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The Maternal and Child Survival Program's Zika Response Activities End-of-Project Report

June 1, 2016–September 30, 2019

The Maternal and Child Survival Program (MCSP) is a global, \$560 million, 5-year cooperative agreement funded by the United States Agency for International Development (USAID) to introduce and support scale-up of high-impact health interventions among USAID's 25 maternal and child health priority countries, as well as other countries. MCSP is focused on ensuring that all women, newborns and children most in need have equitable access to quality health care services to save lives. MCSP supports programming in maternal, newborn and child health, immunization, family planning and reproductive health, nutrition, health systems strengthening, water/sanitation/hygiene, malaria, prevention of mother-to-child transmission of HIV, and pediatric HIV care and treatment.

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Abbreviations

AGOG	Association for Gynecologists and Obstetricians of Guatemala
AIUM	American Institute of Ultrasound in Medicine
ASSIST	Applying Science to Strengthen and Improve Systems
AVF	Altino Ventura Foundation
CARPHA	Caribbean Public Health Agency
CAZ	Community Action on Zika
CRMA	Caribbean Regional Midwives Association
CZS	Congenital Zika syndrome
EBF	Exclusive breastfeeding
ECD	Early childhood development
ECSB	Essential Care for Small Babies
ES	Early stimulation
ESC	Eastern and Southern Caribbean
FP	Family planning
GRENCASE	Grenada Citizen Advice and Small Business Agency
HBB	Helping Babies Breathe
IADB	Inter-American Development Bank
LAC	Latin American and the Caribbean
MCSP	Maternal and Child Survival Program
MNH	Maternal and Newborn Health
MOH	Ministry of Health
MOHSSIB	Ministry of Health, Social Security, and International Business
MOHW	Ministry of Health and Wellness
MOPH	Ministry of Public Health
NCRHA	North Central Regional Health Authority
PAHO	Pan American Health Organization
PASMO	Pan American Social Marketing Organization
PNC	Postnatal care
PPFP	Postpartum family planning
PSS	Psychosocial support
PHEIC	Public health emergency of international concern
QI	Quality improvement
SBCC	Social and behavior change communication
SMFM	Society for Maternal-Fetal Medicine

STTA	Short-term technical assistance
TES	Therapeutic early stimulation
TOT	Training of trainers
TWG	Technical working group
USAID	US Agency for International Development
US NIH	US National Institute for Health
WHO	World Health Organization
WINDREF	Windward Islands Research and Education Foundation
ZIKV	Zika virus

Zika Response Activity Overview

In February 2016, the World Health Organization (WHO) announced that the recent cluster of microcephaly cases and other neurological disorders reported in Brazil, following a similar cluster in French Polynesia in 2014 (both areas affected by a Zika virus [ZIKV] outbreak), constituted a Public Health Emergency of International Concern. The US Agency for International Development (USAID)'s flagship Maternal and Child Survival Program (MCSP) responded to the outbreak in June 2016 with an initial focus on Latin America and the Caribbean (LAC) and later the Eastern and Southern Caribbean (ESC) region.

As the ZIKV epidemic in the Americas evolved, significant challenges became apparent in the affected health systems' capacity to address prevention, surveillance, and management of infectious disease, congenital defects, and their consequences. Since the beginning of ZIKV response efforts, MCSP focused on developing and implementing strategies to increase the capacity of these health systems to care for women of reproductive age, pregnant women, newborns, infants, children, and families at risk of and affected by ZIKV infection. Through activities at global, regional, and country levels, MCSP provided technical leadership on issues related to the ZIKV outbreak response, particularly with regard to the care and support of ZIKV-affected children and their families. MCSP leveraged relationships with a range of global-, regional-, and country-level partners, and collaborated with ministries of health (MOHs) and professional associations to address these gaps in health system and provider capacity to care for those affected by ZIKV.

In 2016 and 2017, MCSP provided technical leadership in regional and global fora on high-quality care in pregnancy and of newborns within the context of the ZIKV outbreak, and supported the development, adaptation, and dissemination of updated guidelines and reference materials related to ZIKV at the global level. In Haiti, MCSP conducted a technical review of ZIKV-related social and behavior change communication and clinical standardization materials. MCSP also worked with the Ministry of Public Health and Population to increase the capacity of frontline health providers to provide Zika infection prevention counseling and management, follow recommended surveillance standards, and establish a referral system for women who were pregnant or planning on becoming pregnant in the near future.

In 2018 and 2019, activities built upon MCSP's extensive experience providing technical assistance in maternal and newborn health, family planning, early childhood development (ECD), service delivery strengthening, and facility-based quality improvement (QI). MCSP responded directly to needs defined by MOHs in five ESC countries, Barbados, Grenada, Guyana, St. Lucia, and Trinidad and Tobago, chosen in collaboration with USAID Washington and the ESC Mission, and developed individual country work plan objectives, with foci on improving the quality of facility-based postnatal care (PNC) service delivery and strengthening Essential Care for Small Babies (ECSB) and ECD services, specifically for children 0–3 years old. Other efforts included providing technical resources and information, sharing the latest evidence, developing and disseminating materials, linking with regional and national professional associations, addressing key gaps in relevant commodities, and promoting mPowering's online portal, ORB. Although MCSP did not work directly on the ZIKV response in Rajasthan, India, MCSP shared all MCSP ZIKV-related resources with the local government in Rajasthan to support ZIKV outbreak response activities in Jaipur.

Figure 1. MCSP Zika response geographic and technical focus areas



Program Highlights/Executive Summary

Global and Technical Leadership

Since June 2016, MCSP has contributed to USAID's efforts to expand global leadership in the regional ZIKV response and technical assistance to countries impacted by the growing epidemic in the LAC region (Figure 1). MCSP and other implementing partners hosted a regional workshop in Trinidad and Tobago in June 2018, which included 85 representatives from 18 countries impacted by the ZIKV outbreak. This workshop provided technical and programmatic updates from the USAID-funded partners and subawardees working on ZIKV in the region, and resulted in clinical guideline updates at the country level. In addition, the workshop jump-started the formation of a regional ZIKV-focused technical working group focusing on care and support for ZIKV-affected infants and children that has broader applicability to care and support for children with disabilities.

At the global level, MCSP continued to act as co-chair of the LAC Neonatal Alliance, providing technical leadership related to the ZIKV response through participation in global and regional events organized by USAID, the Pan American Health Organization (PAHO), and partner organizations. Through these opportunities, MCSP supported the development and dissemination of updated guidelines and reference materials related to ZIKV infection and ECSB, ensuring that health care providers in ZIKV-affected areas received evidence-based guidance related to ZIKV prevention and care and to support of newborns and families affected by ZIKV infection.

From April 22-26, 2019, MCSP participated in a final regional conference in Panama, collaborating with USAID's Applying Science to Strengthen and Improve Systems (ASSIST) to convene and engage MOH representatives and partners to discuss care and support of children and families affected by ZIKV. The conference served as a platform to disseminate MCSP's innovative approaches and lessons learned providing developmental support to children with congenital Zika syndrome (CZS).

Development and Dissemination of Tools and Materials

During the rapid spread of the outbreak in 2016, MCSP, in collaboration with USAID ASSIST and K4Health, conducted a rapid review of existing tools and materials related to ZIKV for providers and lower-level systems managers, including job aids, training materials, and resources for local health authorities across the continuum of preconception, pregnancy, birth, newborn health, and ECD. The findings of this analysis, which noted gaps in technical content and inconsistent messages on effective strategies for prevention of ZIKV infection, guided the adaptation of existing materials and development of new materials for providers and health facility managers related to ZIKV infection and prevention. Over the course of the project, MCSP developed 30 new materials related to the ZIKV outbreak response. Please refer to Annex IV for a comprehensive list.

Building on the design and results of MCSP's obstetric ultrasound capacity assessment in the region, MCSP presented and shared ultrasound assessment tools and related guidance at five conferences following the assessment, and provided tools (translated into Spanish and French) to PAHO for future use.

Availability of ZIKV Response Materials on ORB

MCSP worked with mPowering Frontline Health Workers to strengthen and increase the functionality of the [ORB content platform](#), an online repository of resources that houses digital content, such as job aids, training packages, eLearning modules, and videos, to be used by frontline health workers. MCSP translated the ORB platform into Spanish across all technical areas and added a Zika domain to upload ZIKV-related materials, including printable files of MCSP Zika Pregnancy Wheels and accompanying briefers in English, Haitian Creole, French, Portuguese, and Spanish; the Long-Acting Reversible Contraceptives Learning Resource Package; and the MCSP training packages for early stimulation (ES), therapeutic early stimulation (TES), and psychosocial support (PSS). In total, MCSP uploaded [69 ZIKV-related resources to ORB](#).

Ultrasound Capacity Assessment

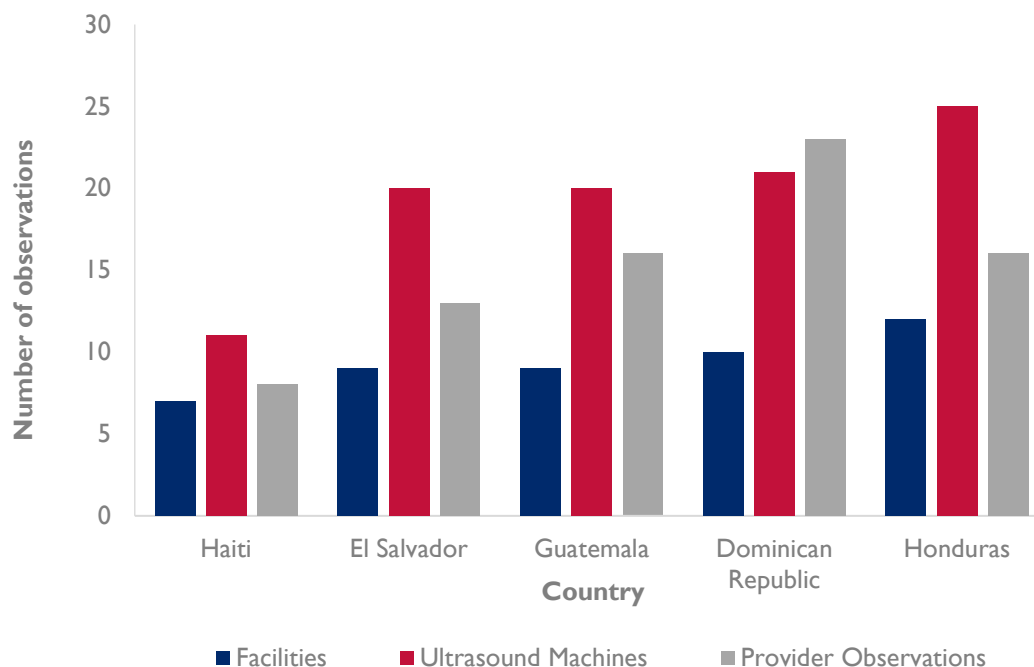
The impact of global recommendations for antenatal ultrasonography to evaluate pregnancies for potential fetal abnormalities consistent with CZS may be limited by the quality of ultrasound examination. Ultrasound quality is known to be highly dependent on both the skills of the ultrasound provider and the technical capacity of their equipment. Gaps in obstetric ultrasound capacity, including in identifying features consistent with CZS before delivery, may contribute to inefficient and ineffective ultrasound referral patterns following suspected ZIKV infection in pregnancy. Such gaps also impede health providers' ability to provide comprehensive counseling to pregnant women and families on prognosis for infants and family preparations for a ZIKV-affected newborn.

MCSP collaborated with USAID ASSIST, the American Institute of Ultrasound in Medicine (AIUM), and the Society for Maternal-Fetal Medicine (SMFM) to design and conduct a rapid obstetric ultrasound capacity assessment in five USAID priority countries in the LAC region: the Dominican Republic, El Salvador, Guatemala, Haiti, and Honduras. The objectives included (1) assessment of obstetric ultrasound providers to detect features of CZS, (2) assessment of ultrasound equipment and service delivery environment used by providers included in the assessment, and (3) collection of key data to inform referral pathways for pregnant women with suspected or confirmed ZIKV infection.

Across the five countries, the team assessed the functionality of 97 ultrasound machines, completed 76 service delivery observations, conducted 65 provider interviews, and carried out 49 ultrasound practice interviews (Figure 2). After analyzing data from these surveys, MCSP, ASSIST, AIUM, and SMFM developed priority recommendations for country governments. Guidance included building the capacity of providers to conduct all routine elements of obstetric ultrasound (including gestational age assessment and basic anatomic survey) and survey all potential findings known to be associated with CZS. MCSP recommended the development of onsite, evidence-based standards for clinical management of cases of suspected ZIKV infection in pregnancy, collaboration with professional ultrasound societies, national endorsement of a basic standard of obstetric ultrasound, and sharing of guidelines within pre- and in-service education. Findings from the assessment were shared via five country-specific reports with USAID headquarters, USAID Missions, and MOHs. The assessment team developed a separate report for USAID headquarters to summarize findings across all five countries.

In accordance with USAID guidance, USAID resources were not used to support funding, procuring, refurbishing, or supporting maintenance of ultrasound equipment or standalone training of providers, especially advanced training on detection of fetal anomalies, regardless of possible Zika infection or other infections contracted during pregnancy.

Figure 2. Total number of health facilities, ultrasound machines, and provider observations conducted, by country



Technical Assistance to ESC Region

At end of 2017, the US Agency for International Development (USAID) requested that MCSP begin providing technical assistance to five countries in the ESC region to strengthen health system and provider capacity in ongoing ZIKV response efforts. MCSP conducted rapid scoping visits and held meetings with MOHs and regional partners to assess needs and identify priorities in each of the five countries, acknowledging that the outbreak was already waning at this point. These visits contributed to context-specific country work plans that focused on using data to improve services and building capacity for inpatient and outpatient reproductive, maternal, newborn, and child health providers across the continuum of care. MCSP implemented activities through subawardees, short-term technical assistance (STTA), and ongoing remote support, working in partnership with host governments, regional professional associations, local nongovernmental organizations, private-sector service delivery sites, and universities. Main results included:

- MCSP developed ES, TES, and PSS training packages, and conducted national workshops for health care and special education providers to integrate these packages into routine service delivery activities. MCSP supported institutionalization of ECD activities through revision and development of ECD policy and curricula in Guyana, Barbados, and St. Lucia.
- MCSP held a subregional ECSB training of trainers (TOT) in Trinidad and Tobago. Master trainers from the TOT, together with MCSP headquarters, co-led national workshops in Barbados, Grenada, Guyana, St. Lucia, and Trinidad and Tobago to improve health providers' capacity to classify and provide essential care to small babies, including skin-to-skin care, nasogastric tube feeding, and daily assessments. Identification at birth and follow-up of infants with suspected and confirmed CZS were included in the curriculum. In 2017, the MCSP Zika response team held national TOTs in Guatemala, El Salvador, and Paraguay as part of the MCSP ZIKV response. Following the training in El Salvador, the country's MOH included ECSB in the updated national guidelines of integrated management of the newborn as part of in-service continuing education programs. A total of 254 health providers were trained in the LAC region under the MCSP Zika response program. Plans for scale-up exist in all countries.

- MCSP worked closely with the Caribbean Regional Midwives Association (CRMA) to implement QI activities, with particular focus on PNC service delivery elements related to the ZIKV response, such as postpartum family planning (PPFP), an effective strategy for preventing unplanned pregnancies, including those impacted by ZIKV infection. Using MCSP's Data Use Package, MCSP and CRMA collaborated with the MOHs in Guyana, St. Lucia, and Barbados to build facility capacity to improve quality of care. MCSP provided STTA to Barbados, St. Lucia, and Guyana, working with a total of 72 health providers across 36 facilities on technical updates in ZIKV, family planning, and maternal and newborn health. Health providers learned how to develop QI plans based on identified needs and address these needs using QI tools and processes. Teams then returned to their facilities to introduce QI plans and adapt them further to the facility context if necessary. MCSP worked with clinical mentors embedded within public-sector health systems and identified by CRMA and MOHs to provide monthly support and mentoring visits to assist staff in implementing QI and improving quality of services. Ten facilities in Barbados, 10 facilities in Guyana, and 13 facilities in St. Lucia implemented QI plans in an effort to improve quality of routine PNC, with several common indicators across the majority of facilities, such as exclusive breastfeeding and PPFP counseling and uptake, two areas with particular relevance to PNC in the context of the ZIKV response.

Progress Narrative and Activity Implementation

Provide Global Technical Leadership by Participation in Key Global and Regional Fora to Share and Disseminate Information, Tools, and Resources

Latin America and the Caribbean Neonatal Alliance

The Maternal and Child Survival Program (MCSP) provided technical leadership as co-chair of the Latin America and the Caribbean (LAC) Neonatal Alliance (an interagency group formed in 2005 to reduce newborn mortality and morbidity in the region), supported the development and regional dissemination of key documents produced by MCSP, and updated global guidelines and reference materials related to Zika virus (ZIKV) infection. The LAC Neonatal Alliance has a broad regional membership, consisting of 20 members, including UN agencies, such as the Pan American Health Organization (PAHO), the United Nations Population Fund, and UNICEF; ministries of health (MOHs); and regional professional societies (obstetricians and gynecologists, nurses, nurse-midwives, and pediatricians). It was therefore well positioned to facilitate the regional dissemination of materials to health providers in the public and private sectors. The LAC Neonatal Alliance kept partners engaged and gave them access to pertinent information related to the ZIKV response via teleconferences, social media, webinars, and electronic formats (communities of practice and e-newsletters). This ensured that health care providers in ZIKV-affected areas received the most up-to-date information and guidance related to ZIKV prevention and care of newborns and families affected by ZIKV.

Webinars

MCSP collaborated with Applying Science to Strengthen and Improve Systems (ASSIST), PAHO, and the International Planned Parenthood Federation to present four webinars on a variety of topics related to the ZIKV response in LAC. The webinars focused on congenital Zika syndrome (CZS), contraception services in the ZIKV context, bases for a model of integrated care and support for babies and families affected by ZIKV, and the implications of the ZIKV epidemic on the health of women and newborns in the Americas. MCSP disseminated event dates via the LAC Neonatal Alliance, and over 150 attendees in LAC attended each webinar. The webinars also discussed the work conducted by MCSP and other partners in the region. Please see Annex III for additional details.

Subaward for Association for Gynecologists and Obstetricians of Guatemala

MCPS provided the Association for Gynecologists and Obstetricians of Guatemala (AGOG) with a subaward to adapt and disseminate existing ZIKV-related materials for a private-sector audience. Through the subaward, AGOG adapted and validated 14 ASSIST and Pan American Social Marketing Organization (PASMO) ZIKV-related materials, developed three podcasts on ZIKV general and clinical information, and attended the National Congress of Medicine in Guatemala City in November 2018, where it distributed 2,000 PASMO and ASSIST ZIKV-related materials and hosted three symposia on ZIKV in the towns of Escuintla (29 participants), Quetzaltenango (43 participants), and Petén (39 participants).

Subregional Workshop

MCSP facilitated the Subregional Workshop on Care for ZIKV-Affected Infants and Families on June 27–28, 2018, in Port of Spain, Trinidad and Tobago, in collaboration with the Trinidad and Tobago MOH, ASSIST, the Caribbean Regional Midwives Association (CRMA), and other partners. Approximately 85 representatives from 18 countries participated, including representatives from the ASSIST-supported countries of Antigua and Barbuda, Dominica, St. Vincent and the Grenadines, Jamaica, and St. Kitts and Nevis.

The workshop led to the following results:

- Participants received technical and programmatic updates related to postnatal care (PNC), infant care, and early childhood development (ECD) in the context of the ZIKV outbreak in the region.
- MCSP organized a regional Zika technical working group (TWG) to support the care of children and families affected by ZIKV in the Eastern and Southern Caribbean (ESC) region. The ESC Zika TWG convenes monthly to respond to the needs identified by MOHs and professional associations, including technical document review, webinars, translation, and dissemination of materials.
- Georgetown Public Hospital Corporation in Guyana started implementing kangaroo mother care, with support from MCSP for initial orientation of its staff.
- Representatives from Barbados committed to updating the screening threshold for referral based on measurement of newborn head circumference.



Colleagues from the Guyana MOH and others attending MCSP's subregional workshop.
Photo by Rebecca Bardet, MCSP.

Summary of Regional and Global Fora with MCSP Participation

Over the course of MCSP Zika Response activities, technical advisors and program implementers participated in a variety of global and regional fora. Conference foci included ECD; care and support of Zika-affected infants, children, and families; and social and behavior change communication. MCSP presented and disseminated the suite of ZIKV-related materials, such as the Zika pregnancy wheel, ECD training packages, PNC poster and checklist with Zika-specific content, and the Long-Acting Reversible Contraceptives Learning Resource Package, with regional audiences. During these conferences, MCSP contributed to strategic discussions to inform global priorities and guidance for strengthening care and support of Zika-affected infants and their families. For a full list of conferences where MCSP Zika response staff attended, facilitated, or presented, see Annex III.

Conferences Attended by, Facilitated by, and/or with Presentations by MCSP Zika Response Staff

- Noguchi L. 2016. Family planning training resource package. Presented at: Regional Meeting of the Implementing Best Practices Initiative, LAC: Responding to the Unmet Need for Contraception with Evidence and High-Impact Best Practices during times of Zika; June 13–15; Lima, Peru.
- Mazia G. 2016. PAHO Meeting on CZS; July 19–21; Recife, Brazil.

- Mazia G, Duran P. 2016. CZS in the Context of the Zika Epidemic [webinar]; August 9.
- Noguchi L. 2016. Zika Webinar for USAID Implementing Partners [webinar]; July 7.
- Noguchi L. 2016. Infectious Diseases Society for Obstetrics and Gynecology Annual Meeting; August 11–13; Annapolis, Maryland.
- Mazia G. 2016. LAC Conference to Reduce Inequalities in Sexual and Reproductive Health; September 6–8; Cartagena, Colombia.
- Noguchi L. 2016. USAID Zika Vector Control Partners Meeting; August 29; Arlington, Virginia.
- Noguchi L, Kellerstrass A. 2016. USAID Zika Communication and Community Engagement Workshop; November 14–19; Panama City, Panama.
- Kellerstrass A. 2016. mPowering's ORB platform. Presented at: Connected Health Conference; December 13–14; National Harbor, Maryland.
- Hathaway M. 2017. Zika: A Sobering Challenge to the Family Planning Community. Presented at: National Family Planning and Reproductive Health Association Annual Conference; March 5–8; Washington, DC.
- Chakhtoura N. 2017. NICHD's Zika Response Efforts over the Past Year. Presented at: MCSP offices; May 16; Washington, DC.
- Noguchi L. 2017. ZIKV in the Americas: Responding to the Evolving Epidemic and Implications for Clinical Practice. Presented at: American College of Nurse-Midwives Annual Meeting; May 20–24; Chicago, Illinois.
- Noguchi L. 2017. Obstetric Ultrasound Capacity for Detection of CZS in Latin America and the Caribbean. Presented at: Gottsfeld-Hohler Memorial Foundation Think Tank: ZIKV and Adverse Perinatal Outcomes; June; Fort Lauderdale, Florida.
- Noguchi L. 2017. International Confederation of Midwives Triennial Congress; June 18–22; Toronto, Canada.
- Mazia G. 2017. Experiences between Neonatal Care Units and Other Levels of Care. Presented at: PAHO Meeting: Care and Support for Families with Children with Disabilities and Growth Retardation from Social and Health Services at the First Level; June; Washington, DC.
- Fiekowsky E. 2017. World Sexually Transmitted Infection and HIV Congress; July 9–12; Rio de Janeiro, Brazil.
- Gomez PI, Martinez K, Vargas J. 2017. Contraception Services in the Zika Context – Is Latin America Up to the Challenge? [webinar]; August 2.
- Kallam B. 2017. Development of Obstetric Ultrasound Service Delivery Assessment Tools in the Context of the ZIKV Epidemic in Five USAID Priority Countries. Presented at: Infectious Diseases Society for Obstetrics and Gynecology Annual Meeting; August 10–12; Park City, Utah.
- Krubiner C. 2017. Pregnant Women and the ZIKV Vaccine Research Agenda [webinar]; September.
- Mazia G. 2017. Upcoming Priorities in Newborn Health. Presented at: PAHO Meeting for Surveillance and Management of Congenital Malformations; September 12–14; Bogota, Colombia.
- Hathaway M. 2017. MCSP Resource: Long-Acting Reversible Contraceptives Learning Resource Package. Presented at: PAHO Meeting for Surveillance and Management of Congenital Malformations; September 12–14; Bogota, Colombia.

- Hathaway M. 2017. ZIKV Update: Infection Prevention and Family Planning Counseling. Presented at: Contemporary Forums for Women's Health and OB/GYN Care; September 21–23; Washington, DC.
- Noguchi L. 2017. Regional Meeting on Respectful Maternity Care; October 17–18; Port of Spain, Trinidad and Tobago.
- Kellerstrass A. 2017. Development of Obstetric Ultrasound Service Delivery Assessment Tools in the Context of the ZIKV Epidemic in Five USAID Priority Countries. Presented at: Johns Hopkins University Digital Health Day; October 18; Baltimore, Maryland.
- Mazia G. 2017. Bases for a Model of Integrated Care and Support for Babies and Families Affected by Zika [webinar]; November 6.
- Noguchi L. 2017. American Society of Tropical Medicine and Hygiene Annual Meeting; November 7–8; Baltimore, Maryland.
- Mazia G. 2017. International Clearinghouse for Birth Defects Surveillance and Research Birth Surveillance Workshop and the International Conference on Birth Defects and Disabilities in the Developing World; November 7–9; Bogota, Colombia.
- Noguchi L. 2017. Vaccines for Emerging and Re-Emerging Pathogens toward Guidance on Meeting the Needs of Pregnant Women Workshop by Pregnancy Research Ethics for Vaccines, Epidemics, and New Technologies; November 9; Baltimore, Maryland.
- 2017. Fourth Global Forum on Human Resources for Health; November 13–17; Dublin, Ireland.
- 2017. ASSIST's International Workshop for Strengthening Health Services to Fight Zika; November 28–30; Santo Domingo, Dominican Republic.
- Noguchi L. 2018. Zika: Update on the Global Epidemic. Presented at: Department of Obstetrics and Gynecology at Washington Hospital Center Grand Rounds; February; Washington, DC.
- Duran P. 2018. Two Years Later: Implications of the Zika Epidemic on the Health of Women and Newborns in the Americas, Current and Future Challenges [webinar]; February 21.
- Noguchi L. 2018. WHO Technical Consultation on Postnatal Care Implementation; February 19–22; Geneva, Switzerland.
- Noguchi L. 2018. Caribbean Public Health Agency Pregnancy Registry Design Meeting; March 5–6; Port of Spain, Trinidad and Tobago.
- Noguchi L. 2018. Development of Obstetric Ultrasound Service Delivery Assessment Tools in the Context of the ZIKV Epidemic in Five USAID Priority Countries. Presented at: AIUM Conference; March 24–25; New York City.
- 2018. Amplifying Community Voices. Presented on panel at: International Social and Behavior Change Communication Summit; April 12–20; Bali, Indonesia.
- Noguchi L. 2018. Allies in Maternal and Newborn Care: Strengthening Services through Maternal Immunization; May 2–5; Amsterdam, Netherlands.
- Lathrop E. 2018. Caribbean Public Health Agency Pregnancy Registry Design Meeting; May 21; Kingston, Jamaica.
- Noguchi L. 2018. ZIKV in the Americas: Where Are We Now? Presented at: American College of Nurse-Midwives Annual Meeting; May 20–24; Savannah, Georgia.

- Multiple MCSP attendees. 2018. MCSP Subregional Workshop on the Care of Infants and Their Families Affected by Zika in English-Speaking Caribbean Countries; June 26–29; Port of Spain, Trinidad and Tobago.
- Noguchi L. 2018. Development of Obstetric Ultrasound Service Delivery Assessment Tools in the Context of the ZIKV Epidemic in Five USAID Priority Countries. Presented at: US Centers for Disease Control and Prevention’s International Conference on Emerging Infectious Diseases; August 28; Atlanta, Georgia.
- Hathaway M. 2018. Development of Obstetric Ultrasound Service Delivery Assessment Tools in the Context of the ZIKV Epidemic in Five USAID Priority Countries. Presented at: International Federation of Gynecology and Obstetrics; August 28; Rio de Janeiro, Brazil.
- 2018. ZERO TO THREE Annual ECD Conference; October 3–5; Denver, Colorado.
- Hathaway M. 2019. Results for Contraceptive Choice Stakeholder Consultation; January 23–24; Washington, DC.
- 2019. K4Health Zika Share Fair; April 1–3; Dominican Republic.
- Pisani L. 2019. Recent Evidence from Integrated ECD Initiatives. Presented at: Comparative and International Education Society Annual Conference; April 14–19; San Francisco, California.
- Lara F. 2019. Framing Presentation - Thematic Topic #4: Building Bridges between Facility, Community and Family-Based Care. Presented at: USAID ASSIST Care and Support for Children and Families Affected by CZS Meeting; April 24–26; Panama City, Panama.
- Quintanar M. 2019. MCSP Zika Response Activities in the Latin American and Caribbean Region - Thematic #1: Screening, Locating Infants Affected by CSZ and Linking Them to Health Services. Presented at: USAID ASSIST Care and Support for Children and Families Affected by CZS Meeting; April 24–26; Panama City, Panama.
- Noguchi L, Krubiner C, Oster E, Sripath P. 2019. Pregnancy and Parenting: Evidence for Empowered and Informed Practice Panel. Presented at: Center for Global Development; June 10.
- Noguchi L. 2019. Presented at: MCSP Technical Consultation on Improving the Quality of Gestational Age Assessment in Low-Resource Settings; May 30.
- Noguchi L. 2019. Families First: Improving Services and Support for Affected Families Panel. Presented at: K4Health Learning from Zika; June 11.
- Hathaway M. 2019. Family Planning to the Rescue! Presented at: K4Health Learning from Zika; June 11.

Adapt, Develop, and Disseminate Tools and Resources Related to Identification and Care of ZIKV-Affected Infants and Their Families

Landscape Analysis of Existing Tools and Materials Related to Zika

MCSP conducted a rapid landscape analysis to determine the need for updated, evidence-based tools and materials to support clinicians and health system managers responding to the ZIKV epidemic. MCSP designed the landscape analysis parameters with input from ASSIST and K4Health, and worked with a consultant to create an evaluation checklist and collect materials. The objectives of the landscape analysis were to: (1) collect training resources and job aids that address prevention of ZIKV infection and management of complications, (2) identify gaps in messaging or target populations within collected tools, and (3) support the identification and prioritization of tools for development and adaptation. MCSP collected

existing materials for providers, health system managers, and local health authorities, including provider job aids, client resources, training materials, and other resources, across the continuum of care. Materials were included in English, Spanish, French, Haitian Creole, and Portuguese, and identified by MCSP and other implementing partners, professional associations, and publicly available websites. The landscape analysis team collected a total of 131 ZIKV-related materials from 39 countries. Of these materials, the majority were published by country governments and regional normative agencies. Most were targeted toward health providers and written in English or Spanish, with approximately half of the materials updated since 2015. The landscape analysis found existing materials were targeted to both the general public and health providers. They focused on care-seeking behavior, symptom recognition, and vector-borne transmission. Some materials included recommendations on prevention of sexual transmission, screening and management of newborns with possible CZS, and/or psychosocial support (PSS) for families. The analysis identified the largest gaps in the lack of materials that addressed family planning for prevention of ZIKV-affected pregnancies, clinical recommendations for newborns with ZIKV-related congenital anomalies, ECD, support for ZIKV-affected families, and expanding the target audience to include more adolescents, men, and unmarried clients.

Based on the initial rapid landscape analysis and in response to evolving global and regional needs, the MCSP Zika response team developed materials to address a variety of needs within the ZIKV epidemic. In consultation with ASSIST and other partners, MCSP adapted, translated, and developed materials, including technical briefers, training packages for health providers, job aids, and technical standardization guidance, among others. Key audiences for these materials were frontline providers working in maternal and newborn health and in ECD service delivery settings across the LAC region, community-level beneficiaries, local and regional professional associations, MOHs, USAID Missions, and other USAID implementing partners. MCSP disseminated the materials through short-term technical assistance (STTA) visits, conference attendance, e-blasts, listservs, social media, USAID ZIKV implementing partners' meetings (including the Zika Communications Network), and the ORB online platform.

A variety of ZIKV-related materials were developed through local partnerships in the ESC region from 2017–2019. The Trinidad and Tobago North Central Regional Health Authority (NCRHA) led the development of six posters and six brochures focusing on ZIKV and ECD. In Grenada, MCSP's local partner Grenada Citizen Advice and Small Business Agency (GRENCASE)'s Roving Caregivers Programme produced a short video aimed at parents of children of all abilities to demonstrate and advocate for early stimulation (ES)

therapies for children ages 0–3. In the final year of the MCSP Zika response, MCSP provided a subaward to AGOG for the adaptation of already USAID-approved ASSIST and PASMO ZIKV-related materials for a private-sector audience. AGOG brought together panels of technical experts to systematically review, adapt, and validate 14 materials—10 for printing and dissemination, and four for digital reproduction. AGOG also developed three podcasts that aired in May 2019 and are available on AGOG's website and Facebook page. The materials and podcasts are listed in Annex IV. AGOG also printed and disseminated ASSIST ZIKV-related materials for the private sector in Guatemala.

Over 25,000 Zika Pregnancy Wheels disseminated to PAHO, USAID ASSIST, LAC Neonatal Alliance and others in 18 countries

The MCSP Zika Pregnancy Wheel was created in collaboration with PAHO and IDSOG and is available in French, Spanish, Haitian Creole, and Portuguese. A briefer describes ways to incorporate it into Zika response programs.

Increase the Available ZIKV Content on ORB and the Functionality of the ORB Platform

MCSP supported mPowering Frontline Health Workers to strengthen and increase the functionality of the [ORB content platform](#), an online repository of resources that houses digital content, such as job aids, training

packages, eLearning modules, and videos, to be used by frontline health workers. The MCSP Zika response team translated the ORB platform into Spanish so that Spanish speakers could navigate and access materials across all technical areas (maternal health; newborn health; HIV; water, sanitation, and hygiene; etc.), increasing usability of this site for the LAC region.

MCSP's Zika response team supported the addition of a Zika domain to upload publicly available ZIKV-related materials developed by partners such as ASSIST, the US Centers for Disease Control and Prevention, the World Health Organization (WHO), PAHO, and others. The team also uploaded MCSP-developed materials, including printable files of MCSP Zika Pregnancy Wheels and accompanying briefers in English, Haitian Creole, French, Portuguese, and Spanish, as well as MCSP training packages for ES, therapeutic early stimulation (TES), and PSS.

MCSP promoted the Zika ORB domain to more than 400 frontline health workers through mPowering's website, MCSP's external-facing webpage, social media, MCSP-led trainings, STTA visits and sub-regional workshops.

Assess Local Capacity for Ultrasound Services Relevant to the ZIKV Response in LAC, in Collaboration with ASSIST and Professional Associations

In many countries with and without autochthonous ZIKV transmission, antenatal ultrasonography to evaluate for fetal abnormalities consistent with CZS is recommended for all pregnant women with suspected ZIKV infection, regardless of laboratory findings. However, the quality of ultrasound examination is highly dependent on the skills of the provider and the technical capacity of their equipment. Challenges in identifying CZS before delivery may impede health providers' ability to provide comprehensive counseling to pregnant women on prognosis and family preparations for an infant impacted by congenital ZIKV infection.

In partnership with ASSIST, the American Institute of Ultrasound in Medicine (AIUM), and the Society for Maternal-Fetal Medicine (SMFM), MCSP conducted an assessment of ultrasound equipment and provider capacity in the context of the ZIKV response in five USAID priority countries: the Dominican Republic, El Salvador, Guatemala, Haiti, and Honduras (see Table 1). USAID selected countries based on incidence of suspected or confirmed autochthonous ZIKV case transmission and on country interest. MOHs then selected individual assessment sites based on geographic areas with the highest incidence of suspected cases of acute ZIKV infection as well as hospitals that had high volumes of maternity care and provided basic ultrasound services.

Table 1. Participating countries and number of departments/districts and sites assessed.

	Country	Number of Departments/Districts Assessed	Number of Sites Assessed
1.	Dominican Republic	4	10
2.	El Salvador	6	9
3.	Haiti	5	7
4.	Honduras	6	13
5.	Guatemala	6	9

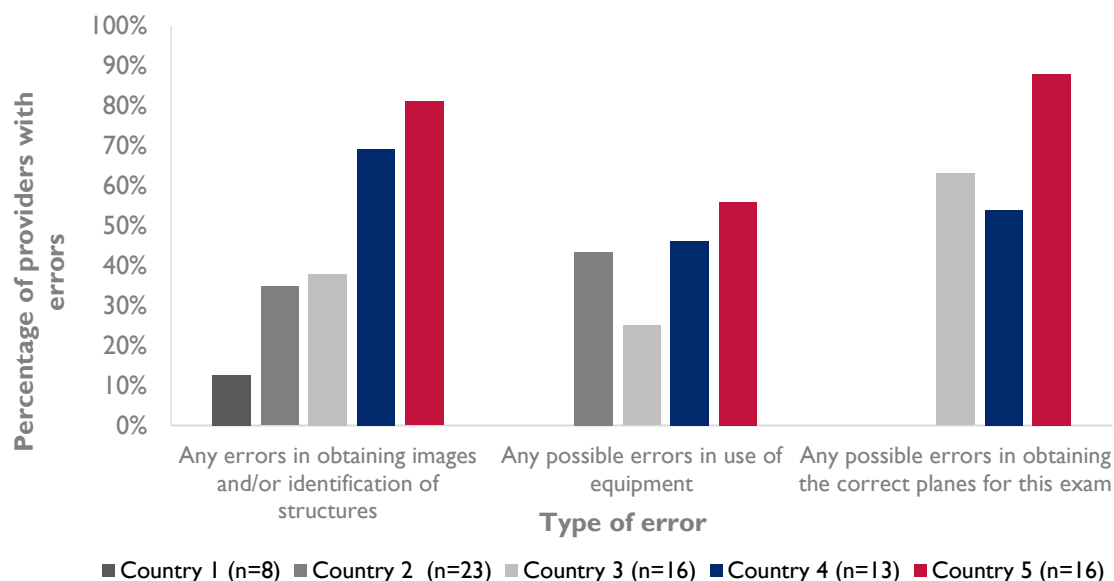
Before the assessment, an initial design meeting convened key stakeholders, including USAID, members of professional associations, and global experts in obstetrics, ultrasonography, and maternal-fetal medicine. The design meeting produced a written synthesis of the assessment's principal objectives and expected results: (1) assess the capacity of ultrasound providers to detect features of CZS, (2) assess the capacity of ultrasound equipment used by providers included in the assessment, (3) and inform referral pathways for pregnant women with suspected or confirmed ZIKV infection.

MCSP collected survey data through oral interviews and service delivery and equipment observations during site visits. The assessment tool consisted of four surveys:

1. Facility service delivery (clinical practice) interview (staffing, referral practices, and client volume)
2. Provider interview (components of examinations for clients with suspected or confirmed ZIKV infection)
3. Service delivery observation (clinical observation of obstetric ultrasound examination)
4. Ultrasound equipment and environment of care (type and functionality of equipment, image storage and sharing capacity, and environmental and infection control practices)

Across the five countries, the ultrasound assessment teams visited 47 health facilities, evaluated the condition of 97 ultrasound machines, and conducted 76 service delivery observations of providers (Figure 3). The assessment teams conducted 65 provider interviews and 49 service delivery/practice interviews. Ultrasound service delivery sites were generally busy, limiting providers' available time to perform an adequate fetal anatomic survey. Ultrasound equipment was typically adequate for routine and ZIKV-specific obstetric ultrasound examinations. In general, the assessment found adequate capacity among providers for fetal biometry, but significant need for improved skills in and consistent application of a thorough fetal anatomic survey and other standard components of second- and third-trimester obstetric ultrasound. In each country, evaluators observed errors in clinical obstetric ultrasounds and although there were errors in provider skills in all five countries, not every country had errors in every sub-category. These deficiencies do have significant potential to impact the validity of providers' interpretations of obstetric ultrasound, including detection of suspected CZS. All countries reported seeing pregnant clients with suspected ZIKV infection. The results of this assessment indicate a need not only for further training in obstetric sonography (especially for evaluation of fetal anatomy) but also for correct operation of ultrasound equipment, such as instrumentation, "knobology," and optimization of images.¹ Per prior agreement with USAID and participating facilities and ultrasound providers, individual country data are masked here.

Figure 3. Observed provider clinical skills during obstetric ultrasound assessment



All five country assessments included observations where providers did not correctly obtain images and/or identify structures according to standard criteria.

¹ Knobology refers to the use of the machine's instrumentation, including adjustment of controls for image optimization and safety.

In general, providers lacked consensus on a standard cutoff (e.g., via percentile or standard deviation) or other objective metrics for microcephaly, indicating the need for national guidance, optimally drawing from global standards such as those put forward by PAHO. Many health providers interviewed expressed willingness to undertake additional training to refine their skills. In future efforts to address gaps in service delivery, attention should be given to building capacity to conduct high-quality, routine basic obstetric ultrasound (inclusive of all recommended components). Additionally, standards should be set for infection control, counseling of women on the capacity and limitations of obstetric ultrasound to serve as a diagnostic tool, and appropriate referral of suspected deviations from normal to service delivery settings with recognized expertise and capacity for clinical management of such complications. After analyzing data from these surveys, MCSP provided several recommendations for stakeholders in the region:

1. Build capacity of providers to survey all potential findings associated with CZS.
2. Develop onsite, evidence-based standards for clinical management of cases of suspected ZIKV infection in pregnancy.
3. Encourage collaboration with professional ultrasound societies.
4. Endorse a basic standard of obstetric ultrasound and share guidelines within pre- and in-service education.

The results of these capacity assessments summarize a range of health system issues related to ultrasound providers, equipment, and facilities that affected quality of clinical service delivery during the ZIKV outbreak. MCSP shared assessment findings via five individual country reports and a summary report with ASSIST, USAID headquarters, Missions, and MOHs.

Provide STTA and Related Support to Countries in the ESC

Strengthened Programming and Policies for Early Childhood Development (ECD) and Therapeutic Early Stimulation (TES)

Developing the capacity of primary health care providers and other frontline workers to integrate ECD techniques into their routine practice improves monitoring of child development milestones and referral for early intervention to begin TES activities. Early referral and intervention have the potential to mitigate the developmental effects of CZS and other disabilities. Additionally, capacity-building on these key topics can also improve the quality of information on ES and nurturing care provided to caregivers, enabling them to undertake TES activities at home while awaiting specialized care (waitlists were identified as an issue in many of the countries). Caregivers are empowered to incorporate simple therapeutic activities into daily routines, creating additional high-quality home learning opportunities. The dual target audiences of the trainings ensure that young children with CZS receive a high frequency of therapeutic care during the critical years of early development.



A mother holds her child with CZS during MCSP's hands-on TES training in Guyana. Photo by Jessica Williams, MCSP.

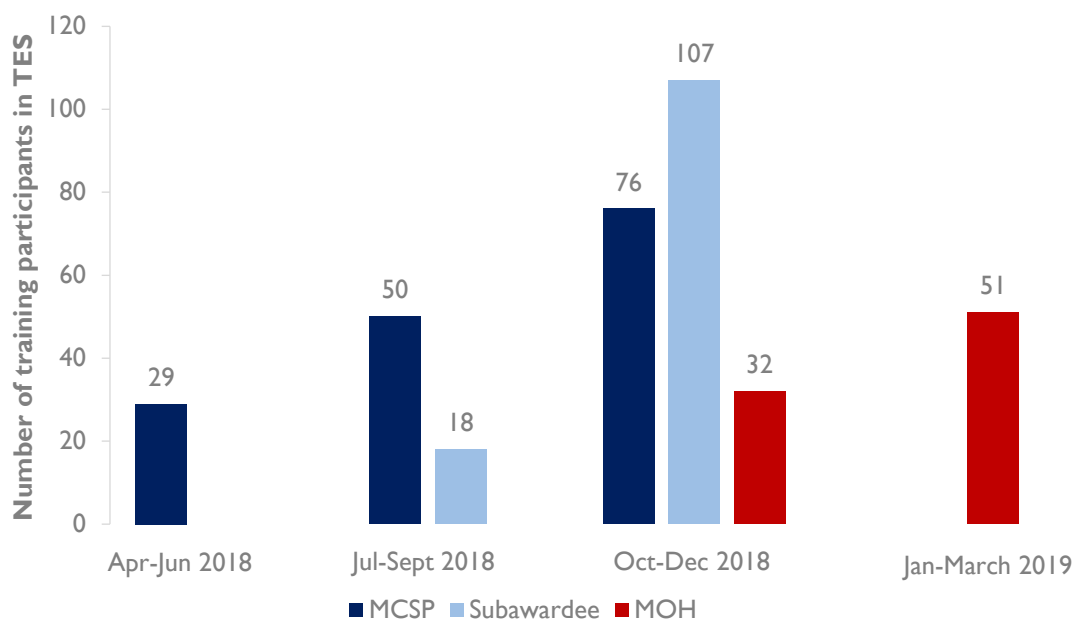
Improving the quality and coverage of facility- and community-based ECD services emerged as a key priority area in the ongoing, local responses to ZIKV in Barbados, Grenada, Guyana, St. Lucia, and Trinidad and Tobago. In light of overwhelming evidence on the importance of early intervention in infants with disabilities and delays, including those affected by in utero exposure to ZIKV, MCSP developed a set of materials

focusing on TES. This package of materials aimed to build the capacity of health care and special education providers to address developmental delays through provision of pediatric therapies, including physical, occupational, orientation/mobility, and speech/language therapies. Through specialized training, providers learned to integrate ECD into their routine clinical services and how to coach parents on providing therapies routinely at home. Empowering caregivers to complete exercises at home increases the dosage and frequency of engagement, which is important for the brain architecture of children with profound delays.

MCSP implemented the TES package via a 3.5-day training of trainers (TOT) for health care and special education providers. The package provides guidance on ES for children ages 0–3 with disabilities or delays, combining activities for brain development with evidenced-based practices from pediatric therapies. The package empowers providers and the families they serve to integrate activities into their daily routines, supporting higher dosage and frequency of therapies.

MCSP trained 154 trainers in TES across the MCSP ESC countries and El Salvador. Master trainers then created plans to cascade the materials and training to other colleagues to ensuring coverage of additional regions. MCSP built step-down trainings into subawards with GRENCASE Caregivers (Grenada) and North Central Regional Health Authority (NCRHA) (Trinidad and Tobago), while step-down trainings in Guyana, Barbados, and St. Lucia were structured as locally led and MOH-funded initiatives (Figure 4). Commitment to furnish resources and staff time to hold these step-down trainings demonstrated heightened local prioritization of ECD initiatives.

Figure 4. Quarterly total of early childhood development training participants in therapeutic early stimulation (TES) by who was responsible for implementation



MCSP supported development of cascade training agendas and funded local organizations directly via subawards to GRENCASE's Roving Caregivers Programme in Grenada and the NCRHA in Trinidad and Tobago. GRENCASE completed 11 step-down trainings for doctors, specialists, nurses, teachers, and daycare workers, as well as direct trainings for parents and other caregivers in Grenada, reaching 212 providers and parents/caregivers across all parishes of Grenada, Petite Martinique, and Carriacou. In Trinidad and Tobago, the NCRHA reached 56 providers through three internally managed step-down trainings.

In Guyana and St. Lucia, MCSP provided technical support to MOH-funded step-down trainings to ensure quality and fidelity to MCSP's TES package. Guyanese TOT participants went on to train 22 rehabilitation assistants from nine regions. In St. Lucia, TOT participants went on to train 38 nurses and community health workers in four regions. Unfortunately, due to understaffing and competing priorities, step-down trainings did not take place in Barbados before MCSP closeout. MCSP maintained contact with Ministry of Health and Wellness (MOHW) representatives leading ECD activities and confirmed step-down trainings will be prioritized following the national vaccination campaign in May 2019.

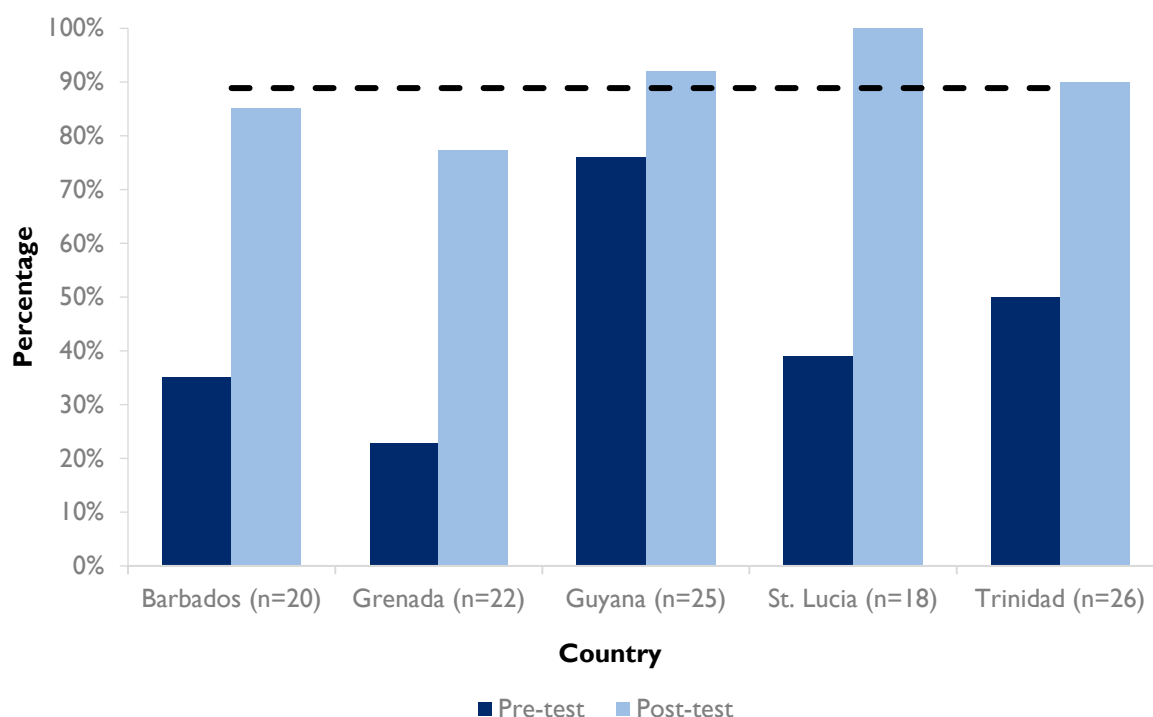
In addition to supporting ECD activities in the five priority ESC countries, MCSP also supported ECD trainings in El Salvador. MCSP collaborated with Save the Children International and USAID's Community Action on Zika (CAZ) project to conduct trainings for ECD specialists and for representatives from the MOH and Ministry of Education. In PY5Q1, MCSP and partners trained 23 participants on TES. In PY5Q2, 18 participants completed a TOT on PSS. Save the Children International and CAZ will support further rollout of both curricula and trainings. Please see the Training Report in Annex II for further details.

As TES is a new responsibility for many of the health care providers in the ESC region, MCSP assessed knowledge attained during the trainings with pre- and post-tests. This information demonstrates the need for further investment in TES education (both pre-service and in-service) and enables MOHs to understand gaps in provider ECD knowledge. See Figure 5 for the percentage of service providers who passed (80% passing rate) the ZIKV ECD assessment.



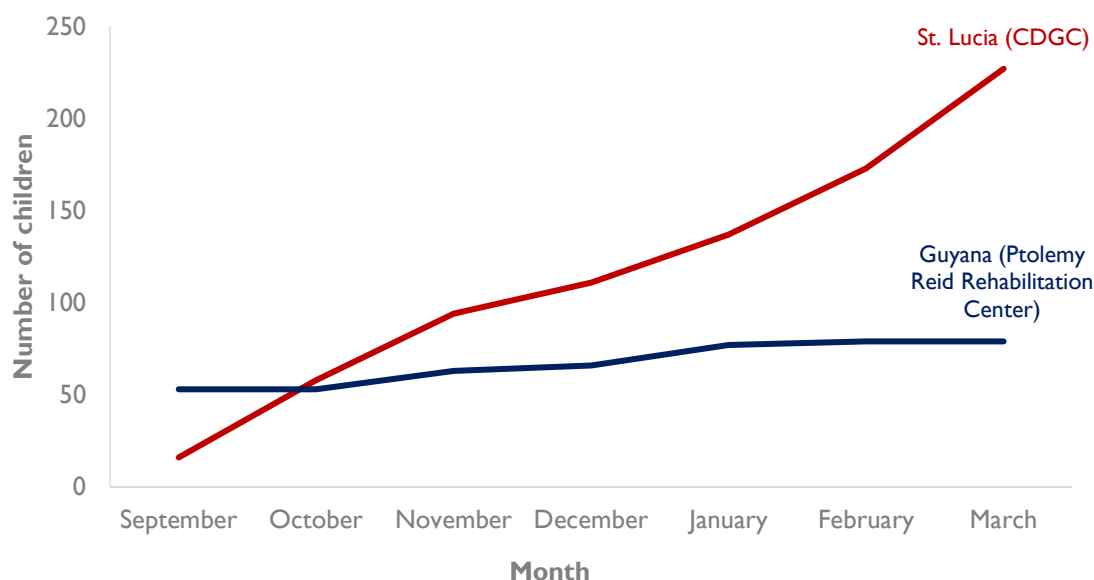
Participants at the TES TOT in Barbados create plans for step-down trainings. Photo by Jessica Williams, MCSP.

Figure 5. Average percentage of service providers who passed (80% passing rate) the Zika virus early childhood development assessment



As TES knowledge improved in MCSP-supported countries, the number of suspected cases of CZS and other disabilities referred to MCSP-trained specialists increased. This resulted in an increase in TES service delivery to children with delays and disabilities. Furthermore, MCSP's support likely improved the data quality at TES services, although this was not explicitly part of the MCSP TES training. In both St. Lucia and Guyana, MCSP could collect referrals from the countries' main ECD facility, which allowed MCSP to track overall numbers enrolled over time. In St. Lucia, the number of children ages 0–3 enrolled in a TES program increased from 16 in September 2018 to 111 in December 2018; in Guyana, the number of children enrolled in a TES program increased from 27 in September 2018 to 65 in December 2018 (Figure 6).

Figure 6. Number of children ages 0–3 with a disability enrolled in a therapeutic early stimulation program, 2018



In an effort to further support parents and caregivers of children ages 0–3 with disabilities, MCSP-supported subawardees in Grenada and Trinidad expanded TES training to reach caregivers. Three trainings took place from July through December 2018, covering a total of 87 parents and caregivers. In Guyana and St. Lucia, parents and caregivers did not receive formalized TES training sessions but did receive individualized sensitization from MCSP-trained health care providers. In Guyana, MCSP-trained health care providers sensitized at least 105 caregivers on how to conduct TES activities during appointments at the Ptolemy Reid Rehabilitation Center. In St. Lucia, at least 48 caregivers were sensitized on how to conduct TES activities during sessions at the Child Development and Guidance Center.

ECD Curricula and Guidelines

In addition to improvements in ECD service delivery, MCSP also supported revision and development of ECD policy and curricula, and provided technical review of materials that will have lasting impact on institutionalization of ECD in national frameworks. MCSP built ECD capacity in Guyana by integrating material into curricula at the University of Guyana. In conjunction with the assistant dean and other faculty members, MCSP reviewed university curricula and identified three courses with the best fit for integration of TES materials: Public Health Nursing, Child Physical Health and Rehabilitation, and Human Development. MCSP added instructions on TES and relevant information into these three courses to enhance the sustainability of TES teachings by making them a permanent part of Guyanese medical curricula. These courses enable students pursuing a nursing degree or a Bachelor of Science in medical rehabilitation to learn TES (started spring 2019).

MCSP reviewed content of national child health booklets in St. Lucia and Barbados. It then provided recommendations to include additional questions on potential exposure to ZIKV during pregnancy and guidance on ES as part of the developmental guidelines. MCSP's edits are under review by respective MOH representatives. Finally, MCSP created and shared general guidelines for integration and delivery of ECD services via the health system. Each country will review and revise as necessary to adapt to local context.

Caregiver PSS

MCSP also addressed caregiver well-being—another key challenge in access to and quality of care for children with delays and disabilities. To address the high levels of stress and depression that many parents and

caregivers face, MCSP developed a PSS package to aid health care providers in the development of support groups and individualized support. The PSS package utilizes art prompts to lead participants through conversation and introspection. Support groups create a network among caregivers who often feel alone and misunderstood. In a similar process to the TES training package, MCSP rolled out the PSS training package with health care providers and special education staff via TOTs, which have the mandate of starting support groups and sharing PSS information with other local providers. MCSP trained 137 participants across the ESC region. Master trainers in Trinidad and Tobago cascaded the PSS training to 47 additional health providers through two NCRHA-supported trainings. See Annex II for further details on the training. In Grenada, GRENCASE's Roving Caregivers Programme collaborated with the International Federation of the Red Cross to implement PSS trainings using International Federation of the Red Cross materials.

At the end of each PSS training, newly minted trainers developed action plans to reinvigorate or establish caregiver support groups. Action plans included sharing resources with pre-existing support groups to refresh their pool of activities, identifying appropriate times and locations for meetings, and developing marketing to attract caregivers to the group.

Strengthened Capacity for Inpatient and Outpatient Facility-Based Maternal and Newborn Health Providers

Essential Care for Small Babies (ECSB) is one of three components of the American Academy of Pediatrics' Helping Babies Survive strategy, together with Helping Babies Breathe and Essential Care for Every Baby. Considering potential increased risk of prematurity, low birthweight, and feeding difficulties for newborns whose mothers become infected with ZIKV, the ECSB curriculum was an appropriate framework for teaching health providers a basic standard of special care needed for all small or premature babies born in low-resource areas, regardless of documented ZIKV exposure. While several ESC countries moved into middle- and higher-income strata, gaps in equity remain across the region regarding care of small and preterm babies, including those impacted by congenital exposure to ZIKV. The ECSB curriculum emphasizes temperature maintenance, appropriate feeding, infection prevention, and management of complications at primary levels of care. ECSB training can improve the capacity of health care workers to support the needs of preterm and low-birthweight babies through hands-on learning and practice using the MamaBreast and PreemieNatalie simulators.

In 2017, MCSP conducted ECSB trainings in El Salvador (May 2017, n = 33), Paraguay (August 2017, n = 34), and Guatemala (November 2017, n = 28). In 2018, MCSP conducted a subregional TOT in Port of Spain, Trinidad and Tobago (April 2018) to train 28 ECSB master trainers from Barbados, Grenada, Guyana, Trinidad and Tobago, and St. Lucia. These ECSB master trainers later served as facilitators for national trainings for doctors, nurses, and midwives in their respective countries. Following the subregional TOT, national trainings then took place in St. Lucia (June 2018, n = 23), Guyana (providers from Region 7 trained in the three components of Helping Babies Survive: Helping Babies Breathe, ECSB, and Essential Care for Every Baby; July 2018, n = 22), Trinidad



ECSB subregional TOT in Trinidad and Tobago. Photo by Goldy Mazia, MCSP.



Health providers from five ESC countries learn techniques during MCSP's ECSB TOT in Port of Spain, Trinidad and Tobago. Photo by MCSP/Goldy Mazia.

and Tobago (September 2018, n = 27), Grenada (November 2018, n = 30), and Barbados (November 2018, n = 29). Please see Annex II for more details.

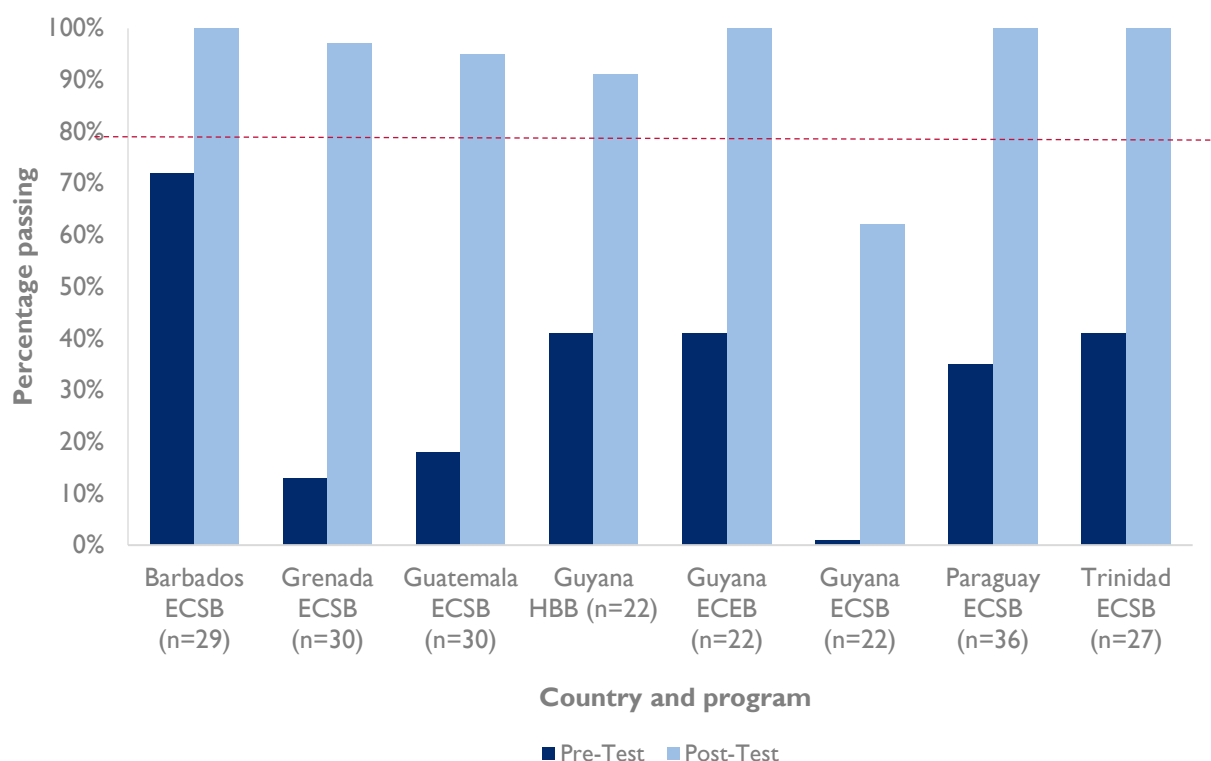
In all countries, the knowledge post-tests showed significant improvement (see Figure 7), and all participants passed the objective structure clinical examination required for certification. Importantly, the above technical standardization activities provided the opportunity across five countries to discuss opportunities to improve quality of services and remove barriers to evidence-based care of preterm and low-birthweight babies at facility and community levels.

MCSP noted a key positive result of the trainings: collaboration among trainers to participate in other countries' activities across the LAC region. Trainers from Trinidad and Tobago traveled to Barbados to support the national ECSB training. Additionally, ESC countries increased the numbers of trained and available ECSB and Essential Care for Every Baby trainers to allow for networking across the ESC region and through shared web-based platforms.



ECSB training of providers in Kamarang, Guyana.
Photo by MCSP/Goldy Mazia.

Figure 7. Percentage passing pre- and post-tests in MCSP Essential Care for Small Babies trainings



Data Use and Quality Improvement Processes for Facility-Based Providers

MCSP worked with the MOHs in Barbados, Guyana, and St. Lucia to design and implement quality improvement (QI) activities focusing on PNC, with a focus on indicators meaningful to the local ZIKV outbreak response. Following collaboration with each country's MOH to identify service delivery sites, MCSP provided key local staff with technical updates on maternal health, newborn health, postpartum family planning (PPFP), and ZIKV infection prevention and management. In addition, MCSP trained staff on QI

tools and processes using a module developed from WHO's Point of Care QI training module and MCSP's Data Use Package. MCSP worked with facility teams to develop facility-specific QI plans that focused on the care of mothers and infants, including improving newborn temperature management (critical for all newborns), exclusive breastfeeding (EBF) rates (recommended for all infants, including those with mothers exposed to ZIKV in pregnancy), and PFP counseling and adoption (a recognized public health strategy to prevent ZIKV-affected pregnancies). Teams used the final 2 days of training to introduce PNC/QI activities at their facilities, update registers as needed for new data collection, and finalize QI plans on site.

Seventy-two providers from 33 facilities across Barbados (10/10 of public health care sites), St. Lucia (13/37), and Guyana (10/350) participated in PNC/QI activities. The CRMA, as a subawardee to MCSP, provided on-the-ground mentorship for QI activities at MCSP-supported facilities. Local clinical mentors from the CRMA embedded in facilities² conducted monthly visits with facility-based teams to provide technical support on implementing their QI plan, including identifying methods of and sources for data collection, visualizing data using a wall chart, and completing an indicator tracker to monitor improvements in service delivery.

Shortly after initial PNC/QI trainings in St. Lucia, Barbados, and Guyana, trainees introduced QI plans at the facilities, and QI teams began collecting data. Barbados collected data from April 2018–February 2019, and St. Lucia and Guyana both collected data from June 2018–February 2019.

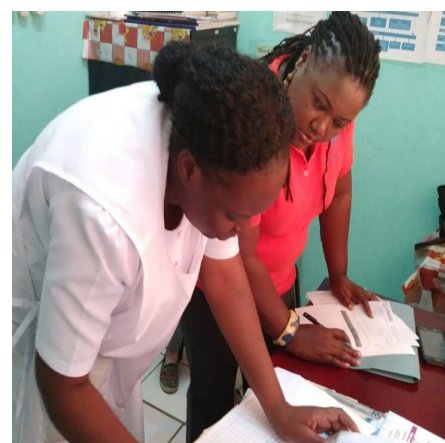
Some facilities (13/33) in all three countries chose to track PFP counseling and adoption. All technical standardization activities included information on USAID's standards for informed choice and voluntarism in the context of family planning service delivery. Other common indicators included EBF and completed routine PNC contacts. Promoting and helping to maintain rates of EBF are critical for all newborns and health systems, including those impacted by ZIKV outbreaks, which may be subject to misinformation around the safety of breastfeeding.

Barbados

MCSP provided STTA on technical standardization for PNC and QI in March 2018 with 25 staff from the Queen Elizabeth Hospital and nine polyclinics, constituting 100% of public-sector facilities providing PNC on the island. Most sites collected data from April 2018 to February 2019. All sites adjusted registers, collected data, and plotted data for at least 8 of the 11 months of QI implementation. The MCSP team focused on supporting the CRMA clinical mentor and facility staff at QI sites to work as a team to use data to determine how to improve PNC services and quality of care. Facilities noted few home visits were conducted within 2 weeks of birth due to staff shortages impacting the entire island and magnified by the lack of incoming nurses into the workforce. Maurice Byers Polyclinic tracked and improved the number of PNC visits conducted at 2 and 4 weeks following birth. In the first 3 months of the project, the clinic conducted one (1.5%) PNC home visit within 2 weeks of birth. In the last 4 months of the project, the clinic had conducted 23 (34%) PNC home visits within 2 weeks of birth. The senior health sister at the facility remarked that the data



Health providers from 10 facilities learn to plot data on a facility wall chart during MCSP's PNC/QI training in Georgetown, Guyana. Photo by MCSP/Jess Thimm.



CRMA mentor V. Blackman coaches a health provider in Guyana on data use for quality improvement as part of MCSP's PNC/QI activities. Photo by MCSP/Jess Thimm.

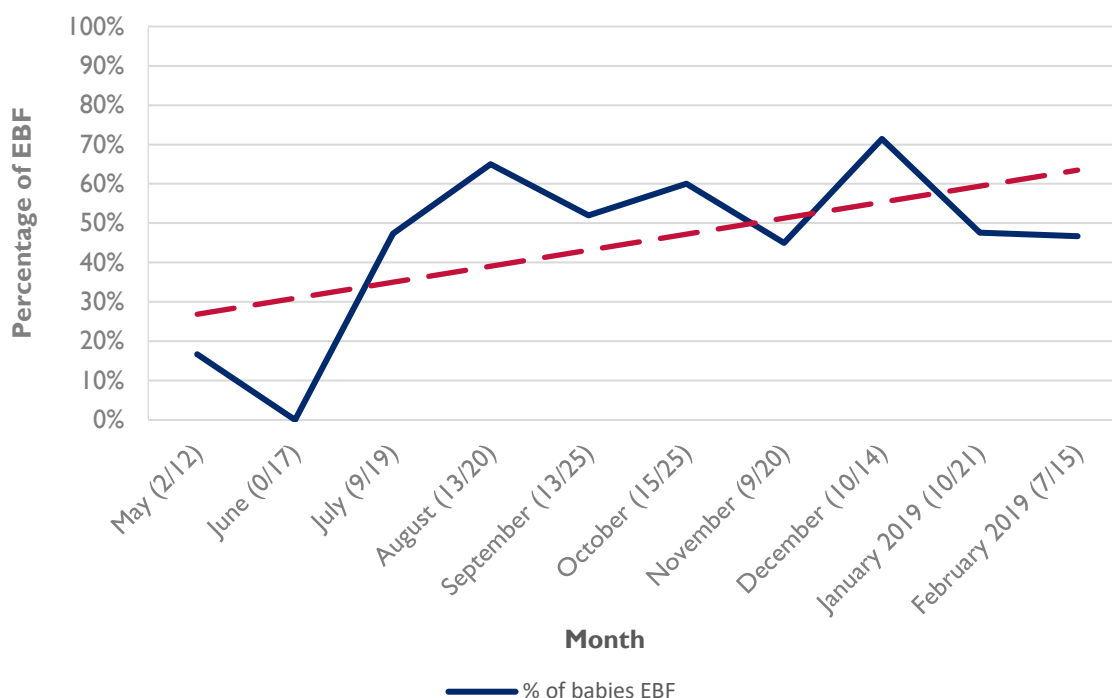
² All but one CRMA clinical mentor was embedded at a facility. The mentor for Guyana, Region 5, was embedded at the Ministry of Public Health in Georgetown.

dashboard tool helped her staff to observe trends in PNC visits and motivated them to focus on predetermined QI goals and seek ways to improve services.

St. Lucia

MCSP provided STTA on PNC and QI in May 2018 with 25 staff from Victoria Hospital, St. Jude Hospital, and 14 health centers. The number dropped to two hospitals and 11 health centers due to closure of one center, lack of patients/data at another, and a third electing to forgo a QI plan. The local CRMA clinical mentor worked with facilities to adjust registers as necessary to collect the facility-identified quality of care indicators, such as counseling on EBF and placing newborns skin to skin immediately after birth. Sites collected data from June 2018 to March 2019. All sites adjusted registers, collected data, and plotted data during this time. By the end of the program, 11 (85%) sites were able to independently track, plot, and analyze their own data. The CRMA and the MCSP team focused on supporting sites to meet and analyze data as a team and brainstorm ways to use the analyses to improve their services and quality of care. The health system as a whole elected to focus on EBF, beginning at the hospital within 1 hour of birth. The main public hospital on the island, Victoria Hospital, prioritized initiating breastfeeding within 1 hour of birth. When a nearby health facility implementing its own QI plan of EBF¹ remarked that most newborns coming from Victoria already received breast milk substitute, leadership at Victoria recognized that many newborns received breast milk substitute without fulfilling medical criteria. The hospital then introduced a nurse-led effort to ensure adherence to the protocol. The health centers worked with new mothers to prioritize EBF through educational sessions and strategizing ways to delay maternity leave so that the mother could spend longer at home with her baby following delivery. Facilities seeking to improve rates of EBF noted 11/48 (23%) 6-week-old babies exclusively breastfeeding in the first 3 months of the project. In the last 3 months of the project, 27/50 (54%) of mothers reported EBF. Figure 8 shows the trend of women reporting exclusive breastfeeding over the course of project implementation in St. Lucia. The dotted line, which represented the trend line over the 10 months of implementation, shows a steady increase over time.

Figure 8. Percentage of women reporting exclusive breastfeeding (EBF) at 6 weeks in St. Lucia



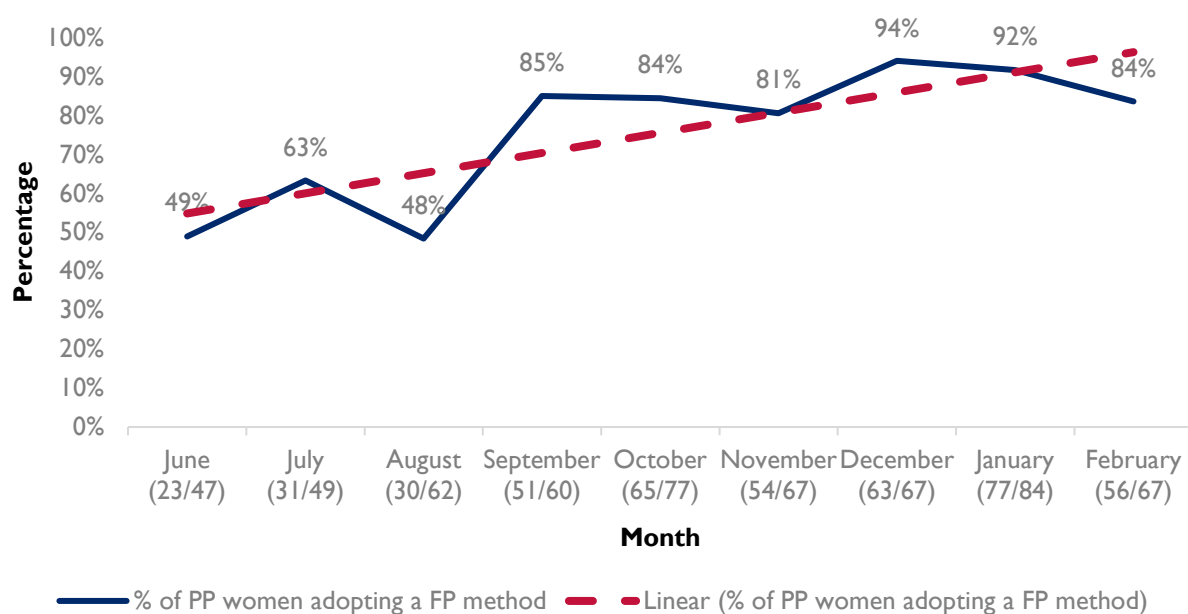
Data source: PNC registers

Guyana

MCSP provided STTA on PNC and QI in Guyana in May 2018 in a workshop for 30 health providers from nine facilities across three regions, including representation from the Ministry of Public Health (MOPH) and USAID. The MOPH selected facilities that included the national public hospital and more remote, rural clinics. Following training on QI processes and tools, each health facility team selected indicators to track QI efforts and monitored them using an MCSP wall chart. Three CRMA clinical mentors worked with facilities to adjust registers and conducted monthly mentoring visits. All sites collected and reported data on quality indicators between June 2018 and February 2019. During the scoping visit and midway through the project, MCSP also worked with PAHO, the leading QI implementation partner in Guyana, to ensure activity coordination and provide regular updates on implementation and results. MCSP transferred all findings, tools, and processes to the QI initiative at the MOPH, which has committed to scale up the QI approach to other regions and health facilities with new funding from the Inter-American Development Bank (IADB). The IADB will continue to coordinate with PAHO during this initiative.

The five sites working on improving quality of care indicators related to PPFP saw 450 (78%) of the 580 patients attending PNC initiate a method of family planning during the 9-month reporting period, see Figure 9. In the first 3 months, 84/158 (53%) of postpartum women counseled on family planning initiated a method, and during the last 3 months, 196/218 (90%) of postpartum women counseled on family planning initiated a method. This 37% increase in postpartum women deciding to initiate a family planning method of their choice highlights the effort of the participating facilities to provide increased and more accessible counseling to postpartum women, including proper counseling on the lactational amenorrhea method. Sites identified and implemented approaches to improve PPFP service provision, including group and one-on-one counseling sessions and a “marketplace” for antenatal care, PNC, and teenage youth groups, where health workers showcased the available methods of contraception. Additionally, the MCSP-supported facilities in Region 7 were able to use QI strategies to increase the percentage of women attending 2-week PNC visits and EBF by advocating for earlier PNC visits during antenatal care sessions. A remote health center in Batavia used MCSP-recommended QI approaches to reinforce the importance of PNC visits within 2 weeks of birth and EBF.

Figure 9. Percentage of postpartum women adopting a family planning (FP) method in Guyana (2018–2019)



Data source: facility PNC register

Project Implementation Data

MCSP supported trainings for 520 providers on ZIKV prevention from January 2018–March 2019. It trained these providers (178) in ECD programs for TES and PSS, ECSB (149), ECD subaward trainings (120), and PNC/QI (73), see Figure 10. These data came from training attendance sheets collected by MCSP and partner organizations. Trainings included doctors, nurses, teachers, therapists, roving caregivers, social workers, and midwives. MCSP technical staff facilitated trainings for ECD, ECSB, and PNC/QI, and in-country providers from partner organizations, who were originally trained by MCSP, facilitated the ECD subaward trainings.

Figure 10. Number of providers trained on Zika prevention (indicator 2a)

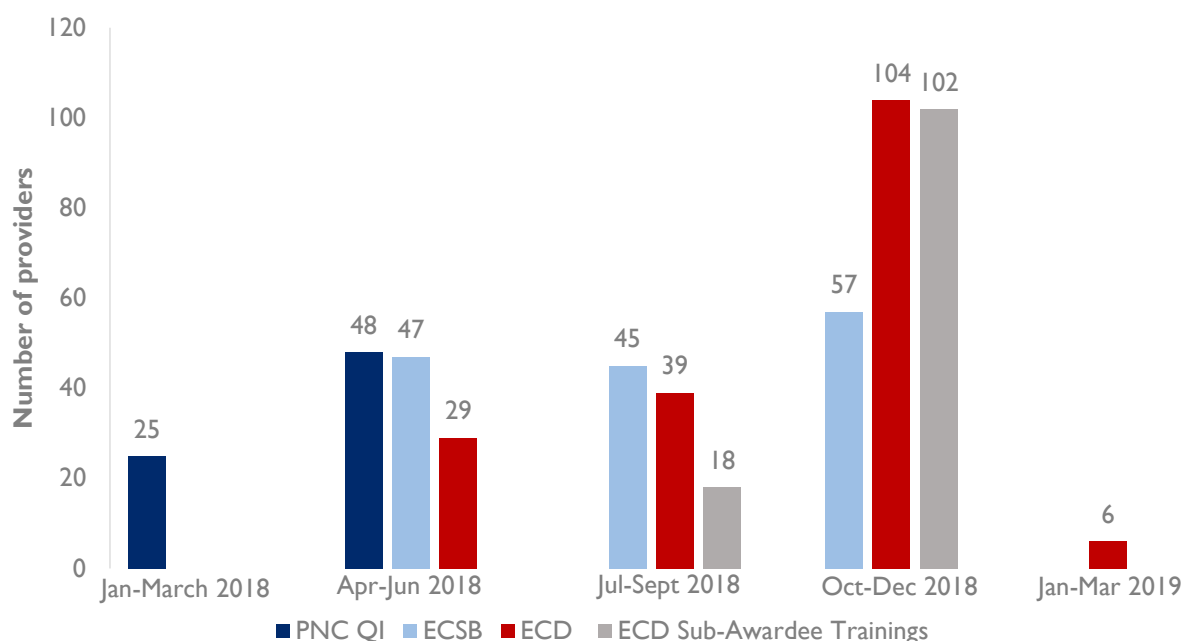
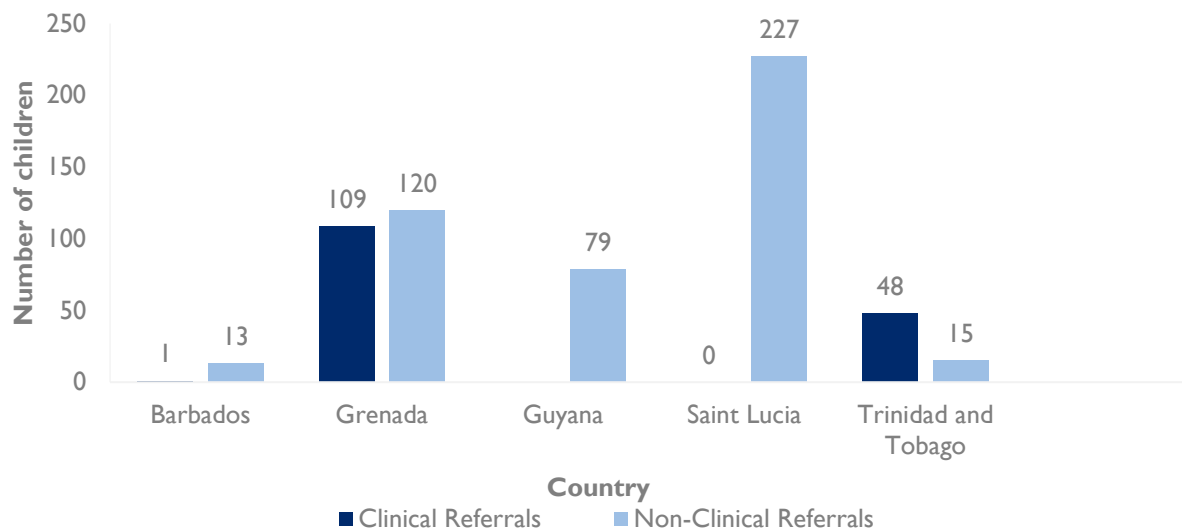


Figure 11. Number of referrals of suspected Zika-affected children (ages 0–3) to care and support services



As project implementation progressed and more providers could offer TES and PSS services, the number of children referred increased (see Figure 11). Data for this indicator came from clinics that provide TES services. As countries and project subawardees continue to conduct TES and PSS trainings, these services are likely to continue to be available for children with delays and disabilities in the ESC region.

Individual, country-level data for both indicators are reported in Annex Ib.

Implementation Challenges and Modifications

MCSP worked with multiple partners and subawardees to execute the USAID-approved regional work plan and five country work plans from 2016–2019. The successful completion of the majority of activities and the collaboration from partners during the course of the program affirmed the cooperative relationship MCSP shared with country governments, professional associations, and other local organizations.

MCSP noted several challenges in implementing activities, including:

- **System delays:** At times, system delays, such as ECSB materials held in customs, caused implementation challenges. In such instances, MCSP attempted to mitigate issues by borrowing materials. In one instance, training went ahead with fewer materials, and the materials, once received in-country, were delivered post-training to institutions.
- **In-country staff shortages:** MCSP worked with each facility team to identify indicators that were relevant to the facilities and feasible to track. Staff shortages, however, contributed to morale issues and decreased time for QI, ECD, and ECSB activities among health providers. In Barbados, for example, a site previously with nine nurses was functioning with four nurses in the final few months of the project. MCSP communicated with the MOHs to help manage expectations and advocate for continued support for facility-based QI, ECD, and ECSB activities. However, MOHs did not prioritize some planned activities, including TES step-down trainings and related supportive supervision.
- **Staff turnover:** Staff turnover contributed to disruption in implementing MCSP-supported activities in PNC, ECSB, and ECD. For example, TES and PSS trainings in Trinidad and Tobago were pushed back from July to October due to delayed response from local partners and shifting point people within MOH for approval of activities. In Barbados, the CRMA replaced its mentor midway through the project. MCSP adjusted timelines to accommodate these shifts.
- **Sociocultural norms:** MCSP worked closely with partners to address the practical challenges faced by beneficiaries, such as limited social and workplace support for EBF among working mothers. MCSP worked closely with local mentors and health providers to facilitate solutions in this area. Additionally, some MCSP-supported countries in the ESC region are experiencing declining birth rates, leading to concern (recognized in popular media) regarding population levels and future workforce shortages. Many providers voiced concerns that PFP might exacerbate this issue. Throughout the project, MCSP responded by facilitating discussion on healthy timing and spacing of pregnancy, which does not advocate for fewer births but does enhance families' abilities to plan pregnancies.
- **Lack of an ECD regional partner/professional association:** For ECD activities, MCSP observed a difference in the volume of activities completed and overall success in countries with subawards (Grenada and Trinidad and Tobago) versus countries that received direct implementation from MCSP (Barbados, El Salvador, Guyana, and St. Lucia). ECD work in direct implementation countries would have benefited from paid professional association partners (like the CRMA) to oversee trainings, monitor implementation, and share updates with the MCSP ECD team.

While the above issues contributed to delays in activities and at times required a shift of strategy, MCSP prioritized finding ways to troubleshoot and innovate different approaches to work within the local context so that work plan objectives moved forward in a locally acceptable manner.

Collaboration

Collaboration with Other USAID or US Government Agencies

MCSP collaborated with US CDC in its support to CARPHA for design of a pregnancy registry and with US NIH (NICHD) in the presentation of a webinar that shared NICHD Zika-related activities.

Collaboration with Other USAID-supported Projects and Programs

USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project

MCSP and ASSIST worked closely on a multitude of activities spanning the MCSP Zika response. In mid-2016, the two worked together to complete the rapid landscape analysis and provide technical review of the materials each developed as a result. These two USAID projects worked in collaboration to implement the five-country ultrasound capacity assessment in the LAC region. At the start of the ASSIST ESC activities, MCSP and ASSIST staff met to discuss MCSP's activities in the ESC as ASSIST prepared to open its programs in additional ESC countries. MCSP also met with ASSIST before and during the MCSP ZIKV regional workshop to harmonize approaches and activities in the ESC region. MCSP collaborated with ASSIST to design agendas and panel sessions, and identify participants for the ASSIST-led regional workshop in Spanish in 2017, the MCSP-led subregional workshop in English in 2018, and the ASSIST-led meeting Care and Support for Children and Families Affected by CZS in 2019. ASSIST/Jamaica will be adapting MCSP's TES training materials and activity cards into a tabletop flipchart for provider/parent counseling and messaging in Jamaica.

Community Action on Zika Project

MCSP worked with CAZ program partners Save the Children and the International Federation of the Red Cross to review, adapt, and disseminate community-level guides and tools, including a community health volunteer job aid geared for use during household visits to ensure the volunteers promote the project's six key behaviors for ZIKV prevention. The job aids included materials for care and support, recognizing early signs of CZS, and an interactive education kit for schools, including an educational board game. MCSP supported validation of care and efforts to disseminate materials to community health workers and others platforms. Throughout the life of project, MCSP's collaboration with CAZ reached over 464 communities in priority countries: Dominican Republic (34), El Salvador (200), and Honduras (230).

Collaboration and/or Knowledge Sharing with Partner Entities in Host Governments and Other Donor Agencies

Caribbean Public Health Agency

MCSP provided technical support to the Caribbean Public Health Agency (CARPHA) to contribute to the design of a ZIKV pregnancy registry. MCSP held meetings with CARPHA, the Trinidad and Tobago MOH, the Jamaica MOHW, ASSIST, USAID ESC, UNICEF, and the US Centers for Disease Control and Prevention to discuss the feasibility, design, and potential implementation of a ZIKV pregnancy registry for the Caribbean region and to discuss Jamaica's involvement in the registry, understand current data collection strategies in Jamaica, and discuss operational parameters for the registry. CARPHA is finalizing the database independently and will seek support from other USAID implementing partners and US Government agencies if needed after the conclusion of MCSP.

Additional collaborating entities included the SMFM, Infectious Diseases Society for Obstetrics and Gynecology, AIUM, US National Institutes of Health/Eunice Kennedy Shriver National Institute of Child Health and Human Development, and Johns Hopkins University.

Caribbean Regional Midwives Association

The CRMA operated through a subaward with MCSP to provide technical and logistical support in the region. It had established and preexisting networks throughout the Caribbean, including in ESC countries where MCSP was working. Through this collaboration, MCSP was able to strengthen the regional role of the association while benefiting from the CRMA's capacity and network. The CRMA provided the logistical support required to host trainings in-country (including the subregional ECSB TOT and national ECSB trainings in five countries), events (including the subregional workshop in Trinidad and Tobago), and mentorship and supportive supervision for the PNC/QI project through embedded nurse-midwives in Guyana, St. Lucia, and Barbados. This relationship capitalized on MCSP's other LAC Bureau-funded activities with the CRMA.

Pan American Health Organization

MCSP consulted PAHO before the first MCSP Zika response work plan and then again in the rapid scoping visits conducted by MCSP. MCSP continued closer collaboration with PAHO in Guyana to design the high-priority technical areas for the Guyana work plan, which included a focus on ECD and data use for improved services. PAHO provided technical advice to overcome challenges with PPFP indicators and will be a continuing presence in Guyana for QI activities beyond the life of MCSP. PAHO was also a key partner during design and dissemination of the MCSP pregnancy wheel. Finally, PAHO also collaborated with MCSP to develop and present several webinars in the LAC region.

Latin America and the Caribbean Neonatal Alliance

MCSP shared updated technical information, resources, and job aids with LAC Neonatal Alliance partners actively involved in the ongoing regional ZIKV response, including PAHO, UNICEF, the United Nations Population Fund, ASSIST, Save the Children, and the Colombian Neonatology Association, among others. Beginning in PY1, the LAC Neonatal Alliance served as a key partner and major contributor in the identification and dissemination of needed tools and resources in the region, including the identification of countries in need of the MCSP pregnancy wheels and other relevant tools for the region.

Kangaroo Mother Care Foundation

MCSP leveraged the 25-plus years of experience that the foundation has on follow-up and care of babies with disabilities and on strengthening the health systems needed to provide care to ZIKV-affected infants and their families. MCSP facilitated collaborations among the foundation and LAC countries. The foundation was also involved in dissemination of tools and materials via the Zika TWG in the ESC.

Altino Ventura Foundation and Ministry of Health of Brazil

The Altino Ventura Foundation (AVF) in Pernambuco, Brazil, and the Brazilian MOH developed models of care for ZIKV-affected families, complemented by guidelines and protocols that can be adapted by other LAC countries. For example, MCSP translated national Zika clinical guidelines into English and into French for adaptation in Haiti. MCSP also facilitated collaboration between the AVF and countries requesting it. The AVF also serves as a key member in the Zika TWG in the English-speaking Caribbean.

Learning

Ultrasound Capacity Assessments

Due to the speed of implementation necessitated by the ZIKV epidemic, the assessment had several limitations, including its convenience sample, rapid implementation, and potential that observations do not reflect the nature of services conducted in the absence of observation. The assessment also did not try to validate individual providers' skills against clinical or laboratory outcomes, which was considered beyond the scope of the rapid assessment. With more time and resources, a stronger and more specific capacity

assessment could be performed. Despite this, the assessment team was able to draw several important conclusions about service delivery capacity and make recommendations.

MCSP learned there were few, if any, formal in-country opportunities for providers to improve or update their ultrasound skills, especially for public-sector providers. Most obstetric ultrasound training took place in pre-service, and for many providers, their pre-service training took place many years ago. Most societies reported that the majority of the older and nonfunctional equipment was in public settings. Maintenance and/or repair were often lacking and required funds and long wait times to secure a trained repair person. Third, all of the professional societies expressed the need to establish standards for obstetric ultrasound skills beyond identifying ZIKV or CZS. The ultrasonographers could benefit from guidance on basic and universally accepted standards for routine obstetric measurements, including calculating gestational age and any abnormalities. WHO recommends at least 6 months of full-time training in a recognized center for doctors to reliably interpret diagnostic scans. Additional training would help to build basic knowledge and skills in recognition of CZS features.

MCSP defined several key recommendations based on the results of this assessment:

- It is important going forward to build capacity of providers to include a survey of all potential findings associated with CZS during obstetric ultrasound in ZIKV-affected regions.
- More than just fetal biometry should be used to assess for microcephaly, as potential findings other than microcephaly were not generally understood or routinely assessed.
- All service delivery sites should have on site a set of evidence-based standards for clinical management of cases of suspected ZIKV infection in pregnancy, with easy access to these standards by all providers caring for such patients.
- Consideration should be given to foster collaboration with Latin American and/or international professional ultrasound societies and MOHs to raise the standard of obstetric ultrasound practice, the development of guidelines and protocols, and the maintenance of continuing education for doctors. Once local guidelines are developed, they could be shared via pre-service, in-service, and continuing education, and disseminated to all facilities as accepted standards for normal/abnormal fetal head size and diagnosis of CZS.
- QI related to the development and optimization of referral patterns should consider the capacity observed at the “centers of excellence” identified in each country.

Windward Islands Research and Education Foundation

In Grenada, MCSP partnered with the Windward Islands Research and Education Foundation (WINDREF) at St. George’s University to characterize the impact of in utero ZIKV exposure on neurocognitive development. The primary objective was to ensure children with in utero ZIKV exposure reach their full developmental potential at 1 and 2 years old by identifying and addressing developmental challenges as early as possible. WINDREF measured multiple neurodevelopmental outcomes in a well-characterized cohort of ZIKV-exposed children in Grenada using sensitive measures of cognition, language, fine and gross motor skills, behavior, attention, and social-emotional reactivity. Preliminary results are the ESC region’s first to describe the neuropsychological impact of in utero ZIKV exposure in infants in their first 2 years of life.³

Before MCSP funding, WINDREF conducted assessments of children 1-year-old (12 ± 2 months) for neurodevelopmental disturbances using the Oxford Neurodevelopment Assessment, an internationally validated tool for the measurement of multiple neurodevelopment outcomes (cognition, language, motor

³ Santos IS, Bassani DC, Matijasevich A, et al. 2016. Infant sleep hygiene counseling (sleep trial): protocol of a randomized controlled trial. *BMC Psychiatry*. 16(1):307. doi: 10.1186/s12888-016-1016-1.

skills, behavior, attention problems, and social-emotional reactivity). With MCSP funding, WINDREF continued to follow these children as they aged to characterize their neurodevelopmental functioning at 22–26 months old using the INTERGROWTH-21st Neurodevelopment Assessment,^{4, 5} an internationally validated, comprehensive measure of cognition, fine and gross motor skills, expressive and receptive language, behavior, attention problems, and social-emotional reactivity. It also screened children for epilepsy using a parent questionnaire and electroencephalography scans, which were interpreted by board-certified pediatric neurologists in the United States via a telemedicine platform.

WINDREF investigators aimed to determine whether ZIKV-exposed children showed signs of developmental delays in cognition and behavior at 1 and 2 years old. Of the 143 1-year-olds assessed by February 28, 2019, maternal antenatal ZIKV status was confirmed in 49 children (12 nonexposed children and 37 ZIKV-exposed children). Preliminary group comparisons did not reveal any differences in cognition or behavior between nonexposed and ZIKV-exposed children at 1-year-old, but small sample sizes warrant caution in interpreting these results. Among 2-year-olds (nine nonexposed and 47 ZIKV-exposed children), six fell below the 25th percentile using international normative standards.^{6, 7} All six children were in the ZIKV-exposed group and referred for early intervention with GRENCASE's Roving Caregivers Programme, an MCSP subawardee that provides home-based services to vulnerable populations across Grenada. Roving caregivers were trained in MCSP's TES Package and on Conscious Discipline, a neurodevelopmentally focused method that emphasizes safety, attachment, and self-regulation.⁸

This study engaged participation from the Ministry of Health, Social Security, and International Business (MOHSSIB); health facilities; frontline providers; locally hired research assistants; and participating families. All parties contributed to the success of this study and to public health awareness of ZIKV and its impact in Grenada. Both MCSP subawardees—WINDREF and GRENCASE's Roving Caregiver Programme—collaborated to bring their two work streams together to benefit Grenadians affected by ZIKV infection. The roving caregivers were trained in MCSP's TES Package and Conscious Discipline, which were incorporated into the home-based care approach. Beyond MCSP, parents in the WINDREF study will continue to have the opportunity to learn home-based therapy skills from GRENCASE's roving caregivers to connect and communicate more effectively with their children, which in turn will foster healthier neurodevelopment. MCSP funded the procurement of additional serum testing kits, electroencephalogram testing materials, and lab supplies for future study activities that will facilitate continued local learning and research.

Early Childhood Development

To assess the impact of TES trainings, MCSP assessed health workers' knowledge of TES before and after training, and observed service delivery during clinical sessions and guidance sessions with parents of children with CZS and other disabilities. MCSP created a standard tool to be used by supervisors (those trained during the TES TOTs) during their routine monitoring and mentoring visits with health workers, and collected supervisor feedback for analysis. MCSP provided guidance to supervisors as part of the TOT to ensure maintenance of key TES knowledge and skills. However, staffing shortages, delay in MOH-led step-down trainings in ESC, and lack of financial support to support data collection posed significant challenges to successful completion. While facilities did not submit observation checklist data, MCSP was able to obtain indicator data on the number of children ages 0–3 identified with disabilities/delays (including CZS), the number of children ages 0–3 receiving support services, and the number of referrals to disabilities facilities.

⁴ Fernandes M, Stein A, Newton CR, et al. 2014. The INTERGROWTH-21st Project Neurodevelopment Package: a novel method for the multi-dimensional assessment of neurodevelopment in pre-school age children. *PLoS One*. 9(11): e113360. doi: 10.1371/journal.pone.0113360.

⁵ Villar J, Fernandes M, Purwar M, et al. 2019. Neurodevelopmental milestones and associated behaviours are similar among healthy children across diverse geographical locations. *Nat Commun*. 10(1): 511. doi: 10.1038/s41467-018-07983-4.

⁶ Fernandes M, Stein A, Newton CR, et al. 2014. The INTERGROWTH-21st Project Neurodevelopment Package: a novel method for the multi-dimensional assessment of neurodevelopment in pre-school age children. *PLoS One*. 9(11): e113360. doi: 10.1371/journal.pone.0113360.

⁷ Villar J, Fernandes M, Purwar M, et al. 2019. Neurodevelopmental milestones and associated behaviours are similar among healthy children across diverse geographical locations. *Nat Commun*. 10(1): 511. doi: 10.1038/s41467-018-07983-4.

⁸ Bailey BA. 2015. *Conscious Discipline*. Oviedo, Florida: Loving Guidance Inc.

Research and Publications

1. Kallam B, Abuhamad A, Hermida J, et al. 2017. Development of obstetric ultrasound service delivery assessment tools in the context of the Zika virus epidemic in five USAID priority countries. *Am J Obstet Gynecol.* 217(6):724–35. doi: 10.1016/j.ajog.2017.08.057.
2. Noguchi LM, Beigi RH. 2017. Treatment of infections during pregnancy: Progress and challenges. *Birth Defects Res.* 109(5):387–90. doi: 10.1002/bdr2.1005.

Communication and Dissemination

Launch of the Caribbean Component of the USAID Zika Project

MCSP attended the launch of the Caribbean component of USAID ZIKV activities in December 2017. MCSP shared materials with local stakeholders and other partners during launch activities, which were covered by local media, and met with potential local partners in Port of Spain, Trinidad and Tobago, for MCSP-led activities.

Guyana Media Coverage

In July 2018, MCSP collaborated with the MOPH and Ptolemy Reid Rehabilitation Center to conduct a TOT for physiotherapists and other health care providers on TES. Representatives from the USAID Mission and members of the media were invited to attend opening ceremonies. Given the unique and important nature of the training, multiple media outlets published stories on MCSP's support to children with disabilities, particularly those affected by ZIKV. The Department of Public Information disseminated an article titled "Local therapists being trained to work with children born with microcephaly, other delayed developmental disabilities" on July 24, 2018.

Launch of NCRHA ECD Activities

In October 2018, the NCRHA team held a launch event to showcase planned activities in collaboration with MCSP in Port of Spain, Trinidad and Tobago. This launch highlighted the TES and PSS TOT sessions and locally led cascade trainings. CEOs of the regional health authorities, MOH representatives, and local media attended the event.

MCSP Presence at Various Global Fora

Cross-linked with Annex III.

MCSP Closeout Events

At the request of USAID, MCSP held country-specific closeout events in St. Lucia, Barbados, Grenada, Trinidad and Tobago, and Guyana in May and June 2019.

St. Lucia

MCSP held its closeout event on May 21, 2019. The event included speakers on PNC/QI, ECSB, and ECD activities from the MOHW, CRMA mentors, and other stakeholders. Approximately 35 participants attended the event, including the Hon. US Ambassador Linda Swartz Taglialatela, MCSP staff Lisa Noguchi and Brianne Kallam, and USAID Mission staff from the region, including Julia Henn, acting Mission director, and Alana Shury, Zika project lead. MCSP-supported activities were successful in St. Lucia, in large part due to strong buy-in from the MOHW and local stakeholders, such as the Children's Development and Guidance Center. Polyclinic staff presented successes in QI, including increased uptake of PPFP and EBF. Local ECD experts shared key achievements on ECSB step-down trainings that took place with the support of the MOHW. The Children's Development and Guidance Center and MOHW held additional ECD-focused trainings on TES and PSS for caregivers of children with delays and disabilities were also held across St. Lucia. Discussion on future outbreak readiness and continuation of activities that began under the MCSP project focused on the potential role of the private sector, making better use of media for community messaging and awareness, working on increasing male engagement in child rearing, supporting public-private partnerships, and increasing focus and training on young nurses to decrease migration of health workers to other countries.

Barbados

MCSP held its closeout event on May 22, 2019. MCSP spoke on outbreak preparedness, and the event included speakers on QI, ECSB, and ECD activities from the MOHW, CRMA mentors, and other stakeholders. Approximately 20 participants attended the event, including MCSP staff Lisa Noguchi and Brianne Kallam, and Alana Shury from the ESC USAID Mission. The closeout event focused on the successes in the areas of the facility-based QI projects, ECSB trainings, and ECD trainings, but it also left time to discuss the challenges and how to support local providers in QI work when facilities are understaffed. Facility teams shared their successes in increasing PFP counseling and uptake and EBF in select facilities. As ECSB and ECD step-down trainings have not yet occurred, MCSP used the closeout event to discuss plans for the MOHW to support these important service delivery strengthening trainings to additional providers in Barbados.

Grenada

MCSP held its closeout event on May 23, 2019. MCSP spoke on outbreak preparedness, and the event included speakers on ECSB and ECD activities from the MOHSSIB, CRMA mentors, and other stakeholders. The local subawardees, WINDREF and GRENCASE, co-moderated the event. Approximately 30 participants attended the event, including MCSP staff Lisa Noguchi and Brianne Kallam, and Alana Shury from the ESC USAID Mission. MCSP activities were successful in Grenada, in large part due to excellent partnerships between GRENCASE's Roving Caregivers Programme and WINDREF, two subawardees in Grenada. WINDREF shared the preliminary results of its study; the discussions focused on the need for continued research following this cohort of Grenadian children through childhood to early adolescence and beyond. The GRENCASE Roving Caregivers Programme presented on its ECD work across Grenada, Petite Martinique, and Carriacou, and shared its results of training 211 providers across all parishes of Grenada. GRENCASE trained doctors, nurses, teachers, daycare workers, and parents on ES, TES, and PSS for caregivers. WINDREF and GRENCASE's Roving Caregivers Programme used this closeout event to discuss their collaboration to continue to study and provide services to the children in the WINDREF cohort. The MOHSSIB, Ministry of Education and Human Resource Development, and Ministry of Social Development, Housing, and Community Empowerment were all in attendance and pledged future support for continued trainings and education on these topics.

Trinidad and Tobago

MCSP held its closeout event on May 28, 2019. MCSP spoke on outbreak preparedness and welcomed speakers on ECSB and ECD activities from the MOH, NCRHA clinical staff, and other stakeholders. The local subawardee, NCRHA, co-moderated the event. Approximately 30 participants attended, including MCSP staff Renee Perez and USAID Mission staff from the region, including Julia Henn, acting Mission director, and Alana Shury, Zika project lead.

Guyana

MCSP held its closeout event on June 19, 2019. MCSP presented on outbreak preparedness, and the event included local speakers on QI, ECSB, and ECD activities from the MOPH, CRMA mentors, and other stakeholders. A member of the IADB's staff shared a presentation on next steps for QI in Guyana. Approximately 40 participants attended, including the Hon. US Ambassador Sarah-Ann Lynch, MCSP staff Mark Hathaway and Allison Schmale, and USAID Mission staff from the region, including Julia Henn, acting Mission director, and Alana Shury, Zika project lead. Presentations highlighted MCSP activities, including work of three different CRMA mentors covering three different regions to expand the breadth of PNC/QI activities. CRMA mentors have been called upon to continue this work after the departure of MCSP. Other successes noted included ECSB training in remote Region 7. A dedicated member of the MOPH and staff at the Ptolemy Reid Rehabilitation Center championed TES and PSS trainings, and the MOPH spearheaded step-down trainings to expand knowledge sharing after MCSP's initial workshop. MCSP also worked with the University of Guyana to integrate new findings on caring for ZIKV-affected children and families into three

curriculum courses, which will be taught to nursing students as soon as spring 2019. The closeout event provided the opportunity for MCSP and local champions to share their hard work on the Zika response. The MOPH requested support in procuring additional newborn and ECD supplies for local health facilities, including baby weight scales, length boards, and head circumference measuring tapes. MCSP funded these procurements, along with additional ECSB models and kits for future MOPH-led cascade trainings.

Key Learning and Future Recommendations

The 2015 ZIKV outbreak in LAC revealed many gaps in the reproductive, maternal, newborn, child, and adolescent health continuum of care and significant health system weaknesses related to infectious disease diagnosis and surveillance. Through close partnerships with country governments and other local stakeholders, MCSP identified several key recommendations for future partners and projects.

Key Learning

- While the Zika virus outbreak was unique in its presentation and impact on reproductive, maternal, newborn, and child health services, the need for coordinated strategy across sectors in an outbreak response is not. As the peak of the outbreak passed, sustained support was needed to maintain local investments of time and resources to longer term needs, e.g., care and support for affected families.
- Countries impacted by the Zika outbreak should implement comprehensive human capacity development approaches to ensure qualified staff are prepared for future outbreaks. MCSP successfully implemented evidence-based, sustainable approaches to capacity-building of health professionals in partnership with local organizations.
- Monthly review and display of key indicators at the facility level and at data review meetings enabled health workers to monitor their performance and decide how to improve reproductive, maternal, newborn, and child health services at the local level. Through use of the MCSP Data Use Package, providers learned how to plot and track progress toward their goal over time.
- Health providers with little to no prior experience working on TES and other ES activities can easily learn this information and integrate it into their routine services.
- Supporting children with CZS and other disabilities requires multisectoral collaboration. Identifying all appropriate providers and clarifying training cascades within those cadres before the TOT would improve efficiency of program expansion.
- Knowledge sharing in Guyana, where QI staff came together and discussed challenges and successes, encouraged facility staff to learn from other facilities going through a similar process.
- Communication pathways within the health system may require reinforcement. In implementing country QI activities, MCSP found a lack of clear communication regarding QI activities, from facility leadership to frontline staff.
- MCSP-led activities contributed to increased capacity to care for low-birthweight and preterm babies and to provide other components of essential newborn care, both critical components of a comprehensive ZIKV outbreak response.
- Strong in-country partnerships with MOHs, clinical specialists, and professional associations are critical to ensure acceptability and sustainability of changes to health service delivery, particularly in short-term response activities.
- Procurement of educational materials and equipment for trainings and future practice can support sustainability of activities that otherwise are not included in health system budgets due to the unpredictability of emergency response activities.

Future Recommendations

- Countries should use a structured mentoring process, reinforce use of checklists and job aids for self-learning (by health professionals), develop an exchange program to allow health professionals to share knowledge and experiences, and support capacity-building for on-the-job training at facility level to sustain skills of health professionals.
- To build upon improvements in quality of reproductive, maternal, newborn, and child health services in the context of the Zika response, countries should identify and support QI advocates at facility and district levels who motivate their supervisees and coworkers to make progress on quality indicators. MOH staff should publicly recognize champions, managers, and health workers for their progress and successes. To sustain capacity-building efforts, MOHs and donors should dedicate resources to support decentralization of QI efforts by mentoring provincial and district focal points in management and leadership skills for QI.
- MOHs should prioritize data discussions to analyze quality indicators and create healthy competition to improve services.
- Health systems should institutionalize ZIKV prevention and vector control messages across a range of settings.
- Health systems should increase the capacity of local facilities and laboratories for higher disease reporting, testing, results communication, and analysis of reportable disease data, including for ZIKV infection.
- Health systems should invest in communication and accountability mechanisms that build trust between communities and country governments, maintaining mechanisms for multisectoral communication and collaboration.
- Health systems should integrate TES and PSS curricula into providers' pre-service training and reinforce in-service learning in these areas by establishing coaching and mentoring.
- Health systems should update policies and systems to ensure an enabling environment for family planning counseling, informed family planning choice, and services for families and children impacted by CZS and other disabilities.
- Implementing partners should invest in partnerships with MOHs, local clinical specialists, and professional associations to ensure acceptability and sustainability of changes to service delivery, particularly in short-term response activities.
- Facility managers should continue to develop QI champions to provide coaching and technical assistance in QI competencies.
- Health systems should consider integrating ECSB curricula into health providers' pre-service training and continuing education, refresher trainings for health providers, and use of ECSB checklists within the neonatal intensive care unit, labor ward, postnatal ward, and health clinics.
- MOHs should collaborate with regional organizations, such as professional organizations, for technical assistance that is relevant, contextually appropriate, and sustainable. MCSP worked closely with CRMA clinical mentors, who were already supported by MOHs and working in participating facilities. This enabled facilities to receive mentorship and technical support from health providers aware of the context-specific challenges and possibilities within the health system. This also provided an opportunity for capacity-building, as MCSP worked closely with these clinical mentors to provide programmatic and technical support in maternal and newborn health, family planning, and data collection.

Sustainability and Exit Strategy

MCSP designed global and regional ZIKV response activities to accelerate country journeys to self-reliance (J2SR) with the aim of continuity after the project ended. In working with other USAID implementing partners, PAHO, CARPHA, professional associations, and MOHs, MCSP sought to strengthen capacity and commitment of health systems and providers to respond to the evolving ZIKV outbreak, including in later stages of the outbreak response, especially for ZIKV-affected families. The following highlights some of the strategies MCSP undertook in each country to facilitate sustainability after the end of the project:

Integrating MCSP products and strategies into pre-service education: At the end of the MCSP Zika response program, the University of Guyana was integrating TES curriculum into three courses, ensuring that best practices in ECD will continue in Guyana beyond the completion of the project through trained health providers.

Identifying children with disabilities and providing technical assistance to country-level partners responsible for working with them: During the initial MCSP scoping visit, the Trinidad and Tobago MOH selected ECD as the priority area for MCSP support of the local ZIKV response. The MOH selected NCRHA, the national leader for care and support of children with disabilities, as the recipient of an MCSP subaward to strengthen the existing expertise. This strategy allowed for existing health providers to be the implementers and recipients of trainings and materials development included in the scope of work. In addition to ECD trainings focused on TES and PSS, Trinidad and Tobago also participated in regional and national ECSB TOTs to ensure that providers continue to receive this training.

In Grenada, MCSP selected GRENCASE as the recipient of the subaward to strengthen the capacity of the health care workers and providers who serve vulnerable populations in Grenada, including children with disabilities. As the local implementer of roving caregiver services, GRENCASE is embedded within the existing health system and continues to serve as a critical linkage between children with disabilities and the formal health care system. MCSP also provided support to WINDREF, an affiliate of St. George's University in Grenada. At the end of MCSP activities, WINDREF continued follow-up of a cohort of ZIKV-affected children and will conduct neurodevelopmental assessments using a locally validated research tool with US National Institutes of Health funding. Part of the sustainability strategy in Grenada was to link the children identified by the WINDREF study as being affected by ZIKV during pregnancy with GRENCASE roving caregivers so that children receive the ECD interventions and support to meet their full developmental potential and to improve their and their families' quality of life.

Working with and through professional associations: MCSP worked closely with the CRMA to implement activities in Barbados, St. Lucia, and Guyana. These three countries requested that MCSP activities focus on ECD, data use for improved health services, and building capacity for health providers in maternal and newborn health care, particularly PNC. Technical updates on PNC, QI, ECSB, and ECD through TES included skills for trainees to build the capacity of other providers on high-impact interventions. MCSP also provided materials for continued cascade trainings, oriented health providers on tools and processes required to implement QI plans, and engaged health providers embedded in the public health system to work as clinical mentors. MOHs can continue these efforts by working with staff to assist facilities with other QI plans in the future. QI plans can be amended to track and improve any indicator of interest or concern, either related or unrelated to outbreak response.

Ensuring sustainability for essential care for premature and low-birthweight infants, including ZIKV-affected infants through cascade trainings in-country: MCSP built capacity for health providers to conduct cascade trainings in other health facilities and communities, and donated training materials for continued practice.

Creating a regional TWG: MCSP led the process for the creation of the Zika TWG to support the care of children and families affected by Zika in the ESC. Through its membership, the TWG will continue to serve as a platform at the regional level to promote global, evidence-based, high-impact interventions related to the ZIKV response as it pertains to affected children and their families. The TWG finalized a terms of reference with operational guidelines and a 2019 work plan. In April 2019, MCSP transferred the management of the Zika TWG to ASSIST to lead as chair. MCSP continued to support this transition and share tools/resources for sustainability of the TWG. Following the end of the project, the TWG will synergize efforts in the ESC and increase effectiveness through collaboration among organizations, associations, agencies, individuals, governments, and the private sector in the region.

Working with regional public health authorities: MCSP coordinated activities with regional public health authorities via the following strategies:

- **CARPHA:** MCSP supported the CARPHA-led development of a ZIKV pregnancy registry, which will be used in surveillance of ZIKV and other congenital birth anomalies after the close of MCSP in the ESC region. This registry will provide country health systems with a tool to better anticipate, prepare, and respond to future epidemics.
- **PAHO:** In Guyana, PAHO is well positioned to support QI activities in country after the close of MCSP. MCSP also handed over QI-related materials, tools, and recommendations to the MOPH at the end of project. The MOPH plans to scale up QI efforts to additional health facilities and regions with support from the IDB.

Through collaboration with local stakeholders, MCSP prioritized work that was relevant at country and regional level. MCSP focused on reinforcing existing functions of health systems, facilitating quality improvement strategies for a range of service delivery settings and introducing best practices in ECD through TES and PSS. Finally, MCSP collaborated with global partners to develop and disseminate materials so that critical knowledge and tools were available to health providers and organizations across the region.

Annex Ia. Performance Indicator Reporting Sheet

The table below presents the Maternal and Child Survival Program (MCSP)'s performance for the US Agency for International Development's Zika virus (ZIKV) indicators. Throughout the life of activities, MCSP trained 520 providers on prevention of ZIKV infection. These providers came from various services, such as labor and delivery wards, postnatal care (PNC) services, and early childhood development (ECD) providers. Reviewers of these data should be aware of generally low-volume facilities in these island nations impacted by the ZIKV outbreak. MCSP developed and integrated a ZIKV prevention technical brief, the content of which is integrated into all provider trainings. MCSP's support led to 612 referrals: 158 clinical referrals and 454 nonclinical referrals.

	Indicator 2A	Indicator 4A
Q1 Total (Oct. – Dec. 2017)	0 health providers	0 referrals
Q2 Total (Jan. – March 2018)	25 health providers	1 referral Clinical: 1 referral Nonclinical: 0 referrals
Q3 Total (April – June 2018)	124 health providers	0 referrals
Q4 Totals (July – Sept. 2018)	102 health providers	69 referrals Clinical: 0 referrals Nonclinical: 69 referrals
FY2018 Total	251 health providers	70 referrals
Q1 Total (Oct. – Dec. 2018)	263 health providers	108 referrals Clinical: 0 referral Nonclinical: 108 referrals
Q2 Total (Jan. – March 2019)	6 health providers	434 referral Clinical: 157 referral Nonclinical: 277 referrals
FY2019 Total	269 health providers	542 referrals
End-of-Project Total	520 health providers	612 referrals

Annex Ib. Other Zika Activity Indicators

Data collection began in PY4Q4 for most indicators. The following tables include totals for indicators tracked for Q3 and Q4 of PY4 and Q1 and Q2 of PY5 for PNC and ECD programs.

Table 2. Postnatal care (PNC)/quality improvement (QI) indicators

Country	Number/ percentage of MCSP supported PNC/QI supported sites that received at least one supervisory visit post training	Percentage of newborns breastfed within 1 hour of birth	Percentage of newborns placed skin to skin immediately after birth for 1 hour	Percentage of newborns with a temperature < 36.5°C upon admission to postnatal ward	Number/percentage of newborns receiving a PNC home visit referred from delivering institution to an MCSP supported facility	Percentage of postpartum women who adopt a postpartum family planning method of choice at MCSP supported facilities	Percentage of women who report exclusive breastfeeding at MCSP supported facilities (postpartum time period varies by country)
Barbados	10/10 (100%)	9	9	123/1,501 (8%)	41/413 (10%)	329/725 (45%)	74/126 (59%)
Guyana	10/10 (100%)	9	1,070/4,595 (23%)	9	9	450/580 (78%)	453/566 (80%)
St. Lucia	13/13 (100%)	398/860 (46%)	9	9	86/199 (43%)	89/110 (81%)	88/188 (47%)
Total	33/33 (100%)	398/860 (46%)	1,070/4,595 (23%)	123/1,501 (8%)	127/612 (21%)	868/1,415 (61%)	615/880 (70%)

⁹ Indicator not identified as a QI priority for the country and not captured within PNC/QI activities.

Table 3. Early childhood development (ECD) indicators

Country	Number/ percentage of children (ages 0 3) with a disability enrolled in therapeutic early stimulation (TES) at country specific institution (disaggregated by clinical and confirmed cases of congenital Zika syndrome)	Number/ percentage of facilities or outposts with a provider trained by MCSP in TES	Number of national providers trained by MCSP ^a	Percentage of providers passed (scored 80% or above) MCSP TES knowledge and learning survey pre test ^b	Number of policies, regulations, or guidelines related to capacity to manage ECD that includes provision for care and treatment of disabled newborns and children	Number of curricula of physical, occupational, and speech/ language therapy programs to address gaps in TES	Percentage of Zika virus (ZIKV) exposed children who score significantly below non ZIKV exposed children on neurodevelopmental assessment	Percentage of ZIKV exposed children who score significantly below non ZIKV exposed children on the neurodevelopmental assessment who were referred to specialized services
Barbados	13	n.d.	17	17/20 (85%)	1	n.d.		
Grenada	120	n.d.	93	17/23 (74%)	1	n.d.	36/170 (21%)	2/36 (6%)
Guyana	79/79 (100%) ^c	20	49 ¹⁰	24/26 (92%)		5		
St. Lucia	227/835 (27%) ^d	n.d.	19 ¹¹	18/18 (100%)	1	n.d.		
Trinidad	15	n.d.	91	23/26 (88%)		n.d.		
El Salvador	n.a.	n.d.	29	n.a.		n.d.		
Total	454	20	298	99/113 (88%)	3	5	36/170 (21%)	2/36 (6%)

a) Includes people trained in TES and psychosocial support, and considers MCSP, subawardees, and ministry of health trainings

b) Only includes TES training of trainers

c) Data collected from the Ptolemy Reid Rehabilitation Center; TES activities have been incorporated in all therapies

d) Data collected from the Children's Development and Guidance Center

n.d. Indicator not defined for this country

n.a. Data not available

¹⁰ The Guyana Ministry of Public Health led a TES step-down training where an additional 15 providers were trained using MCSP materials.

¹¹ The St. Lucia Ministry of Health led TES step-down trainings where an additional 51 providers were trained using MCSP materials.

Annex II. Training Summary

Training	Country	Curricula	Length	Training Dates	Total Participants and Cadre	Total Newly Trained Health Providers in Zika Prevention (Indicator 2a)
Postnatal care (PNC)/quality improvement (QI) training	Barbados	MCSP facilitated a workshop focusing on PNC service delivery strengthening, data quality, and use (March 7–8, 2018). MCSP technical advisors, MCSP monitoring and evaluation specialists, and representatives of the Caribbean Regional Midwives Association (CRMA) conducted visits to 10 supported facilities. During each site visit, the team developed QI action plans to strengthen QI activities chosen during the workshop.	2 days	March 7–8, 2018	10 facilities, 25 participants	25 participants: doctors, midwives, nurses
Essential Care for Small Babies (ECSB) subregional training of trainers (TOT)	Trinidad and Tobago	A subregional ECSB TOT was conducted in Trinidad and Tobago on April 11–12, 2018, with nine participating countries and five Guyanese co-facilitators. MCSP trained participants from nine Eastern and Southern Caribbean countries (five MCSP-supported countries and four additional countries selected by the CRMA). Participants were oriented on counseling women of reproductive age on Zika virus (ZIKV) prevention.	2 days	April 11–12, 2018	28 participants, 9 countries	28 participants: doctors, midwives, nurses
PNC/QI training	St. Lucia	MCSP held a PNC/QI workshop in St. Lucia on May 7–8, 2018, covering technical updates on PNC and ZIKV, as well as approaches and tools for QI. The workshop was followed by site visits (May 9–11) to 16 facilities, where MCSP staff supported development of QI plans. During the workshop and site visits, four major QI priorities emerged, including home visits to mothers/infants within a 10-day period after birth (as outlined in St. Lucia policy), counseling on exclusive breastfeeding, counseling on postpartum family planning ≤ 6 weeks, and referrals/counterreferrals and information sharing with the Child Development and Guidance Center (semiprivate facility that receives all children with delays/disabilities).	2 days	May 7–8, 2018	26 participants, 16 facilities	26 participants: doctors, midwives, nurses

Training	Country	Curricula	Length	Training Dates	Total Participants and Cadre	Total Newly Trained Health Providers in Zika Prevention (Indicator 2a)
Psychosocial support (PSS)	Grenada	MCSP held this training in collaboration with the Red Cross on May 15-17, 2018, with 27 participants and on May 20-28, 2018, with 28 participants.	2 days	May 15–17 and 28–20, 2018	55 participants, 6 parishes	0: training content led and facilitated by the Red Cross
PNC/QI training	Guyana	MCSP held a PNC/QI workshop in Georgetown, Guyana, covering technical updates on PNC, essential newborn care, and ZIKV, and the framework and tools for conducting QI activities in facilities. The workshop included participants from health facilities in Regions 4, 5, and 7, including the central hospital (Georgetown Public Hospital Corporation) and the Ministry of Public Health (MOPH). All facility teams developed a QI plan that included the identification of key indicators. The workshop was followed by site visits, where MCSP and CRMA focal points reviewed facility registers, data collection tools, and QI plans with facility staff.	3 days	May 15–17, 2018	22 participants, 10 health facilities	22 participants: doctors, midwives, nurses
ECSB national TOT	St. Lucia	MCSP supported five Ministry of Health and Wellness representatives from the regional TOT in Trinidad and Tobago to conduct a step-down ECSB TOT for 23 doctors, nurses, and other health providers in St. Lucia.	2 days	June 12–14, 2018	23 participants, 5 facilities	19 participants: doctors, midwives, nurses
Therapeutic early stimulation (TES) and early stimulation (ES) TOT	Grenada	MCSP conducted a workshop on ES and TES in collaboration with subawardee and home-based care provider Grenada Citizen Advice and Small Business Agency (GRENCASE)'s Roving Caregivers Programme. MCSP supported identification of six providers who will go on to facilitate step-down trainings through September 2018. The MCSP early childhood development (ECD) specialist provided recommendations on development of ES videos (a deliverable of the GRENCASE subaward). Workshop participants were also trained on counseling women of reproductive age on ZIKV prevention.	5 days	June 25–29, 2018	29 participants, 6 parishes	29 participants: nurses, special education teachers, early childhood teachers, social workers, daycare supervisors, roving caregivers

Training	Country	Curricula	Length	Training Dates	Total Participants and Cadre	Total Newly Trained Health Providers in Zika Prevention (Indicator 2a)
Subregional Workshop on Care for ZIKV-Affected Infants and Families	Trinidad and Tobago	MCSP facilitated a workshop on technical and programmatic updates related to congenital Zika syndrome (CZS), PNC, and health services in the context of the ZIKV outbreak in the region. MCSP presented clinical updates on PNC, the relevance of healthy timing and spacing of pregnancy to families of disabled children, and ECD. The workshop was attended by 85 participants from 18 countries.	2 days	June 27–28, 2018	85 participants, 18 countries	0: workshop did not include ZIKV prevention training ¹²
Helping Babies Survive national TOT	Guyana	MCSP supported four MOPH representatives from the regional TOT in Trinidad to conduct step-down training of providers in Region 7, including Helping Babies Breathe, Essential Care for Every Baby, and ECSB for 22 doctors, nurses, midwives, and community health workers in Guyana.	3 days	July 11–13, 2018	22 participants, 12 facilities	22 participants: doctors, midwives, nurses
TES TOT	Guyana	MCSP conducted a TES training for physiotherapists, occupational therapists, pediatricians, and health care workers from the MOPH. Staff administered pre- and post-tests on the training. Trainers also provided hands-on experience through practice of TES activities with infants identified with CZS at Ptolemy Reid Rehabilitation Center.	3.5 days	July 23–27, 2018	28 participants, 7 regions	27 participants: therapists, teachers, and rehabilitation assistants
TES TOT	St. Lucia	MCSP conducted training for community health nurses, specialists from the Child Development and Guidance Center, and special education teachers.	3.5 days	August 6–10, 2018	22 participants, 13 facilities	12 participants: nurses, mental health nurses, preschool teachers, special education teachers, therapists, representative from roving caregivers

¹² This workshop, although not an explicit training activity, gave MCSP the opportunity to present its Zika prevention material to providers, MOH, CRMA, and CARPHA representatives from countries that MCSP directly supported, and others within the ESC region (Antigua, Dominica, St. Vincent, St. Kitts, and Jamaica). A total of 30 participants at the workshop were attendees who had not previously seen MCSP's Zika prevention materials.

Training	Country	Curricula	Length	Training Dates	Total Participants and Cadre	Total Newly Trained Health Providers in Zika Prevention (Indicator 2a)
TES step-down (1)	Grenada	MCSP supported the GRENCASE's Roving Caregivers Programme and in-country stakeholders to conduct a secondary cascade of the original TES training in-country.	4 days	August 25–28, 2018	18 participants, 7 parishes	18 participants: Ministry of Health, Social Security, and International Business (MOHSSIB)
TES Step-down parenting workshop	Grenada	MCSP supported GRENCASE's Roving Caregivers Programme to conduct a secondary cascade of the original TES training for parents of young children with disabilities. Training data are not included in indicator 2a because only parents were trained.	4 days	September 24–27, 2018	72 participants, 6 parishes	0: participants and parents are not included in health providers counted in indicator 4a
ECSB national TOT	Trinidad and Tobago	MCSP supported five Ministry of Health (MOH) representatives from the regional TOT in Trinidad and Tobago to conduct a step-down ECSB TOT for 17 doctors, nurses, and midwives in Trinidad and Tobago.	2 days	September 26–27, 2018	27 participants, 10 facilities	23 participants: doctors, midwives, nurses
TES TOT	Trinidad and Tobago	MCSP, in coordination with the North Central Regional Health Authority (NCRHA), conducted training for doctors, midwives, and nurses on TES.	3.5 days	October 1–4, 2018	30 participants, 14 facilities/organizations	30 participants: therapists, social workers, nurses
TES step-down (2)	Grenada	MCSP supported GRENCASE's Roving Caregivers Programme and in-country stakeholders to conduct a secondary cascade of the original TES training in-country.	1 day	October 15, 2018	23 participants, 5 parishes	23 participants: Ministry of Education and Human Resource Development, Ministry of Social Development, Housing, and Community Empowerment, GRENCASE roving caregivers
TES step-down (1)	Trinidad and Tobago	MCSP supported the NCRHA and in-country stakeholders to conduct a secondary cascade of the original TES training in-country.	2 days	October 17–19, 2018	23 participants, 14 facilities/organizations	19 participants: nurses
TES step-down (2)	Trinidad and Tobago	MCSP supported the NCRHA and in-country stakeholders to conduct a secondary cascade of the original TES training in-country.	2 days	October 24–26, 2018	22 participants, 11 facilities/organizations	21 participants: therapists, nurses, nurse/educator, nursing assistants, social worker

Training	Country	Curricula	Length	Training Dates	Total Participants and Cadre	Total Newly Trained Health Providers in Zika Prevention (Indicator 2a)
Caregiver PSS TOT	Trinidad and Tobago	MCSP, in coordination with the NCRHA, conducted training for doctors, midwives, and nurses on PSS.	2 days	October 29–30, 2018	32 participants, 11 facilities/organizations	5 participants: social workers, nurses, clinical instructors
ECSB national TOT	Grenada	MCSP supported four MOH representatives from the regional TOT in Trinidad and Tobago to conduct a step-down ECSB TOT for 30 doctors and nurses in Grenada.	2 days	November 7–8, 2018	30 participants, 11 facilities	29 participants: providers
TES step-down (3)	Grenada	MCSP supported the GRENCASE Roving Caregivers Programme and in-country stakeholders to conduct a secondary cascade of the original TES training in-country.	2 days	November 7–8, 2018	23 participants, 8 facilities	23 participants: Ministry of Education and Human Resource Development, Ministry of Social Development, Housing, and Community Empowerment, MOHSSIB
Caregiver PSS TOT	Guyana	MCSP conducted training for rehabilitation assistants, doctors, midwives, and nurses on PSS.	2 days	November 13–14, 2018	32 participants, 9 regions	22 participants: doctors, nurses, social workers, therapists, rehabilitation assistants
TES step-down (3)	Trinidad and Tobago	MCSP supported the NCRHA and in-country stakeholders to conduct a secondary cascade of the original TES training in-country.	2 days	November 13–14, 2018	16 participants, 5 facilities	16 participants: clinicians and social workers
Caregiver PSS step-down (1)	Trinidad and Tobago	MCSP supported the NCRHA and in-country stakeholders to conduct a secondary cascade of the original PSS training in-country.	2 days	November 15–16, 2018	24 participants, 11 facilities/organizations	0 participants
Caregiver PSS step-down (2)	Trinidad and Tobago	MCSP supported the NCRHA and in-country stakeholders to conduct a secondary cascade of the original PSS training in-country.	2 days	November 21–22, 2018	25 participants, 6 facilities/organizations	0 participants
ECSB national TOT	Barbados	MCSP supported five MOH representatives from the regional TOT in Trinidad and Tobago to conduct a step-down ECSB TOT for 29 doctors and nurses in Barbados.	2 days	November 27–29, 2018	29 participants, 11 facilities	28 participants: providers

Training	Country	Curricula	Length	Training Dates	Total Participants and Cadre	Total Newly Trained Health Providers in Zika Prevention (Indicator 2a)
TES TOT	Barbados	MCSP conducted training for doctors, midwives, nurses, physical therapists, and special education teachers on TES.	3 days	December 3–5, 2018	23 participants, 11 facilities	16 participants: teachers, doctors, nurses, therapists
Caregiver PSS TOT	Barbados	MCSP conducted training for doctors, midwives, nurses, physical therapists, and special education teachers on PSS.	2 days	December 6–7, 2018	22 participants, 13 facilities/organizations	1 participant: doctor
Caregiver PSS step-down	Grenada	MCSP supported GRENCASE and in-country stakeholders to conduct a secondary cascade of the original PSS training in-country.	2 days	December 10 and 12, 2018	15 participants, 5 parishes	0 participants: step-down based off of Red Cross PSS training materials
Caregiver PSS TOT	St. Lucia	MCSP conducted training for doctors, midwives, nurses, physical therapists, and special education teachers on PSS.	2 days	December 10–11, 2018	23 participants, 14 facilities	7 participants: nurses, mental health nurses, preschool teachers, special education teachers, therapists
TES TOT	El Salvador	MCSP, in collaboration with Save the Children International, conducted training for MOH/Ministry of Education representatives, nurses, and special education professionals on TES.	3.5 days	December 10–14, 2018	23 participants, 6 agencies/organization	23 participants: teachers, doctors, nurses, and therapists
Caregiver PSS TOT	El Salvador	MCSP, in collaboration with Save the Children International, conducted training for MOH/Ministry of Education representatives, nurses, and special education professionals on PSS.	2 days	January 22–24, 2019	18 participants, 6 agencies/organizations	6 participants: health care workers, teachers, therapists

Annex III. Global, Regional, and Domestic Conferences

Conference	Date/Location	MCSP Participation and Key Takeaways
Regional Meeting of the Implementing Best Practices Initiative: Latin America and the Caribbean (LAC): Responding to the Unmet Need for Contraception with Evidence and High-Impact Best Practices during Times of Zika	June 13–15, 2016 Lima, Peru	This specially convened meeting focused on high-impact practices family planning in the context of the Zika virus (ZIKV) epidemic and was organized by the Implementing Best Practices Initiative, co-sponsored by the World Health Organization (WHO), the Pan American Health Organization (PAHO), and the United Nations Population Fund. MCSP co-hosted a session with WHO at the Share Fair on Family Planning on the Family Planning Training Resource Package. This session also launched the Medical Eligibility Criteria provider wheel in Spanish.
Webinar: Zika Congenital Syndrome in the Context of the Zika Epidemic	August 9, 2016 Online	MCSP co-hosted and presented a webinar in collaboration with PAHO and Applying Science to Strengthen and Improve Systems (ASSIST) (in Spanish) regarding congenital Zika syndrome (CZS), presented by Dr. Goldy Mazia, MCSP, and Dr. Pablo Duran, PAHO. The presentations and discussions focused on best practices related to prevention and screening of newborns for health care providers and health system managers in the LAC region. Participants included health care professionals and health system managers from throughout the LAC region.
Infectious Diseases Society for Obstetrics and Gynecology Annual Meeting	August 11–13, 2016 Annapolis, Maryland	MCSP participated in discussions during this annual meeting on several sessions related to ZIKV, including a US Centers for Disease Control and Prevention update. MCSP also engaged with the Infectious Diseases Society for Obstetrics and Gynecology for potential partnership areas.
PAHO meeting on CZS	July 19–21, 2016 Recife, Brazil	MCSP attended a meeting organized and sponsored by PAHO to characterize CZS.
LAC Conference to Reduce Inequalities in Sexual and Reproductive Health	September 2016 Cartagena, Colombia	M. Hathaway conducted a tablet-based survey for providers to collect feedback on the types and formats desired for Zika-related information for health providers.
USAID's Zika Vector Control Partners meeting	September 2016, Washington, DC	MCSP presented updates on MCSP programming.
Eunice Kennedy Shriver National Institute of Child Health and Human Development workshop: Bridging Knowledge Gaps to Understand How ZIKV Exposure and Infection Affect Child Development	September 22–23, 2016 Bethesda, Maryland	MCSP presented updated technical information on ZIKV infection.

Conference	Date/Location	MCSP Participation and Key Takeaways
USAID Zika Communication and Community Engagement Workshop	November 14–19, 2016 Panama City, Panama	L. Noguchi and A. Kellerstrass shared MCSP resources and updates.
Connected Health Conference	December 13–14, 2016 National Harbor, Maryland	L. Noguchi and A. Kellerstrass attended the Global Digital Health Forum and shared ZIKV-related resources available on ORB.
National Family Planning and Reproductive Health Association Annual Conference	March 5–8, 2017 Washington, DC	M. Hathaway presented ZIKV technical updates to providers and implementing partners.
CORE Group Spring 2017 Global Health Practitioner Conference	April 20, 2017 Washington, DC	MCSP and mPowering led a table that highlighted community-focused Zika training materials available on ORB and an overview of MCSP Zika response activities in Latin America and Haiti.
American College of Nurse-Midwives Annual Meeting	May 20–24, 2017 Chicago, Illinois	MCSP presented an oral presentation titled “ZIKV in the Americas: Responding to the Evolving Epidemic and Implications for Clinical Practice” at this conference attended by 100 participants.
Gottsfeld-Hohler Memorial Foundation Think Tank: ZIKV and Adverse Perinatal Outcomes	June 2017 Fort Lauderdale, Florida	MCSP co-presented with the Society for Maternal-Fetal Medicine on “Obstetric Ultrasound Capacity for Detection of CZS in LAC” on collaborative development of the obstetric ultrasound capacity assessment to detect CZS.
International Confederation of Midwives Triennial Congress	June 18–22, 2017 Toronto, Canada	L. Noguchi participated and shared MCSP and other Zika-related resources with participants, including midwives from Peru, Chile, Argentina, Mexico, and PAHO staff.
PAHO Meeting: Care and Support for Families with Children with Disabilities and Growth Retardation from Social and Health Services at the First Level	June 2017 Washington, DC	MCSP presented “Experiences between Neonatal Care Units and Other Levels of Care” (on behalf of colleagues in Colombia and El Salvador) to participants from six countries. The meeting focused on ways health systems can support children with disabilities as a framework for helping Zika-affected children.
World Sexually Transmitted Infection and HIV Congress	July 9–12, 2017 Rio de Janeiro, Brazil	MCSP attended and disseminated resources for providers on sexual transmission of ZIKV. Meetings were held with contacts in Brazil at Federal University of Rio de Janeiro, Fiocruz, and the Maternal, Child, and Adolescent Institute, particularly to explore strategies to identify and address gaps and challenges in the management and care of affected infants.
Webinar: “Contraception Services in the Zika Context – Is Latin America Up to the Challenge?”	August 2, 2017 Online	MCSP co-hosted a webinar (in Spanish) in collaboration with ASSIST, the International Planned Parenthood Federation, and Profamilia (presented by Dr. Pio Ivan Gomez, International Planned Parenthood Federation; Dr. Kissayris Martinez, SIFPO 2-Zika; Dr. Jonathan Vargas, Profamilia).

Conference	Date/Location	MCSP Participation and Key Takeaways
Infectious Diseases Society for Obstetrics and Gynecology Annual Meeting	August 10–12, 2017 Park City, Utah	MCSP presented a poster, “Development of Obstetric Ultrasound Service Delivery Assessment Tools in the Context of the ZIKV Epidemic in Five USAID Priority Countries.”
Webinar: Pregnant Women and the ZIKV Vaccine Research Agenda	September 2017 Online/Washington, DC	MCSP hosted this webinar by Dr. Carleigh Krubiner, faculty project director for the Pregnancy Research Ethics for Vaccines, Epidemics, and New Technologies project, for approximately 20 attendees and 10 online participants.
PAHO Meeting for Surveillance and Management of Congenital Malformations	September 12–14, 2017 Bogota, Colombia	G. Mazia presented on upcoming priorities in newborn health for the LAC region in the context of CZS. M. Hathaway also presented remotely on MCSP’s Long-Acting Reversible Contraceptives Learning Resource Package to approximately 200 attendees.
Contemporary Forums for Women’s Health and OB/GYN Care	September 21–23, 2017 Washington, DC	MCSP presented “ZIKV Update: Infection Prevention and Family Planning Counseling” to approximately 180 health providers.
Regional Meeting on Respectful Maternity Care	October 17–18, 2017 Port of Spain, Trinidad and Tobago	L. Noguchi participated in technical discussions.
Johns Hopkins University Digital Health Day	October 18, 2017 Baltimore, Maryland	Shared tablet-based ultrasound service delivery assessment tools with participants.
Webinar: Bases for a Model of Integrated Care and Support for Babies and Families Affected by Zika	November 6, 2017 Online	MCSP co-hosted and presented a webinar (in Spanish) in collaboration with the International Planned Parenthood Federation and the Altino Ventura Foundation regarding integrated care and support for babies and families affected by Zika (presented by Dr. Goldy Mazia, MCSP; Dr. Cristina Valença Azevedo Mota, executive secretary of Pernambuco; Dr. George S. Dimech, International Planned Parenthood Federation; Dr. Liana Ventura, Altino Ventura Foundation).
American Society of Tropical Medicine and Hygiene Annual Meeting	November 7–8, 2017 Baltimore, MD	L. Noguchi participated and shared MCSP Zika resources.
International Clearinghouse for Birth Defects Surveillance and Research Birth Surveillance Workshop and the International Conference on Birth Defects and Disabilities in the Developing World	November 7–9, 2017 Bogota, Colombia	MCSP participated in the workshop on November 7 and the conference on November 8–9 in Bogota, Colombia. There were various opportunities for updates and discussions on CZS (panels and simultaneous sessions), with presenters from Colombia, Brazil, and the United States (including the US Centers for Disease Control and Prevention). MCSP also provided technical expertise at the workshop on methodology for surveillance of birth defects.
Vaccines for Emerging and Re-Emerging Pathogens toward Guidance on Meeting the Needs of Pregnant Women Workshop by Pregnancy	November 9, 2017 Baltimore, MD	L. Noguchi participated in technical discussions.

Conference	Date/Location	MCSP Participation and Key Takeaways
Research Ethics for Vaccines, Epidemics, and New Technologies		
Fourth Global Forum on Human Resources for Health	November 13–17, 2019 Dublin, Ireland	MCSP's Zika response team and mPowering participated in the forum and promoted the Zika domain on the ORB web platform.
ASSIST's International Workshop for Strengthening Health Services to Fight Zika	November 28–30, 2017 Santo Domingo, Dominican Republic	Led technical discussions with key stakeholders on ZIKV epidemiology, family planning, and clinical features of CZS; contributed to the agenda; and facilitated sessions.
Department of Obstetrics and Gynecology at Washington Hospital Center Grand Rounds	February 2018 Washington, DC	L. Noguchi presented during Grand Rounds on "Zika: Update on the Global Epidemic."
Webinar: Two years Later: Implications of the Zika Epidemic on the Health of Women and Newborns in the Americas, Current and Future Challenges	February 21, 2018 Online	MCSP co-hosted and moderated a webinar (in Spanish) in collaboration with PAHO and ASSIST regarding the implications of the Zika epidemic on women and children in the Americas (presented by Dr. Pablo Duran, PAHO).
WHO Technical Consultation on Postnatal Care Implementation	February 19–22, 2018 Geneva, Switzerland	Contributed to discussions on improving quality of postnatal care services and measurement (MCSP Core maternal health funding).
2018 International Social and Behavior Change Communication Summit	April 12–20, 2018 Bali, Indonesia	Participated in summit and was a panelist for "Amplifying Community Voices," which focused on children as change agents during the Zika response.
Caribbean Public Health Agency (CARPHA) Pregnancy Registry Design Meeting I	March 5–6, 2018 Port of Spain, Trinidad and Tobago	Facilitated comprehensive forum to discuss feasibility, design, and future implementation of a Zika pregnancy registry for the Caribbean region.
American Institute of Ultrasound in Medicine Conference	March 24–25, 2018 New York City, NY	Presented ultrasound capacity assessment tools and other MCSP materials.
Bill & Melinda Gates Foundation Maternal Immunization	May 2–5, 2018 Amsterdam, Netherlands	Shared MCSP materials (Jhpiego funding).
CARPHA Pregnancy Registry Design Meeting 2	May 21, 2018 Kingston, Jamaica	Co-led discussions with CARPHA on potential approaches to design of a CARPHA-led pregnancy registry for use in the Eastern and Southern Caribbean (ESC) region. Discussed current status of outcome data collection related to ZIKV exposure in pregnancy. Discussed operational parameters for implementation of a national and regional Zika registry.
American College of Nurse-Midwives Annual Meeting	May 20–24, 2018 Savannah, Georgia	L. Noguchi presented "ZIKV in the Americas: Where Are We Now?" as an update on epidemiology of the ZIKV epidemic and MCSP Zika response activities.
MCSP Subregional Workshop on the Care of Infants and their Families Affected by Zika	June 26–29, 2018 Trinidad and Tobago	Provided technical and programmatic updates related to CZS, postnatal care, and health services in the context of the Zika outbreak. MCSP

Conference	Date/Location	MCSP Participation and Key Takeaways
in English-Speaking Caribbean Countries		facilitated a meeting with partners to develop and maintain an ESC regional CZS technical working group.
US Center for Disease Control and Prevention's International Conference on Emerging Infectious Diseases	August 28, 2018 Atlanta, Georgia	Presented process of designing and implementing ultrasound capacity assessment tools.
International Federation of Gynecology and Obstetrics Rio	August 28, 2018 Rio de Janeiro, Brazil	M. Hathaway presented process of designing and implementing ultrasound capacity assessment tools.
ZERO TO THREE Annual Early Childhood Development Conference	October 3–5, 2018 Denver, Colorado	MCSP shared therapeutic early stimulation and psychosocial support packages, and the importance of integrated response for children in adversity.
Results for Contraceptive Choice Stakeholder Consultation	January 23–24, 2019 Washington, DC	MCSP participated in this technical consultation.
K4Health Zika Share Fair	April 1–3, 2019 Dominican Republic	M. Hathaway and J. Thimm shared summaries of MCSP Zika response work and disseminated resources to other implementing partners.
Comparative and International Education Society Annual Conference	April 14–19, 2019 San Francisco, California	MCSP presented lessons learned from implementation of early childhood development activities for children and families affected by ZIKV.
USAID ASSIST Care and Support for Children and Families Affected by CZS Meeting	April 24–26, 2019 Panama City, Panama	MCSP collaborated with ASSIST to host a workshop on care and support to children and families affected by ZIKV. One hundred and three participants from 17 countries, including the five ESC countries of focus under MCSP's PY4–5 work plan, shared experiences, knowledge, norms, and recommended care models and practices, with emphasis on continuum of care and support from clinical to community level. During day 1 of the meeting, Dr. Quintanar-Solares delivered a presentation summarizing MCSP's work in the Zika response in the LAC region, specifically regarding management of Zika-affected newborns by building capacity of health workers through Essential Care for Small Babies trainings, and additional information on identifying CZS. On day 2 of the meeting, F. Lara delivered a presentation on MCSP's experience developing and piloting two technical early childhood development packages: therapeutic early stimulation and psychosocial support for caregivers.

Annex IV. MCSP Zika Response Materials Adaptation and Development

Material	Key Content
Adaptable Clinical Update Resource Slides	This adaptable set of PowerPoint slides provides epidemiologic and technical updates on ZIKV and the care and support of Zika-affected infants and their families.
Algoritmo Consejería Balanceada - Impresión - Bloque de notas	Association for Gynecologists and Obstetricians of Guatemala (AGOG) Pan American Social Marketing Organization (PASMO)-adapted algorithm for counseling
Algoritmo Consejería Postparto - Impresión - Bloque de notas	AGOG PASMO-adapted algorithm for postpartum counseling
Algoritmo Consejería Prenatal - Impresión - Bloque de notas	AGOG PASMO-adapted algorithm for antenatal counseling
Basic First- and Second-Trimester Ultrasound Checklist	Health provider job aid in checklist form intended for guidance on utilization of ultrasounds on patients during their first and second trimester of pregnancy. The checklist is included as an appendix in MCSP's ultrasound capacity assessment reports.
Combat Zika Board Game (Community Action on Zika; CAZ) (Spanish)	This board game will be used in schools in CAZ focal countries to orient users on Zika virus (ZIKV) facts and how to prevent transmission, including elimination of breeding sites and identification of symptoms.
Community Protocol (CAZ) (Spanish)	Sets guidelines for communities to implement in the prevention of ZIKV. The protocol will be disseminated in CAZ focal countries.
Consejería en el contexto del virus de Zika	AGOG podcast on counseling in the context of Zika
Early Childhood Development (ECD): An Integral Part of Zika Response Programs Briefer (English and Spanish)	Describes relevance of ECD to a comprehensive Zika response and what related technical support is offered by MCSP in the Eastern and Southern Caribbean (ESC) and other regions. The briefer describes training content, the cascade training model, and knowledge sharing across the five MCSP countries in ESC, and can be used as an advocacy tool for strengthening ECD services for families affected by ZIKV and other congenital anomalies and developmental disabilities.
Family Planning Choice Chart Stamp	This stamp is a tool to add a succinct list of family planning method choices to individual patient care records to record patient choice and systematically redesign and reprint client charts.
Ficha - Flujogramas para la atención de mujeres con sospecha y sin sospecha de infección por virus Zika	AGOG PASMO-adapted flowchart on the care of women suspected to have Zika and those not suspected to have Zika
Generalidades sobre el Síndrome Congénito asociado a Zika	AGOG podcast providing general information on congenital Zika syndrome (CZS)
Gestational Age Wheel and Accompanying Briefer with ZIKV Content (French, Spanish, Haitian Creole, Portuguese, English)	The wheel is a job aid that helps providers estimate gestational age and provides reminders for counseling mothers/families on Zika content (e.g., prevention, symptoms, protection) and recommended case reporting by health care providers.

Material	Key Content
Grenada Early Stimulation Video	The Grenada Citizen Advice and Small Business Agency's Roving Caregivers Programme developed a video to introduce and demonstrate early stimulation therapies in the local environment for caregivers and parents.
Impresión Cinta Métrica	AGOG PASMO-adapted metric tape
Landscape Assessment Report	Report detailing findings of MCSP landscape assessment on depth and breadth of current Zika-related resources.
Long-Acting Reversible Contraceptives Learning Resource Package (English, French, Spanish)	MCSP Zika response team funded Spanish and French translations of the Long-Acting Reversible Contraceptives Learning Resource Package and implementation guidance, which provides facilitators and program staff with a comprehensive resource for high-quality, long-acting reversible contraceptives training using a modular, facility-based approach for capacity-building and mentorship.
MCSP Zika Response Team: Haiti and Regional Work Plan Activities Briefer	Briefer describing MCSP Zika response activities in the Latin American and the Caribbean region and in Haiti during PY1.
MCSP Zika Response Team: Work Plan Activities for PY2–3	Briefer describing MCSP Zika response activities in the ESC region during PY2–3.
North Central Regional Health Authority Posters and Brochures	The North Central Regional Health Authority produced six posters and six brochures on ECD and Zika-related topics, such as “What is Zika?,” “What is CZS,” and “Tummy Time.”
Package for Care and Support to Children Affected by CZS (CAZ) (Spanish)	A package of materials, including guide, brochure, rotafolio, and key messages sheet, to support frontline providers engaging with children and families affected by CZS. This package will be disseminated in El Salvador.
Postnatal Care Checklist and Poster with ZIKV Content (English, French, Spanish)	These are job aids listing recommended standards, reminders, and actions that should take place before a mother-baby dyad is discharged from the postnatal care ward.
Prevention of ZIKV Infection: Key Points for Counseling Women of Reproductive Age	This brief summarizes key points to include when counseling women of reproductive age on prevention of ZIKV infection, including recommended prevention strategies for infants and children.
Psychosocial Support (PSS) Training Manual and Presentation (English and Spanish)	The PSS materials are used in trainings of trainers (TOTs) and cascade trainings in the ESC region and beyond to strengthen emotional support received by Zika-affected families and caregivers.
Rueda con los criterios médicos de elegibilidad para el uso de anticonceptivos 2015	AGOG PASMO-adapted medical eligibility criteria for contraceptive use from 2015
Scoping Visit Assessment Tool	This tool was developed by MCSP and used by MCSP and Applying Science to Strengthen and Improve Systems (adapted version) to prioritize areas for Zika response activities in the ESC region. Responses are collected via interviews with stakeholders across the health system. At the request of USAID, MCSP adapted the tool for general use in different outbreak contexts.
Sintomatología y manifestaciones clínicas	AGOG podcast on Zika symptoms and clinical manifestations
Social and Behavior Change Communication TOT Guide (CAZ) (Spanish)	This guide provides guidance to community health workers on conducting behavior change activities for prevention of ZIKV transmission. This guide will be used in CAZ trainings in Central America.
Tabla de valores de Microcefalia – Impresión	AGOG PASMO-adapted chart for microcephaly

Material	Key Content
Technical Brief: Zika Response – Therapeutic Early Stimulation (TES) and PSS	Describes relevance of the TES and PSS training and methodologies to a comprehensive Zika response, and what related technical support is offered by MCSP in the ESC and other regions. The briefer describes training content, theories, and knowledge sharing across the five MCSP countries in ESC.
TES Home Visit and Support Group Observation Checklist	Job aids for supervisors that can be used at the household or group level to assess health care provider TES knowledge and quality of activity implementation
TES Training Manual, Activity Cards, Presentation, and Handouts (English and Spanish)	The TES materials are used in TOTs and cascade trainings in the ESC region and beyond to strengthen ECD-related skills of providers and caregivers. The content covers care and support for children with disabilities.
Trifoliar – ¿Que métodos de planificación familiar nos conviene usar?	AGOG PASMO-adapted brochure on family planning methods
Trifoliar – Repelente- ¿Zika a mí?	AGOG PASMO-adapted brochure on personal implications of Zika
Trifoliar – Usemos Condón	AGOG PASMO-adapted brochure on condom use
Ultrasound Capacity Assessment Report: Haiti (French, English)	Report detailing findings and recommendations from in-country ultrasound capacity assessment conducted in Haiti in 2016.
Ultrasound Capacity Assessment Report: Dominican Republic (English, Spanish)	Report detailing findings and recommendations from in-country ultrasound capacity assessment conducted in the Dominican Republic in 2016.
Ultrasound Capacity Assessment Report: Honduras (English, Spanish)	Report detailing findings and recommendations from in-country ultrasound capacity assessment conducted in Honduras in 2016.
Ultrasound Capacity Assessment Report: El Salvador (English, Spanish)	Report detailing findings and recommendations from in-country ultrasound capacity assessment conducted in El Salvador in 2016.
Ultrasound Capacity Assessment Report: Guatemala (English, Spanish)	Report detailing findings and recommendations from in-country ultrasound capacity assessment conducted in Guatemala in 2016.
Ultrasound Capacity Summary Report and Infection Prevention and Control Guidance	The five-country summary report communicates findings from the ultrasound capacity assessments in 2016–2017. The report includes survey tools and an adaptable Basic First- and Second-Trimester Ultrasound Checklist for provider use.
Ultrasound Capacity Assessment Tools	These tools were used in five countries (Guatemala, El Salvador, the Dominican Republic, Haiti, and Honduras) to assess equipment functionality, provider capacity, and environment of care for obstetric ultrasound in the context of the Zika response. Surveys include: clinical practice interview, clinical provider interview, service delivery observation, and equipment and environment of care assessment.
Zika Prevention During Pregnancy Brochure (CAZ) (Spanish)	Brochure of key messages on how to prevent Zika infection during pregnancy
Zika Prevention During Pregnancy Game (CAZ) (Spanish)	Educational games played to share key messages to prevent Zika infection during pregnancy

Annex V. Subgrants under the Activity

Subgrantee	Amount	Duration	Description	Contact Information	Main Results
American Institute of Ultrasound in Medicine (AIUM)	\$6,878	January 1, 2017– July 31 2018	AIUM was responsible for providing facilitation for working groups related to assessment preparation and logistics, administrative support related to travel for AIUM association members participating in the five-country assessment, and inputs for summary reports, which described actionable information for country governments and other USAID-funded partners regarding the quality of ultrasound services for evaluation of suspected congenital Zika syndrome (CZS).	Glynis Harvey, CEO, AIUM gharvey@aium.org	<ul style="list-style-type: none"> Contributions to the content and design of data collection tools used in all five countries Submission of country summary reports in collaboration with MCSP, the Society for Maternal-Fetal Medicine (SMFM), and Applying Science to Strengthen and Improve Systems (ASSIST), as relevant, at the conclusion of each country assessment trip to report on findings of the assessment Technical edits for final reports to USAID
SMFM	\$8,855	January 1, 2017– July 31 2018	SMFM contributed to technical expertise for the ultrasound assessments conducted in Latin America and the Caribbean in 2017. The SMFM co- led preliminary planning discussions and the development of an assessment plan. It was responsible for providing facilitation of working groups related to assessment preparation and logistics, administrative support related to travel for SMFM association members taking part in the assessment, and inputs for summary reports, which included actionable information for country governments and other USAID-funded partners regarding the quality of ultrasound services for evaluation of suspected CZS.	Matthew Granato, CEO, SMFM mgranato@smfm.org	<ul style="list-style-type: none"> Contributions to the content and design of data collection tools used in all five countries Submission of country summary reports in collaboration with MCSP, ASSIST, and AIUM at the conclusion of each country assessment trip to report on findings of the assessment Support for final reports to USAID

Subgrantee	Amount	Duration	Description	Contact Information	Main Results
Infectious Diseases Society for Obstetrics and Gynecology	\$3,740	February 15, 2017–July 31, 2017	In collaboration with MCSP and the Pan American Health Organization, the society contributed to the creation of a Zika pregnancy wheel. The wheel and supporting MCSP briefer were translated into Spanish, French, Haitian Creole, and Portuguese. The pregnancy wheel and accompanying briefer were designed to assist frontline health providers in assessing gestational age and estimated date of delivery. The pregnancy wheel includes reminders on key actions for health providers and counseling points for antenatal care clients on Zika virus.	Jennifer Ocampo-Martinez, Executive Director Jennifer.Ocampo@idsog.org	<ul style="list-style-type: none"> Contributed to MCSP production of a final version of the MCSP Zika Pregnancy Wheel. More than 25,000 wheels were distributed to 18 countries across the Latin America and the Caribbean region.
Emory University	\$25,976	November 1, 2017–October 31, 2018	Dr. Lathrop served as a maternal health and family planning technical advisor for the MCSP Zika response team to support Zika response efforts in five countries in the Eastern and Southern Caribbean region (Barbados, St. Lucia, Guyana, Trinidad and Tobago, and Grenada). Dr. Lathrop served as lead technical advisor for St. Lucia activities, including strengthening postnatal care and data use in health facilities. Specific contributions included writing and editing of technical documents, routine monitoring of the Zika response work plan activities, and provision of other technical assistance.	Dr. Eva Lathrop, Emory University Doctor elathro@emory.edu	<ul style="list-style-type: none"> Provided technical assistance within MCSP Zika response team. Provided technical assistance to the Caribbean Public Health Agency related to the Zika pregnancy registry and co-facilitated the design discussion meeting in Jamaica.
Caribbean Regional Midwives Association (CRMA): Barbados, Grenada, Guyana, St. Lucia, and Trinidad and Tobago	\$45,983	April 15, 2018–March 31, 2019	The CRMA, as a regional leader in building practitioner capacity in education and clinical practice, provided local technical assistance to Trinidad, St. Lucia, Guyana, Barbados, and Grenada. It provided logistical and administrative support for workshops, including the regional Essential Care for Small Babies (ECSB) training of trainers (TOT), national cascade ECSB trainings, and regional workshop on care of Zika-affected children and their families. The CRMA provided a mentor from within its membership in Barbados, St. Lucia, and Guyana to conduct clinical mentorship visits to track implementation of MCSP-supported facilities' quality improvement plans. Mentors were responsible for visiting each site monthly, completing necessary program and data reporting	Shirley Curtis, Former President of CRMA shirleycurtis@yahoo.com	<ul style="list-style-type: none"> Signed subaward with documented statement of work and milestone table. Conducted regional ECSB TOT. Completed April–August mentoring visits, reports, and data collection. Coordinated and supported MCSP's Subregional Workshop on Care for ZIKV-Affected Infants and Families.

Subgrantee	Amount	Duration	Description	Contact Information	Main Results
			requirements, and identifying strategies to assist facilities with achieving quality improvement aims.		
Grenada Citizen Advice and Small Business Agency (GRENCASE) Roving Caregivers Programme	\$100,156	May 1, 2018–February 28, 2019	GRENCASE provided MCSP early childhood development (ECD)-related training for roving caregivers and daycare workers; community health nurses from the Ministry of Health, Social Security, and International Business; preschool teachers from the Ministry of Education and Human Resource Development; and parents of children referred by roving caregivers and daycare workers. Approximately 38 training days were planned between May and August 2018 to cover topics within early stimulation, therapeutic early stimulation, and psychosocial support. GRENCASE will lead development and dissemination of ECD-related training for communities across Grenada, including materials for television, radio, print, and social media.	John Williams, GRENCASE Caregivers Programme Manager grencase175@gmail.com	<ul style="list-style-type: none"> Signed subaward with documented statement of work and milestone table. Completed sourcing of materials for roving caregivers, health providers, and educators. Conducted psychosocial support TOT. Conducted early stimulation and therapeutic early stimulation TOT and secondary cascade training across Grenada for health providers and caregivers, including parents. Completed development of early stimulation instructional video.
Windward Islands Research and Education Foundation Research Group	\$63,867	March 15, 2018–February 28, 2019	The subaward to the Windward Islands Research and Education Foundation allowed for completion of an additional round of research follow-up for Zika virus-exposed infants, and enhanced collaboration and clear pathways articulated for linkages between study activities and community-based ECD activities supported by GRENCASE (a separate MCSP fixed-amount awardee). The scope of work focuses on assessment of neurocognitive functioning in children 2 years old who have been exposed to Zika virus in utero.	Dr. Randy Waechter, St. George's University, Grenada, Investigator RWaechte@sgu.edu	<ul style="list-style-type: none"> Signed subaward with documented statement of work and milestone table. Completed neuropsychological data collection for 105/150 infants of mothers who were pregnant during the Zika virus outbreak.
North Central Regional Health Authority (NCRHA), Trinidad and	\$74,933	September 1, 2018–February 28, 2019	The NCRHA provided administrative, logistical, and technical support to improve ECD service delivery and availability of ECD materials in Trinidad and Tobago. The NCRHA will train health professionals, primarily in the public sector, on issues related to ECD, relevant early	Dr. Natalie Dick, NCRHA Clinician drndick@gmail.com	<ul style="list-style-type: none"> Signed subaward with documented statement of work and milestone table. Conducted the therapeutic early stimulation TOT.

Subgrantee	Amount	Duration	Description	Contact Information	Main Results
Tobago Ministry of Health			developmental stimulation strategies, and psychosocial support for their caregivers. It will conduct focused developmental evaluations and interventions for a cohort of infants born in Trinidad and Tobago with confirmed congenital ZIKV infection or history of prenatal Zika virus infection/exposure, providing valuable baseline data. The NCRHA is developing and disseminating ECD-related materials for radio, TV, print, and social media.		<ul style="list-style-type: none"> Completed development of community messaging materials. Facilitated baseline specialist neurodevelopmental evaluations for 51 children with a mother who was exposed to Zika virus during pregnancy.
Association for Gynecologists and Obstetricians of Guatemala (AGOG)	\$25,084	September 1, 2018—May 31, 2019	Through collaboration with MCSP, AGOG strengthened competencies of Guatemalan gynecologists and obstetricians to counteract effects of Zika on maternal health. AGOG facilitated validation and reproduction of USAID-approved Zika-related materials for the private sector, strengthened competencies of Guatemalan gynecologists and obstetricians, and held a symposium for doctors.	Dr. Linda Valencia, AGOG President clinicamujerysalud@yahoo.com	<ul style="list-style-type: none"> Signed subaward with documented statement of work and milestone table.

Annex VI. Success Stories

Success Story: St. Lucia



Tricia Wells and son at the Child Development and Guidance Center. Photo by Kim Gardner.

NAME

Tricia Wells

ROLE

Parent

LOCATION

Castries, St. Lucia

SUMMARY

Ms. Wells has utilized the services provided by the St. Lucia Child Development and Guidance Center for therapeutic early stimulation services for her son, Caleb.

Teaching Parents to Provide Therapeutic Early Stimulation Improves Long-Term Outcomes for Children with Disabilities

When Tricia Wells welcomed her baby boy, Caleb, in early 2018, doctors informed her that the baby's development might be impacted by intrauterine growth restriction and referred the family to St. Lucia's Child Development and Guidance Center, the island's only center to support children 0–3 years old with developmental delays and disabilities. The news came as a shock to Tricia and her family. Tricia, who has a learning disability herself, worried about how she would be able to support her child's needs. Luckily, the Child Development and Guidance Center was able to begin early stimulation activities with Caleb at just 2 months old. Evidence shows that the earlier stimulation activities are undertaken, the greater the impact on development outcomes.¹³

However, in many communities affected by the Zika virus (ZIKV) outbreak, children are not able to access specialized disabilities services due to myriad barriers, including long waitlists caused by staff shortages, limited transportation means, or cost of services. Even for families that can overcome these barriers, biweekly and monthly sessions are not sufficient to address the neurodevelopmental needs of children at high risk of delay. Therefore, MCSP sought to develop a toolkit to support integration of therapeutic early stimulation (TES) activities into routine services of primary health care staff, with the ultimate goal of reaching caregivers with simple, at-home TES activities. This approach was able to reach many families, including families both affected and unaffected by CZS.

MCSP carried out workshops on TES throughout the Latin American and Caribbean region, reaching over 250 health care providers, developing a new cohort of TES champions, and disseminating easy-to-use activity cards. Each of the activity cards provides guidance on how to include TES into daily routines, pulling from pediatric therapies, including occupational, motor, speech, and orientation/mobility therapies. Activities make use of common, everyday common, everyday household items and integrate easily into daily routines.

Access to this innovative package has already made a big difference in young Caleb's life. His therapist at the Child Development and Guidance Center states "[He] has been making progress in all areas of his development—communication, personal, social, and problem-solving. Because of [his] mom's learning challenges, the pictures from the TES manual have been really useful to add to the sessions. There have even been home visits by our therapy assistant, and the pictures have been a useful tool to add to what we were already doing at the clinic."

"[He] has been making progress in all areas of his development—communication, personal, social, and problem-solving."

- Dr. Kim Gardner

For parents struggling to understand how to support their children with special needs, the tools empower them to take action immediately after diagnosis. Tricia states: "Caleb is doing a lot more and getting into everything. He likes to pick up things. He is talking a lot more. I hope that Caleb will go to regular school, as he is very bright. Before having the activity cards, it was hard to know what to do with Caleb. Now I know I can do peek-a-boo, look at the tree with him."

While these actions may seem small, over time, they can have real impact on development outcomes. Due to MCSP's training, more health providers and caregivers will have the information to provide children like Caleb with holistic care.

Success Story: Guyana



Shonette Jonas, left, with nurses from participating facilities.
Photo by Kathryn Boryc Smock, MCSP.

NAME

Shonette Jonas

ROLE

Nurse and Mentor

LOCATION

Betervverwagting, Guyana

SUMMARY

Shonette Jonas works with MCSP and the Caribbean Regional Midwives Association to introduce quality improvement in postnatal care across facilities in Guyana's Region 4. Nine months following the start of the project, Jonas is now principal nursing officer, working with the Ministry of Public Health to integrate quality improvement tools and processes into the national framework and to roll out activities to facilities throughout the country.

Nurse Mentor Works with Ministry of Public Health in Guyana to Take Quality Improvement Successes National

Nurse Shonette Jonas was the public health nurse in charge at the Betervverwagting Health Center, located 10 miles outside of Guyana's capital of Georgetown. She joined MCSP's quality improvement (QI) efforts in May 2018 as a facility-embedded clinical mentor and local representative of MCSP subawardee, the Caribbean Regional Midwives Association (CRMA).

When MCSP, in response to the Ministry of Public Health (MOPH)'s request, introduced a new facility-based QI framework, including data use and analysis tools for adaptive management, Jonas was one of 22 participants who attended the training "Visualizing and Using Routine RMNCH Data at Health Facilities: A Resource Package for Health Providers and District Managers." In the course of 2 days, Jonas and the other participants received technical updates on prevention of ZIKV infection, maternal and newborn health, postpartum family planning, and a concise overview of QI strategies, including the use of a wall chart/dashboard for tracking and visualizing collected data on indicators meaningful to the outbreak response.

Following the training, Jonas and two other nurses, Caroline Bury and Caroline Hicks, were identified by CRMA to work as clinical mentors to continue supporting all 10 participating facilities in QI activities. These three dedicated nurses received an orientation on mentoring techniques and tools. They took the tools and QI plans back to their facility to introduce the techniques to their colleagues and adjust the registers to allow the teams to collect relevant data. They then repeated this process with the other facilities they would be mentoring.

Jonas and QI teams at six health centers in Regions 4 and 5 started tracking the number of new mothers coming in for postnatal care within the recommended 2-week period and the number of postpartum women who initiated a family planning method of their choice following appropriate counseling. Two of the first things Jonas and the teams noticed were that though women were counseled, they were not offered a method during their postnatal visit, and the quality of counseling services

needed improvement. As a response, the staff worked to improve the services at their facilities by focusing on the following:

1. Introducing the concept of the “marketplace” at their clinic—a visual presentation of the available methods of family planning and an opportunity for women to see these methods and ask questions outside of the postnatal clinic
2. Increasing opportunities to provide counseling services by including the service during child health days and into the adolescent youth groups for pregnant teenage girls
3. Starting the counseling sessions with pregnant mothers during antenatal care and giving women the option to select a postpartum family plan with a desired method during their last antenatal care visit.

When facility staff collected their data, plotted it on dashboards, and analyzed and responded to what they were seeing in their monthly QI discussions, the teams noticed the upward trend in uptake of postpartum family planning methods. In the first 3 months of the project (June–August 2018), the average percentage of women counseled on family planning deciding to initiate a method was 53%. During the last 3 months (December 2018–February 2019), the average percentage of women deciding to start a method of their choice jumped to 90%.

As Jonas says: “When the project first started, I thought it would be hard to accomplish such a goal of change with health care workers, postpartum women, and the community. But now we are seeing an increase of women choosing a method of family planning of their choice as well as an increased number of women attending postnatal care within the recommended 2-week period. Some are coming with their 2-day-old babies for a postnatal visit!” She continues, “I am overjoyed at the reaction of the community and the involvement of significant others in the postnatal process.”

MCSP and the CRMA completed support for QI activities in Guyana in February 2019. In that same month, the MOPH promoted Jonas to principal nursing officer with the new task of integrating QI into the national framework. Many facilities not involved in the QI initiative heard of the successes and expressed a desire to implement QI at their facilities. In response to the positive outcomes of MCSP’s QI project in Guyana, the MOPH will be working to roll out QI activities across the country.



Shonette Jonas at Beterverwagting Health Center.
Photo by Jess Thimm, MCSP.

“I am overjoyed at the reaction of the community and the involvement of significant others in the postnatal process.” – Nurse Jonas

Success Story: Trinidad and Tobago



Photo by: Mayeka Cummings-Luke, MCSP

NAME

Jessica Clement

ROLE

Mother

LOCATION

San Fernando, Trinidad and Tobago

SUMMARY

Jessica Clement gave birth to her son at 25 weeks gestation and feared that her baby would not survive. However, the neonatal nurses at San Fernando General Hospital had recently undergone the Essential Care for Small Babies (ECSB) training. In 2018, MCSP led the subregional and national ECSB training of trainers, which resulted in a series of cascade trainings across Trinidad and Tobago. The program provided health practitioners with additional skills and knowledge to care for small babies like Jessica's, including identifying danger signs and supporting mothers in exclusive breastfeeding and kangaroo mother care. Nine weeks after birth, Jessica's baby was discharged, and she attributes his improving health to the support of the skilled hospital staff.

Essential Care for Small Babies

“Zane Was Determined to Survive”

Meet Jessica Clement, a 31-year-old mother of two who gave birth to Zane, a preterm, low-birthweight male newborn on January 18, 2019, at San Fernando General Hospital in San Fernando, Trinidad and Tobago. At only 25 weeks gestation, baby Zane weighed 785 g (1.7 pounds) at birth.

Devastated at the thought of not only having a preterm baby but that his chance of survival would be very low, Jessica recounted, “I had little to no hope that my baby would survive at 25 weeks gestation based on numerous stories I had heard.” She said that it was through her faith in God and the support of family and friends that she gained the strength and courage to cope.

Classified as an extremely preterm infant (a baby that is born before the 28th week of pregnancy), Zane was transferred to the neonatal intensive care unit immediately after birth, as he required specialized care and treatment from trained neonatal doctors and nurses to survive and attain optimal health. Thankfully, through MCSP, doctors, nurses, and midwives at the five regional health authorities and private hospitals in Trinidad and Tobago had received training in ECSB. An MCSP-led national ECSB training was conducted in 2018, which was followed by cascade training at San Fernando General Hospital conducted by trainer Sally Chandler.

The ECSB training is an initiative of the American Academy of Pediatrics, developed in collaboration with the World Health Organization and supported by USAID, to reduce neonatal mortality and improve neonatal survival rates worldwide. The training has increased the knowledge, skills, and competencies of health care providers across Trinidad and Tobago, including providers from both the public and private health sectors, who became adept in the management of preterm and low-birthweight babies and in providing support to the newborns' families. The ECSB curriculum is broadly applicable to care for growth-restricted babies, including those impacted by congenital Zika infection.