious disease outbreak should be expected to occur not only in patients but also in caregivers, health staff, and communities. This is often exacerbated by HCWs/MNH staff often being women and likely to have increased workloads at home, such as caring for sick family members. As such, MHPSS interventions are an essential component of MNH service delivery during an outbreak.

Psychosocial support should be integrated into interactions with pregnant and postnatal women and adolescent girls. Staff need to have the time to actively listen to concerns expressed by women during ANC and PNC visits and to have the knowledge and skills to provide psychosocial support and psychological first aid, address rumors and myths, and provide accurate information about the infectious disease outbreak and how to protect themselves, their newborn, and their families. It is important for MNH staff to have a comprehensive and updated list of MHPSS services that are available to make effective internal and external referrals as needed for additional mental health and psychosocial support services. Healthcare staff themselves should also have access to MHPSS support services and channels to raise concerns within their organizations.

For detailed MHPSS actions see Annex 1: Preparedness and Response Checklist: Maternal and Newborn Health During Infectious Disease Outbreaks in Humanitarian Settings.

GLOSSARY

Bodily fluids: Bodily fluids include blood, visibly bloody fluids, and other body fluids (semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, peritoneal fluid, pericardial fluid, amniotic fluid, tissues, and laboratory specimens that contain concentrated virus).[25] Depending upon the disease, the list of infectious bodily fluids varies. For example, bodily fluids causing EVD include urine, saliva, sweat, feces, vomit, breast milk, amniotic fluid, and semen of a person who is sick with or has died from EVD.[26]

Community-based services: CHWs or other lay community members such as TBAs, outreach workers, or other trained HCWs providing community-based services in camp and non-camp settings to women and babies in their homes. These workers may be linked to a primary care facility. This care is mostly preventive and promotive, with outreach services that include follow-up of women and newborns.[27]

Community midwives: Midwifery service providers who are nationally recognized as an SBA, have successfully completed formal midwifery education, and are deployed to a rural or underserved area.[28]

Hospitals: These may include rural district hospitals, national referral hospitals, and temporary field hospitals. Hospitals have the ability to provide more advanced MNH care, such as CEmONC and advanced neonatal respiratory support.[29]

Emergency operations center: A public health emergency operations centre is a physical location or virtual space in which designated public health emergency management personnel assemble to coordinate operational information and resources for strategic management of public health events and emergencies.[30]

Incubation period: The time from exposure to the causative agent until the first symptoms develop.

Isolation and treatment center: Isolation separates sick people with a contagious disease from people who are not sick. Treatment centers are decentralized, specialized, disease-specific treatment centers.

Jaundice: Jaundice is common in newborns, especially preterm and low-birth-weight babies. Although jaundice is not harmful in most cases (physiologic jaundice), jaundice in premature and/or low-birth-weight babies, or babies with other risk factors such as infection, can be serious and require immediate attention. Signs of jaundice include yellow skin and eyes, sometimes with 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.[31]

Kangaroo mother care (continuous): Early, continuous, and prolonged SSC between the mother and preterm babies; exclusive breastfeeding or breast milk feeding; early discharge after hospital-initiated KMC with continuation at home; adequate support and follow-up for mothers at home; and close follow-up for babies by a skilled provider.[32]

Kangaroo mother care (intermittent): Intermittent KMC is the practice of skin-to-skin care alternated with the use of either a radiant warmer or incubator care for the baby, plus the other components as mentioned under continuous KMC, above.[33]

Miscarriage or spontaneous abortion: Pregnancy loss that is defined differently around the world but in general before reaching a viable gestational age, which WHO generally refers to as before 28 weeks of pregnancy.[34]

Nosocomial infection: Nosocomial infections or healthcare-associated infections occur in patients under medical care. As these infections occur during a hospital stay, they cause prolonged stay, disability, and economic burden. Transmission of these infections should be restricted for prevention. Nosocomial infections can be controlled by practicing infection-control programs, keeping check on antimicrobial use and resistance, and adopting an antibiotic control policy. An efficient surveillance system can play its part at the national and international level. Efforts are required by all stakeholders to prevent and control nosocomial infections.[35]

Patient flow and care pathways: Patient flow is the movement of patients through a healthcare facility. It involves the medical care, physical resources, and internal systems needed to get patients from the point of admission to the point of discharge while maintaining quality and patient/provider satisfaction. Improving patient flow is a critical component of process management in hospitals and other healthcare facilities.[36]

Preparedness: Refers to the ability of governments, professional response organizations, communities, and individuals to anticipate and respond effectively to the impact of likely, imminent, or current hazards, events, or conditions. Preparedness means putting in place mechanisms that will allow national authorities and relief organizations to be aware of risks and to deploy staff and resources quickly once a crisis strikes.[37]

Primary healthcare facilities: These facilities include existing host community primary care facilities and other clinics operating out of permanent structures that can be supplemented by temporary clinics and mobile clinics. Services are typically provided by mid-level staff such as nurses and midwives, with support for referral to hospital if needed as well as connections to the community structures. Some of these structures can provide BEmONC.[38]

Post-abortion care: A continuum of care to treat potentially life-threatening complications from incomplete and unsafe abortion and therefore reduce abortion-related morbidity and mortality. The five essential elements of PAC include: community and service provider partnerships, counseling, uterine evacuation treatment, contraceptive and FP services and reproductive and other health services.[39]

Response: The acute emergency phase begins immediately after disaster strikes. During this phase, humanitarian organizations begin to respond, focusing on providing critical services such as food, water, sanitation, primary health care, and shelter. The priority during this phase is to keep the population alive. As the crude mortality rate returns to its baseline, a disaster enters what is called the post-emergency phase. During this phase, aid agencies turn their focus to providing more routine services and developing local capacity to support the needs of the community.[40]

Small and/or sick newborn: A small newborn weighs less than 2500 g at birth (this includes preterm and low-birth-weight newborns), and a sick newborn has any medical or surgical condition.[41]

ANNEX 1. PREPAREDNESS AND RESPONSE CHECKLIST: MATERNAL AND NEWBORN HEALTH DURING INFECTIOUS DISEASE OUTBREAKS IN HUMANITARIAN SETTINGS

The checklist below includes a list of recommended actions for those responsible for maternal and newborn health (MNH) programming before and during infectious disease outbreaks. The checklist has actions for preparedness and response and is divided into the following two sections:

(1) Maintaining Essential Maternal and Newborn Services During Infectious Disease Outbreaks: Coordination, Antenatal Care (ANC), Labor and Childbirth, Postnatal Care (PNC), Family Planning (FP) and Reproductive Health (RH), and Case Management;

(2) Cross-cutting Considerations for Maternal and Newborn Health During Infectious Disease Outbreaks: Risk Communication and Community Engagement (RCCE), Referral, Infection Prevention and Control (IPC), and Mental Health and Psychosocial Support (MHPSS).

Recommended actions not implemented in preparedness stages should still be considered and undertaken as part of any response.

When using this checklist, it is important to consider the context and type of infectious disease and recognize that outbreaks may vary in severity throughout the duration of the epidemic or pandemic. This requires constant monitoring and learning by program implementers to improve and adapt actions as an outbreak continues (or for future outbreaks) and to ensure that actions are appropriate for the stage of the outbreak and the specific disease and respond to the needs of pregnant and postnatal women and adolescent girls and their newborns.

Source: Jonathan Hyams / Save the Children
Milka Nyamache, Clinical Supervisor – Maternity at Save the Children's primary health care centre in Cox's Bazar, Bangladesh.

Maternal and Newborn Health Preparedness and Response Checklist for Infectious Disease Outbreaks						
	Recommended preparedness action	**Actions/ changes needed**	**Status** ☐ Completed ☐ In-progress ☐ Not started	**Recommended response action**	**Actions/ changes needed**	**Status** ☐ Completed ☐ In-progress ☐ Not started
1. MAINTAINING ESSENTIAL MATERNAL AND NEWBORN SERVICES DURING INFECTIOUS DISEASE OUTBREAKS						
1.1 COORDINATION						
Coordination mechanisms	Participate in sexual and reproductive health (SRH) coordination mechanisms, e.g., SRH working group (WG), gender-based violence (GBV) WG.			Participate in outbreak coordination mechanisms, e.g., emergency operations centers (EOCs) to ensure MNH actors are represented and part of decision-making processes. Advocate for the service needs of pregnant and postnatal women and adolescent girls, and newborns, within outbreak response strategies. Advocate for outbreak response representation in SRH WG meetings.		
	Ensure integration of infectious disease outbreak preparedness into national Every Newborn Action Plans and Ending Preventable Maternal Mortality plans.					
Assessments	Conduct and/or participate in mapping availability of Minimum Initial Service Package (MISP)/MNH service availability, staffing and supplies, and use findings to inform service adaptations for infectious disease of concern. Gather and review MNH-related national policies, protocols, and clinical guidelines.			Conduct assessments to understand impact of infectious disease outbreak service adaptations on access to and use of MNH services, and use findings to adjust organization of services.		

Maternal and Newborn Health Preparedness and Response Checklist for Infectious Disease Outbreaks						
	Recommended preparedness action	**Actions/ changes needed**	**Status** ☐ Completed ☐ In-progress ☐ Not started	**Recommended response action**	**Actions/ changes needed**	**Status** ☐ Completed ☐ In-progress ☐ Not started
1.2 ANTENATAL CARE						
Health facility level	Develop a context-specific plan for providing ANC core services across all contact points (community and facility levels) for infectious disease outbreak(s) of concern. The World Health Organization (WHO) recommends eight antenatal visits commencing early in pregnancy (first trimester); a minimum of four is recommended in humanitarian settings.			Make adaptations to ANC service delivery based upon the type of infectious disease outbreak and mode of transmission (e.g., provide appointments to reduce wait times and contacts with other patients, consider alternative schedule of visits to include telehealth for some visits if there are no risks or danger signs). Ensure continuity of services such as emergency obstetric and newborn care (EmONC) and post-abortion care (PAC).		
	Train and support MNH staff to provide comprehensive ANC and service delivery adaptations for infectious disease outbreak of concern.					
Community level	Train community MNH workers (e.g., community midwives, traditional birth attendants (TBAs), and community health workers (CHWs) in provision of community-based ANC, according to their capacity. For example, community midwives can provide the full package of ANC services while TBAs and CHWs can provide components of ANC such as education, nutrition education, birth planning, and planning for transport in an emergency; support identification and referral for danger signs; and provide information on how to prevent and manage infections including infectious disease of concern.			Depending on local context, size, and nature of outbreak, MNH services may need reconfiguring to relieve pressure from facilities and ensure they are able to continue providing EmONC services such as PAC. This might include: • Shifting services away from facilities to the community by supporting skilled birth attendants (SBAs), community midwives, or CHWs to safely provide ANC services according to their capacity and following outbreak response protocols • Expanding community-based care for post abortion care (PAC) and management of postpartum hemorrhage (PPH)		

Maternal and Newborn Health Preparedness and Response Checklist for Infectious Disease Outbreaks						
	Recommended preparedness action	**Actions/ changes needed**	**Status** ☐ Completed ☐ In-progress ☐ Not started	**Recommended response action**	**Actions/ changes needed**	**Status** ☐ Completed ☐ In-progress ☐ Not started
Community level (cont.)	Establish/support self-care and community-based ANC services through local partners (e.g., pharmacies, private sector) and community MNH workers. Refer to WHO Consolidated Guideline on Self-Care Interventions for Health for guidance. *Note:* Community-based services are most effective when established before an outbreak occurs.					
	Establish/support self-care and community-based ANC services through local partners (e.g., pharmacies, private sector), community midwives and CHWs. Refer to WHO Consolidated Guideline on Self-Care Interventions for Health for more guidance.					
Clean delivery kits and community newborn kits	Pre-position clean delivery kits and community newborn kits at health facility and community levels to minimize supply challenges if there are movement restrictions or economic challenges associated with the outbreak.			After checking local legislation or obtaining approval from local authorities, provide clean delivery kits and community newborn family care kits to visibly pregnant women. Distribution should be combined with clear information that these kits are a contingency measure in case they are unable to go to the health facility, that birth in a health facility with an SBA is recommended, and that women may bring the kits with them to the health facility for childbirth.		
1.3 LABOR AND CHILDBIRTH						
Health facility level	Prepare labor and delivery room with personal protective equipment (PPE) and infection prevention supplies for the anticipated infectious disease outbreak and ensure maintenance of PPE supplies.			Increase quantities of IPC materials due to high-risk contact in labor and childbirth and based on type of infectious disease outbreak (especially for bodily fluids, respiratory, and direct contact).		

Maternal and Newborn Health Preparedness and Response Checklist for Infectious Disease Outbreaks						
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Health facility level (cont.)	Integrate considerations for infectious disease of concern (e.g., respiratory, waterborne, bodily fluids) into standard operating procedures (SOPs) or policies for: • Labor and delivery • Referral pathways, including patient transport • Provision of respectful maternal and newborn care • Presence of birth companion and necessary IPC/safety measures • Provision of essential newborn care (ENC) • Management of obstetric and neonatal complications requiring basic and comprehensive EmONC and PAC • Prevention and management of stillbirths (or a fetus who dies after 28 weeks of pregnancy but before or during birth) • Pregnancy loss • Neonatal death (including bereavement care) Train MNH HCWs on the above using a competency-based approach including "dry runs" of emergency procedures that should be undertaken to identify challenges and familiarize the team. Adapt ongoing coaching, mentoring, and supportive supervision to accommodate infectious disease outbreak restrictions and IPC (e.g., virtual support online tools, phone and texting support).			Adapt service delivery SOPs based upon type of outbreak to ensure timely access to BEmONC and CEmONC services. For example: • Establish a dedicated stabilization/birthing room for patients with confirmed infection or unknown status in the maternity/hospital • Establish treatment centers that are attached to existing maternities for ease of referral for labor and delivery services, as well as basic and comprehensive EmONC • Integrate labor and delivery services into treatment centers with competent staff to provide stabilization, routine labor and birth care, ENC, and EmONC with respect to disease-specific IPC guidance • In the case of cesarean sections and blood transfusions: additional screening of donors may be required depending on the infectious disease: ensure healthcare workers (HCWs) are aware of potential for low-grade fever with transfusion; and ensure appropriate IPC for the operating theater • Implement policies for visitors to health facilities where safe to do so. If visitors are permitted, ensure that visitors are screened for infection and follow infection control procedures		

Maternal and Newborn Health Preparedness and Response Checklist for Infectious Disease Outbreaks						
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Community level	Establish new/support existing community-based interventions, and integrate considerations for infectious disease outbreak of concern, according to national regulations (e.g., provision of misoprostol for the prevention of PPH and chlorhexidine for cord care), and referral systems to maternity and EmONC services. Train community-based MNH workers (e.g., community midwives, TBAs, and CHWs) on the above. *Note:* Community-based delivery is dependent on national guidelines and the existing structure of health services (e.g., recommended in cases where community-based midwives are linked with health facilities, authorized, and fully equipped to support home deliveries).			Adapt and strengthen accessibility to lifesaving community-based services by pathogen/mode of transmission of the infectious disease. For example, adapt and strengthen accessibility to birth services in the community by: • Distributing clean delivery kits and community newborn family care kits • Implementing community-based prevention of PPH using misoprostol • Provision of clean cord care and using chlorhexidine if indicated • Provision of hygiene supplies • Advocating for support to re-establish access to EmONC facilities • Strengthening referral pathways to EmONC facilities • Strengthening transport systems for access to community services and referral to facilities for EmONC		
1.4 POSTNATAL CARE						
Health facility level	Integrate considerations for infectious disease of concern into postnatal care SOPs to ensure: • Quality care (e.g., keeping mother and baby together from the time of birth (in skin-to-skin contact [SSC]) to the extent possible, ensuring respectful maternal and newborn care, facilitating exclusive breastfeeding or appropriate substitutes, kangaroo mother care (KMC) as indicated, caring for the small and sick newborn, identifying danger signs, stabilization, and referral			Minimize contact between HCWs and mother–baby dyad (after uninfected and uncomplicated deliveries) by promoting early discharge to reduce time within the health facility and potential exposure to infectious disease, where appropriate and safe to do so.		

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Health facility level (cont.)	• Integration with pre-discharge assessment and counseling, including referral for accessible PNC and nurturing care (WHO recommends a minimum of four postnatal care contacts during the first six weeks after birth: a first visit as soon as possible within the first 24 hours following birth; a second visit between 48 and 72 hours; a third visit between day 7 and 14 after birth; and if possible, a fourth visit during week 6 following birth) Train and support MNH staff to provide comprehensive PNC and service delivery adaptations for infectious disease outbreak of concern.			Consider adapting the recommended timing and content of PNC visits to ensure access and coverage of essential, routine PNC services by prioritizing PNC contacts with women and newborns in the first 48 hours after birth and within 24 hours postpartum for home births. One to two follow up PNC visits should be provided by 7 days, especially for small newborns, babies still not breastfeeding well, adolescent mothers, or first-time mothers.		
				Keep mothers and newborns together (in SSC as much as possible) when safe to do so. Follow appropriate infection prevention measures (e.g., hand hygiene).		
				Merge PNC and newborn appointments to reduce number of contacts (e.g., vaccines and PNC/ contraception as a one-stop), and switch to telephone appointments as appropriate.		
				Provide emotional care and support and referrals to mothers experiencing pregnancy loss, which can be an increased risk depending upon the type of infectious disease outbreak, and provide clinical care (e.g., lactation suppression and protocol for safe induction of stillbirth).		
				Ensure appropriate training and resources available for IPC and safe handling/disposal of fetus and all products of conception (e.g., placenta, amniotic fluid, membranes) where stillbirth/miscarriage is associated with infectious disease outbreak.		
				Offer 2-to-3-month supplies of micronutrient supplements and 1-year supply of oral contraceptives; consider long-acting reversible contraception during facility-based PNC visits.		

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Community level	Establish/strengthen community-based postnatal care services through: • Training of community volunteers (TBAs, CHWs) and community midwives (e.g., training on home-based PNC and contraception • Establishing/strengthening transport system for facility referral Plan how to adapt these services according to infectious disease(s) of outbreak concern.			Consider further shifting services away from facilities to the community by supporting local partners, SBAs, community midwives, or CHWs to safely provide PNC services according to their capacity and following outbreak response protocols. Ensure adequate supplies, supportive supervision, coaching, and linkages with health facilities in line with infectious disease outbreak (employing virtual support as required).		
	Establish/support self-care and community-based PNC services through local partners (e.g., pharmacies, private sector) and community MNH workers. Refer to WHO Guidelines on Self-Care for Health and Well-Being for guidance.					
	Train community MNH workers (e.g., community midwives, TBAs, and CHWs) in provision of community-based PNC, according to their capacity. For example, community midwives can provide the full package of PNC services, while TBAs and CHWs can support/provide components of PNC, e.g., ENC for the newborn (exclusive breastfeeding, thermal care, hygienic cord and skin care, hand washing and other IPC measures), education, and identification and referral for danger signs in mother and newborn. *Note:* Community-based services are most effective when established before an outbreak occurs.					

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Care of small and/or sick newborns	Train and support community-based midwives and HCWs on care for small and sick newborns including first-line treatment for possible severe bacterial infection (PSBI) and where to refer.			Ensure availability of safe and appropriate oxygen treatment, including bubble continuous positive airway pressure (CPAP), provision of appropriate feeding and IV fluids, and management of jaundice and bacterial infections, following recommended IPC and PPE precautions. Continue to support mother or alternate caregiver to provide KMC for preterm and low birthweight (<2000 g)[ii] infants during outbreaks, following the recommended IPC and PPE precautions.		
	Contribute to development of protocols for the care of newborns when the mother is acutely unwell or has died, in coordination with protection services.			Allow caregiver in the facility, with strict adherence to screening and IPC measures for the care of small and sick newborn, and promote Family-Centered Care, an innovative approach to caring for newborns in the hospital and at home. Please refer to Family-Centered Care for Sick Newborns: A Paradigm of Social Collaboration to Improve Maternal Newborn Health Outcomes from the Healthy Newborn Network for more information.		
	Adapt protocols and SOPs for care of small and sick newborns for infectious disease of concern (adaptations might include shifting to community-based services by trained HCWs, case detection by CHWs, and referral).			Develop strategies to ensure continuity of KMC and adherence to IPC measures at home and follow-up visits, including how and who to contact at health facility to access phone support as needed.		
	Include neonatal or pediatric services in referral pathways. Train CHWs and HCWs on adapted protocols and SOPs for care of small and/or sick newborns, danger signs, and referral pathways.			Consider early discharge for stable preterm or low-birthweight newborns, with instructions and support for family and caregivers on breastfeeding, KMC, and knowledge of danger signs (and where to seek care). Schedule follow-up visit for mother and baby.		

ii Low birthweight is <2500 g and WHO prioritizes ≤2000 g for KMC.

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Feeding support	Train all staff on issues surrounding infant feeding disruption during an infectious disease outbreak, including likelihood of inappropriate or conflicting advice from healthcare providers/advisors on breastfeeding and separation, donations and uncontrolled distributions of breastmilk substitutes, and spread of rumors and unreliable information about transmission. Ensure: • Staff in facilities and community settings are trained on infant and young child feeding guidance and adaptations required for infectious disease of concern • MNH staff are trained and skilled in breastfeeding support and the following competencies as required: breastmilk expression, increasing milk supply, relactation, rapid cessation of breastfeeding, hygienic handling and storage of breastmilk and breastmilk substitute, safe handling and disposal of infectious breastmilk (e.g., Ebola virus disease [EVD]), responsive cup/spoon feeding, and feeding during illness and recovery • Continued feeding support to small and sick newborns			Breastfeeding women and adolescent girls not suspected of having an infection should be encouraged and supported to breastfeed as usual, while those who are infected should be encouraged to continue to breastfeed following recommended precautions unless they are advised to adopt temporary alternatives. *IMPORTANT:* Default guidance is always zero separation, KMC if required, and breastfeeding (or at least breastmilk feeding) unless and until pathogen is known or likely to pass through bodily fluids including breastmilk, or mother or baby are too sick. For airborne transmission, proper masking—as with coronavirus disease 2019 (COVID-19)—should be advised but KMC/breastfeeding continued. Be sure to: • Address rumors and unreliable information about breastfeeding and promote how important breastfeeding is for infants • Support mothers who wish to restart breastfeeding in order to protect their infant against infectious diseases • Make provisions for breastfed infants to stay with hospitalized mothers • Provide breastfeeding support to mothers who are incapacitated by severe illness		

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Feeding support (cont.)	For further guidance see: • Infant Feeding During Infectious Disease Outbreaks • Comprehensive Breastfeeding Support and Feeding of Small and Sick Newborns in Low- and Middle-Income Countries: Programmatic Considerations			• Determine and disseminate disease-specific IPC measures for infant feeding (e.g., mask, hand hygiene) For outbreaks where guidance is to adopt temporary alternatives: • Provide emotional support and trauma-informed care for caregivers who are feeding during illness, are separated (if necessary), or have temporarily stopping breastfeeding (if required) • Identify at-risk mothers and infants for referral to nutrition and health services • Refer to Annex 2 for pathogen-specific guidance on breastfeeding		
1.5 FAMILY PLANNING AND REPRODUCTIVE HEALTH						
SRH and GBV coordination	Participate in SRH working group and GBV subcluster coordination and contribute to adaptations to organization of services in response to the infectious disease outbreak of concern.			Ensure continued participation in SRH and GBV coordination groups to ensure two-way communication on service gaps and needs, including challenges the outbreak is presenting.		
FP and SRH service mapping	Ensure that FP and RH adaptations are included in contingency plans for outbreaks by completing: (1) facility mapping indicating where contraceptive and GBV services will be available; (2) expansion of community-based distribution of contraception, community-based GBV services, and self-care.			Ensure that women, adolescent girls, and their families are aware of any changes to FP, GBV, and RH services and how to access them.		

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Continuity of contraceptive services	Train HCWs on postnatal and post-abortion contraception and required infectious disease outbreak adaptations (which will vary depending on the size, type, and phase of the outbreak) to ensure continued access to a range of contraceptive methods, including long-acting reversible contraception (e.g., intrauterine devices and progestin-only implants) and short-acting methods that are recommended for the immediate postnatal period (first month) for breastfeeding or non-breastfeeding women and adolescent girls.			Ensure continuity of postnatal and post-abortion contraceptive services by maintaining adequate numbers of trained staff, supplies, and PPE to safely provide the services.		
				Ensure continuity of postnatal FP services for postnatal clients with and without infection.		
	Establish/support community-based contraception services, according to national policies and guidelines.			Consider shifting provision of appropriate short-acting contraceptive methods (depending upon breastfeeding status) to community services through CHWs, local pharmacies, and SBAs. Note: CHWs must be trained and supervised before initiating community-based services.		
GBV response	Ensure that maternities, health facilities, and isolation/ treatment centers have updated referral pathways for comprehensive GBV services. Train MNH staff on: • Increased GBV risks and health consequences during an infectious disease outbreak and pregnancy • Available support for survivors of sexual violence and intimate partner violence (e.g., pregnant women who experience GBV incidents and women who are pregnant due to sexual violence) who disclose and referral pathways • First line care and support and referral, and clinical management of rape if feasible			Advocate for continuation of GBV response services within the infectious disease outbreak response.		
				Where it can be done safely, encourage MNH health staff to proactively make information on GBV services and hotlines available in MNH-related community and facility services, including those providing infectious disease–related testing/treatment.		
				Post visual representations of up-to-date GBV referral pathways in clear locations in facilities, especially if they have been adapted during the outbreak.		
				Ensure that maternities and treatment facilities are safe, accessible, and acceptable (e.g., separation of male and female patients, ensuring female healthcare providers).		

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GBV response (cont.)				Take all possible steps to avoid converting safe shelters for survivors of domestic violence into additional capacity for infectious disease health response.		
MNH and RH supplies	Calculate supply requirements to maintain MNH, FP and other RH services in the MISP, using the Inter-Agency Reproductive Health Kits 6th Edition - Manual from the Interagency Working Group on Reproductive Health in Crises and Newborn Care Supply Kits Manual (available upon request from the United Nations Childrens Fund) in coordination with the United Nations Population Fund and the United Nations Childrens Fund. Ensure adequate storage, and develop distribution plans.			Distribute MNH/RH supplies/kits, and ensure consumption-reporting and planning for sustainable supply chains.		
Resource	For more detailed actions on FP/RH, please refer to Sexual and Reproductive Health and Rights During Infectious Disease Outbreaks: Operational Guidance for Humanitarian and Fragile Settings from the READY initiative.					
1.6 CASE MANAGEMENT						
Case management	Train HCWs providing outbreak response services to recognize routine signs of pregnancy, labor, obstetric, and newborn complications.			Include HCWs with experience in care for pregnant and breastfeeding women and newborns in case management teams and clinical staffing of isolation and treatment centers (ITCs).		
	Train clinical staff on established referral pathways for labor, childbirth, EmONC, and newborn care.					
	Ensure that HCWs are trained on GBV risks and can assist disclosing survivors by offering first-line care, appropriate medical treatment, and/or referral for care.					

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Triage	Include the need for and provision of care for pregnant and postnatal women and adolescent girls and their newborns in all existing dedicated ITCs or health services with additional outbreak treatment capability. Establish pathways for those in need of MNH emergency care, either at the facility or through a referral system.			Ensure that admitted pregnant and postnatal women and adolescent girls and their newborns are cared for by staff with maternal health skills, to ensure optimal maternal and fetal well-being.		
				Ensure rapid and effective delivery of EmONC with a protocol to stabilize and treat obstetric emergencies or refer to higher-level care within the treatment facility or at another health facility.		
Treatments	Train HCWs on WHO and/or national updated treatment options for known infectious disease for pregnant and breastfeeding women and adolescent girls and their newborns.			Provide up-to-date guidance to HCWs on the risk-benefit analysis of relevant treatments in pregnancy, childbirth, and breastfeeding, including access to specialist staff when required.		
				Advocate to the case management response pillar for inclusion of the most recent evidence-based recommendations related to treatment options for pregnant and breastfeeding women and adolescent girls and their newborns.		
				Advocate for the inclusion of pregnant and breastfeeding women in clinical trials for treatments, unless there are evidence-based reasons not to.		
Discharge				Implement discharge plans that take into consideration implications for the return of women and adolescent girls who have been admitted to isolation and treatment facilities, especially new mothers and their newborns. They may experience less support from their families and communities due to fear or infection. If postnatal, offer contraception before discharge. If still pregnant, make an ANC and birth plan (e.g., any specific follow-up or measures required at birth or for the newborn).		

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2. CROSS-CUTTING CONSIDERATIONS FOR MATERNAL AND NEWBORN HEALTH DURING INFECTIOUS DISEASE OUTBREAKS						
2.1 RISK COMMUNICATION AND COMMUNITY ENGAGEMENT						
Health service information	Provide information to pregnant and postnatal women and adolescent girls and communities on: • How to access services (e.g., if there are movement restrictions, closures of facilities, repositioning of HCWs) • Importance of continuing to access MNH services • How to use alternative methods of healthcare (e.g., hotline phone numbers and telemedicine • Self-care recommendations following the WHO guidelines • Importance of breastfeeding and KMC • Where to access different types of services including care for complications • Where to access services that are safe and providers who are well trained			Provide information to pregnant and postnatal women and adolescent girls on: • Signs, symptoms, and complications of infection in pregnancy • What to do if suspect infection, • Safety of vaccine in pregnancy and breastfeeding (unless, very rarely, not deemed safe).		
Information, education, and communication materials	Develop information, education, and communication (IEC) materials for endemic or known infectious disease risks by mode of transmission and impact on MNH in the necessary languages both written and oral.			Create and disseminate IEC materials in coordination with the RCCE pillar, addressing new concerns from the MNH community as they arise.		
RCCE strategy	Coordinate with RCCE specialists to develop a comprehensive MNH RCCE strategy to share health information and listen to concerns, suggestions, complaints, etc., especially with vulnerable groups. This may be through platforms such as social media, CHWs, or women's groups.			Update messages as additional information becomes available about adaptations made to MNH services (e.g., location of primary health care, EmONC, PAC, and isolation units/treatment centers), and procedures (e.g., visiting policy changes, treatment centers), as well as IPC precautions at health facilities.		

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RCCE strategy				Share information with pregnant women and adolescent girls about the infectious disease (e.g., symptoms, risks for the pregnancy, and where to seek care).		
				Work closely with RCCE Specialists to make necessary adaptations to the MNH RCCE strategy during the outbreak, especially where restrictions on mass gathering or movement may be in place, the usual communication strategies may not be possible, and women and adolescent girls' concerns may have changed.		
2.2 REFERRAL						
Referral pathways	Establish and maintain safe and timely referral pathways between maternities, acute services for mothers and newborns (EmONC, PAC, specialized newborn units), and community services, considering likely adaptations needed for different infectious diseases. Consider: • Transfer system, route, and vehicle. Small and sick newborns should ideally be transferred with their mothers (KMC position for transfer is an alternative) • Identification of staff with obstetric and newborn/pediatric experience to support with transfer • Necessary permissions from authorities for travel • Confidential management of patient details			Develop SOPs for ITCs, on the safest place to care for infected women in labor or with obstetric complications.		
				Support ITCs to develop appropriate space for management of birth and complications, depending on infectious disease type.		
				Develop referral pathway from ITC to maternity facility with appropriate IPC measures and trained staff present.		

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				Prepare and train health staff on mitigation plans for issues such as: • Restricted movement • Restricted access from affected area to non-affected area • Confidentiality breaches when transferring suspect or confirmed cases • Poor adherence to necessary IPC requirements during transfer • Limited PPE stock for transport staff • Fear and stigma towards referral patients		
Referral transport	Establish dedicated transport systems for pregnant and postnatal women and newborns. Update referral SOPs and decontamination procedures for transport system based on requirements of infectious disease of concern.			Adapt IPC procedures of ambulances and MNH transport. Ensure that guards, drivers, paramedics, and any decontamination staff receive training. Ensure that additional time for IPC is factored into emergency referral plans.		
Training	Train MNH, triage, and transport staff on SOPs, IPC, and referral pathways for identified infectious disease risk as relevant to transport and referral system.			Conduct refresher training as needed and provide supportive supervision for transport team to ensure that IPC standards are strictly adhered to.		
2.3 INFECTION PREVENTION AND CONTROL						
Facility level	Train MNH staff (midwives) on infection prevention SOPs and PPE, correct donning and doffing, danger signs, and referral pathways.			If required, adapt patient and staff flow at health facilities based on mode of transmission to prevent transmission of infectious disease, e.g., patient movement between areas, seating areas outside, different entrances and exits.		

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Facility level (cont.)	Ensure responsible and appropriate science-based use of PPE to ensure adequate supply and discourage misuse and waste of valuable resources.					
	Prepare labor and childbirth room by ensuring that appropriate IPC precautions, including supplies, training, and PPE, are available for specific infectious diseases of concern.			If separate facilities are set up for treatment and isolation of suspect or confirmed patients, ensure that SOPs consider the IPC needs of MNH services (e.g., safe disposal of placenta, bodily fluid spillages).		
	Procure IPC supplies to ensure adequate supplies for all levels of MNH providers at all health facility levels.			Work with the IPC pillar of the EOC, health ministry, or other coordination mechanism to ensure procurement of appropriate IPC supplies based on the latest recommendations. Monitor consumption data and supplies to prevent stockouts, and ensure that health facility staff providing MNH services have the needed supplies to safely provide MNH services.		
	In case of respiratory and droplet transmission, ensure that adequate ventilation systems are in place for routine MNH services, particularly in areas such as the labor and delivery room and operating theater. This is particularly important for aerosol-generating procedures (e.g., maternal intubation) that may be required during CEmONC. Depending on pathogen, additional respirators (masks) may be required.			Where required, ensure IPC measures for safe and dignified burial of stillborn, maternal, or newborn deaths, e.g., for viral hemorrhagic fevers such as Ebola.		
Community level	Procure IPC supplies, including PPE that are appropriate for the infectious disease of concern, for community-level services. Train community staff on how to safely maintain IPC standards and how to don and doff PPE.			Ensure continuous supplies of quality IPC supplies. Conduct regular monitoring, supportive supervision, and refresher trainings. Plan for safe and responsible disposal of PPE and infectious waste used in the community.		

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PPE	Coordinate with the IPC pillar and/or EOC for guidance on PPE specifications for infectious disease of concern.			Ensure that adequate and appropriate PPE is available for MNH HCWs, ambulance staff, community midwives, and CHWs, per the guidance from the IPC pillar. Provide staff with clear guidance and training that includes donning, doffing, and safe disposal of contaminated materials. Any challenges with PPE supplies or PPE quality should be escalated early to the local and national health leaders, Health Cluster, and Ministry of Health (MOH) and the Logistics pillar if activated.		
	Calculate and procure required PPE supplies for health facility and community-level MNH services and pre-positioning of stock.					
2.4 MENTAL HEALTH AND PSYCHOSOCIAL SUPPORT						
Service delivery	Develop or update mapping of available MHPSS services, referral options, and points of integration, considering anticipated mental health problems of pregnant and postnatal women and adolescent girls, particularly those experiencing complications such as preterm birth, stillbirths, newborn with congenital anomalies, and small or sick newborn.			Make time during all contacts (ANC, labor and delivery, and postnatal care) to listen and respond to the concerns of women and adolescents about the outbreak and changes to their situation that may affect their health risks and access to care (e.g., social distancing, stay-at-home orders, school and work closures), and socioeconomic, cultural, and political changes that they may be experiencing. Provide information about how to prevent infection and on health risks for them and their baby in case of infection and how to manage these risks. Prioritize innovative approaches such as Family-Centered Care to address anxiety and fear for women and families during hospitalization for newborn illness and to strengthen self-confidence for continuing care at home.		
	Train MNH HCWs on how to identify distress and support pregnant and postnatal women and adolescent girls related to the impact of infectious disease outbreak (e.g., training on supportive communication, psychological first aid, when to refer women to more specialized services, e.g., mental health, GBV).					

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HCW/MNH staff	Make safe and confidential MHPSS services freely available to MNH staff and other HCWs.			Recognize that demands of the outbreak may increase needs for MHPSS and uptake of services for staff (e.g., due to high risk of burnout and moral injury for staff providing care to SRH patients).		
	Monitor and promote staff safety for HCWs/MNH staff by strengthening linkages between IPC, occupational health and safety, patient safety, and quality improvement.					
	Adapt human resource policies to ensure that the needs of HCWs, including those providing MNH care during the outbreak, are met in terms of sick-leave policies, adequate time off, procedures to actively monitor staff who have been exposed or show symptoms, and screening and testing of staff.			Employ surge staff to ensure the continuity of MNH services during the outbreak, if required to avoid burnout of existing personnel.		
	Implement policies to support safe breastfeeding or expression of breast milk while at work for HCWs who are breastfeeding.			Prioritize HCWs, including those providing MNH care, for vaccinations (if vaccines are available).		
				Reassign HCWs at high risk of severe disease, including staff members who are pregnant, to lower-risk services, where possible.		

ANNEX 2. BREASTFEEDING RECOMMENDATIONS BY COMMON PATHOGENS

Table 5 summarizes the risk of transmission of each pathogen and the current recommendations for breastfeeding and other considerations. Specific infection prevention and control (IPC) measures for each pathogen need to be adhered to in all cases to prevent postnatal mother-to-child transmission.

When women are admitted into a treatment center and are breastfeeding, efforts should be made to ensure that there is adequate privacy. Where no infant feeding recommendations are in place, consult the following decision-making guidance documents: Infant Feeding During Infectious Disease Outbreaks: A Guide for National Health Authorities, Health and Nutrition Policymakers, Professional Associations and Other Bodies and Practitioners Working in Outbreak Preparedness and Response and Infant Feeding During Infectious Disease Outbreaks: A Guide for Decision Makers and Programmers Working in Emergency Preparedness and Response. Note that the default infant feeding recommendation should be continued breastfeeding, until and unless evidence indicates that withholding either breastfeeding or maternal proximity is justifiable.

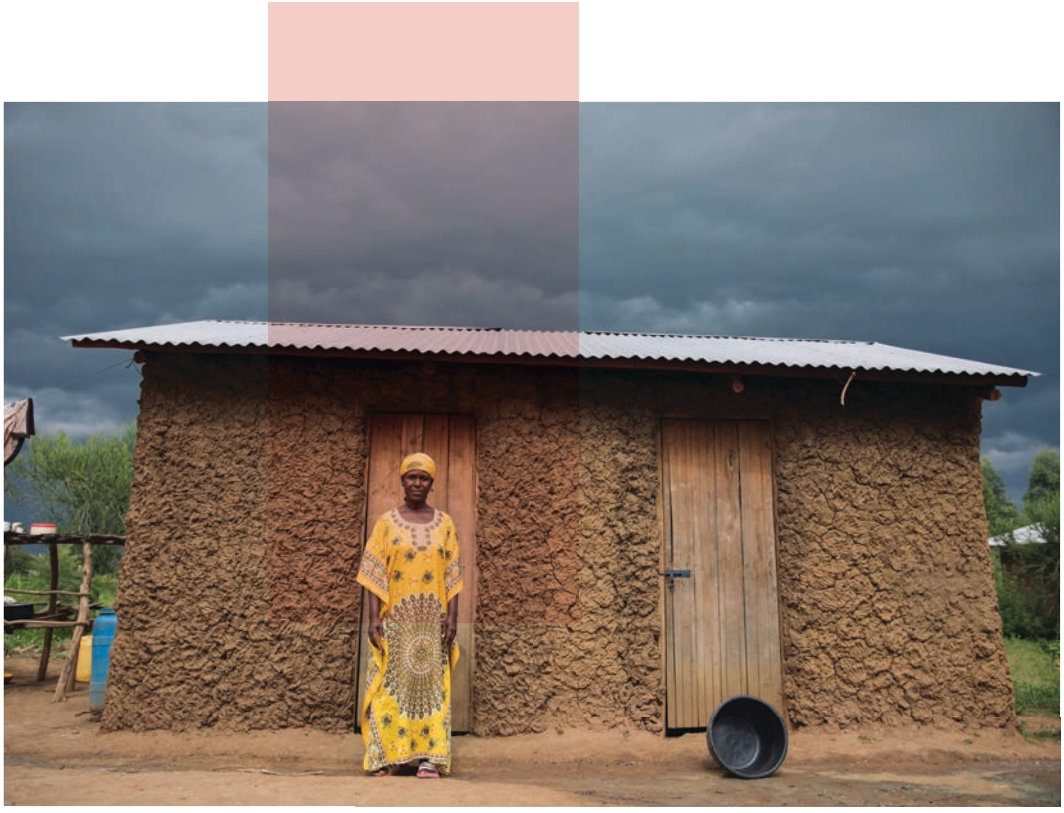
Table 5: Risk of Transmission Through Breast Milk or Direct Contact Through Breastfeeding, by Disease and Pathogen

Disease and causing pathogen	Transmission documented through breast milk or direct contact through breastfeeding	Recommendation
Respiratory pathogens		
Coronavirus disease 2019 (COVID-19) **Causing pathogen:** severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)	Current evidence suggests that breast milk is not likely to spread the virus to infants.[42]	Protect, promote, and support exclusive breastfeeding (up to six months), and keep mother and infant together. Wash hands frequently with soap and water or use alcohol-based hand rub, especially before touching the baby. Avoid coughing and sneezing on the baby. Caution mother not to fall asleep while feeding her baby if tired. Infected mother should wear a face mask.
Influenza **Causing pathogens:** 3 types of seasonal influenza viruses, types A, B, C, that cause disease in humans	Transmission via respiratory secretions. Virus not identified in breast milk. Breastfeeding protects infants of women who have had influenza vaccination.[43]	Protect, promote, and support exclusive breastfeeding (up to six months), and keep mother and infant together.[44] Infected mother should wear a face mask.

Disease and causing pathogen	Transmission documented through breast milk or direct contact through breastfeeding	Recommendation
Measles **Causing pathogen:** virus in the paramyxovirus family	Virus not identified in breast milk. Potential transmission if mother becomes symptomatic postnatally.[45]	If a nursing mother is diagnosed with measles, she should temporarily limit close contact with the child for up to three days (72 hours) after the appearance of the rash. This includes temporarily limiting breastfeeding in order to prevent the baby from getting infected. However, the mother is encouraged to continue feeding the infant with expressed breast milk.[46] If infant is separated from the mother, avoid mixing with other infants (as the infant may be within the incubation period of measles).
Bodily fluids pathogens		
Crimean-Congo hemorrhagic fever **Causing pathogen:** Crimean-Congo hemorrhagic fever virus (*Bunyaviridae* family)	Limited evidence-based data available on transmission via breast milk and potential infectivity via breastfeeding. Early infant deaths associated with infection in mother late in pregnancy.[47]	Given the limited data available, risk-benefit analysis of breastfeeding should be done case by case. The decision to breastfeed is usually dependent on the clinical condition of the mother being able to breastfeed.[48]
Ebola virus disease (EVD) **Causing pathogen:** Ebola virus (*Filoviridae* family)	Documented transmission to newborn from acutely infected mothers.[49] Available evidence indicates that the risks of EVD outweigh the risks of not breastfeeding. Because the Ebola virus is present in body fluids, including sweat and breast milk, both close physical contact during breastfeeding and breast milk itself are presumed to carry a transmission risk.	Recommendation to temporarily discontinue or not initiate breastfeeding if acute EVD infection is suspected or confirmed in the mother.[50] Babies should be temporarily separated from their mother and fed with donor human milk or an appropriate breast-milk substitute (infant formula if under six months) with the support of a family member or community EVD survivor. Support the mother to express breast milk and for safe disposal to prevent engorgement and mastitis. If a breastfeeding woman and her breastfeeding child are both diagnosed with EVD, breastfeeding should be discontinued, the pair should be temporarily separated, and appropriate breast-milk substitutes (or donor human milk) should be provided. It is important to note that if the child is under six months of age and does not have safe and appropriate breast-milk substitutes or if the child cannot be adequately cared for, then the option to not separate and continue breastfeeding can be considered. A woman who has recovered from EVD, cleared viremia, and wants to continue breastfeeding should wait until she has had two consecutive negative reverse transcription polymerase chain reaction breast milk tests for Ebola virus, separated by 24 hours. During this time, the child should be given a breast-milk substitute. Mothers should be supported to resume (relactate) or increase breast milk production.

Disease and causing pathogen	Transmission documented through breast milk or direct contact through breastfeeding	Recommendation
		Women's choices related to stopping breastfeeding or continuing after EVD recovery and testing of breast milk should be respected and supported by healthcare workers (HCWs) to facilitate the choice. For more detailed information, please refer to the WHO's Guidelines for the Management of Pregnant and Breastfeeding Women in the Context of Ebola Virus Disease.
Lassa fever **Causing pathogen:** Lassa virus (*Arenaviridae* family)	Limited evidence-based data available on transmission via breast milk and potential infectivity via breastfeeding.[51,52,53]	Given the high risk of transmission and mortality rates in newborns and the limited evidence, risk-benefit of breastfeeding should be assessed in the same way as for EVD.[54]
Marburg virus disease **Causing pathogen:** Marburg virus (*Filoviridae* family)	Limited evidence-based data available on transmission via breast milk and potential infectivity via breastfeeding.	Given the high risk of transmission and mortality rates in newborns and the limited evidence, risk-benefit of breastfeeding should be assessed in the same way as for EVD.[55]
Waterborne pathogens		
Cholera **Causing pathogen:** *Vibrio cholerae*, two variants cause outbreaks: O1 and O139	No transmission.[56] Breastfeeding showed to decrease diarrheal disease incidence.	Protect, promote, and support exclusive breastfeeding (up to six months), and keep mother and infant together. The mother should be encouraged to wash her hands with soap and water before putting the newborn to breast. If there is a reason to believe that the mother's breast has been in contact with stool or vomit, consider asking the mother to clean her breast with soap and water and expressing a small amount of breast milk on her nipple and areola before putting the newborn to feed. She should not use chlorine solution or other antiseptic solution.[57] Mother should be supported in maintaining her hydration and replacement of salts. Support the mother with breastfeeding if weak.
Hepatitis E **Causing pathogen:** Hepatitis E virus (HEV; *Hepeviridae* family), at least four different types: genotypes 1, 2, 3, and 4	Virus detectable in breast milk, but no transmission documented.[58]	Protect, promote, and support exclusive breastfeeding (up to six months), and keep mother and infant together. Currently, there are no contraindications to breastfeeding with maternal HEV infection.[59]

Disease and causing pathogen	Transmission documented through breast milk or direct contact through breastfeeding	Recommendation
Poliomyelitis **Causing pathogen:** Poliovirus (*Picornaviridae* family); three serotypes of wild poliovirus: types 1, 2, and 3	Limited data available. Polio antibodies documented in breast milk if mother vaccinated.[60]	Protect, promote, and support exclusive breastfeeding (up to six months), and keep mother and infant together.
Shigellosis **Causing pathogen:** Shigella, four species: *S. dysenteriae type 1* is most important for regional epidemics	Not documented. Breastfeeding showed to decrease diarrheal disease incidence.	Protect, promote, and support exclusive breastfeeding (up to six months), and keep mother and infant together.[61]



Source: Sarah Waiswa / Save the Children
Carolyne, 42, Health Community Volunteer, outside her home in Bungoma, Kenya

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