Operational Considerations for Maintaining Essential Services and Providing Maternal, Newborn, and Child Healthcare in Low-Resource Countries

Updated June 21, 2022

Summary of Recent Changes

Updates as of June 10, 2022

- Updated and combined webpages on maintaining essential services with providing services and surveillance for maternal, newborn, and child healthcare during COVID-19 in low-resource countries.
- Included COVID-19 vaccination before, during and after pregnancy; and details about breastfeeding and vaccination.
- Details about childhood COVID-19 vaccination are also included.
- Updated details on infection prevention and control, routine testing, homecare and COVID-19 treatment.
- Updated US quarantine, isolation and contact tracing guidance.

Key Points

- Pregnant and recently pregnant women are at a higher risk for severe illness when compared to non-pregnant women. Pregnant women with COVID-19 may also have higher risks of adverse birth outcomes, such as preterm birth and stillbirth. Children with certain underlying conditions are at increased risk of severe illness.
- COVID-19 vaccine before pregnancy, during pregnancy and during breastfeeding can protect mother and child from severe illness due to COVID-19. Current data suggest that the benefits of receiving a COVID-19 vaccine outweigh any known or potential risks of vaccination during pregnancy.
- It is important to capture information for surveillance at each point of interaction with healthcare providers to increase understanding of COVID-19 among pregnant women, new lactating-mothers, their children, and those who intend getting pregnant, supporting informed decision-making.

Intended Audience

The intended audience for this document are healthcare service providers, Community Health Workers (CHWs), and health volunteers in low-resource countries. These considerations are meant to supplement local guidelines and should not be used in place of the laws of any country or locality.

Background

While current data suggest that pregnant women, newborns, and children are not at highest risk for COVID-19 deaths, disruption of routine essential services poses a threat to their health and survival, during the COVID-19 Pandemic.

During the Ebola epidemic, increased risk was found in pregnant women with co-morbidities, and children with malnutrition, and chronic conditions (e.g., asthma, diabetes, congenital heart defects, epilepsy, and behavior/learning problems.[1, 2]

World Health Organization -WHO "pulse survey" rounds 1-3 implemented during COVID-19 pandemic 2020-2021, reports substantial disruptions persist in "continued essential health services" . Round 1 of the survey took place during May – September 2021 and the reporting period referred to the 3-month period preceding survey completion. Round 2 of the survey took place during January – March 2021 and the reporting period referred to the 3-month period preceding the month of survey completion. For Round 3, most survey responses were received during November – December 2021. The reporting period of the survey refers to the six-month period preceding the month of survey completion. There were 129 participating countries, territories and areas, in the round 3 survey implementation.

- In Round 1 pulse survey (third quarter (Q3) May-September 2020), countries reported on average, about half (56%) of essential health services were disrupted.
- In Round 2 pulse survey (first quarter (Q1) January-March 2021), countries reported progress with just over one third of services (41%) being disrupted.
- In Round 3 pulse survey (fourth quarter (Q4) November-December 2021), over a third of essential health services (44%) were reported as disrupted. For sexual, reproductive, maternal, newborn, child and adolescent health (SRMNCAH), 32% of 74 countries reported disruption in essential health services in these focus areas.
  - The top five SRMNCAH "level of service disrupted" include: Adolescent and youth friendly services (48%), well child visits (46%), family planning and contraception (38%), antenatal care (34%), and identification and care for intimate partner violence (33%).
  - The top five SRMNCAH "disruption to level of service, that returned back to pre-pandemic service level" include: Adolescent and youth friendly services (38%), well child visits (44%), family planning and contraception (44%), antenatal care (51%), and identification and care for intimate partner violence (53%).

WHO has developed guidance for maintaining essential health services during the COVID-19 outbreak and a guidance to assess each facility's readiness to continue frontline service during the COVID-19 pandemic.

People who are pregnant or were recently pregnant are at an increased risk for severe illness from COVID-19 when compared to people who are not pregnant. People who have COVID-19 during pregnancy are also at increased risk for preterm birth (delivering the baby earlier than 37 weeks) and stillbirth and might be at increased risk for other pregnancy complications .

Newborns with low birth weight or prematurity are at increased risk for complications both generally and as a result of COVID-19. Therefore, it is crucial that the needs of mothers, newborns, and children are kept in mind when developing mitigation strategies for maintaining essential services delivery in low-resource countries, including considering providing services by telehealth where feasible.

General Considerations for Maintaining Essential Services During COVID-19

For the continuation of care of sexual, reproductive, maternal, newborn, child and adolescent health, while considering infection prevention and control -IPC , healthcare and care providers are encouraged to triage their patients and potential patients to home-based care or hospital care before any physical contact is made. Telehealth and IPC are two general considerations for continuing essential health and care of women, children and adolescents in low-resourced populations. CDC encourages the use of telehealth in delivering maternal and newborn care where feasible.

Telehealth

The American College of Obstetricians and Gynecologists developed a document with resources to consider when implementing telehealth in practice. A presidential taskforce on telehealth was developed in February 2020 and recommendations were published. Some of the recommendations include access to technology, equipment, patient privacy, payment modality, and licensing. Types of telehealth modalities discussed include:

- Live, two-way (or real-time) synchronous audio and video allows specialists, local physicians, and patients to see and hear each other in real-time e.g. via phone or computer to discuss conditions.
- Store-and-forward, also referred to as “asynchronous telemedicine,” sends medical imaging such as X-rays, photos, ultrasound recordings, or other static and video medical imaging to remote specialists for analysis and future consultation.
- Remote patient monitoring collects personal health and medical data from an individual in one location and electronically transmits the data to a physician in a different location for use in care and related support.
- mHealth is a general term for self-managed patient care using mobile phones or other wireless technology and does not necessarily involve monitoring by a physician. It is most commonly used to deliver or reinforce patient education about preventive care and provide medication reminders, appointment reminders, and other essential self-care steps that patients should undertake to maintain their optimal obstetric health.

In December 2021, WHO also published a guidance document on How to plan and conduct telehealth consultations with children and adolescents and their families, encouraging telehealth among children and their families. The aim of the guidance is to encourage greater use and consistency in teleconsultations and inform facility managers developing telehealth systems.

Infection Prevention and Control -IPC

Managing healthcare operations during COVID-19 could be challenging. It is essential that individuals, communities and healthcare systems use mitigation strategies; and consider isolation and work restriction guidance for healthcare personnel, including contingency and crisis management in the context of significant healthcare worker shortages. Women represent 70% of the health and social sector workforce globally, and with their frontline interaction with communities and participation in care work, they face a higher risk of exposure to COVID-19. Appropriate facility environmental engineering (e.g., ventilation) and administrative controls (e.g., IPC standard operating procedures -SOPs), and personal protective equipment (PPE) should be used to minimize risk of infection to all frontline workers. Further, special attention should be given to how their work environment may expose them to discrimination and to address their social and reproductive health and psychosocial needs as frontline health workers.

Some IPC measures to consider include:

- Implementing IPC activities.
- Ensuring staff use appropriate personal protective equipment (PPE), such as masks and eye protection (e.g., goggles, face shields) when seeing patients and gowns and gloves as needed.
- Ensuring patients wear well-fitting masks for source control.
- Enforcing a distance of at least 2 meters between all people in the facility (physical distancing) whenever possible.
- Making handwashing stations with soap and water or hand sanitizer with at least 60% alcohol readily available and accessible.

Vaccination

COVID-19 vaccination is recommended for people who are pregnant, breastfeeding, trying to get pregnant, or who might become pregnant in the future. Pregnant women should receive a COVID-19 vaccine booster when it is time to get one.

Data indicates that the benefits of receiving a COVID-19 vaccine outweigh any known or potential risks of vaccination during pregnancy. There is currently no evidence that any vaccines, including COVID-19 vaccines, cause fertility problems in women or men.

The American College of Obstetricians and Gynecologists (ACOG) recommends that all eligible persons aged 12 years and older, including pregnant and lactating individuals, receive a COVID-19 vaccine or vaccine series. Pregnant and recently pregnant women up to 6 weeks postpartum should receive a booster dose of COVID-19 vaccine following the completion of

pregnant women up to 6 weeks postpartum should receive a booster dose of COVID-19 vaccine following the completion of their initial COVID-19 vaccine or vaccine series. COVID-19 vaccines may be administered simultaneously with other vaccines. This includes vaccines routinely administered during pregnancy, such as influenza and Tdap (Tetanus, diphtheria and pertussis vaccine).

Obstetrician–gynecologists and other women's health care practitioners should lead by example by being vaccinated and encouraging eligible patients to be vaccinated as well.

The American Academy of Pediatrics (AAP) recommends coronavirus disease 2019 (COVID-19) vaccine for children and adolescents who are eligible for vaccination and do not have contraindications using a COVID-19 vaccine authorized for use for their age.

Adolescent Sexual Health and Pre-Pregnancy

Adolescent Sexual Health

The negative impact of COVID-19 on contraception and sexual and reproductive health cannot be underestimated. WHO reported adolescent health, well child clinics and family planning/contraception clinics as the top three most affected areas of healthcare. Most adolescents found themselves out of school during the pandemic. Most adolescent healthcare, including sexual health education implemented in collaboration with schools, and school health programs in developing countries were discontinued (e.g., even the non-governmental health organizations' (NGOs) services were paused). Adolescent friendly healthcare services were one of the areas WHO pointed out as "yet to return to the pre-pandemic level of healthcare services". While the technical components of service delivery may remain the same, health care providers may need to alter modes of delivery to meet patient needs.

Adolescent girls and boys may be particularly impacted by changes to service delivery during the COVID-19 pandemic. Some areas of focus should include:

- Orphanhood secondary to COVID-19: Loss of a parent, both parents or caregiver (including relatives and grandparents)
- Sexual exploitation and abuse
- Lack of contraceptives
- Gender-based violence
- Mental wellbeing
- Less access to education and other learning opportunities or aspirations
- Adolescent marriage
- Adolescent pregnancies
- Unequal access to information , since most children get information on what is going on around them or in their communities from interaction with teachers and experts at school
- Adolescents who are pregnant or young parents may be disproportionately impacted by social isolation and lack of healthcare and social support, during a community lockdown and travel restriction

Pre-Pregnancy

General Healthcare Services for **ALL** women during the COVID-19 pandemic should include the following:

- Vaccination:
  - Vaccinate all eligible women against COVID-19.
  - Be sure to screen for COVID-19 symptoms before vaccination.
  - Assess the need for other locally recommended vaccines including tetanus toxoid vaccination
- COVID-19 Screening:
  - Assess for COVID-19 symptoms.
  - If a woman is in urgent need, follow facility/country recommendations for seeking care.

    - If a woman reports symptoms or contact with a person with suspected/confirmed COVID-19, provide country-specific information on quarantine or self-isolation; advise phone contact or rescheduling if possible
- Women's Healthcare Services:
    - Screen for pregnancy.
    - Screen for sexually transmitted infections.
    - Inform and assess for danger signs in pregnancy and birth preparedness.
    - Conduct ongoing pregnancy risk assessment – including emotional well-being and personal safety.
    - Screen for intimate partner violence.
    - Assess for supplemental nutrition and vitamin need including Iron, folic acid, calcium, and other recommended patient specific supplementation.
    - Provide preventive measures and treatment such as malaria prophylaxis (e.g., insecticide treated nets, intermittent preventive treatment in pregnancy) and treatment; antiretroviral therapy or HIV pre-exposure prophylaxis, and routine disease and infection screening and treatment.
    - Schedule more frequent in-person clinic or hospital visits if risk assessment identifies potential or actual pregnancy complications.
    - Ensure adequate documentation of care provision and appropriate care planning (after providing care) including home care/telehealth possibilities and hospital care when necessary.
    - Refer all new pregnancies and complications in pregnancy to the nearest hospital for further **initial assessment** (at first visit).

Antenatal Services

The following considerations should supplement local Ministry of Health guidance.

Healthcare Worker In-Person Contact with Patient or Hospital Care

Facility-based visits with a skilled provider and laboratory capacity:

- **First visit** at any gestational age, should include ultrasound estimation of gestational age
- Visits at 30, 36, and 40 weeks
- Voluntary counseling and testing for HIV, syphilis, hepatitis B; treatment and management of people testing positive
- Hemoglobin, urinalysis with urine dipsticks for proteinuria, rapid test for malaria
- Distribution of iron-folic acid, mebendazole, HIV antiretroviral -ARV drugs, intermittent preventive treatment of malaria in pregnancy -IPTp; consider provision of multi- month prescriptions as applicable
- Treatment of malaria, urinary tract infection/asymptomatic bacteriuria
- Evaluation and management of pregnancy danger signs
- Inpatient or outpatient management of complications including hypertension and diabetes
- Group antenatal care sessions should be discontinued or transitioned to telehealth if possible
- Individualize counseling and advice on self-care, in addition to COVID-19-specific messages.
- Screen for and manage anemia, malaria, pre-eclampsia/eclampsia, sexually transmitted infections/HIV, TB, gender-based violence, infection, antepartum/postpartum hemorrhage, labor, and childbirth complications. Provide preventive measures per country guidelines.
- Ensure availability of auxiliary services: ultrasound, laboratory services, and blood bank services.

Home Care/Telehealth Considerations

- Triage and provide advice on common discomforts, concerns or preoccupations, and danger signs related to pregnancy (e.g., haemorrhage, swelling, headache, blurry vision).
- Counsel on family planning, pregnancy spacing, birth preparedness/complication readiness plan, and visit schedule.
- Mental and emotional health support (e.g., for prenatal depression)
- Adherence support for women with chronic illnesses (e.g., HIV, hypertension and diabetes)

- Advice on self-care.[2]

Community-based visits with a trained community health worker (CHW) using point-of-care devices:

- Visits at 20, 26, 34, and 38 weeks
- Advice on common discomforts
- Voluntary counseling and testing for HIV
- Counseling and referral as needed for syphilis, hepatitis B
- Urinalysis with urine dipsticks for proteinuria and asymptomatic bacteriuria
- Rapid test for malaria
- Follow-up of problems/infections/illnesses being managed by a skilled provider including hypertension and diabetes
- Distribution of iron-folic acid, mebendazole, HIV pre-exposure prophylaxis -PrEP, ARV, IPTp
- Treatment of malaria
- Triage and referral for identified problems
- Group antenatal care sessions should be discontinued or transitioned to telehealth if possible

Childbirth -Labor and Delivery

Home Care/Telehealth Considerations

- Triage and advice for women who think they are in labor

Community-based providers

- Triage and advice for women who think they are in labor

Facility-based delivery with a skilled provider (private or public sector)

- Cesarean surgeries should only be performed when medically indicated. **COVID-19- positive status is NOT an indication for cesarean section.**
- Facilities should follow the standard operating procedure for delivery during COVID-19, including appropriate infection prevention and control (IPC) practices. CHWs should identify women who deliver at home and record home birth in the Local Birth Registry. In overcrowded health facilities where physical distancing is difficult, an early discharge may be considered 6 hours post-delivery for healthy women and their newborn who have experienced uncomplicated vaginal births and 2 days after cesarean birth. Mothers and newborns may be discharged separately if one requires further skilled care.
- Basic Emergency Obstetric and Neonatal Care (BEmONC) and Comprehensive Emergency Obstetric and Neonatal Care (CEmONC) facilities should be trained in COVID-19 case management reporting of pregnancy outcomes including:
  - Status of the mother and newborn -alive or deceased
  - Health status of the mother and newborn -any health complications
  - Maternal and neonatal age
  - Delivery location
  - Parity (single birth, twins, triplets, etc.)
  - Birthweight

COVID-19 status after birth for mothers and newborns should be monitored. If a woman tests negative for COVID-19, a CHW or facility-based health worker will add her information to the pregnancy **local** surveillance platform. If a woman tests positive for COVID-19, a facility-based health worker will add her information to the local and national surveillance database using forms, including WHO Global Clinical Platform for COVID-19 Core Case Report Form or WHO Global COVID-19 Clinical Platform Case Report Form (CRF) for Post COVID condition (Post COVID-19 CRF) if recovered. Other surveillance databases can also be considered including the International Severe Acute Respiratory and emerging Infections Consortium –ISARIC, a

secure data capture system that standardizes global data on COVID-19 . Women who test positive for COVID-19 should have contact tracing follow-up. If a maternal or perinatal death occurs during delivery, a facility death review should be conducted by the death review committee (see section on mortality).

Postnatal Follow-Up Care

Home Care/Telehealth Considerations

After uncomplicated deliveries, **women who test negative** for COVID-19 should be discharged home. Follow up within one week of delivery with homecare or telehealth:

- Triage and provide advice on concerns or preoccupations and pregnancy danger signs.
- Provide counseling on family planning, pregnancy spacing, complication readiness plan, visit schedule, and newborn vaccinations.
- Provide advice on self-care.[2]
- Provide mental and emotional health support (e.g., for postpartum depression, adherence support for women with chronic illnesses)
- Provide maternal mental health
- Provide breastfeeding counseling :
  - Breast milk is the best source of nutrition for most infants, it is still unclear if mothers with COVID-19 can transmit the virus via breast milk , but the limited data available, including WHO breastfeeding and COVID-19 scientific brief suggest this is not likely. A mother's intention to breastfeed should be supported by maternity care providers.
  - A mother with confirmed COVID-19 should be counseled to take precautions to avoid spreading the virus to her infant, including handwashing and wearing a well-fitting mask. If a woman is COVID-19 positive and too unwell to breastfeed, provide support for the woman to express breastmilk. If possible, expressed breastmilk should be fed to the infant by a healthy caregiver, who is not at high-risk for severe illness from COVID-19. An infant being breastfed by a mother who is suspected or confirmed to have COVID-19 should be considered as having suspected COVID-19—when the infant's testing results are not available—for the duration of the mother's recommended period of home isolation.

Facility-based postnatal care with a skilled provider (private or public sector)

Patients with symptoms consistent with COVID-19, should get tested immediately and isolate until test results are received. They should return to the facility only after fever has resolved for 3 or more days without the use of any medications and 5 days have passed since the onset of symptoms, unless there are any medical emergencies, in which case patient should come back immediately. They should take precautions until day 10, including wearing a well-fitting mask. If test is positive, isolation may be extended to 10-20 days depending on severity of illness or until the national criteria for stopping isolation have been met.

If a woman tests positive for COVID-19 before discharge, she should remain in the health facility until symptoms clear, and isolate from other patients to limit risk of COVID-19 transmission. CHWs should track health outcomes during postpartum follow-up visits at the woman's home using a post natal care-PNC checklist within one week of delivery.

If the mother tests positive for COVID-19, isolate the newborn in a separate room and allow a family or household member to deliver breastmilk, if needed. This person should be healthy, fully vaccinated, and COVID-19 negative. If the parent decides to keep the newborn in the same room to ease breastfeeding, this should also be at least considered or allowed. Current evidence suggests that the chance of a newborn getting COVID-19 from their birth parent is low, especially when the parent takes additional prevention measures:

- Clean and disinfect commonly touched surfaces at least twice a day.
- Wash hands with soap and water for at least 20 seconds before holding or caring for the newborn. If soap and water are not available, use a hand sanitizer with at least 60% alcohol.
- Wear a well-fitting mask within 6 feet of the newborn.
- Consider using a physical barrier that allows physical distancing while connecting.

Note: Check the newborn for COVID-19 symptoms daily. Once the isolation or quarantine period is completed, parents may resume normal care of newborn.

Essential Newborn Care

Facility-based delivery with a skilled provider (private or public sector)

All newborns need to be given skin-to-skin care by the mother, irrespective of the mother's or their COVID-19 infection status , as recommended by WHO . Strict hygiene practices are required and must be continued including medical mask wearing by mothers who are COVID-19-positive, and frequent handwashing or use of hand sanitizer with at least 60% alcohol if soap and water are not readily available before touching the baby.

Newborn care interventions include:

- Screen for and manage asphyxia, congenital anomalies, birth injuries, infection, feeding problems, breathing difficulties, hypo-/hyperthermia.
- Provide prophylactic treatment as indicated: antibiotics, antiretroviral (ARV) drugs, TB drugs.
- Provide essential care: birth dose of oral polio vaccine, bacille Calmette-Guerin (BCG), and hepatitis B vaccinations per national immunization schedule; thermal protection, eye and cord care, vitamin K.
- Respond to observed signs or reported problems.
- Facilitate early and exclusive breastfeeding.
- Provide individualized counseling messages for parents/caregivers.

Counseling and health education for new parents should include the following messages:

- All newborns need to be given skin-to-skin care by the mother, irrespective of the mother's or their COVID-19 infection status, as recommended by WHO . Strict hygiene practices are required and must be continued.
- Make sure the baby sleeps safely. Do not cover the baby's head or allow the baby to get too hot or too cold.
- Know possible signs and symptoms of COVID-19 infection in babies. Babies under 1 year old might be more likely to have severe illness from COVID-19 than older children, but most babies who test positive for COVID-19 have mild or no symptoms.
- Don't skip baby's healthcare appointments.
- Newborn visits (which is the first visit of a newborn to a healthcare provider) should be done in person, if possible.

Home Care/Telehealth Considerations

The following steps should be followed by the new parent, family/household member or caregiver at home, and should be included in the follow-up checklist during telehealth sessions for homecare:

- Stay home.
- Limit visitors and isolate from people who are not members of the household.
- Wear a mask in shared spaces. Do not put a face shield or mask on your baby.
- Wear a well-fitting mask within 6 feet of the newborn the entire time you are in isolation or quarantine.
- Clean home daily, especially commonly touched surfaces with soap and water or disinfectant. If someone is sick or has tested positive for COVID-19, disinfect more frequently (at least twice a day). This includes tables, doorknobs, light switches, countertops, handles, desks, phones, toilets, faucets, and sinks.
- If the newborn develops symptoms the newborn should be taken to a healthcare provider immediately. Reported symptoms in newborns with COVID-19 include:
  - Fever
  - Runny nose
  - Cough
  - Vomiting

- Vomiting
- Diarrhea
- Poor feeding
- Trouble breathing
- Being overly lethargic, listless, lacking in energy or inactive

Essential Child Health

Essential child health services

- Prioritize primary series vaccinations, especially for measles-rubella- or poliomyelitis-containing vaccines and other combination vaccines.
- Prioritize vaccination for diseases with risk of outbreaks: measles, polio, diphtheria, and yellow fever.
- Prioritize pneumococcal and seasonal influenza vaccines for vulnerable population groups.

- Provide diagnostic testing for infants and children exposed to HIV (or other diseases) per national algorithms/guidelines
- Intensify effort to detect and monitor nutritional status using low-literacy/numeracy tools including Mid-Upper Arm Circumference (MUAC) tapes

Disclaimer:

CDC operational considerations documents and/or resources are developed in partnership with global partners and specifically designed as reference guides in non-U.S. settings. CDC guidelines are intended for a U.S. audience and not meant to supersede guidance issued by the World Health Organization or any country.

Resources & References

Vaccination in Pregnancy Resources

- Questions and Answers: COVID-19 vaccines and pregnancy (who.int)
- COVID-19 Vaccines While Pregnant or Breastfeeding
- COVID-19 Vaccines for People Who Would Like to Have a Baby
- COVID-19 among Pregnant and Recently Pregnant People
- COVID Data Tracker
  - Vaccination Among Pregnant People
  - Data on COVID-19 during Pregnancy: Severity of Maternal Illness
- Toolkit for Pregnant People and New Parents
- Building Confidence in COVID-19 Vaccines

Treatment in Pregnancy Resources

- Therapeutics and COVID-19: living guideline (who.int)
- United Nations Medical Directors COVID-19 Pandemic Guidelines
- Guidelines for Pregnancy Management During the COVID-19 Pandemic: A Public Health Conundrum (nih.gov)
- Pregnancy and COVID-19: pharmacologic considerations – PubMed (nih.gov)
- Care of the pregnant woman with coronavirus disease 2019 in labor and delivery: anesthesia, emergency cesarean delivery, differential diagnosis in the acutely ill parturient, care of the newborn, and protection of the healthcare personnel – PubMed (nih.gov)

- Placental transfer and safety in pregnancy of medications under investigation to treat coronavirus disease 2019 – PubMed (nih.gov)

- Putting It All Together: Clinical Considerations in the Care of Critically Ill Obstetric Patients with COVID-19 – PubMed (nih.gov)
- Clinical manifestations, risk factors, and maternal and perinatal outcomes of coronavirus disease 2019 in pregnancy: living systematic review and meta-analysis – PubMed (nih.gov)

Other References

- DeSisto CL, Wallace B, Simeone RM, et al. Risk for Stillbirth Among Women With and Without COVID-19 at Delivery Hospitalization — United States, March 2020–September 2021. MMWR Morb Mortal Wkly Rep 2021;70:1640–1645. DOI: http://dx.doi.org/10.15585/mmwr.mm7047e1
- Blackwell, N. et.al. (2015) Mothers Understand And Can do it (MUAC): a comparison of mothers and community health workers determining mid-upper arm circumference in 103 children aged from 6 months to 5 years. (Arch Public Health. 2015 May 18;73(1):26. https://pubmed.ncbi.nlm.nih.gov/25992287/
- COVID-19 vaccination during pregnancy and first-trimester miscarriage.
- Paul, Sangeeta. (2022, February 08). Impact of SARS-CoV-2 infection in pregnant women on maternal and perinatal outcomes. News-Medical. Retrieved on February 17, 2022 from https://www.news-medical.net/news/20220208/Impact-of-SARS-CoV-2-infection-in-pregnant-women-on-maternal-and-perinatal-outcomes.aspx .
- Pediatric Emergency Department Visits Associated with Mental Health Conditions Before and During the COVID-19 Pandemic — United States, January 2019–January 2022. Radhakrishnan L, Leeb RT, Bitsko RH, et al. MMWR Morb Mortal Wkly Rep 2022;71:319–324. DOI: http://dx.doi.org/10.15585/mmwr.mm7108e2
- Clinical manifestations, risk factors, and maternal and perinatal outcomes of coronavirus disease 2019 in pregnancy: living systematic review and meta-analysis. Allotey J et.al. BMJ. 2020 Sep 1;370:m3320. doi: 10.1136/bmj.m3320. PMID: 32873575; PMCID: PMC7459193.
- Pregnancy influences immune responses to SARS-CoV-2. Cristian Ovies et.al.,Science Translational Medicine, **13**, 617, (2021). /doi/10.1126/scitranslmed.abm2070
- Colombia Increases Surveillance to Protect Pregnant Women Against COVID-19 | Division of Global Health Protection | Global Health | CDC

Other Resources

- Technical Guidance for Prioritizing Adolescent Health
- UNFPA Adolescent Sexual and Reproductive Health Toolkit for Humanitarian Settings
- How to plan and conduct telehealth consultations with children and adolescents and their families (who.int)
- COVID-19-Associated Orphanhood and Caregiver Death in the United States – PubMed (nih.gov)
- Webinar: Ending child marriage in the time of COVID-19: What role for parliaments? (who.int)
- 10 million additional girls at risk of child marriage due to COVID-19 (unicef.org)
- Pregnant and Recently Pregnant People | CDC
- Investigating the Impact of COVID-19 during Pregnancy | CDC
- WHO Recommendations on Antenatal Care for a Positive
- Pregnancy Experience
- UNFPA COVID-19 Technical Brief for Antenatal Care Services
- Urgent Maternal Warning Signs | CDC
- Pregnancy Wheel Adaptations Empower Community Health Workers | Division of Global Health Protection | Global Health | CDC

Global Health | CDC

- Considerations for Inpatient Obstetric Healthcare Settings | CDC

- Acceptability of ENG-releasing subdermal implants among postpartum Brazilian young women during the COVID-19 pandemic – PubMed (nih.gov)
- The impact of the COVID-19 pandemic on postpartum contraception planning – PubMed (nih.gov)
- The negative impact of COVID-19 on contraception and sexual and reproductive health: Could immediate postpartum LARCs be the solution? – PubMed (nih.gov)
- Caring for Newborns | COVID-19 | CDC
- Maternal Death Surveillance and Response

References

1. Elston, J. W. T., et al. 2017. "The health impact of the 2014–15 Ebola outbreak." Public Health 143: 60-70.
2. Jones, S. A., et al. 2016. "'Women and babies are dying but not of Ebola': the effect of the Ebola virus epidemic on the availability, uptake and outcomes of maternal and newborn health services in Sierra Leone." 1(3): e000065.

Last Updated June 21, 2022