



## TECHNICAL REPORT

---

# Collaborative Improvement of Care and Support for Children and Families Affected by Zika in Selected Countries of Latin America and the Caribbean

**JUNE 2020**

---

This technical report was prepared by University Research Co., LLC (URC) for review by the United States Agency for International Development (USAID) and authored by Elena Hurtado, Miguel Hinojosa, José Corral, María Magdalena Martínez, Iván de León, María Elena Banegas, Indira Moreno, Patricia Misiego, Christian Requena, Digna M. López, Lani Marquez, and Ximena Gudiño of URC under the USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project. The work of the USAID ASSIST Project to improve Zika-related health services was made possible by the generous support of the American people through USAID.



## TECHNICAL REPORT

# Collaborative Improvement of Care and Support for Children and Families Affected by Zika in Selected Countries of Latin America and the Caribbean

JUNE 2020

Elena Hurtado, University Research Co., LLC  
Miguel Hinojosa, University Research Co., LLC  
José Corral, University Research Co., LLC  
María Magdalena Martínez, University Research Co., LLC  
Iván de León, University Research Co., LLC  
María Elena Banegas, University Research Co., LLC  
Indira Moreno, University Research Co., LLC  
Patricia Misiego, University Research Co., LLC  
Christian Requena, University Research Co., LLC  
Digna M. López, University Research Co., LLC  
Lani Marquez, University Research Co., LLC  
Ximena Gudiño, University Research Co., LLC

### **DISCLAIMER**

The contents of this report are the sole responsibility of University Research Co., LLC (URC) and do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

## Acknowledgements

This report is the product of the dedicated efforts of Zika care and support quality improvement teams in hospitals and secondary-level facilities and staff of the United States Agency for International Development (USAID) Applying Science to Strengthen and Improve Systems (ASSIST) Project, working together to reduce Zika infection during pregnancy and its adverse consequences for newborns and children. We thank the members of these teams and the directors of these facilities of the Ministries of Health and Social Security Institutes and the regional/zonal/area directors who supported the efforts of the improvement teams and helped to expand their work to other facilities.

We recognize for their role in supporting the development of the Zika Care and Support Collaborative: Dr. Jorge Hermida, Regional Director for Latin America of the USAID ASSIST Project at University Research Co., LLC (URC); Ms. Lani Marquez, ASSIST Director of Knowledge Management, URC, and Dr. Miguel Hinojosa, Regional Coordinator for the Care and Support Collaborative; ASSIST Country Directors and the Collaborative Coordinators in the participating countries: Dr. Cecilia Villaman and Dr. Digna López, Dominican Republic; Dr. María José Escalante and Dr. José Corral, Ecuador; Dr. Guadalupe Razeghi and Dr. María Magdalena Martínez, El Salvador; Dr. Roberto Aldana and Dr. Iván de León, Guatemala; Dr. Norma Aly and Ms. María Elena Banegas, Honduras; Dr. Ivonne Gómez and Dr. Indira Moreno, Nicaragua; Ms. Graciela Ávila and Dr. Patricia Misiego, Paraguay; Dr. Christian Requena, Peru.

Thanks are also due to the technical field coaches of ASSIST in each country who provided technical support to the health facilities and improvement teams and whose names appear in Annex A of this report. The development of this report was led by Ms. Elena Hurtado, Knowledge Management and Communications Advisor of ASSIST in Guatemala. Mr. Eric Baranick of USAID provided helpful comments to improve this report.

This technical report was prepared by URC under the USAID ASSIST Project, which is funded by the American people through USAID's Bureau for Global Health, Office of Health Systems. The project was managed by URC under the terms of Cooperative Agreement Number AID-OAA-A-12-00101. URC's global partners for USAID ASSIST Zika activities included: American Academy of Pediatrics; EnCompass LLC; FHI 360; Institute for Healthcare Improvement; and WI-HER, LLC.

For more information on the work of the USAID ASSIST Project, please visit [www.urchs.com/assist](http://www.urchs.com/assist) or write [assist-info@urchs.com](mailto:assist-info@urchs.com).

### Recommended citation:

Hurtado E, Hinojosa M, Corral JA, Martínez MM, De León I, Banegas ME, Moreno I, Misiego P, Requena C, López, DM, Marquez L, and Gudiño X. 2020. Collaborative Improvement of Care and Support for Children and Families Affected by Zika in Selected Countries of Latin America and the Caribbean. *Technical Report*. USAID Applying Science to Strengthen and Improve Systems Project. Chevy Chase: University Research Co., LLC (URC).

# Table of Contents

- List of Figures and Tables ..... ii
- Abbreviations ..... iii
- EXECUTIVE SUMMARY ..... iv
- I. INTRODUCTION..... 1
  - A. Report Objectives..... 1
- II. METHODOLOGY ..... 2
  - A. Aims of the Care and Support Collaborative ..... 3
  - B. Participating Health Facilities and Cases of Affected Children ..... 5
  - C. Data Collection ..... 6
- III. DEVELOPMENT OF THE COLLABORATIVE ..... 7
  - A. Formulating Standards and Quality Indicators ..... 7
  - B. Structure of the Collaborative ..... 8
  - C. Phases of the Collaborative ..... 10
    - 1. Preparatory Phase ..... 10
    - 2. Implementation Phase..... 11
    - 3. Expansion Phase ..... 11
    - 4. Sustainability and Institutionalization Phase ..... 12
- IV. RESULTS..... 13
- V. DISCUSSION ..... 16
  - A. Regional Strategies Implemented by All Countries ..... 16
    - 1. Case Managers ..... 16
    - 2. ECHO Tele-mentoring clinics ..... 17
  - B. Cross-cutting Change Ideas ..... 18
    - 1. Norms, Protocols, and Other Official Guidelines ..... 18
    - 2. Registers ..... 18
    - 3. Training of Health Workers..... 19
    - 4. Job Aids and other Support Materials ..... 20
  - C. Best Practices ..... 21
    - 1. Case Identification..... 21
    - 2. Localizing Children ..... 22
    - 3. Linking Cases to Health Services..... 23
    - 4. Diagnostic Assessments and Clinical Care ..... 23
    - 5. Psycho-emotional or Basic Psycho-social Support and other Care ..... 26

6. Early Infant Stimulation .....	27
7. Physical Therapy and Rehabilitation .....	27
D. Unanticipated Positive Effects of Care and Support Collaborative .....	28
VI. LESSONS LEARNED .....	29
VII. RECOMMENDATIONS .....	30
A. Management of Service Networks .....	30
B. Organizing the Health Service Response .....	31
C. Organize the Response at the Community Level.....	31
ANNEXES.....	33
Annex A: Health Authorities, Facilities, QI Team Coordinators, and ASSIST Coaches who Participated in the Care and Support Improvement Collaborative by Country ..	33
Dominican Republic.....	33
Ecuador .....	33
El Salvador .....	35
Guatemala .....	38
Honduras .....	40
Nicaragua .....	43
Paraguay .....	48
Peru .....	52
Annex B: List of Materials Produced by ASSIST for the Care and Support Collaborative .....	54
Annex C: Catalogue of Effective Change Ideas or Best Practices Tested in the Care and Support Collaborative by Country .....	57

## List of Figures and Tables

Figure 1. Continuum of care and support for children affected by Zika and their families ....	3
Figure 2. Model for Improvement and the PDSA cycle.....	4
Figure 3: Percentage of infants with suspected or confirmed microcephaly or CSaZ who received at least 80% of required services by age in compliance with national norms, June 2018 through June 2019 (Tier 1 countries) and July 2018 through October 2019 (Tier 2 countries).....	14
Figure 4: Percentage of affected individuals who were attended by a provider trained in providing psycho-emotional support during each visit to the health facility, June 2018 through June 2019 (Tier 1 countries) and July 2018 through October 2019 (Tier 2 countries).....	15
Table 1. Number of health facilities that fully participated in the Care and Support Collaborative by country, first phase (Tier 1).....	5

Table 2. Number of health facilities that participated in the Care and Support Collaborative by country in the expansion phase .....	5
Table 3. Number of cases identified, located, and that received at least 80% of the required services according to age and national norms in the seven LAC countries that fully participated in the Care and Support Collaborative, June 2019 .....	6

## Abbreviations

ASSIST	USAID Applying Science to Strengthen and Improve Systems Project
CSaZ	Congenital Syndrome associated with Zika
DAS	<i>Dirección de Área de Salud</i> (Health Area Directorate)
DOM	Dominican Republic
ECHO	Extension for Community Healthcare Outcomes
ECOR	Health Coordination Team ( <i>Equipo Coordinador de Salud</i> ) (Honduras)
ECU	Ecuador
GUA	Guatemala
HIV	Human immunodeficiency virus
HND	Honduras
IHSS	<i>Instituto Hondureño de Seguridad Social</i> (Honduran Social Security Institute)
ISSS	<i>Instituto Salvadoreño del Seguro Social</i> (Salvadoran Social Security Institute)
LAC	Latin America and the Caribbean
MCH	Maternal and child health
MOH	Ministry of Health
PER	Peru
PRY	Paraguay
QI	Quality improvement
SESAL	Secretariat of Health of Honduras
SIBASI	Basic Integrated Health System (El Salvador)
SILAIS	Local Integrated Health Care System (Nicaragua)
SLV	El Salvador
UNICEF	United Nations Children’s Fund
URC	University Research Co., LLC
USAID	United States Agency for International Development

## EXECUTIVE SUMMARY

During the extension period (2017-2020) of the United States Agency for International Development (USAID) Applying Science to Strengthen and Improve Systems (ASSIST) Project, as part of the USAID response to the Zika virus epidemic in Latin America and the Caribbean (LAC), the USAID ASSIST Project applied continuous quality improvement (QI) and collaborative learning methods to strengthen prenatal care, newborn care, and care and support for children affected by the Zika virus during their mother's pregnancy.

The USAID ASSIST Project's Zika care improvement work was implemented in two phases, beginning in 2017. In the first phase, health facilities in the Dominican Republic, El Salvador, Guatemala, Honduras, and Nicaragua participated; in the second phase, activities in the original countries were expanded to new facilities and new Zika improvement programs were launched in Ecuador, Paraguay, and Peru as well as in five countries in the English-speaking Caribbean. This report describes the Zika care and support improvement work in the eight Spanish-speaking countries.

The Zika Care and Support Collaborative engaged 292 QI teams in the same number of health facilities in the eight assisted countries in the LAC region. These teams sought to improve case detection and care and support for newborns and children diagnosed with microcephaly or Congenital Syndrome associated with Zika virus (CSaZ), including providing psycho-emotional support for the families. The Care and Support Collaborative was the logical follow-on to the Newborn Care Collaborative to ensure that appropriate care was provided over time to those newborns identified with microcephaly or other anomalies associated with CSaZ.

The objectives of the Care and Support Collaborative were to: 1) Increase the identification and location of children with microcephaly or other manifestations of CSaZ (beyond those infants born in health facilities and including those who were born in facilities but later "lost to follow-up"; 2) link those cases to appropriate health facilities and referral facilities; and 3) provide complete and integrated care to all children affected by Zika infection and provide psychological and emotional support to their families.

To measure results and the effectiveness of improvement interventions, two indicators were tracked that were linked to these improvement objectives: 1) the percentage of children with microcephaly/CSaZ who were linked to care that received at least 80% of the clinical follow-up services by age in accordance with national norms; and 2) the percentage of mothers and caregivers who were attended by a provider trained in psycho-emotional support during each follow-up visit.

The synthesis drew primarily on documents prepared by the country teams supporting the Care and Support Collaborative (monthly reports, learning session reports, progress reports, case studies, and indicator data) and the summary tables of effective change ideas and notes prepared by the regional coordinator of the collaborative from virtual meetings of the country Care and Support Collaborative coordinators. This information was complemented by interviews with some of the ASSIST country directors and Care and Support Collaborative coordinators and group discussions with coaches and members of improvement teams in some countries.



The activities carried out in each phase of the Care and Support Collaborative—preparation, implementation, expansion, and institutionalization/sustainability—were many and not mutually exclusive nor always conducted sequentially. The results of the Care and Support Collaborative, as presented in the consolidated time series charts for all countries (June 2018-June 2019), show that in the beginning, countries made slow progress in the first indicator of percentage of children receiving 80% or more of the required services by age, per national guidelines, since teams were focused on identifying and locating cases and linking them to care but were challenged to produce evidence that the affected children received 80% of the stipulated services; the indicator reached 80% coverage in May of 2019 in the first phase countries. In the second phase countries, as the number of cases of microcephaly and CSaZ increased, there was a decline in the proportion who received 80% of required services, until coverage improved in 2019, reaching 80% by April 2019.

The second indicator of percentage of mothers attended by a provider trained in psycho-emotional support in each follow-up visit followed a similar pattern as the first indicator, but with higher levels of coverage: by March 2019, it reached 98% in the first phase countries and by June 2019, 84% in the second phase countries.

### **Strategies Led by the Regional Level**

Two improvement strategies applied in all eight countries were initiatives spearheaded by ASSIST's regional Zika team: 1) case managers, and 2) Extension for Community Healthcare Outcomes (ECHO) teleclinics. Both strategies were adapted to the context of each assisted country, particularly the case manager strategy.

In all eight countries, ASSIST teams selected and trained “case managers” to improve access to care quality and completion of all the recommended assessments for children affected by microcephaly and other consequences of Zika infection, including psycho-emotional support to parents and other caregivers. In some countries, case managers were drawn from “linkage personnel” or “linkage teams” which already existed; this served to strengthen the health system governance structure in integrated service networks. Each country established its own profile for case managers and provided training in the competencies defined for their role in the country.

The main hospitals that provided care for cases of microcephaly and CSaZ participated in the ECHO teleclinics to strengthen the case management skills of specialists, general physicians, and other health care providers. The ECHO teleclinics program used a virtual platform in which a team of specialists from the American Academy of Pediatrics, other regional experts depending on the case, and teams from the participating hospitals were simultaneously connected. In all, 15 teleclinics were implemented, each including: a) a didactic presentation by a specialist about some aspect of microcephaly and CSaZ; b) the presentation of a clinical case by one of the participating hospitals; c) recommendations provided by the specialists to improve management and follow-up of the case; and d) comments and questions from the other participants and responses from the specialists.

For sustainability of the ECHO model, ASSIST donated equipment to the participating hospitals and coordinated a training process for ECHO coordinators in each country on the management of Zoom for the teleconferences and maintenance of the equipment. In this way, the teleclinics methodology can be applied to other topics of national interest.

## **Cross-cutting Strategies**

Some interventions were applied to all parts of the continuum of care for Zika care and support, such as: 1) norms and care protocols; 2) forms to document care; 3) training of health workers; and 4) job aids, equipment, and other inputs.

In all eight countries, ASSIST supported the Ministries of Health to review, update, and develop norms and protocols, especially for the care and management of infants and children affected by Zika, psycho-emotional support, growth and development, and developmental stimulation.

For the identification, localization, linkage, and follow-up of children affected by Zika infection, new registries of cases and data bases were developed in each country. Country teams also developed a list of all the assessments and services that a Zika-affected child needed by age through at least the first two years of life and in some countries, longer. In several countries, teams developed a special card for Zika-affected children which listed these assessment and services.

ASSIST supported numerous trainings for health care providers, reviewing topics covered by the other collaboratives, such as Zika diagnostic tests in mothers and infants, correct measurement of head circumference in newborns, and quality improvement methodology, as well as new topics such as manifestations of CSaZ, psycho-emotional and psycho-social support, growth and development, infant neurodevelopment and neurodevelopmental delays, developmental assessments, and basic infant stimulation and physical therapy. These trainings typically included Ministry of Health trainers who would be responsible for replicating the trainings for additional personnel.

As part of the collaborative improvement methodology, each ASSIST country team organized learning sessions for the Care and Support Collaborative, either as stand-alone sessions or in conjunction with the Prenatal Care and Newborn Care Collaboratives. In these sessions, teams would share effective change ideas and sometimes present testimonial videos on the work of case managers or from families with a case of microcephaly or CSaZ to sensitize participants.

ASSIST teams worked with the Ministries of Health to develop numerous job aids for health care providers in the form of flipcharts, pamphlets, cards, posters, pocket guides, and others. Flipcharts addressed care, referral, and counter-referral of Zika-affected children; the steps in psycho-emotional and psycho-social support; infant development milestones; and guidance for early stimulation by age group. The project distributed kits for developmental assessment and early stimulation to health facilities, together with instructions on their use. The project also distributed kits for families, some donated by UNICEF and others assembled by ASSIST. The project also installed television sets to show Zika-related videos in health facility waiting rooms, covering topics such as Zika prevention, care in pregnancy, the importance of early infant stimulation, and tutorials.

## **Best Practices**

**Active search for cases.** Inconsistencies in the number of reported cases of children affected by Zika led QI teams to undertake an active search of cases through a retrospective review of clinical registers (for example, delivery books, newborn registers, referrals, information systems). Teams also prospectively monitored records of births,

newborn consultations, emergency room visits, clinical laboratory tests, and hospitalizations. Case managers or linkage workers and community health teams engaged in active search for cases of microcephaly or CSaZ in the community through interviews with key informants (such as traditional birth attendants) and meetings with community leaders.

**Locating children and families.** Another challenge was to locate the exact address and locality of each one of the children identified as affected by Zika. Teams enlisted the help of local health committees, took advantage of immunization campaigns, and worked with traditional birth attendants and community-based organizations. They forged alliances with other institutions and projects working at the community level.

**Effectively linking cases to needed services.** The task of linking cases to needed services was necessarily coordinated with other institutions, cooperating agencies, and projects in order to ensure services for all cases, especially those located in remote communities. To make this linkage effective, teams found they needed to standardize the referral process from the first level of care to basic hospitals and to specialized hospitals, using critical paths or care flowcharts, and strengthen communication between levels of care as well as within each facility.

**Defining needed services by age.** When the recommended assessments and services and care pathways were defined for microcephaly and CSaZ cases by age, based on national norms, teams could then define an individualized plan of care for each affected child, based on the assessments and services already received and those which still needed to be provided. These assessments included hearing and eye exams, nutritional evaluations, as well as psycho-emotional support for the mother or principal caregiver, and provision of infant stimulation and physical therapy.

**Creating catalogs of available services.** Hospitals developed catalogs of their available specialties and identified limitations in their capacity to respond, such as lack of equipment to perform transfontanelar ultrasound or hearing and eye exams and the lack of specialists in pediatric neurology and ophthalmology, for example. Additional types of providers, such as professional nurses, social workers, psychologists, and physical therapists, were added to QI teams and to trainings in order to expand and give continuity to services.

**Prioritizing care for Zika-affected children and families.** In some places, teams introduced stamps that indicated that children affected by Zika should be prioritized so they wouldn't have to wait so long to be seen. One country introduced a one-stop window for Zika-affected children where parents could arrange all of their appointments, with specific slots available each week for evaluation by specialists. Another hospital set aside one day a week and assigned a pediatrician to attend all identified cases.

**Enlisting private practitioners and grouping specialists so that families could receive multiple services on the same day.** Another change idea was to contact a medical specialist in private practice (e.g., ophthalmologist or otolaryngologist) and convince the specialist to conduct evaluations of Zika-affected children for free or at a reduced price. However, it proved difficult for children and their mothers to attend individual appointments due to the distances from where they lived and their limited financial resources. Instead, intrahospital coordination proved to be key to ensure that appointments and tests could be completed in the short term. A successful change idea

was to bring all of the specialists available in the hospital together on the same day and to bring all of the children for consultation that day, with the case managers providing follow-up to each child.

**Strengthening inter-institutional coordination.** To provide all of the needed services it was necessary to establish inter-institutional coordination with all of the required providers (university hospitals, specialty hospitals, private physicians and clinics, religious, and non-governmental) through formal agreements to provide services and support. To enable children and families to receive grouped services, teams had to arrange transportation for children, mothers, and other family members.

**Providing psycho-emotional support to families.** Just as clinical care of affected children was strengthened, teams also sought to improve the referral of mothers and families affected by CSaZ for psycho-emotional support services. Teams created or adapted specific referral forms to facilitate integrated support for families of affected children. Through supportive supervision and in-service training, facilities reinforced the skills of providers in basic psychological support.

**Expanding early infant stimulation and physical therapy services.** Hospitals also expanded their early infant stimulation and physical therapy services for patients with CSaZ by renovating or creating specific areas for infant stimulation and physical therapy. ASSIST and UNICEF donated equipment and furnishings for these areas as well as kits for health providers to conduct developmental assessments and early infant stimulation. Families were also given kits for stimulation in the home so that they could continue the exercises they learned at health facilities.

### **Unanticipated Positive Effects**

The emphasis on ensuring complete and integrated care of children affected by Zika provided a concrete example to country health systems of how services could function as integrated networks. The Zika emergency also provided an opportunity for health systems to make more visible their response to children with disabilities, which was practically invisible, despite the enormous social impact. Moreover, the processes established to identify, locate, register, link to care, and follow up CSaZ cases could be used in the future for other congenital abnormalities, both at the community and facility levels.

The USAID ASSIST Project supported health workers to establish physical spaces for care of children through early stimulation, rehabilitation, and physical therapy, either through renovating existing areas or establishing new ones. The provision of furniture and infant stimulation equipment to health workers and therapists as well as to mothers and other family members benefitted both affected children as well as other children in the first two years of life.

In some places, the project also linked with programs for Kangaroo Mother Care and care of premature infants, which often had specialists in the areas needed by children affected by Zika. Through trainings sponsored by the project, overall services for growth and development of all children were strengthened. Mothers, fathers, and other family members of affected children were linked to support groups, parent workshops, and clubs. Client satisfaction with these services was evidenced by numerous testimonials given by

parents and family members who were grateful for the attentive and respectful care they received.

Finally, this report summarizes lessons learned in the implementation of the Care and Support Collaborative as well as recommendations for establishing integrated service networks, referral processes, and community-level services.



## **I. INTRODUCTION**

The global objective of the United States Agency for International Development (USAID) Applying Science to Strengthen and Improve Systems (ASSIST) Project was to improve the quality and outcomes of clinical care and strengthen other functions of the health system that support quality care. The project sought to build health worker and health facility capacity to improve the effectiveness, efficiency, client-centeredness, safety, accessibility, and equity of the services they provide.

In addition to supporting the implementation of improvement strategies, the project sought to generate learning on how improve the efficiency and effectiveness of the application of improvement methods in low- and middle-income countries. The project's activities addressed specific questions about what works and does not work in terms of improvement interventions, geographic spread of best practices, and sustainability over time.

Through the extension period of the USAID ASSIST Project (2017-2020), as part of the USAID response to the Zika epidemic in Latin America and the Caribbean (LAC), the project applied improvement methods to strengthen the Zika response of affected countries in prevention and control of Zika infection and in the care and support provided to children with microcephaly and Congenital Syndrome associated with Zika born to mothers infected with Zika during pregnancy. This was the first time that improvement methods had been applied in a health emergency context by ASSIST.

ASSIST's Zika programming began in 2017 and was implemented in two phases. In the first phase, health facilities in the Dominican Republic, El Salvador, Guatemala, Honduras, and Nicaragua received ASSIST support; in the second phase, new facilities were added in these countries as well as health facilities in Ecuador, Paraguay, and Peru. In addition, ASSIST worked in the Zika response in five countries of the English-speaking Caribbean.

Knowledge management activities were an integral part of ASSIST's improvement work, and knowledge management strategies and activities were leveraged in each country to harvest and spread learning about the factors that led to improvement and to achieving results in an effective and efficient manner. This report summarizes the results of the project's efforts to improve care and support for children affected by Zika and their families in the eight Spanish-speaking countries that actively shared strategies, learning, and change ideas.

### **A. Report Objectives**

This report summarizes the activities, results, and effective change ideas garnered from national improvement collaboratives focused on care and support of children and families affected by Zika infection during their mother's pregnancy, carried out simultaneously in eight LAC countries. The objectives of this synthesis report are to:

- Describe the phases of the Care and Support Collaborative supported by ASSIST in each country, its main activities, and the actors who participated;
- Describe the results and effective change ideas implemented that led to improvement in care and support and which may be considered as best practices; and

- Identify lessons learned and recommendations for teams that want to introduce or strengthen the integrated clinical care of children and psychological and psycho-social support to families affected by Zika or other health problems leading to disabilities.

The Care and Support Collaborative involved teams in the Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Nicaragua, Paraguay, and Peru, although teams in Nicaragua ended their participation around the time of the collaborative launch and are not included in the results presented in this report, although some of the change ideas developed initially in Nicaragua related to care and support for Zika-affected infants and children are included in the catalog of effective changes ideas in **Annex B**.

In systematizing the activities and results of these collaboratives, ASSIST seeks to make the key learning derived about improving care and support services for Zika-affected children available to other countries in Latin America and the Caribbean as well as elsewhere. The insights from this collaborative complement what was learned in the other collaboratives supported by the project on Prenatal Care and Newborn Care in the context of Zika. Lessons learned from the three collaboratives address the continuum of care from birth to the first 1000 days which are considered critical for children's growth and development.

## II. IMPROVEMENT METHODOLOGY

The quality improvement (QI) collaborative is an approach that facilitates structured and shared learning among a number of improvement teams working towards the same improvement aim in the same technical area by fostering friendly competition and the rapid spread of effective change ideas. The premise behind this approach is that actively shared learning among improvement teams enables more rapid change and faster scale-up and can thus achieve impact at large scale.

QI collaboratives combine elements of traditional health programming (standards, training, job aids, equipment, inputs) with modern improvement methods (team work, process analysis, performance monitoring, client satisfaction), creating a dynamic learning system in which teams from different sites work together to share and rapidly scale up effective strategies to improve the quality and efficiency of services, in this case, services to address the effects of Zika infection in children.

With ASSIST support, almost 300 health facilities in the eight countries simultaneously implemented three improvement collaboratives in the context of Zika: 1) a Prenatal Care Collaborative, focused on clinical screening and counseling of pregnant women and distribution of condoms; 2) a Newborn Care Collaborative focused on screening of all newborns to detect microcephaly and Congenital Syndrome associated with Zika (CSaZ) and the initial care of these cases; and 3) a Care and Support Collaborative to improve services for children affected by maternal Zika infection during pregnancy, including adequate diagnosis of needs and integrated management of care plans, early stimulation and rehabilitation, and psycho-emotional and psycho-social support for mothers and families. Rehabilitation refers to the set of social, psychological, educational, therapeutic, and medical services to meet an individual's needs to overcome any form of disability. Psycho-emotional support refers to the psychological care and emotional support provided



to patients, while psycho-social support refers to support at the community level to improve how individuals function in society by addressing psychological factors and the surrounding social environment.

Together, the three collaboratives introduced changes in care processes for the prevention, early diagnosis, and management of children affected by Zika and their families, guided by the specific improvement aims of each collaborative and using indicators designed to capture aspects of effectiveness, client-centeredness, accessibility, and equity of Zika-related services and to generate learning to inform continuous strengthening of health care, including in emergency response situations. The last of the three collaboratives to be implemented was the Care and Support Collaborative, which responded to the growing effects on children born to mothers who were infected by Zika during pregnancy.

### **A. Aims of the Care and Support Collaborative**

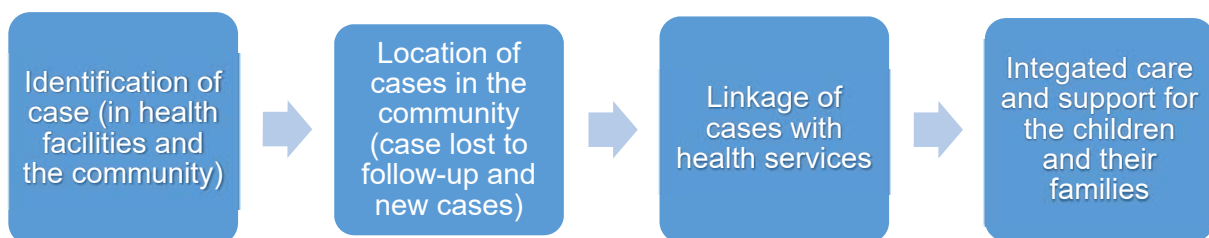
The Care and Support Collaborative was launched to provide follow-up to the newborns and children identified with microcephaly and CSaZ, primarily through the efforts of the Newborn Care Collaborative but also through other efforts supported by the project to find children affected by Zika. Because microcephaly and other neurodevelopmental effects of CSaZ can vary from mild to severe, the appropriate treatment and follow-up of cases also varies. Affected babies need a clear protocol for diagnostic tests and follow-up care, not just in the first years of life but throughout their lives.

The Care and Support Collaborative focused on strengthening services for Zika-affected children in the first two years of life and on providing needed psychological care and emotional support for their mothers and families, especially the direct caregivers. Ensuring quality care for these children involved not only evidence-based medical services but also respectful care and psychological support, taking into account gender and cultural factors.

The Care and Support Collaborative had the following improvement aims:

- Increase the identification and location of cases of microcephaly and other manifestations of CSaZ, including those born in health facilities as well as those identified in outpatient care
- Link these cases to health facilities and referral institutions
- Provide integrated and complete care to all cases of children affected by Zika and psycho-emotional support to their families (see **Figure 1**)

**Figure 1. Continuum of care and support for children affected by Zika and their families**



To achieve these improvement aims in the care and support of children affected by Zika and give psycho-emotional and psycho-social support to their mothers and families, quality improvement teams in each country carried out repeated Plan-Do-Study-Act (PDSA) cycles following the Model for Improvement (Langley et al., 2009) depicted in **Figure 2**. After analyzing care and support processes for newborns and children affected by Zika to identify gaps (i.e., deviations from standards) and weaknesses, teams generated change ideas to test in order to reach the improvement objectives. While testing change ideas, teams regularly collected data to assess the selected measures to show the effects of the changes tested.



Two key indicators were defined related to the improvement aims:

- Percentage of children with suspected or confirm microcephaly or CSaZ who received at least 80% of the care and support services defined in national norms by age; and
- Percentage of affected individuals who were attended by a provider trained in offering psycho-emotional during each visit to the health facility.

These indicators were measured by facility-based care and support QI teams. In each facility, the measurement of the first indicator was done through the review of clinical records of each identified case of microcephaly or CSaZ, checking whether the required clinical care (both diagnostic assessments and treatment) as well as infant stimulation and physical therapy were provided according to age and national norms.

QI teams used a data base to enter the numerators (cases that had received 80% or more of the required services defined in national norms) and denominators (total number of cases linked to care) to generate time series charts to plot indicator performance over time.

With the support of ASSIST coaches in each country, QI teams used the indicator performance data and criteria to identify those areas of care with deficiencies and implemented change ideas to improve them. Teams shared their change ideas and results with other teams during learning sessions (of which from two to five were held in each country) and through other means (email, web pages, Zoom meetings, etc.). The learning sessions gave teams the opportunity to learn from other teams and often led to decisions to adopt change ideas that had proven successful elsewhere.

The next section describes the coverage of the Care and Support Collaborative in each participating country in terms of facilities involved and the number of cases of microcephaly and CSaZ reached. It also describes the knowledge management activities carried out to harvest and document best practices.

## B. Participating Health Facilities and Cases of Affected Children

**Tables 1 and 2** summarize the number of facilities that participated in the Care and Support Collaborative in each country by phase—initially, 233 health facilities of different types in the initial phase of work in five countries and 59 additional facilities in the three expansion countries, for a total of 292 facilities participating in the collaborative in the eight countries. Removing facilities in Nicaragua, the totals are 206 facilities in the first four countries and 59 facilities in the three expansion countries, or a total of 265 facilities in seven countries.

The first phase (also referred to as “Tier 1”) countries that fully participated in the Care and Support Collaborative were El Salvador (SLV), Honduras (HND), Guatemala (GTM), and Dominican Republic (DOM). In the expansion phase, ASSIST implemented Zika improvement activities in Paraguay (PRY), Ecuador (ECU), and Peru (PER). Because MOH facilities in Nicaragua were not able to participate in the Care and Support Collaborative after April 2019, facilities in Nicaragua are omitted from **Table 1**.

**Table 1. Number of health facilities that fully participated in the Care and Support Collaborative by country, first phase (Tier 1)**

Type of facility	SLV	HND	GTM	DOM	TOTAL
Pediatric Hospital	1 (third level)		1	3	5
National/General Hospital	2 (1 MOH and 1 Social Security)	3	3	5	13
Regional Hospital	2	3	4	6	15
Provincial Hospital	7 (departmental)	1		8	16
Maternity	4 (basic hospitals)		1	2	7
Health Center	108 (103 UCSF and 5 Social Security)	3	39		150
<b>TOTAL</b>	<b>124</b>	<b>10</b>	<b>48</b>	<b>24</b>	<b>206</b>

**Table 2. Number of health facilities that participated in the Care and Support Collaborative by country in the expansion phase**

Type of facility	PRY	PER	ECU	TOTAL
Pediatric Hospital	1			1
National/General Hospital	3		4	7
Regional Hospital	1	11		12
Provincial Hospital	1		4 (basic hospitals)	5
Health Center		21	13	34
<b>TOTAL</b>	<b>6</b>	<b>32</b>	<b>21</b>	<b>59</b>

**Table 3** shows the number of Zika-affected children reported by country that participated in the Care and Support Collaborative. It is noteworthy that the number of cases reported at the national level in Ecuador was less than the number of cases reported alive and identified with the support of ASSIST, possibly because the national figure only considered cases that were confirmed by laboratory test. In other countries (SLV, GTM, PER, DOM), the number of cases identified at the national level was much higher than the number identified with ASSIST support since the project did not support all facilities with cases of microcephaly or CSaZ. The Secretariat of Health of Honduras requested that ASSIST try to involve all facilities in the country with cases, even those facilities that had not been supported by ASSIST previously.

In all, with ASSIST support, 794 cases of children affected by Zika were identified (99% of whom were found alive); 699 cases were located (88% of those identified) and linked to health services, and of these, 580 cases (83% of those located and 73% of those identified) received at least 80% of the services specified for their age according to national norms by June 2019.

**Table 3. Number of cases identified, located, and that received at least 80% of the required services according to age and national norms in the seven LAC countries that fully participated in the Care and Support Collaborative, June 2019**

<b>CASES</b>	<b>ECU</b>	<b>SLV</b>	<b>GTM</b>	<b>HND</b>	<b>PRY</b>	<b>PER</b>	<b>DOM</b>	<b>TOTAL</b>
Number of cases (national)	21	241	328	241	57	189	231	1308
Number deceased or missing	2	7	18	0	21	1	6	55
Number alive	85	151	74	221	58	42	171	802
Number identified	85	151	72	221	53	41	171	794
% identified	100.0	100.0	97.3	100.0	91.4	97.6	100.0	99.0
Number located	78	101	72	203	39	35	171	699
% located	91.8	66.9	100.0	91.9	73.6	85.4	100.0	88.0
Number receiving ≥80% of required services	65	94	66	174	30	35	115	580
% receiving ≥80% of required services	83.3	93.1	91.7	85.7	76.9	100.0	67.3	83.0

### **C. Data Collection**

The information presented in this synthesis report drew on various sources:

1. Review of country reports

- Monthly reports of the Care and Support Collaborative in each country
  - Learning session reports
  - Technical progress reports
  - Case studies
  - Data entered into the USAID ASSIST Project's Improvement Indicator Database and the graphs produced
2. Review of regional reports
    - Summary tables of change ideas tested in each country
    - Notes from the regional coordinator of the Care and Support Collaborative
    - Notes from the virtual meetings of the Care and Support Collaborative coordinators
  3. Collection of primary data
    - Interviews with ASSIST country directors and Care and Support Collaborative coordinators in the countries
    - Group discussions with field coaches in some countries
    - Conversations with and observations of the QI teams in some countries
    - Other direct observations in some countries

The next section describes the phases and activities of the Care and Support Collaborative in the seven countries.

### **III. DEVELOPMENT OF THE COLLABORATIVE**

The Care and Support Collaborative was the logical extension of the work of the Prenatal Care and Newborn Care collaboratives implemented in each country, in terms of its development of a model or cascade of care and support that all children affected by microcephaly or other manifestations of CSaZ should receive as well as support for families. The Care and Support Collaborative was launched at the beginning of 2018, and in June 2018 carried out baseline assessments of its indicators. It was implemented in close coordination with UNICEF, which developed a psycho-social support and community-based rehabilitation model with local partners (such as ASCATED in Guatemala), while ASSIST focused on ensuring that diagnostic tests and clinical care were provide to affected children and that psycho-emotional support was provided to their families in health centers and in the community through home visits.

#### **A. Formulating Standards and Quality Indicators**

The standards of care and corresponding quality indicators for the assessment of microcephaly were developed by USAID and the USAID ASSIST Project based on the best available scientific evidence and the judgement of local and international experts. However, with respect to care and support for children affected by microcephaly and CSaZ, there was not much experience with standards of care or indicators to measure them. As the Care and Support Collaborative progressed, these were adapted.

In the beginning, QI teams just focused on actively searching for, identifying, locating, and linking to care, cases of children with microcephaly and CSaZ. Nevertheless, as understanding of the care and support needed by these children evolved, the collaborative's indicators were refined. The indicators first focused simply on completion of the different assessments and services required by age and national norms, but over

time, more attention was placed on the timeliness of these services (i.e., dates when each assessment was received). Teams also sought to document evidence that psycho-emotional support was provided to the mother or caregiver by a trained provider. Given these criteria for achieving the indicator, some teams had difficulty collecting the data.

Data collection by teams started in the first four countries in June 2018 and in Paraguay, Ecuador, and Peru in July 2018, initially with two indicators: 1) the percentage of cases who received at least 80% of the recommended services by age according to national norms, and 2) the percentage of family members or caregivers who received psycho-emotional support by a trained providers in each follow-up visit.

## **B. Structure of the Collaborative**

The QI teams in the Care and Support Collaborative were constituted in a more flexible way than the teams that participated in the Prenatal Care and Newborn Care collaboratives that preceded it. At the regional level, ASSIST's team proposed two types of QI teams: a care and support QI team and an access QI team. In the Dominican Republic, for example, the access team involved the regional health services and hospitals, while in Guatemala, the access team include Health Area Directorates and hospitals. In some health facilities with very few cases of microcephaly and CSaZ, a dedicated QI team was not formed. In some facilities, the newborn care collaborative QI team also took on the care and support improvement work, often adding new team members (i.e., specialists, psychologists, social workers, physical therapists, and others) and assigning specific roles to each one.

In El Salvador, in the Metropolitan and Western Regions, the care and support process was led by the health service network which had a multidisciplinary case management team that operated across all three levels of care. The obstetrician evaluated the newborn and communicated any suspicion of microcephaly or CSaZ to the mother; the neonatologist or pediatrician assessed the newborn and made a definitive diagnosis; the epidemiologist followed up on laboratory tests; the social worker contacted referral services and made appointments for specialist care; and the "linkage nurse" (who played the role of case manager) verified completion of each of the services required for care and support of cases linked to care in the health services.

In Honduras, the Coordinating Teams for Health Networks (ECORs) at the municipal level organized the care and support of Zika-affected infants in some 90 facilities. Since only about 20% of the facilities supported by ASSIST had cases of affected children, QI teams were not formed at the facility level but rather ASSIST supported the ECORs in all regions with cases to incorporate quality improvement activities in their work. In this way, the ECORs were able to provide follow-up to over 200 Zika-affected children.

The advantage of the case management process in Honduras was that it was entirely managed by Secretariat of Health personnel who were oriented and supported by ASSIST. In 16 hospitals, they organized "response teams" which in other countries were known as "access teams." In Honduras, only the response teams applied QI methodology to their work, carrying out PDSA cycles and measuring compliance with the indicators. These teams would be activated once a case of microcephaly or CSaZ was identified in the network. Some teams were more active than others.

The Care and Support Collaborative had technical field facilitators or coaches employed by ASSIST who provided support to a certain number of health facilities or regions. The ASSIST coaches operated at various levels and had various duties. In general, these coaches actively participated in identifying, locating, linking, and following up cases, verifying data at the facility level through review of medical records of all affected children to ensure data quality.

The coaches also provided training and technical support to the QI teams to strengthen their teamwork and guide them in PDSA cycles. The coaches supported the entry of data into ASSIST's database, data quality control (reviewing primary data sources like clinical records and checklists), data consolidation, calculation of indicators, analysis and interpretation of results, development of improvement plans, and the testing of change ideas and their documentation.

In each country, there was a coordinator for the Care and Support Collaborative who supported and provided guidance to the field coaches. The collaborative coordinator reported to the ASSIST country director and to the regional coordinator of the Care and Support Collaborative and liaised with MOH and Social Security Institute counterparts and other partners.

In El Salvador, the National Directorate of Quality had quality units in each of the health areas where the project worked that served as counterparts for the Zika improvement collaboratives. There were also quality units in other countries (Ecuador, Honduras, Peru), and in the Dominican Republic, the Vice Ministry of Quality, which served as ideal counterparts for a project focused on health care QI. These units, in many cases, incorporated continuous quality improvement and collaborative learning in their implementation strategies.

**Perspective of a national health authority**

*“Quality is not a number but is represented by actions. I base this statement on what we have done in this project, that has caused us to reflect on the quality of the services we offer. We have better quality of care now but we still lack a culture of quality.”*

-- Dr. Andrés Manzueta, Vice-Minister of Quality, Dominican Republic

Relationships with institutional counterparts were not always smooth, particularly at the central level. In the first place, the MOH in some countries did not view the Zika epidemic as a real problem or priority, and there were many changes in national authorities due to government changes and political situations, above all in Guatemala and El Salvador. In Peru, for example, the decision was made at the central level that the project would work only at the regional level in Piura and Tumbes since the Zika topic was not a priority for the national authorities. Nonetheless, the response at the local level (health facilities) in all the countries was generally positive.

At the regional level, the project facilitated virtual spaces and in-person learning sessions to provide feedback on the improvement work and assess indicator performance for decision-making. The regional coordinator of the Care and Support Collaborative organized periodic virtual meetings of all the country collaborative coordinators to share progress, discuss challenges, and provide feedback.

In April 2019, ASSIST organized on behalf of USAID a regional workshop in Panama on Care and Support for Infants, Mothers, and Families Affected by Zika, with 104 delegates

from 18 countries, including Ministry of Health and Ministry of Education representatives from the seven countries that fully participated in the Care and Support Collaborative. The objectives of the workshop were to share experiences, strategies, challenges, successes, and recommendations as well as to create consensus on norms and standards of care as well as tools for the care and support of children affected by Zika and their families. The workshop demonstrated that through the work of the USAID Zika response, Latin American and Caribbean countries were now significantly better prepared for potential future similar public health emergencies and managing child development abnormalities.

The list of health authorities and facilities participating in the Care and Support Collaborative in each country is found in **Annex A**.

### **C. Phases of the Collaborative**

The Care and Support Collaborative was conceived of in 2017 as a joint effort of USAID and UNICEF. In the beginning, the work of the collaborative was not very structured, resulting in disparate activities in each country. But over the first few months of the Care and Support Collaborative, the collaborative leaders progressed in developing the theoretical and practical content of the collaborative. The key informants for this report agreed that the Care and Support Collaborative really took off in February 2018 and supported the first measurements of quality of care and support in June 2018.

The following section attempts to describe the key activities of the Care and Support Collaborative by typical phase of a collaborative, noting that these phases were not always clearly distinguished, and they overlapped to some degree. There was also not necessarily a strict linear progression through phases, and sometimes activities were repeated.

#### **1. Preparatory Phase**

The preparatory activities that were carried out the national, regional, zonal/area, district, and local (health services) levels to introduce quality improvement in the care for children and families affected by Zika included the following:

- Presentation of the collaborative as a logical continuation of the project's work on prenatal and newborn care at the national level, when children affected by Zika began to appear
- Advocacy to convince health authorities of the true number of cases of microcephaly/CSaZ and to make the argument that their care and support was an issue of rights
- Training of ASSIST coaches in the new content areas
- Planning of the training of institutional coaches and health workers in participating facilities in the new content areas
- Formation of QI teams and access teams and identification of key stakeholders in the health system to engage
- Definition of the roles and responsibilities of the ASSIST team members in each country: country director, focal point of the Care and Support Collaborative, field coaches, and others



## **2. Implementation Phase**

The implementation phase encompassed activities to introduce comprehensive care for children affected by Zika and psycho-emotional support for their families:

- Development of care pathways based on the analysis of the critical path of care for affected children
- Development of reference tables for variables included in the assessments, by age and according to national norms
- Introduction of the ECHO tele-mentoring program in September 2018
- Selection of case managers at all levels of the health system or identification of existing personnel who could fulfill this role
- Support for the updating or development of care norms and protocols for congenital abnormalities and their management
- Baseline measurement and subsequent measurement of the indicators
- Training of health workers in quality improvement of the different moments of care: screening for microcephaly and congenital abnormalities at birth to identify cases of CSaZ; case definition; psycho-emotional and psycho-social support; growth and development surveillance; and early stimulation
- Training of case managers from all three levels of care
- Monthly visits of ASSIST coaches to QI teams
- Furnishing of rooms for early stimulation, pediatric physical therapy, and other care
- Follow-up of referrals

For access teams:

- Formation of access improvement teams at the regional or zonal levels or identification of existing teams who could fulfill that function (response teams)
- Linkage and coordination meetings and signing of agreements with institutions who could provide specific support in the regions
- Case managers operating in facilities from the primary care level to the hospital level, to identify, actively search for, locate, and link cases to services
- Creation of a database of affected children who were identified, located, linked, and actively followed up (such as the ACCESS database developed in Nicaragua)
- Mobilization of existing resources for diagnostic services and specialized therapies and to transport families and specialists
- Development of a directory of institutions that can conduct specialized assessments and services required for cases of CSaZ
- Inter-institutional coordination and strengthening of referral and counter-referral processes
- Coordination with other USAID implementing partners, UNICEF, and others

## **3. Expansion Phase**

The expansion phase encompassed activities to expand best practices to new facilities in the initial countries and to health facilities in the expansion countries of Paraguay, Ecuador, and Peru. It should be noted that the expansion countries started activities shortly after the initial countries. Activities included:

- Meetings with health authorities to present the project
- Training of coaches (existing one and new ones) and key personnel in new health facilities
- Consolidation and dissemination of best practices to date
- Training of health workers
- Identification of case managers to provide follow-up to patients and to health workers
- Formation of care and support QI teams and access teams in the new facilities
- Review of records in hospitals and zones/regions to define the cohort of cases
- Measurement of indicators
- Discussion of the findings from the measurement of indicators with health workers
- Virtual meetings every two to three weeks of the Care and Support Collaborative focal points in each country to share experiences and lessons learned

#### **4. Sustainability and Institutionalization Phase**

This phase encompassed activities to sustain and institutionalize the identification, location, and linkage to the required services for all cases of disability, associated with Zika or not, and assuring complete and integrated care, including psycho-emotional support to families:

- Coordination with the MOH National Directorate of Quality, the Vice-Ministry of Quality, or other organizational quality units
- Develop plan for institutionalization/sustainability
- Definition of package of change ideas to be institutionalized in the health services: record forms and patient cards for cases of microcephaly/CSaZ; intrahospital care pathways; inter-hospital care, referral, and counter-referral pathways; psycho-emotional support to be provided to caregivers in each visit; early stimulation, physical therapy, and rehabilitation as part of integrated care for cases of microcephaly/CSaZ or other disability
- Formalizing the role of the case manager, not only for cases of microcephaly/CSaZ but for other disabilities and high-risk groups.
- Establishing guidelines for the referral and response (counter-referral) between case managers and specialized medical services
- Strengthening the follow-up care received by children in accordance with the national protocol and norms for assessments and services to be received by age
- Promote the addition of other specialists to the QI teams, such as psychologists, physical therapists, and social workers, to support the management of cases of disability, associated or not with Zika
- Institutionalize support groups for parents (parents' school, mothers' and fathers' clubs, clubs of families with cases of microcephaly, CSaZ, or other disabilities) and encourage monthly meetings in health facilities
- Evaluate care processes to determine their sustainability
- Establish linkages with religious and social assistance organizations to support affected families

- Disseminate testimonials from families and develop measures of beneficiary satisfaction to make visible the impact of the changes introduced and motivate health workers

## IV. RESULTS

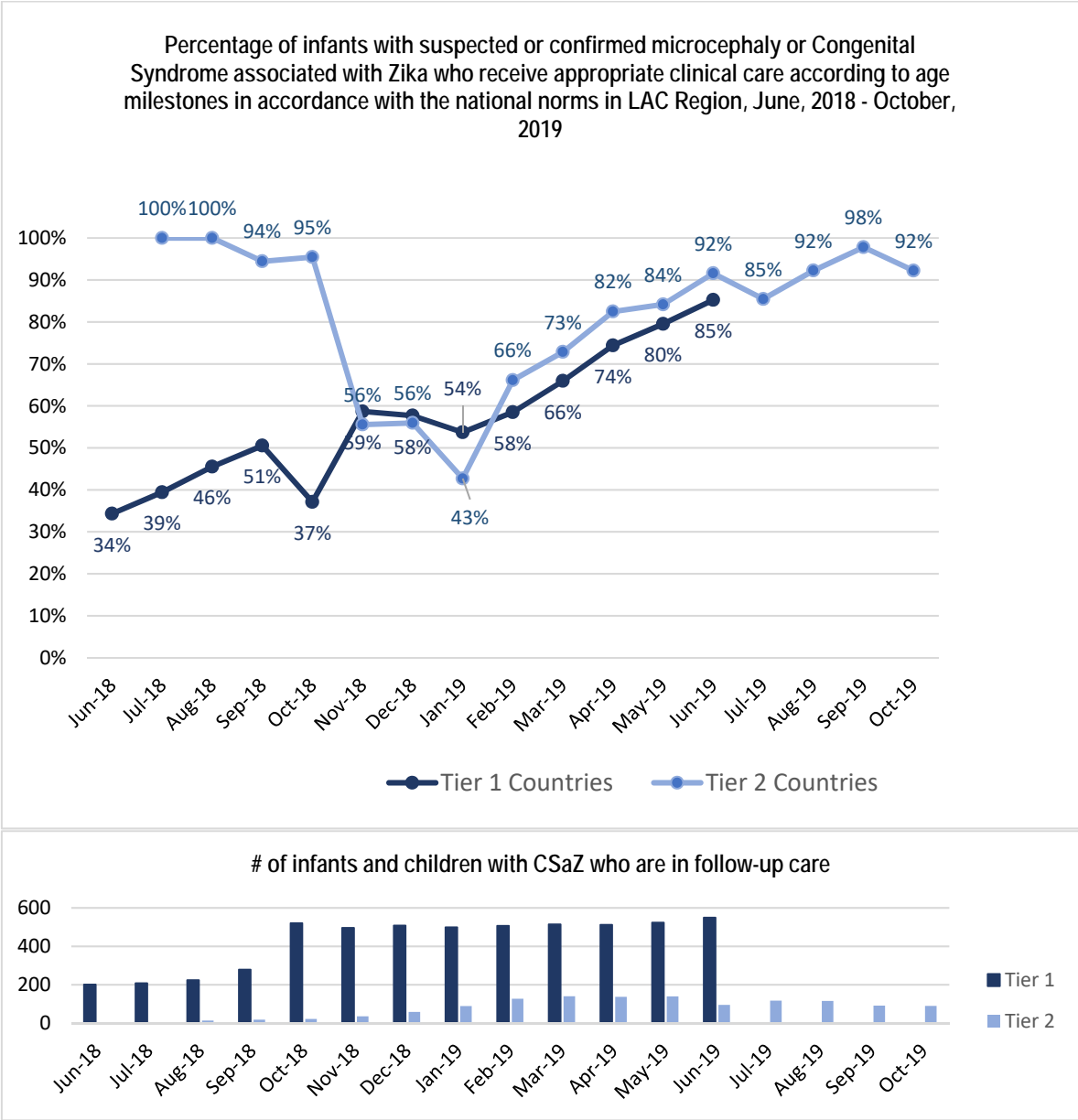
This section of the report presents the monthly measurements of the two indicators that all teams in the seven countries implementing the Care and Support Collaborative monitored: 1) the percentage of suspected or confirmed case of microcephaly or CSaZ who received adequate care, according to national norms and age; and 2) the percentage of affected individuals who were attended by a health worker trained in providing psycho-emotional support at each visit.

**Figure 3** shows the consolidated results for the first indicator for the two groups of countries from June 2018 through June 2019 (additional data points were available for Ecuador and Peru). In the four Tier 1 countries (Dominican Republic, El Salvador, Guatemala, and Honduras), the proportion of microcephaly or CSaZ cases that received adequate care gradually rose from about 35% at baseline in June 2018 to 50% by September 2018, since teams were initially focused on identifying, locating, and linking cases to health services. However, as the collaborative developed, ASSIST country teams began to place emphasis on more precisely measuring that at least 80% of required services were provided in a timely way to achieve the indicator. In Honduras, for example, verifying the dates and locations of the services received by each child proved to be difficult, and the team realized when their indicator performance seemed to be high, in reality teams were just measuring linkage to services and not necessarily receipt of comprehensive care by age.

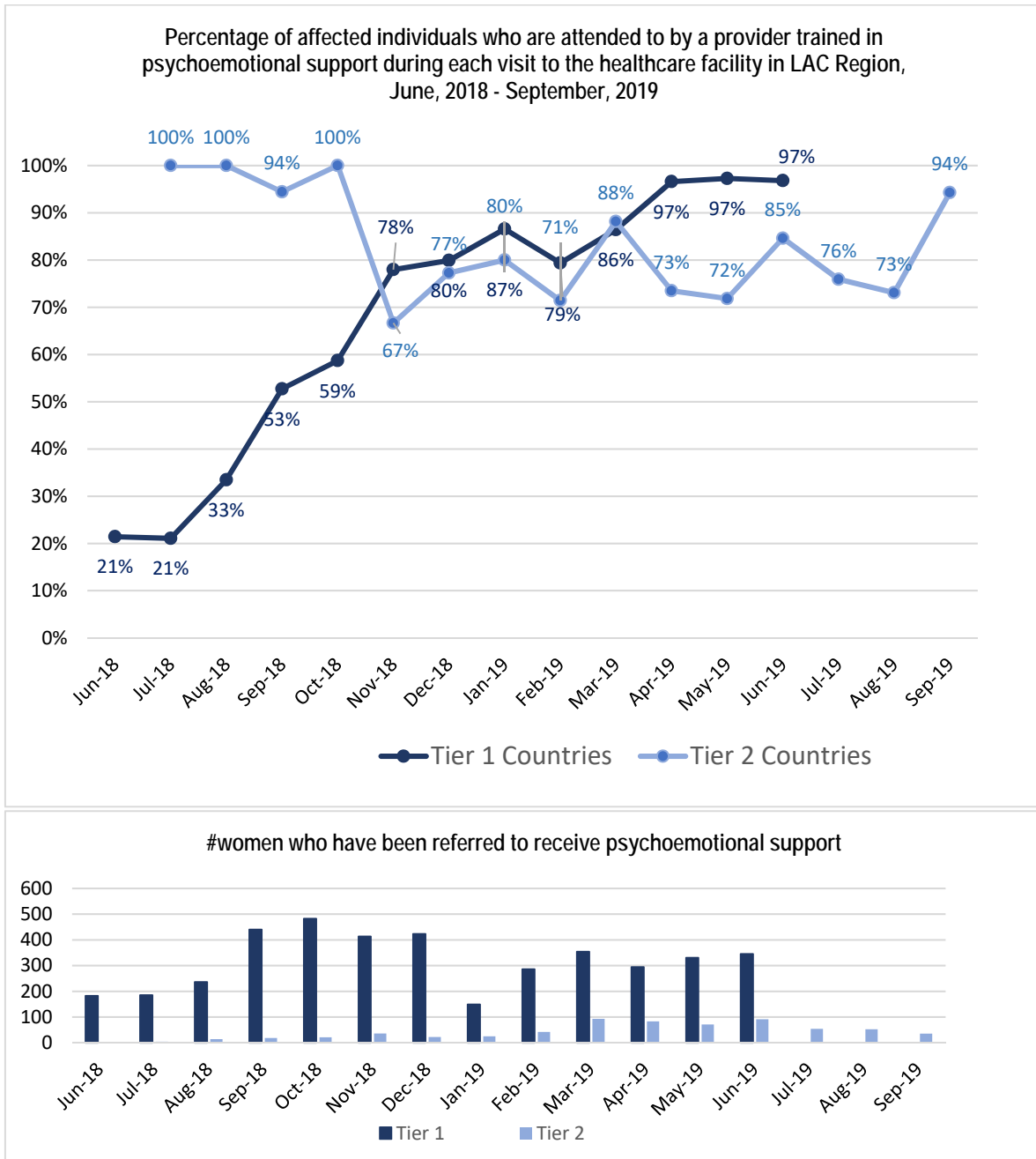
The three Tier 2 countries (Paraguay, Ecuador, and Peru) began measuring these indicators only about a month after Tier 1 countries had done so. While performance seemed initially very high, this was in fact an artifact of the small number of microcephaly and CSaZ cases initially identified in those countries. As the number of cases increased, the proportion of cases receiving adequate services dropped to 43% in January 2019 and then began to climb and surpassed performance in the Tier 1 countries.

**Figure 4** shows the proportion of affected individuals who were attended by a health worker trained in providing psycho-emotional support at each visit. This indicator shows a similar pattern as the first indicator, but all countries achieved performance of over 80% by March 2019, although the teams in the Tier 2 countries dropped in performance in April and May 2019.

**Figure 3: Percentage of infants with suspected or confirmed microcephaly or CSaZ who received at least 80% of required services by age in compliance with national norms, June 2018 through June 2019 (Tier 1 countries) and July 2018 through October 2019 (Tier 2 countries)**



**Figure 4: Percentage of affected individuals who were attended by a provider trained in providing psycho-emotional support during each visit to the health facility, June 2018 through June 2019 (Tier 1 countries) and July 2018 through October 2019 (Tier 2 countries)**



## V. DISCUSSION

In this section, we discuss the most relevant change ideas implemented in the countries to improve care and support for children affected by Zika and provide psycho-emotional support to the family.

### A. Regional Strategies Implemented by All Countries

The first two strategies promoted across all eight countries by the project's regional team for Zika were the designation of case managers and the Extension for Community Healthcare Outcomes (ECHO) tele-mentoring program. Both strategies were adapted to the context of each country, particularly the case manager strategy.

Case managers have been used in HIV care to improve patient adherence by providing active follow-up and support to patients. The University of New Mexico's ECHO Program is an internet-based model for linking health professionals with specialists through "tele-clinics" to discuss the management of complicated cases. The University of New Mexico signed an agreement in 2014 with the University of the Republic of Uruguay to serve as an ECHO hub for Spanish-speaking countries and with the American Academy of Pediatrics (AAP) to serve as an ECHO hub for Zika. As one of ASSIST's partners on the Zika response, AAP contracted with the University of the Republic of Uruguay to develop the LAC ECHO tele-mentoring program for Zika care and support in Spanish.

#### 1. Case Managers

In mid-2018, the eight countries participating in the Care and Support Collaborative began to select and train "case managers" to support facilitating access and assuring completion of the recommended services that Zika-affected babies and children should receive, per national norms in each country, and to provide psycho-emotional support to parents and other caregivers. While this change idea was suggested by the regional team leading the project, in reality each country, department/zone, district, and health facility adapted the strategy to their need and the realities of their health system. Ministries of Health responded positively to the strategy since it helped to reinforce the integration of the health system to meet the needs of Zika-affected families.

In **El Salvador**, for example, a care delivery model based on case managers was fully consistent with the government's health sector reform agenda which called for "linkage personnel" at each level of care. The case managers proposed by ASSIST effectively fulfilled this function and became part of "case management teams" that connected the different levels of care. Linkage personnel, other support personnel in the Vice Ministry of Health Services, staff from the first level of care, from hospitals at the second level of care, and from referral hospitals for women and newborn from the third level of care made up the case management teams at the level of the Basic System of Integrated Health (SIBASI). Each SIBASI case management team included a physician/epidemiologist, a pediatrician or neonatologist, and a linkage nurse.

Similarly in **Honduras**, where the governance of the health system is through health service networks, they identified the municipal level Health Coordination Team (*Equipo Coordinador de Salud* or ECOR) as the appropriate body to perform the case management function.

In all countries, a profile was developed for the case management function at each level of care as well as selection criteria for individuals to perform this role. In **Ecuador**, the case management function was performed by social workers or patient managers. The direct follow-up of cases was done directly in the health facilities and reviewed monthly in meetings of the “provincial access teams” which had representatives of each facility and monitored performance indicators.

They also defined the competencies that case managers should have and organized competency-based trainings for them. Numerous job aids were developed for case managers, including manuals and pocket guides, and in El Salvador, the document, “Case Managers for the Follow-up of Children Affected by Microcephaly and CSaZ” explained their functions.

The linkage teams at the primary, secondary, and third level of care were supported each month by the ASSIST coaches (field facilitators) assigned to them. ASSIST coaches would verify the identification, location, and linkage to specialized services of all cases of microcephaly or CSaZ in the facilities supported by ASSIST but also in other facilities where there were cases (Honduras). In each country they defined the plan of services required for each child by age according to the norms of each country and compared it to the care actually received to decide how to close any gaps or missing services.

Learning sessions were carried out with case managers as well as with improvement teams and access teams to review performance along the cascade of expected care and support. Case managers identified gaps and proposed change ideas to test in order to improve compliance with all of the required services stipulated by national norms.

Another tool used to facilitate communication between case managers was the creation of WhatsApp groups at the departmental or municipal level. In **Guatemala**, to enhance the sustainability of the case manager function they have considered integrating the case manager function with the growth and development component which would permit the case managers to participate in the measurement of head circumference and in the growth monitoring and early stimulation of children.

## **2. ECHO Tele-mentoring clinics**

In order to strengthen the competencies of health professionals (general physicians, specialists, nurses, psychologists, physical therapists, nutritionists, and others) in providing clinical care to children affected by Zika and psychological and psycho-emotional support to their families, in all eight Spanish-speaking countries, ASSIST implemented, in partnership with the American Academy of Pediatrics, the ECHO tele-mentoring program in the hospitals that provided care to children with microcephaly and other manifestations of CSaZ.

The ECHO model provides virtual support in the form of a learning network of hospital professionals. A regional technical team made up of three specialists from AAP (from Puerto Rico, Brazil, and the United States) led the LAC Zika ECHO network, with additional invited experts from ASSIST. A total of 15 LAC Zika ECHO sessions were held from September 2018 to July 2019. ECHO sessions lasted 1.5 hours and included a brief didactic lecture by one of AAP’s specialists, followed by a presentation of a de-identified patient case (usually a complicated case) by one of the participating ASSIST-supported

hospitals. Following the case presentation, the experts commented on the case and addressed questions from participants, including questions on the didactic lecture. The goal of the sessions was to increase the capacity of health professionals in supported hospitals to effectively manage cases of CSaZ. Patients and families also benefitted by having diverse specialists provide advice on how to most effectively manage the particular case, addressing both clinical and psycho-emotional aspects.

The tele-mentoring model reinforced continuous quality improvement, collaborative learning, and integrated care approaches; reduced training costs; created capacity for tele-medicine in the participating hospitals; and increased provider knowledge of clinical management of CSaZ. Before the closing of ASSIST in the participating countries, ASSIST provided training and donated computer and projection equipment to the Ministries of Health and selected hospitals to enable them to continue using the tele-mentoring model for other capacity-building needs. In El Salvador, for example, ASSIST trained teams from the technical and informatics units of the MOH and in tertiary and secondary care hospitals to be able to continue using the tele-mentoring model for other topics in maternal and child health.

## **B. Cross-cutting Change Ideas**

Some change ideas – those traditionally associated with health programming such as training and standards – were applied to all aspects of identifying, locating, and linking children affected by microcephaly and CSaZ to specialized clinical care, follow-up of their care, and providing psycho-emotional support to their families. These are discussed below, although the order in which they are presented was not necessarily the order in which they were implemented.

### **1. Norms, Protocols, and Other Official Guidelines**

In all eight countries, ASSIST supported the MOH and Social Security Institute to develop or update norms and protocols for the care and management of children affected by Zika, including growth and development, early stimulation, and psycho-social support. In Honduras, ASSIST supported the Secretariat of Health to develop an annex for its maternal and child health procedures manual to describe the follow-up to be provided to children affected by Zika; in this way, procedures for the care of Zika-affected children has been institutionalized. In Peru, ASSIST worked with the central Ministry of Health to draft guidelines for the care of Zika-affected children. Although these were not published by the central MOH, ASSIST did formalize the document with the Tumbes Health region as the “Protocol for the follow-up of pregnant women and children suspected or affected by Zika in the Tumbes Region.” In several countries, ASSIST supported the development of specific manuals for assessment of hearing and vision, early stimulation, physical rehabilitation, and case management of children affected by Zika.

### **2. Registers**

Ensuring follow-up of children affected by Zika necessarily required new instruments to register and track individual cases. QI teams in the countries developed lists and notebooks to track cases as well as individual case forms (Ecuador) and/or registers to track cases at the primary level and in hospitals (El Salvador, Guatemala). The initial registers were expanded to show how cases received services to which they were



referred, the child's current status (alive or dead), whether the case was later determined not to be microcephaly but perhaps another congenital problem, and the date and results of specific diagnostic tests and services.

All of the countries developed various instruments to register and document the process of linking children to health services and diagnostic tests and their results. These included referral and counter-referral forms for children with CSaZ (El Salvador, Guatemala, Honduras), referral forms between case managers, and referrals for psycho-emotional support. In Honduras, providers used WhatsApp to refer and follow-up cases between regions, hospitals, and other facilities.

Several countries developed cards or booklets listing all of the assessments and services that a Zika-affected child would require up through two years of age and individual sheets for the child's record for providers to note when each service was received (Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras). Other forms were developed to record specific services, such as an electronic form to record the result of transfontanellar ultrasound (El Salvador), evaluation of development, record of physical therapy sessions (El Salvador, Guatemala, Honduras), and record of psycho-social support and psychological assessment, including the mental health of the caregiver (Guatemala).

Several countries produced a Child Health Booklet for children affected by Zika that the family would retain to document the date and location where specific services were provided to the child and which could be shown to subsequent care providers.

One weakness identified in several countries was that all of the information relevant to a particular case was not documented in a single form but rather in several different instruments which were not always standardized across services. Nevertheless, teams reported that having several registers had worked for them as part of the process of testing change ideas. They also recognized that the task of creating a unified record was the responsibility of the central MOH and would require the involvement of the information system.

Related to the need for registers was the need for a database to facilitate the follow-up of referrals. Various databases were created in the supported countries to summarize information from different registers. Nicaragua developed a database in ACCESS that facilitated the follow-up of individual cases. This was shared with the other countries and adapted to their needs (Guatemala). In Honduras, they decided that an Excel database was sufficient; it is managed by the Secretariat of Health to track care for all identified cases.

### **3. Training of Health Workers**

The Care and Support Collaborative supported numerous trainings of health workers, including refresher trainings to build on training conducted under the other collaboratives, such as on diagnostic tests for mother and children, measurement of head circumference in newborns, and quality improvement methodology. Additional trainings were developed to address topics relevant for the Care and Support Collaborative, such as psycho-emotional and psycho-social support, growth and development, infant neurodevelopment, developmental assessments, and basic stimulation and physical therapy exercises for infants. Rapid courses were also developed to facilitate onboarding on new personnel.

Health workers in facilities supported by ASSIST were trained in a basic Zika course which included a module on psycho-social support. Some providers also participated in a post-graduate course on Early Stimulation and Development offered by UNICEF and a course on child development sponsored by WHO and UNICEF. Finally, ASSIST also developed a virtual course on neurodevelopment to complement these other courses and support the identification of children with neurodevelopmental problems, a key risk area for Zika-affected babies.

For all of these trainings, ASSIST developed curricular guides and plans and supporting materials for training facilitators and participants as well as job aids to support application of the knowledge. Training often included MOH facilitators and trainers who would be responsible for replicating the trainings for other personnel. Trainings always included the official norms, manual, and job aids developed with support of the project.

As part of collaborative learning, ASSIST organized with local health authorities, learning sessions for teams in the Care and Support Collaborative, sometimes in conjunction with the other ASSIST-supported collaboratives, to share effective change ideas and best practices. Often the learning sessions included a video testimonial of a specific case or the presence of a family affected by microcephaly or CSaZ. These testimonials were important to sensitize health professionals, particularly specialists, to the human dimensions of Zika care and support.

#### **4. Job Aids and other Support Materials**

Various job aids were developed with ASSIST support for health care providers in the form of flip charts, leaflets, brochures, and cards. These included flow charts of the care and referral pathways and services provided in different levels of care (Dominican Republic, Guatemala, Honduras), tips on basic psycho-emotional and psycho-social support that providers should offer families, basic communication techniques (such as “how to deliver bad news”), a pocket guide for case managers, and a card on signs of mental health issues in caregivers (Guatemala). Job aids were also developed on the key milestones in infant development and guidance on early infant stimulation by age groups.

ASSIST also provided kits for health facilities to support developmental assessments, early stimulation, and multi-sensory stimulation by health workers, with instructions on their use. In Paraguay, the MOH developed, with support from UNICEF, a job aid for families on the creation and use of didactic toys in the home. The ASSIST team in Honduras developed a “Guide for the use of the early stimulation kit” for health workers. The project also furnished infant stimulation rooms in some facilities and provided rugs and mats, educational toys, building blocks, and other materials.

Materials were also developed for caregivers and families, including posters for waiting areas listing the key milestones in child development and signs of alert for developmental delays among infants 0-12 months and from 12-24 months and reproduction of the UNICEF brochure, “Play with your baby” (Dominican Republic). Early stimulation kits for home use were provided to families, some donated by UNICEF and others prepared by ASSIST. In Peru, the ASSIST team developed a “Guide for the use of the home infant stimulation kit”. In Paraguay, the project installed television sets and video players to show videos on Zika prevention in the prenatal period, the importance of early stimulation, and how to develop eight toys promoted in the UNICEF campaign, “Toys for all of life” that

promoted stimulation of children during the first 1000 days or first three years of life. In the Dominican Republic, videos developed by UNICEF were shown in prenatal and pediatric waiting rooms.

A list of the materials developed or distributed by ASSIST as part of the Zika Care and Support Collaborative may be found in **Annex B**.

## **C. Best Practices**

The section discusses the change ideas tested by QI teams in the eight countries to improve the cascade of care and support for Zika-affected children and their families.

**Annex C** provides a general catalogue of the change ideas implemented in each country that participated in the Care and Support Collaborative.

### **1. Case Identification**

The first challenge faced by country teams was to know the true number of children affected by Zika. When data were available at the national level, they found that information obtained at the local level often did not coincide with official data or health facility data. Furthermore, early on, some countries only reported laboratory-confirmed cases of microcephaly caused by Zika, not suspected or probable cases.

In Paraguay, the ASSIST team reviewed records of the Directorate of Surveillance and of the National Program for the Prevention of Congenital Defects and later the registers of the measurement of head circumference of newborns in selected hospitals. This active search found some duplication of data since there were two different notification forms in use, but also suffered from difficulties in confirming the classification of newborns as microcephalic since follow-up information on the cases was often missing. ASSIST supported the MOH to address these gaps.

Some countries (Dominican Republic, Ecuador, and El Salvador) did a retrospective review of registers of newborns for the previous nine months, using recorded head circumference. The Epidemiology Departments of the hospitals were very involved in the search for cases. In El Salvador, the MOH's national level information system was used to conduct an active retrospective search for cases of microcephaly and CSaZ. This facilitated the initial identification of cases, which were complemented by the active search for cases at the local level and for postnatal cases in the community.

With the improvements introduced under the Newborn Care Collaborative to properly screen all newborns for microcephaly and ensure the correct measurement, recording, interpretation, and classification of head circumference, more cases were identified prospectively in newborn and child consultations. Health workers began asking mothers questions to establish association with Zika.

The case managers or linkage personnel and other community-level workers became involved in the active search for cases at the community level through interviews with key informants (for example, traditional birth attendants), anecdotal information, and meetings with community leaders. They also reviewed daily consultation registers in primary care facilities to look for suspected cases and referrals. In secondary and tertiary care facilities, depending on the country, they also reviewed daily consultation registers for outpatient

services, emergency services, and hospitalizations, laboratory reports, delivery and newborn care registers, as well as referrals and counter-referrals of cases.

In Honduras, ASSIST supported the active search for cases in each facility in each region. Health personnel were asked to look for cases of infants who were born before head circumference measurement became routine, including during vaccination campaigns. The system put in place in Honduras included monthly meetings between the ECOR and representatives of all health facilities in their network to review the status of all identified cases and to report new cases. The ECORs took this information to regional meetings where the cases were consolidated in an electronic database and discussed with facility representatives. In this way, facilities might learn of cases in their catchment area that had not gone to the facility.

The ECOR, linkage nurse, or case manager would report on new cases and initiate the process of care and follow-up. In other places, the access improvement team at the area or district level would manage the process.

Since the identification of cases was based on the measurement of head circumference, this review and verification process also led to the correction of documentation errors by newborn care QI teams through refresher training on correct screening for microcephaly: measurement of head circumference at birth and at 24 hours, in centimeters to one decimal place, interpreted using the correct reference tables or graphs, and recording the classification. Teams also emphasized the need to attach the head circumference graph to the child's health record.

The vast majority of cases identified were suspected cases of CSaZ, not confirmed, due to the limited lab capacity (Honduras, Guatemala). In Honduras, efforts were made to reinforce through training the need for lab tests for the mother and newborn and complying with all of the documentation needed for newborns with microcephaly.

## **2. Locating Children**

Another challenge for QI teams was to confirm the place of residence and exact address of each one of the affected children identified through active search, such as cases identified in hospital records but who never returned to the hospital for follow-up care, or cases identified in outpatient clinics. Often the contact information for the family was missing or incomplete. In many countries, internal migration and emigration complicated the establishment of current residence. QI teams would involve the epidemiology departments of the hospitals and social workers to locate the households.

Case managers and linkage personnel would also engage local health committees in Zika risk areas to support the identification of cases (El Salvador). QI teams again took advantage of immunization campaigns, traditional birth attendants, and community-based organizations to locate children. In Guatemala, teams were able to add georeferencing information to locate cases.

In some countries, ASSIST facilitated partnerships with other organizations working at the community level to locate cases, such as Pastoral Infantil in the Dominican Republic, Save the Children in El Salvador, and UNICEF and the Association for Training and Technical Assistance in Education and Disability (ASCATED) in Guatemala. One challenge was locating immigrant children (such as Haitian immigrants in the Dominican Republic), and

teams tried special communication strategies and materials (posters and audiovisual products in Creole) to reach immigrant families.

Teams also sought to identify cases in child follow-up consultations, necessitating the engagement of pediatricians in the process. In one hospital in the Dominican Republic (Jaime Mota Regional University Hospital), the hospital assigned personnel to reach out to private practices to locate possible cases.

### **3. Linking Cases to Health Services**

Children born with microcephaly or CSaZ in the hospital were automatically linked to resources in that facility but also needed to be linked to the primary care facility closest to their residence. In the same way, cases identified in outpatient departments needed to be linked to the health facility in their community, and those identified in the community needed to be linked to the nearest hospital for specialized follow-up.

The linkage task was coordinated with other institutions, cooperating agencies, and USAID-funded projects in order to ensure access to health services for all cases, especially those who lived in remote communities (Dominican Republic, El Salvador). In Ecuador, primary health care technicians and “neighborhood physicians” who operate at the community level were engaged in locating cases and linking them to follow-up health services established by national norms.

To effectively link cases, it was necessary to standardize referral processes within the hospital and between the hospital and the primary care level as well as with specialized referral hospitals in accordance with the health network concept governing the health system in some countries (El Salvador, Honduras). QI teams developed critical paths and care flow charts within the facility (Dominican Republic, Guatemala) and between levels of care. In hospitals in Honduras, these were considered a new process of specialized integrated care and had their own flow chart.

Once children were linked, case managers were responsible for reviewing progress each month in follow-up records and databases to identify any gaps in meeting the stipulated care and assessments. Each child would have a “needs plan” (El Salvador, Honduras) which shows the assessments and services that the child had received and those the child still needed. Teams sought to ensure that each child received the comprehensive care defined in the country’s norms.

In El Salvador, they began by conducting a retrospective review of all cases identified in 2018, beginning with those identified at birth who were later located and linked to follow-up care. For each child, they reviewed all relevant records to determine which of the required follow-up services and assessments by age that the child had actually received, including seven actions requiring specialist care and 29 criteria, including growth and development consultations and psycho-emotional support to the family in each visit. This review allowed QI teams to establish the “needs plan” for each case and helped drive the testing of changes to improve care.

### **4. Diagnostic Assessments and Clinical Care**

QI teams had to first establish, based on national norms, what appropriate “care and support” for cases of CSaZ consisted of. Teams in all countries organized the information

in tables of recommended assessments and services, by age, for CSaZ cases. Once the assessments and care were clearly defined, teams developed a care plan for each child. These care plans facilitated the ongoing evaluation of whether the child had completed all or most of the recommended assessments and services (El Salvador, Honduras). In Honduras, for example, six assessments were stipulated in the national norms, and health workers were trained to offer psycho-social support to the family in each visit and to refer difficult cases to the psychologist.

With small variations between countries, the required assessments include evaluations by pediatric neurologists and ophthalmologists and auditory and vision screenings. A related standard by which care was assessed in each country was whether the family was seen by a provider trained in psycho-emotional support at each visit. Lastly, to address children's sensory and neuromotor deficits, required services included early stimulation and physical therapy.

In addition to the previously mentioned assessments and services, nutritional assessments were also identified as a needed service, to understand the nutritional status of children and monitor their growth as well as to address particular feeding challenges. In Guatemala, for example, some of the Zika-affected children were identified as being severely malnourished and were link to Nutritional Recuperation Centers.

Once the required assessments and services were identified, facilities also developed tools to ensure that required services were truly available. Some hospitals developed catalogues of available specialist services, which helped to identify gaps such as the lack of pediatric neurologists and ophthalmologists and the lack of equipment to perform transfontanelar ultrasound scans and auditory and visual assessments. At the same time, developing the catalogues also enabled some hospitals to identify available resources they didn't know they had.

Hospitals developed internal flowcharts of the steps that affected children/families should follow to receive in an orderly and preferential way, the necessary services available in that facility. Some facilities introduced a stamp for the child's record to indicate that the child was affected by Zika and should receive priority attention (reduced waiting time). In Ecuador, they introduced a specific window for CSaZ cases to schedule follow-up appointments and coordinated the number of specialist openings available each week in an effort to provide all specialist care on the same day, if possible.

Initially, children were given individual referrals to their nearest hospital for specialized care. One change idea tested was to engage specialists in private practice (for example, ophthalmologists or otolaryngologists) to evaluate children with microcephaly for free or at a reduced rate. It proved to be difficult for families to come to these individual appointments due to distance or lack of financial resources. Teams in El Salvador tested assigning one pediatrician to the outpatient clinic each day to provide all of the required tests, and this proved to be a best practice taken up by other facilities.

Effective intra-hospital coordination proved to be critical to ensure that appointments and tests could be completed in a timely way. Another successful change idea was to bring all of the available specialists in the hospital to one care point and bring all of the children needing services to the facility on that day. Case managers supported this process and helped to define how children could receive needed services in the care network.

Different countries had different names for these comprehensive care points: brigades, health days, or health fairs. In El Salvador, they organized three health fairs in which case managers would organize to have available in one facility all seven required services as well as specialized psychological support for caregivers and families, dental care, early stimulation, and physical therapy.

To enable children and families to take advantage of these confluences of services, transportation had to be arranged from the often distant communities where these children lived, often in very difficult financial circumstances. Case managers would meet with families to make arrangements for travel to departmental capitals or the national capital which could not be completed in the same day. In Honduras, the health regions assumed the responsibility of arranging transportation to and from the facility, housing for several days, food for the child and family members, and personal hygiene supplies. In Guatemala, teams requested support from the Municipality's Women's Office, and one health center had the idea to set up beds in the health center for women and children coming from far away to spend the night before their appointment in the departmental hospital.

Even in those countries where the service delivery system is organized in networks, hospitals—especially specialty and university hospitals—often operate in an isolated fashion. Inter-institutional coordination was therefore critical. Countries would often develop directories listing the private clinics and practices, religious clinics, and governmental and non-governmental organizations that offered clinical care and services of psycho-emotional support, early stimulation, rehabilitation, and physical therapy. Ministries of Health would develop agreements with these institutions to support the delivery of care to Zika-affected families. In El Salvador, for example, one private organization supported ophthalmological evaluations and provision of glasses to children who needed them.

ASSIST's field coaches and QI teams also strengthened their knowledge, skills, and capacities for comprehensive care for children with microcephaly or CSaZ. Specialists were engaged in training activities through seminars and workshops on psycho-emotional support, early stimulation and infant development, physical therapy, and rehabilitation. Other professionals were added to QI teams and trainings, such as nurses, social workers, psychologists, physical therapists, and rehabilitation therapists, to ensure that teams involved all staff providing care and support to Zika-affected children and families. ASSIST also promoted case-based learning through the ECHO tele-mentoring clinics with

*“The National Specialty Hospital in San Felipe participated in four health brigades as a pilot effort to coordinate specialized pediatrics, nutrition, rehabilitation, and psychology services. At first health professionals were not convinced this would work, but the extreme needs of Zika-affected children and the gratitude of families convinced them of the value of this strategy. The mayors' offices, Lions Club, Rotary Club, and regional authorities supported the process by arranging transportation for families by bus or subsidizing their private transportation, providing housing, food, and a package of water, milk, diapers, cleansing towels, toilet paper, drinking cups, sheets, and towels.”*

-- Dr. Heriberto Rodríguez, San Felipe Hospital, Honduras

specialists. As one physician participant said, “*The icing on the cake was the ECHO tele-clinics.*”

In Honduras, ASSIST and the Secretariat of Health developed a guide for ongoing supervision for use by national and regional level staff when supervising the local level to verify support for implementation of care and support services. In each supervision visit, they would try to observe all the care processes, not only care for affected children, and strengthen local capacity. The Secretariat of Health acknowledged that for them it was important that such supervision come from the central level, as part of a cascade of empowering supervision. They also felt that the central level’s involvement also encouraged the regional level to provide close oversight of children to ensure that they received all assessments and services since this was part of “official supervision criteria”.

## **5. Psycho-emotional or Basic Psycho-social Support and other Care**

As part of creating a catalogue of specialist services, QI teams would explore whether the hospital had a psychologist or psychiatrist on staff to incorporate this resource in the QI team or the access team. Similarly, they added social workers to the teams to assess families’ socio-economic status. If these professionals were available in the hospital, families would be referred internally.

But not all hospitals had these personnel on staff, particularly the lower level facilities. For this reason, in all supported facilities, with or without psychologists, all health workers dealing with Zika-affected families were sensitized and trained in the content and skills for basic psycho-emotional support using a curriculum for non-psychologists.

To conduct trainings in psycho-emotional support, some countries hired consultant psychologists to either directly provide training to health workers or to train institutional facilitators who would then replicate the training at the facility level. These consultants were also engaged to observe the performance of providers in Zika psycho-emotional support counseling sessions and provide feedback.

Across all teams, one improvement objective defined by ASSIST’s regional team leading the Care and Support Collaborative was to provide psycho-emotional support to the child and family at every consultation to build their confidence and engagement in the care process. The active engagement of the family in the child’s care was considered an essential part of the care process, emphasizing what the family can do to improve the quality of life of these children. Health professionals in the supported facilities reported having more positive attitudes following psycho-emotional support training and feeling more confident in how they dealt with Zika-affected families.

In some places, children with microcephaly and their caregivers were included in parents’ workshops and mothers’ and caregivers’ clubs. These clubs and workshops would be part educational, part creative, part recreational, and sometimes part spiritual. Some teams engaged fathers and other family members in addition to the mothers through invitations sent by health workers or made by community health worker during home visits.

Teams also strengthened referral of affected mothers and families to psycho-emotional support services in hospitals and created new referral forms for this type of support.



## **6. Early Infant Stimulation**

Hospitals expanded their coverage of patients with CSaZ with early infant stimulation services by renovating or furnishing new rooms or spaces for infant care as early stimulation and physical therapy rooms. ASSIST and UNICEF donated furniture and other materials to equip these rooms in hospitals and other facilities. Health workers were also given kits for developmental evaluation and early stimulation. Kits were also provided to families in some countries to support early stimulation in the home and to enable families to continue the same exercises in the home that they learned at the health facility.

Teams in Guatemala developed simplified tests of infant development and recommendations for stimulation activities, including a sheet for the monthly evaluation of infants 0-2 months and quarterly evaluation for infants 3-24 months based on IMCI guidelines. In Paraguay, teams used the Model of Integrated Care for Early Infant Development (MAIDIT) and the Battelle developmental inventory with its accompanying instruction manual. Two health professionals from each hospital were trained in the use of the full Battelle methodology, and each hospital was given a complete set of the battery of test and scoring sheets.

As a result of these interventions, health providers made efforts to explain to the families of affected children, the importance of early stimulation, emotional connection, and communication. Providers showed families how to perform stimulation and physical therapy exercises, and in this way, families began to understand the value of stimulation and were capacitated to better manage children with microcephaly and CSaZ. Home visits were also used to teach parents stimulation activities and follow up on children's progress.

In the trainings on early infant development and stimulation, they followed the same practice of forming institutional facilitators who could replicate the trainings at various levels. In Guatemala, for example, trainings on growth monitoring and development and early stimulation of both children affected by Zika and those not affected by Zika were given to a wide range of staff (auxiliary nurses, professional nurses, medical residents, psychologists, and social workers) to train as many professionals as possible to staff the stimulation rooms.

Teams also providing in-service mentorship to follow up the training process in each provider's work setting. This mentorship allowed for more direct feedback to each provider in a setting of greater confidence and privacy.

## **7. Physical Therapy and Rehabilitation**

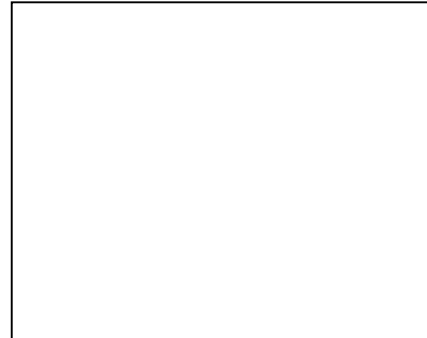
Similar to the approach to early stimulation, teams arranged for simplified training in physical therapy to all staff so that they would be able to provide some support to children and families, even in the absence of professional physical therapists. Teams also referred children for physical therapy in hospitals and other institutions.

The project supported refurbishing of physical therapy rooms in several hospitals. In the Dominican Republic, the early stimulation and physical therapy rooms were managed by the Department of Physical Therapy and by physical therapists certified by the Dominican Association of Rehabilitation. In other countries, teams engaged physical therapists from the national network to plan trainings on early stimulation and rehabilitation for children at high neurological risk due to Zika. In El Salvador, the project supported the upgrading of

the low vision clinic in the National Referral Hospital for Pediatric Care and the formation of a neurodevelopment club in one family health unit.

#### **D. Unanticipated Positive Effects of Care and Support Collaborative**

In those countries which had had recent reforms to the organization of the health system, such as El Salvador and Honduras, where the governance model was not by programs but rather by care processes and where services were organized in integrated networks, ASSIST was able to develop a concrete example of what integrated care for children affected by Zika could look like. Through the Care and Support Collaborative, teams were able to reapply planning and implementation support roles that were contemplated in the normative framework of the health system and fully operationalize the governance of the health system.



Another important result of the Zika care and support work in all countries was to raise the issue of child disability in general and call attention to the need for integrated care to meet all of the child's needs, a largely hidden issue in most countries despite the enormous social cost of children's disability. The processes established to identify, locate, register, link to services, and follow-up on delivery of required services are useful not only for cases of microcephaly and CSaZ but for other congenital defects as well, at both the community and facility levels.

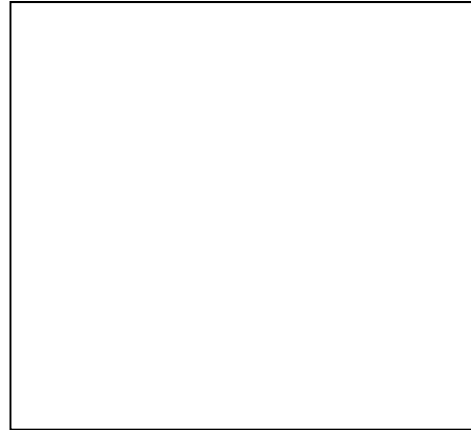
The project also left behind physical spaces for the follow-up of children in terms of early stimulation, rehabilitation, and physical therapy rooms and prompted staff to renovate existing spaces as well as furnish new ones. These physical therapy and stimulation rooms are available for all children that seek care in these hospitals and health centers, both in normal circumstances as well as special conditions following the critical path defined in each facility. The sharing of lessons and effective practices among those responsible for these rooms through the collaborative also served to strengthen these services.

The provision of furniture and stimulation kits to health workers and therapists on one hand, and to mothers and other caregivers on the other, was another important contribution to the ongoing care for children affected by Zika as well as other children in the first years of life.

In some countries, the project linked with the existing Kangaroo Mother Care program for premature infants which had specialists who could support many service needs for Zika-affected children (Dominican Republic). In El Salvador, QI teams leveraged the program for follow-up of premature newborns to support follow-up of Zika-affected babies. The trainings supported by ASSIST strengthened the program of child growth and development for all children and across all levels of care in several countries.

In El Salvador, the project supported the MOH to create a new module in the online information system to not only visualize the cases of CSaZ identified but also track the set of services that each child should receive in the different levels of care. The module can be applied in the future to other groups of infants with special needs, such as premature infants, those with congenital defects, other disabilities, and even high-risk pregnancies.

Lastly, but no less important, client satisfaction was seen to improve, as evidenced by numerous testimonials from mothers, fathers, and families of Zika-affected children, even if it wasn't measured directly in the collaborative's indicators. These beneficiaries expressed gratitude for the care, support, and the respectful treatment they and their children received.



## **VI. LESSONS LEARNED**

- All three Zika collaboratives supported by ASSIST demonstrated that coordination and linkages between health facilities and levels of care can be facilitated to ensure continuity of care from conception through childhood.
- The Care and Support Collaborative stimulated interest on the part of health authorities and providers to find ways to offer integrated, holistic care to children and families affected by CSaZ and other disabilities.
- The central level of the MOH did not always recognize Zika as a national health priority, and as a result some health workers perceived the work of the project as an additional burden rather than as part of their job. Some Ministries argued that assuring quality care to the majority of mothers and newborns was more important than focusing only on the needs of children affected by Zika.
- Although there is some perception that it is easier to apply QI methods to routine services on the MOH, this project demonstrated that it is possible to productively apply QI methods to enhance services in a health emergency such as Zika.
- QI methods and the collaborative approach go beyond training to create a conducive environment for good performance (coaches and facilitators, quality improvement and access teams, case managers) and team work (team meetings and learning sessions) as well as improved case management (ECHO tele-mentoring clinics and virtual meetings via Zoom).
- Health workers viewed QI methodology as practical and useful and associated it mainly with PDSA cycles and learning sessions.
- Time series charts were well understood by health workers and were even seen as motivating. However, for new topic areas like care for children affected by Zika and psycho-emotional support, the indicators used were not always well understood by

health workers, and stronger efforts to socialize indicators among health workers are needed.

- Changes tested by QI teams should always take into account possibilities of sustainability and their ability to be integrated into existing tools and care processes (for example, incorporating quality indicators into health information systems).
- The regular visits of ASSIST coaches to health facilities were highly valued, especially at the primary care level where many health workers feel like they are alone and don't receive much system support or opportunities for continuing education.
- The formation of access teams and the engagement of multiple institutions and organizations in the follow-up of Zika-affected children and families was essential to improve access to both clinical and non-clinical care.

## VII. RECOMMENDATIONS

In Honduras, participants in the Care and Support Collaborative considered that two strategies were the most important: 1) management and coordination of services in regional networks, and 2) organizing the health system response in hospitals and other health facilities. Recommendations from the Care and Support Collaborative are organized under these two strategies plus organizing the response at the community level. These recommendations are intended to orient teams who want to apply this model of integrated care with psycho-social support for high-risk groups.

### A. Management of Service Networks

- **Strengthen connections and integration between the different levels of health care** to ensure access to services and continuity of care, visualized in networks and care and communication pathways. Health sector reform processes can be leveraged to reinforce the organization of services in networks and quality improvement as a cross-cutting strategy.
- **Implement the model of teams and case managers** or take advantage of existing roles (such as network coordinators or linkage personnel) to make operational the connections between different levels of care and assure integrated care for high-risk population groups: children affected by Zika, children with other congenital abnormalities, premature infants, and others.
- **Establish strategic alliances** with other health and social sector actors (other Ministries and state institutions, universities, non-governmental organizations, churches, and private providers) who provide services at the local level as well as with international cooperation agencies, who through agreements can support interventions needed to provide comprehensive care.
- **Develop service directories** for clinical and non-clinical services that are available in the network and empower providers to make use of all the resources in the network as well as outside the network.
- **Develop guidelines and instruments to support referral and counter-referral** between levels of care, between case managers and other involved actors.

## B. Organizing the Health Service Response

- Review records and documentation and cross-reference information to identify and locate cases. Use registers, databases, and georeferencing of cases in the **information system**.
- **Make use of documentation tools** such as lists of affected children, needs plans, tables of required services by age, and booklets to track services received by individual children.
- **Develop catalogues of specialty services** available in each hospital to identify potential synergies and gaps in the response. Manage teams where there are specialists and specialists where there are teams.
- Coordinate among the different services and personnel within the same facility and develop **flowcharts and internal care pathways** to show connections with all relevant clinical and non-clinical staff.
- **Encourage the formation of quality improvement teams** and the designation of case managers for affected children and families, linking them with existing quality committees that usually exist in hospitals. Continually analyze care processes and the organization of services so that teams ground their actions in reality and are motivated to standardize procedures.
- **Create different spaces to address the needs of children** (or whomever the population group of interest is) including Kangaroo Mother rooms, milk banks, rooms for early stimulation and physical therapy, and meeting rooms for support groups.
- **Strengthen the development of health worker capacity** through training plans for both specialized and non-specialized staff. Use virtual modalities in training, including online courses, tele-mentoring clinics, and online discussions. Use in-person training methods to develop specific competencies and add new content (e.g., psycho-social support and communication, early stimulation, physical therapy) to existing workshops.
- **Organize exchange/observation visits and rotations** among health professionals who provide care to affected children, assess development, provide early stimulation, psycho-social support, and physical therapy.
- **Design, field test, and reproduce job aids** for health workers, especially on new topics.

## C. Organize the Response at the Community Level

- Involve the community and **strengthen the capacity of families** and not only of health workers.
- Elevate the model of primary health with a protagonist role for **community leaders, local providers, health promoters, and personnel involved in home visits** to develop their capacity to identify, locate, link, and provide follow-up to vulnerable children.

- **Engage community organizations** such as health commissions and committees, development councils, emergency committees, and others to identify the true perceptions and needs of the community for care of vulnerable children.
- Improve the knowledge of existing community workers and **empower** them to demand access to quality services (rights-based approach, social audit)
- **Involve men and other family members**, not just the mother, in interpersonal communication and community-based rehabilitation, such as support groups, clubs, home visits, and others.
- **Develop strategies to sensitize, inform, communicate, educate, and change behaviors** in the community, with models of social protection to support change in favor of the most vulnerable.
- **Develop print and audio-visual materials** for the community, parents, and other caregivers based on behavior change communication principles.

## ANNEXES

### Annex A: Health Authorities, Facilities, QI Team Coordinators, and ASSIST Coaches who Participated in the Care and Support Improvement Collaborative by Country

#### Dominican Republic

Prioritized Health Hospitals
Dr. Robert Reid Cabral Children's Hospital
Maternal and Child Hospital San Lorenzo de los Mina
Jaime Mota Regional Hospital
Taiwan Regional Hospital
Dr. Alejandro Cabral Regional Hospital
Juan Pablo Pina Regional Hospital
Dr. Arturo Grullón Regional Children's Hospital
Dr. Ricardo Limardo Hospital
Dr. Luis Morillo King Hospital (expansion site)

ASSIST Technical Team for the Care and Support Collaborative in the Dominican Republic	
Name	Position
Dr. Cecilia Villamán	Project Director
Dr. Digna López	Technical Advisor and Coordinator of the Care and Support Collaborative
Dr. Gianmarco Martínez	Program Officer
Dr. Viery Franco	Program Officer
Lic. Mélida Núñez	Program Officer
Dr. Mirella Virella	Field Coach
Dr. Diana Ortega	Field Coach
Dr. Eliezer Beriguete	Field Coach

#### Ecuador

Authorities of the Ministry of Health of Ecuador	
Name	Position
Dr. Verónica Espinosa	Minister of Health
Dr. Amelia Briones	National Director of Health Services Quality
Dr. Bertha Andrade	Analyst, International Cooperation and Relations with Bilateral Counterparts

<b>Authorities of the Ministry of Health of Ecuador</b>	
<b>Name</b>	<b>Position</b>
Dr. Mauricio Espinel	Analyst, National Directorate of Mental Health
Dr. Mario Chávez	Analyst, National Directorate of Health Services Quality
Ms. Luisa Fernanda Zúñiga	Analyst, National Directorate of Health Services Quality
Dr. Melva Esperanza Morales	Zonal Director of Public Health Surveillance
Dr. Lilibeth Stefanía Arteaga Vera	Zonal Specialist in Health Services Quality
Dr. Maria Elina Pomasqui	Zonal Specialist in Health Services Quality
Ms. Aida Leyes	District Analyst for Health Services Delivery
Ms. Monica Miranda	District Analyst for Epidemiology
Ms. Lady Cucás	District Analyst for Health Services Delivery
Ms. Myriam Giler	Director of Teaching, Delfina Torres de Concha General Hospital - Esmeraldas
Dr. Cindy Arias	Quality Analyst, Padre Alberto Buffoni Hospital – Quinindé
Dr. Ana Lucía Matute	Technical Coordinator of Mental Health, Rodríguez Zambrano Hospital – Manta
Dr. Marcelo Borja	Quality Analyst, Marco Vinicio Iza Hospital – Lago Agrio
Dr. Rolando Grass	Quality Analyst, Miguel Hilario Alcívar Hospital – Bahía de Caráquez
Obstetrician Paulina Guerrero	Quality Analyst, Shushufindi Basic Hospital – Shushufindi

Appreciation is extended to the Directors of the Health Centers and QI teams of the following facilities:	Hospitals: Delfina Torres de Concha and Padre Alberto Buffoni
	San Rafael, Las Palmas, Nuevo Quinindé, and Viche Health Centers in Esmeraldas
	Rodríguez Zambrano, Verdi Cevallos, and Napoleón Dávila Hospitals
	Cuba Libre, Manta, Chone, Santa Ana, Andrés de Vera, Tosagua, Pedernales, and Jama Health Centers in Manabí
	Marco Vinicio Iza Hospital and Shushufindi Basic Hospital
	Cascales Health Center in Sucumbíos

<b>Technical Team of ASSIST in Ecuador</b>	
<b>Position</b>	<b>Name</b>
Director	María José Escalante
Technical Coordinator	Bernarda Salas



Care and Support Collaborative Coordinator	José A. Corral
Newborn Care Collaborative Coordinator	Iván E. Orellana
Prenatal Care Collaborative Coordinator	Alejandro Vargas

## El Salvador

Case managers for the Care and Support Collaborative in El Salvador		
Department	Facility	Case Managers
San Salvador	National Women's Hospital	Dr. Silvia Gámez Lic. Rubidia Argentina Campos Dr. Roxana Quiteño Ramos
	Benjamin Bloom National Children's Hospital	Dr. Juana Huezo Lic. Ana Isabel Rauda Lic. Patricia de Guidos
	Saldaña National Hospital	Dr. Gerardo Huezo Dr. Ana Gloria Sandoval Dr. Carlos Aparicio Lic. Ana Jeannette Salinas Lic. Yanira Elizabeth Rodríguez
	Zacamil National Hospital	Lic. María Ofelia Delgado Dr. Yanira Zepeda Dr. Douglas Martí Dr. Carlos Gamero
	San Bartolo National Hospital	Lic. Marlene Castro Dr. Glenda Portillo Dr. Ana Antonieta Reinoso Dr. Irma Aparicio Lic. Estebana de Jesús Mejía
	Soyapango National Hospital	Lic. María Luisa Ventura Dr. Karen Vides de Larín Dr. Carlos Brizuela Dr. Henry Betancourth
	Metropolitan Region	Dr. Jorge Alberto Melendez Lic. María Esther de Mejía
	SIBASI South	Lic. Vilma Ruth Macay de Pineda Lic. Lorena de Schnider Dr. Claudia Funes
	SIBASI East	Lic. Alma Lorena Martínez de Martínez Dr. Blanca Delmi de Flores
	SIBASI Central	Lic. Karin Marisela García de Martínez Lic. Ana María Sorto
UCSF Panchimalco	Lic. Thelma Patricia Zúñiga Dr. Carolina García	

Case managers for the Care and Support Collaborative in El Salvador		
Department	Facility	Case Managers
	UCSF Habitat Confien	Dr. Karla Margarita Santos Lic. Olga Miranda
	USCFI San Marcos	Lic. Lorena Yanira Alvarado
	UCSF E San Jacinto	Lic. Ana Noelia Cristales
	UCSF E San Martín	Dr. Evelin Leonor Lic. Mayra de Mendoza Dr. Gloria Figueroa
	UCSF E Popotlán	Dr. David Alberto Rivas Lozano
	UCSF E Apopa	Dr. Ivonne Duarte
Santa Ana	San Juan de Dios National Hospital, Santa Ana	Dr. Flor Alabí Dr. Moisés Figueroa
	Chalchuapa National Hospital	Dr. Karla Jiménez Dr. Francisco Rivas Lic. Délima de Arevalo
	Metapán National Hospital	Dr. Osvaldo Álvarez Dr. Betsy Yesenia Mena Martínez Lic. Sandra E. Flores de Hernández
	Western Health Region	Dr. Claudia Valencia Lic. Ana Margarita de Espinoza
	SIBASI Santa Ana	Dr. Luis Alberto Figueroa Lic. Sandra Funes
Sonsonate	Sonsonate National Hospital	Dr. Gustavo Fuentes Dr. Griselda Torres Dr. Ulises Vásquez Lic. Alba Claribel Rodríguez de Bonilla
	SIBASI Sonsonate	Lic. María Victoria Martínez
Ahuachapán	Ahuachapán National Hospital	Dr. Rodolfo Geovanni González
	SIBASI Ahuachapán	Dr. Ana Luisa Rodríguez
Chalatenango	SIBASI Chalatenango	Lic. Roxana Ramos
Cabañas	Ilobasco National Hospital	Dr. Luz Margarita Fernández
	Sensuntepeque National Hospital	Dr. Jorge Luis Sánchez Vides
	UCSF E Sensuntepeque	Dr. José Luis Pérez Mijangos
	UCSF I Victoria	Dr. Juan José Ángel Fernández
San Vicente	San Vicente National Hospital	Dr. Gerardo Enrique Flores
Cuscatlán	Cojutepeque National Hospital	Dr. Kelwin López Ventura

<b>QI Team Members in the Care and Support Collaborative in El Salvador</b>		
<b>Department</b>	<b>Facility</b>	<b>QI Team Members</b>
San Salvador	Metropolitan Region	Dr. Jorge Melendez Lic. María Ester Menjívar Dr. Claudia Funes Lic. Vilma de Pineda Dr. Claudia López Lic. Alma Martínez Dr. Gerardo Huevo Lic. Ana Salinas
	UCSF-E San Martín	Dr. Orlando Rubio Lic. Mayra Reyes Dr. Iveth Calles Dr. Ana Julia Arana Lic. Carlos Maravilla
Santa Ana	San Juan de Dios National Hospital, Santa Ana	Dr. Flor Alabí Dr. Moisés Figueroa Dr. Karla Ortega Dr. Jorge Rivas Lic. Laura Cecilia Ochoa de Valencia
	Metapán National Hospital	Dr. Betsy Mena Martínez Dr. Guillermo Vidaurre Lic. Estela Ardón
	Chalchuapa National Hospital	Dr. Karla Jiménez Dr. Francisco Rivas
Sonsonate	Sonsonate National Hospital	Dr. Griselda Torres Dr. Edwin Gutiérrez Dr. Nehemías Alfarto Dr. Gustavo Fuentes
Ahuachapán	Ahuachapán National Hospital	Dr. Rodolfo Geovanni González Dr. Ileana Aguirre Lic. Isabel Álvarez
Cabañas	SIBASI Cabañas	Dr. Ernesto Bonilla Dr. José Luis Pérez Mijango Dr. Maria de los Ángeles Recinos Escobar Dr. Salvador Escobar Mr. Marcos Guzmán
	UCSF E Sensuntepeque	Dr. José Luis Pérez Mijango Dr. Jorge A. Ramirez Dr. Cecilia Estrada Dr. Andrea Gutiérrez Lic. Sandra Recinos
	UCSF I Victoria	Dr. Juan José Ángel Fernández Mr. Juan Ramón Bonilla Alcantar Mr. Timoteo Beltrán Ms. Liliam Amabel Rivera de Hernández
	UCSF I San Isidro	Dr. Jorge Galan

<b>QI Team Members in the Care and Support Collaborative in El Salvador</b>		
<b>Department</b>	<b>Facility</b>	<b>QI Team Members</b>
	UCSF Tejutepeque	Dr. Veronica Adalinda Serrano Dr. Milagro Dolores Gonzalez Barillas Dr. Mario Gerardo Cornejo Lic. Iliana Zuleyma García Ms. Valle
	Sensuntepeque National Hospital	Lic. Lisseth Ramirez Dr. Jorge Luis Sánchez Vides
Chalatenango	SIBASI Chalatenango	Dr. Roberto López Lic. Roxana Ramos Dr. Sandra Peraza

<b>Technical Team of ASSIST in El Salvador</b>		
<b>Position</b>	<b>Name</b>	<b>Area Assigned</b>
Project Director	Dr. Guadalupe de Razeghi	
Technical Advisors	Dr. Gianira de Benítez Dr. Magdalena Martínez Dr. Ana Valeria Mayén	Prenatal Care Collaborative Care and Support Collaborative Newborn Care Collaborative
Field Coaches	Dr. Ángel Romero	Sensuntepeque
	Dr. Milton Mejía	Chalatenango
	Dr. Wilmer Cárcamo	San Vicente and Cojutepeque
	Dr. Pamela Córdova	Ilobasco
	Dr. Claudia Reyes	Metropolitan Region
Extension	Dr. Oscar Villalobos	Metapán and Chalchuapa
	Dr. Elia Estrada	Santa Ana
	Dr. Samuel Ramos	Sonsonate
Expansion	Dr. Pedro Abrego	San Vicente and Cojutepeque
	Dr. Jairo Romano	Sonsonate
	Dr. Nancy Fuentes	Chalatenango
	Dr. Verónica Aguirre	Ahuachapán
	Dr. Nancy Carrillo	Metropolitan Region

## Guatemala

<b>Authorities of the hospitals that participated in the Care and Support Collaborative in Guatemala</b>		
<b>Hospital</b>	<b>Name</b>	<b>Position</b>
Amatitlán National Hospital	Dr. Melisa Estrada	Director
	Dr. Liliana Roche	Epidemiologist
Coatepeque Departmental Hospital	Dr. Edgar Gilberto Juárez	Director
	Dr. Mario Alejandro Pérez	Technical Deputy Director
Regional Hospital of the West	Dr. Marvin Giovanni Ortega Méndez	Director
	Dr. Israel Rivera	Technical Deputy Director

<b>Authorities of the hospitals that participated in the Care and Support Collaborative in Guatemala</b>		
<b>Hospital</b>	<b>Name</b>	<b>Position</b>
Chiquimula Modular Hospital	Dr. Flor de María Figueroa García	Director
	Dr. Danilo Martin	Technical Deputy Director
Zacapa Regional Hospital	Dr. Juan Tomás García Delgadillo	Director
	Dr. Mario Chicas.	Technical Deputy Director
	Dr. Byron Estrada	Epidemiologist
Cuilapa National Hospital	Dr. Margarita Cortez	Director
Poptún Petén Hospital	Dr. Carlos Humberto Donis Polanco	Director
Children's Hospital for Infectious Diseases and Rehabilitation	Dr. Fabiola Fong Sazo	Director
	Dr. Ana Karin Quinteros	Technical Deputy Director
	Dr. Helga Luna	Chief, Rehabilitation Department
We thank the 38 second level health facilities whose QI teams participated in the Care and Support Collaborative		Coordinators of Municipal Health Districts Members of the QI teams

<b>Health Area Directors Participating in the Care and Support Collaborative in Guatemala</b>	
<b>Name</b>	<b>Position</b>
Dr. Jaime Guerra	Director, Zacapa Health Area
Dr. Luis Méndez	Director, Peten Southwest Health Area
Dr. Juan Nájera	Director, Quetzaltenango Health Area
Dr. Carlos Guerra	Director, Guatemala South Health Area
Dr. Victor Martinez	Director, Santa Rosa Health Area
Dr. Maria Elena Alas	Director, Chiquimula Health Area

<b>Technical Team of ASSIST in Guatemala</b>		
<b>Position</b>	<b>Name</b>	<b>Role</b>
Country Director	Roberto Aldana	Technical oversight
Improvement Collaborative Coordinators	Mélida Chaguaceda	Family planning and prenatal care collaboratives
	Carlos León Medrano	Newborn care collaborative
	Iván de León Rivadeneira	Care and support collaborative
Technical Advisor	Elena Hurtado	Knowledge management and communication
Field Coaches	Alma García	Santa Rosa
	Martha Lidia Godínez	Quetzaltenango
	Gelemer D. Hoil	Zacapa
	Oscar A. Ixquiac	Santa Rosa
	Eduardo Luna	Zacapa
	Alma García	Santa Rosa

<b>Technical Team of ASSIST in Guatemala</b>		
<b>Position</b>	<b>Name</b>	<b>Role</b>
	Juan Muñoz	Petén Sur Oriental
	Karen Orellana	Guatemala Sur
Field Coaches – Extension Phase	Valeska I. Hernández Sao	Quetzaltenango/Guatemala
	Jairo D. Pérez Quiñónez	Monitoreo
	Walter F. Sac Escobar	Quetzaltenango
	Mario R. Suarez Bendfeldt	Chiquimula

## Honduras

<b>Health Facilities Participating in the Care and Support Collaborative in Honduras with Cases of Children with CSaZ</b>	
<b>Region</b>	<b>Facility</b>
Tegucigalpa Metropolitan Region	1. El Manchen
	2. La Cañada
	3. La Peña
	4. Carrizal
	5. Centro América Oeste
	6. La Providencia
	7. Las Crucitas
	8. San francisco
	9. El Pedregal
	10. San Miguel
	11. Monterrey
	12. Nueva Suyapa
	13. Alemania
	14. San Benito
	15. Villa Nueva
	16. Villa Adela
	17. Nueva Esperanza
	18. El Chile
	19. Alonzo Suazo
	20. Zambrano
	21. El Bosque
Región Choluteca	22. Perspire
	23. Mojaras
	24. El Corpus
	25. El Triunfo
	26. Concepción de Maria
	27. Moramulca
	28. Orocuina
	29. Namasigue
	30. Yusguare
	31. Ciudad Nueva
	32. Providencia
	33. Las Acacias
Región Cortes	34. Omoa
	35. IHSS SPS

<b>Health Facilities Participating in the Care and Support Collaborative in Honduras with Cases of Children with CSaZ</b>	
<b>Region</b>	<b>Facility</b>
	36. Puente Alto
	37. Cuyamel
	38. San Manuel Lima
	39. Lima Cortes
	40. Villa Nueva
	41. Potrerillo
	42. San Antonio Villa Nueva
	43. Choloma IHSS
Región Metropolitana de SPS	44. Quebrada Seca
	45. Miguel Paz Barahona
	46. Rivera Hernández
	47. Armenta
	48. El Carmen
	49. San Jose Boquerón
	50. Calpules
	51. Las Palmas
	52. San Antonio Chamelecón
	53. Chamelecón
El Paraíso Region	54. FESITRANH
	55. Cofradía
	56. Brisas del Valle
	57. Naco
	58. Teupasenti
	59. Potrerillos
	60. Buena Vista
	61. El Paraíso
	62. Planes
	63. Trojes
	64. Alauca
	65. Jutiapa
Olancho Region	66. Agua Fría Mineral
	67. CE Hospital
	68. El Porvenir
	69. Nueva Suyapa
	70. Zapotillo
	71. Hospital San Francisco
	72. Policlínico de Catacamas
	73. Millonaria
	74. Emanuel
	75. Rio Blanco
76. Silca	
77. Guayape	
78. Coyol	
79. La Cañada	
80. Galana	
81. Quebrada el Danto	

<b>Health Facilities Participating in the Care and Support Collaborative in Honduras with Cases of Children with CSaZ</b>	
<b>Region</b>	<b>Facility</b>
	82. Gualaco
	83. San Francisco
	84. Culmi
Yoro Regio	85. Guayma
	86. San Manuel
	87. Guaymita
	88. Berlin
	89. San Jorge
	90. Santa Rita
	91. Carlos B Gonzales
Atlántida Region	92. Metropolitana
	93. Confite
	94. Corozal
	95. Pizatte
	96. Hospital Tela
	97. Jutiapa

<b>ASSIST QI Coaches at the National Level in Honduras</b>	
1.	Leoida Elizabeth Cerrato Pineda
2.	Manuel Emilio Carrasco Williams
3.	Eva Maria Chacón Serrano
4.	Alda Roxana Aguilar Martínez
5.	Edna Luz Urquía Amaya
6.	Mayra Osiris Colindres Lazo
7.	Carmen Zulema Lagos Aguilar
8.	Edelma Isabel Salgado Umanzor
9.	Francia Martínez
10.	Norma Aly Karen Yulissa Córdova
11.	Maria Elena Banegas
12.	Melvin Chávez Núñez
13.	Ana Ruth Gutierrez
14.	Miriam Moradel Cubero
15.	Marlen Yadira Romero Aguilera
16.	Tania Judith Diaz Sánchez
17.	Gabriela Dennisse Amador
18.	Daniela Maria Flores
19.	Zayda Mirella Cáceres
20.	Maria del Rosario Fernández Ramírez
21.	Elizabeth Molina Vargas
22.	Claudia Maricela Cruz Cruz
23.	José David Zepeda



24.	Juan Elmo Gáelas
-----	------------------

## Nicaragua

Name	Position
Dr. Carlos Cruz	Director General of Health Services
Dr. María Esther Estrada	Director of the Health Model
Dr. María Auxiliadora Gadea	Lead for Children's Health

Facilities and QI Team Members Participating in the Care and Support Collaborative in Nicaragua		
Department	Facility	QI Team Members
Carazo	Headquarters Carazo SILAIS	Dr. Damaris Isabel Medal Ruiz Lic. Ana Rosa Brenes Gutiérrez
	CSF Diriamba	Dr. María Alejandra Guevara Ms. Dinora Guadamuz Dr. Paola María Espinoza Sandoval
	CSF Gregoria Gutiérrez	Lic. Olga María Porras Ramos Dr. María José Jirón Altamirano Dr. Jossie Yurina Cerna Zuñiga Lic. Kathy del Carmen Traña Lovo
	CSF Hermanos de Finlandia	Lic. Arling Alexandra Umaña Guzman Dr. Ingrid Mariel Granera Casco Lic. Lefina de Jesús Delgado Guadamuz Ms. Nelly del Carmen Téllez Cáceres Mr. Joynner Enrique González Chávez
	CSF Pedro Narvárez Cisneros	Ms. Ana Carolina González Navarro Dr. Ixy Nahee Huete Zepeda Ms. Ana Guadalupe Rodríguez Hernández Lic. Mercedes de los Angeles Canales Dr. Ileana del Socorro Arias Hernández
	CSF La Conquista	Ms. Silvia Elena López Medrano Lic. Arelys Guadamuz Cabrera
	CSF La Paz de Carazo	Dr. Nereyda del Carmen Rodriguez Romero Lic. Francisca Ramona Medrano Gutiérrez Dr. Carlos Enrique Leyton Luna Ms. Magda del Carmen Martínez Gómez
	CSF Dr. Sócrates Flores Vivas	Dr. María Auxiliadora Cruz Jarquín Dr. Carlos Eduardo Mendieta Palacios Lissette Nohemí Obando López Mr. Marvín José Sánchez Pérez
	CSF Santa Teresa	Lic. Ana Rosa Brenes Gutierrez Dr. José David Medina Lemes Aux. Elvis Bayardo López Aguilar Lic. Janella Escalante Narvárez
Granada	Headquarters Granada SILAIS	Dr. Rafael de Jesús Gutiérrez Lic. María Mercedes Aragón Gutiérrez

Facilities and QI Team Members Participating in the Care and Support Collaborative in Nicaragua		
Department	Facility	QI Team Members
	CSF Virgen de los Desamparados	Lic. Donald Ivan Hernández López Lic. Sara Elisa Herrera Cárdenas Dr. Martha Azucena Álvarez Vanegas Dr. Yasmina Danelia García Ortíz Mrs. Marisela Auxiliadora Fletes Castillo
	CSF Pedro Aráuz Palacios	Dr. Jahaira Calero Guzmán Lic. Silvia María Umaña Vanegas Lic. Virginia Elena Flores Márquez Lic. Nora del Carmen Castillo
	CSF Jorge Sinforoso Bravo	Lic. Freddy Antonio García Canales Lic. Judith del Socorro Castillo Martínez Lic. Azucena del Socorro Bonilla Martínez Lic. Claudia Lucia Calderón Martínez
	CSF Pedro José Chamorro	Lic. Isabel Useda Hidalgo Lic. Carolina Estrada Lara Dr. Margarita Dolores Pérez Salinas Dr. Valentina del Socorro Pineda López Mr. Ariel Alberto Pérez Pérez
	CSF Villa Sandino	Dr. Rina Mayela Ruiz Carballo Lic. Marcelina Vasconcelos Suazo Lic. Suley Figueroa Peña
	Monte Carmelo Primary Hospital	Lic. Francisco José Pavón Peña Dr. Jeffery Joliethe Ríos Lic. Francisca Verónica Obando Hernández Lic. Gioconda Rodríguez Rodríguez Dr. Rudy Alirio Álvarez Rojas Dr. María Mercedes Sequeira Tenorio Dr. Ana del Carmen Castillo Hernández
Managua	Headquarters Managua SILAIS	Dr. Julián Corea Dr. Judith García Aragón Dr. Elizabeth Altamirano
	Nilda Patricia Zedillo Primary Hospital	Dr. Cintya Vanesa Cruz Blanco Lic. Carmen Traña Pérez Mrs. María Salgado Mrs. Jazmina Largaespada
	CSF Nuestra Señora de las Victorias	Dr. Esperanza Mendoza Lic. Gloria Orozco Lic. Francisco López Lic. Liliana Jimenez
	CSF Altagracia (D III)	Dr. Jorge A. García Ruiz Lic. Juana Mendez Cajina Dr. Madelin Garcia Lic. Juana Pérez
	CSF Carlos Rugama (D V)	Lic. Blanca Nuñez Gómez Lic. Luz Marina Corpeño Dr. Vladimir Flores

Facilities and QI Team Members Participating in the Care and Support Collaborative in Nicaragua		
Department	Facility	QI Team Members
	CSF Edgard Lang (D III)	Lic. Jamileth López Gómez Dr. Norwin Mairena Dr. William Morales Lic. Carmen Gutierrez
	CSF Francisco Buitrago (D IV)	Dr. Eusebia Ruiz Espinoza Lic. Aura Morales Zapata Dr. Jairo Lee Lic. Carmenza Galeano Aburto
	CSF Pedro Altamirano (D V)	Lic. Hely Briceño Guerra Lic. Rebeca García Sevilla Dr. Jeffry Alonso
	CSF Polyclinci Francisco Morazán (D II)	Dr. Norma González Cruz Dr. Barney Pérez Lic. Ronal Suazo
	CSF Roberto Herrera (D I)	Lic. Glenda Arrechavala Wilson Dr. Eliette Caceres Lic. Gloria Delgadillo Dr. Lester Tórrez
	CSF Roger Osorio (D VI)	Lic. Miguel Reyes Díaz Dr. Francisco Gutierrez Lic. José Ramírez Dr. Francisco Olivas Cajina
	CSF Silvia Ferrufino (D VI)	Lic. Lesli Morales Dr. Bismar Morales Lic. Alba Sandoval Dr. Javier Ortiz
	CSF Sócrates Flores (D II)	Lic. Eglis Espinoza Osorio Dr. Yader A. Pérez Lindo Dr. Erick López Tijero
	CSF Villa Libertad (DVII)	Lic. Neyla María Urroz Dr. Justo Pastora Lic. Mayda R. Urbina Lic. Dina Valle Hernandez
	CSF Carlos Lacayo	Dr. María José Pérez González Lic. Noel Moreira
	Francisco Matamoros Primary Hospital	Dr. Alvaro Guadamuz Cruz Lic. Mabel Vargas Dr. Ramón Ramos López Dr. Migdalia Zamuria Jarquin
	CSF Julio Buitrago	Dr. David García Andrade Dr. Ana Rodríguez Lic. María Mazarelo Lic. Margarita Cerna
	CSF San Rafael del Sur	Lic. Concepción Huerta Rivera Dr. Henry Calero Lic. Erika Moreno Dr. Jaime Barreto

Facilities and QI Team Members Participating in the Care and Support Collaborative in Nicaragua		
Department	Facility	QI Team Members
	Mexico-Nicaragua Friendship Primary Hospital	Dr. Lidia Dávila Poveda Lic. Martha Molina Dr. Reina Alemán Lic. Raúl Mojica Hernández
	Yolanda Mayorga Primary Hospital	Dr. Cintya Vanesa Cruz Blanco Lic. Carmen Traña Pérez Mrs. María Salgado Mrs. Jazmina Largaespada
	CSF Villa Carlos Fonseca	Dr. Esperanza Mendoza Lic. Gloria Orozco Lic. Francisco López Lic. Liliana Jimenez
Masaya	Headquarters Masaya SILAIS	Lic. Carla Cruz Salgado Dr. Wilmer Beteta
	CSF Carlos Roberto Huembes	Lic. Keila Esther Pérez Lic. Belinda Urbina Mrs. Fabiola herrera
	CSF Alejandro Calero	Dr. Martha Rebeca Padilla Dr. Helder Solís Lic. Donald Hernández Dr. Gloria Blass Mrs. Mayela González Montiel Mr. Ronald Guevara
	CSF Benicio Gutiérrez	Dr. José Luis Guido Dr. Martha Lorena Castillo Dr. Odalia Calero
	CSF Alejandro Davila Bolaños	Lic. Maritza de los Ángeles Chavarría Dra. Carla Nicaragua Mrs. Damaris Gutiérrez
	CSF Monimbó	Dr. María Concepción Marín Dr. Dayra Baltodano Dr. Daniela de los A. Balmaceda Mr. Gerald Medal Lic. Fátima Solís
	CSF José Napoleón García	Dr. Dhayana Rodríguez Lic. Fabiola Sánchez Mrs. Ninneth Domínguez G. Dr. Marcos Zamuria Dr. Josefana Navarro
	CSF Enrique Cisnes	Dr. Erick Dávila Lic. Verónica Orozco Dr. Kenia Rodríguez Dr. Martín Flores Mrs. Margine Muñoz
	CSF Augusto Cesar Sandino	Dr. José Ramón Márquez Dr. María Elena Hurtado Lic. Carmen María López Pavón

Facilities and QI Team Members Participating in the Care and Support Collaborative in Nicaragua		
Department	Facility	QI Team Members
		Dr. Félix Harintong Ramos Mrs. Carmen Delia Bermúdez Mr. Agustín Campos
	CSF Pedro Pablo Gutiérrez	Lic. Maritza Ruíz Lic. María E. Tapia Lic. Ileana López Martínez Lic. Jovania Santana
	CSF Tisma	Dr. Darling Soza Mrs. Mara Elizabeth Meneses Lic. Conny Putoy Dr. Hendrick Alvarado Mrs. Ninneth Peña
Nueva Segovia	Headquarters Nueva Segovia SILAIS	Dr. Claudia López Dr. Yorlene Rodríguez Aguilar Dr. Gema Lira Dr. Alba Nubia Montenegro
	CSF Leonidas García	Dr. Wilmer Huete Morales Lic. Aurora María Gómez Dr. Martha Irene Cruz Ms. Maylin Mairena
	CSF Ramón Sevilla	Dr. Eddy Cáceres Lic. Sonia González Dr. Ivania Loásiga Dr. Acris Aráuz
	Augusto C. Sandino Primary Hospital	Dr. Scarleth García Dr. Román Hernández Dr. Silvana Olivera Lic. Dina Aguilera Lic. María Esther Rocha
	Pastor Jimenez Primary Hospital	Dr. José Francisco Ocampo Dr. Alba Aurora Maradiaga Dr. Claudia Briones Lic. Juan Alberto Carrillo Lic. Álvaro Martínez Dr. Rosa Nelly Alemán
	CSF Vicente Godoy	Dr. Jacqueline Avilés Rueda Dr. Mayela Montiel Ms. Xiomara Carazo Ms. Norma Bustamante
	CSF Héroes y Mártires N. Segovia	Dr. Gema Carvajal Lic. Guadalupe Blandino Dr. Cynthia Hernández Lic. Ana Yanci Sarantes
	CSF Edwin Barahona	Dr. Daniel Palacios Lic. Elba Iglesias Lic. Amparo Gómez Dr. Marlon Gómez

<b>Facilities and QI Team Members Participating in the Care and Support Collaborative in Nicaragua</b>		
<b>Department</b>	<b>Facility</b>	<b>QI Team Members</b>
	CMP-MINSA Ocotal	Dr. Brenda Huete Dr. Delvis Landero Dr. Carolina Méndez Lic. Kenia Joya Dr. Belkys Altamirano
	CSF José Dolores Fletes	Dr. Martha Hernández Lic. Luz Ivania Hernández Lic. María Victoria Cruz
	Bello Amanecer Primary Hospital	Dr. Mario Rugama Dr. Juana Mercedes Sánchez Dr. Giovanni Ortiz Lic. María Auxiliadora Rodríguez Lic. Mary López Dr. Diego Alberto Vargas
	CSF Enoc Ortéz	Dr. Erenia Luna Ms. Silvia Matute Dr. Mildred Jirón Lic. Norma Reyes Lic. Jazmina Ortez
	CSF Luis Felipe Moncada	Dr. Madeline Reyes Ms. Deyvin González Dr. Carlos Mora Lic. Martha Lorena Olivas
	CSF Jorge Navarro	Dr. Verónica Munguía Lic. Francis Contreras Mr. Elvin Cabrera Ms. Nery del Socorro Chavarría

<b>ASSIST Technical Team for the Care and Support Collaborative in Nicaragua</b>	
<b>Name</b>	<b>Position</b>
Dr. Ivonne Gómez	Project Director
Dr. Indira Moreno Rodríguez	Coordinator, Care and Support Collaborative
Dr. Carla Martínez Martínez	Coach
Dr. César Rodríguez Bonilla	Coach
Dr. René Villalobos Mora	Coach
Dr. Jeaneth Chavarría Cruz	Coach

## Paraguay

<b>Health Authorities and Care and Support Collaborative Participants in Paraguay</b>		
<b>Hospital</b>	<b>Name</b>	<b>Position</b>
Itaguá National Hospital	Dr. Yolanda Gonzalez	General Director
	Dr. Estela Torres	Medical Director
	Dr. José Buena	QI team member
	Dr. Margarita Kruztfeld	QI team member
	Lic. Lucia Figueredo	QI team member

Health Authorities and Care and Support Collaborative Participants in Paraguay		
Hospital	Name	Position
	Lic. Beatriz Ríos	QI team member
	Lic. Beatriz Aquino	QI team member
	Dr. Magdalena Maidana	QI team member
Clinical Hospital, Faculty of Medical Sciences	Dr. Ana Campuzano	Former Chief of Pediatrics
	Dr. Jimmy Jiménez	Current Chief of Pediatrics
	Dr. Laura Duarte	QI team member
	Dr. Patricia Rolon	QI team member
	Lic. Rossana Martinez	QI team member
	Lic. Lucía Valdez	QI team member
	Dr. Osvaldo Torres	QI team member
	Dr. Valentina Arias	QI team member
	General Pediatrics Hospital Acosta Ñú	Dr. Pío Alfieri
Dr. Nidia Burró		Medical Director
Dr. Marco Casartelli		QI team member
Dr. Juan Fernando Ojeda		QI team member
Dr. Silvia Garcete		QI team member
Dr. Patricia Arredondo		QI team member
Dr. Carlos Franco		QI team member
Dr. Leticia Bordón		QI team member
Lic. Gladys Alegría Ayala Ferreira		QI team member
Lic. Leticia Morínigo		QI team member
Lic. Susana Laniec		QI team member
Lic. Kristel Kleiner		QI team member
Barrio Obrero General Hospital		Dr. Derlis León
	Dr. Lucila Trinidad	Medical Director
	Dr. Patricia Sosa	QI team member
	Lic. Lisa Mujica	QI team member
	Lic. Ada Agüero	QI team member
	Lic. Odorina Benítez	QI team member
	Ms. Patricia Meza	QI team member
	Dr. Carolina Brítez	QI team member
Mariano Roque Alonso District Hospital	Dra. Silvia Gimenez	Director General
	Dr. Ulises Ruiz Díaz	Medical Director
	Lic. Selva Fleitas	QI team member
	Lic. Adela Valiente	QI team member
	Lic. María Ester Salinas	QI team member
	Lic. Karin Aveiro	QI team member
	Dr. Aida Venialgo	QI team member
Maternal and Child Hospital Santísima Trinidad	Dr. Nicanor Alvarez	Director
	Dr. Nélide Almirón	Medical Director
	Dr. Herminio Dávalos	QI team member
	Dr. Carmen Quintana	QI team member
	Lic. Gloria Figueredo	QI team member
	Lic. Ruth Paredes	QI team member
	Lic. Maria de Jesús Moreno	QI team member
	Lic. Graciela Venialgo	QI team member

<b>Health Authorities and Care and Support Collaborative Participants in Paraguay</b>		
<b>Hospital</b>	<b>Name</b>	<b>Position</b>
	Lic. Emilia Duarte	QI team member
	Lic. Osmar Morínigo	QI team member
Loma Pyta Maternal and Child Hospital	Dr. Luis Lopez	Director General
	Dr. Carlos Ayala	Medical Director
	Dr. Mari Lombardo	QI team member
	Lic. Liliana Ramos	QI team member
	Lic. Carol Méndez	QI team member
	Lic. Cinthia Miño	QI team member
	Lic. Gregoria Villasanti	QI team member
Luque General Hospital	Dr. Francisco Javier Duarte	Director General
	Dr. Victor Raúl Luraschi	Medical Director
	Dr. Marlene Estigarribia	QI team member
	Lic. Cristina Hellmers	QI team member
	Lic. Soledad Villalba	QI team member
	Lic. Edvelia Ríos	QI team member
	Lic. Joel Caballero	QI team member
	Lic. Clara González	QI team member
San Lorenzo Maternal Child Hospital	Dr. Luis Pratt	Director General
	Dr. Cristina Balmori	Medical Director
	Dr. Nilda Colman	QI team member
	Lic. Daniela Chaparro	QI team member
	Lic. Dionisia Vázquez	QI team member
	Lic. Nayder Martínez	QI team member
	Lic. Mirta Otaño	QI team member
Ciudad del Este Regional Hospital	Dr. Federico Schrodel	Director General
	Dr. Nelson Zena	Former Director General
	Dr. Diego Ruiz Diaz	Medical Director
	Dr. Armando Meza	Former Medical Director
	Dr. Esdilma Jara	QI team member
	Lic. Fátima Cañete	QI team member
	Dr. Carlos Gómez	QI team member
	Lic. Maria Estela Holtzberger	QI team member
	Lic. Magali Godoy	QI team member
	Lic. Idalino Vázquez Bernal	QI team member
Ñemby District Hospital	Dr. Cynthia Decuod	Director General
	Dr. Victor Meza	Medical Director
	Lic. Cirila Quintana	QI team member
	Lic. Amada Escobar	QI team member
	Lic. Liduvina Centurión	QI team member
	Lic. Elodia Quintana	QI team member
President Franco District Hospital	Dr. Luis Villalba	Director General
	Dr. Ariel Fleitas	Former Director General
	Lic. Marcelo Giménez	Former Administrator
	Dr. Liza Morel	QI team member
	Lic. Juliana Fariña	QI team member
	Dr. Liliana Rocio Álvarez	QI team member
	Dr. Vicente Acuña	Director General



<b>Health Authorities and Care and Support Collaborative Participants in Paraguay</b>		
<b>Hospital</b>	<b>Name</b>	<b>Position</b>
San Pablo Maternal Child Hospital	Dr. Amada Rodríguez	Medical Director
	Dr. Ana Arrechea	QI team member
	Dr. Patricia Sosa	QI team member
	Dr. Domingo Bogarín	QI team member
	Dr. Antonia Gurrieri	QI team member
	Dr. Ma. Elena Peña de Fanego	QI team member
	Lic. Cristina Dinatale	QI team member
	Lic. Blanca Fernández	QI team member
	Lic. Viviana González	QI team member
	Lic. Rocío Ruiz Díaz	QI team member
Hernandarias District Hospital	Dr. Carlos Insaurralde	Director General
	Dr. Arturo Portillo	Medical Director
	Dr. Myrni Sosa	QI team member
	Lic. Nilce Cubillas	QI team member
	Lic. Milcia Arévalos	QI team member
	Dr. Liliana Ocampos	QI team member
	Lic. Edel Mongelos	QI team member
	Lic. Rossana Giménez	QI team member
	Lic. Juana Ramírez	QI team member
	Lic. Estela Ramírez	QI team member
	Lic. Mirna Gamarra	QI team member
	Lic. Carmen Candia	QI team member
	Lic. Juana González	QI team member
	Lic. Virginia Medina	QI team member
Minga Guazú District Hospital	Dr. Olga Castillo	Director General
	Dr. Denisse Gill Romero	QI team member
	Lic. Romilda Llamas	QI team member
	Lic. Sady Pereira	QI team member
	Dr. Criz Isasi	QI team member
	Lic. Yudi Acosta	QI team member
	Lic. Julia Graciela Sosa	QI team member
	Lic. Rossana Duarte	QI team member
	Lic. Lorena Quintana	QI team member
	Lic. Lilia Raquel Ozuna	QI team member
	Lic. Vivian Garayo	QI team member
	Lic. Norma Enciso	QI team member

<b>ASSIST Technical Staff in Paraguay</b>		
<b>Name</b>	<b>Health Region</b>	<b>Facilities</b>
Dr. Marlene Espinola	10th Health Region, Alto Paraná	1. Ciudad del Este Regional Hospital
		2. Presidente Franco District Hospital
Ms. Andrea Rufinelli	10th Health Region, Alto Paraná	3. Minga Guazú District Hospital

ASSIST Technical Staff in Paraguay		
Name	Health Region	Facilities
		4. Hernandarias District Hospital
Dr. Edgar Samudio	11th Health Region, Central	5. San Lorenzo General Hospital, Calle 'i
		6. Ñemby District Hospital
Dr. Gualberto Piñanez		7. Luque General Hospital
		8. Mariano Roque Alonso Maternal Child Hospital
Dr. Edgar Samudio	18th Health Region, Capital	9. Loma Pyta Maternal Child Hospital
Dr. Carolina Vera		10. Barrio Obrero General Hospital
Lic. Dominica Vera	Specialist in Monitoring and Evaluation	
Lic. Graciela Ávila	Project Director	

## Peru

Institutions and Team Members in the Care and Support Collaborative		
Region	Health Facility	Name
Tumbes	Corrales	Lic. Karina García Castillo
	La Cruz	Lic. María García Ordinola
	Zorritos	Dr. Marcia Zavaleta Guevara
	Cancas	Beatriz Jara Ibañez
	Carlos Cortez Jimenez Hospital, Essalud Tumbes	Lic. Ana Sánchez Segura
	Aguas Verdes	Lic. Liset Vite Purizaca
	Zarumilla	Lic. Shirley Mogollón
	Gerardo Gonzáles Villegas	Lic. Gabriela Eca
	Pampa Grande	Lic. Mercedes Sánchez
	Andres Araujo	Lic. Haydee Reyes
	Tumbes Regional Hospital	Lic. Kathia Vilela
Piura	Miguel Cruzado Vera Paita Hospital	Lic. Martha Farfán Achata
	Nuestra Señora de las Mercedes Paita Hospital	Lic. Licha Marisol Vera Rojas
	Catacaos	Lic. Gladys Cotrina Bustamante
	Castilla	Lic. Sara Gómez Meneses
	Sechura	Lic. Irene Tentalean Vásquez
	Santa Rosa Piura Hospital	Dr. Amanda Farfán
	Chulucanas Hospital	Dr. Nancy Villaverde
	La Matanza	Lic. Elida Cango Saavedra
	Salitral	Lic. María Mercedes León Maco
Morropón	Lic. Amelia Campos	

<b>Institutions and Team Members in the Care and Support Collaborative</b>		
<b>Region</b>	<b>Health Facility</b>	<b>Name</b>
	Essalud Hospital Talara	Dr. Armando Uribe Malmaceda
	Essalud Hospital Sullana	Lic. Jenny Zapata Acuña
	Sullana Support Hospital	Dr. Jorge Luis Salazar Quijandría
	Bellavista	Lic. Yudith Valle Echenique
	Talara II	Lic. Griselda Pacheco
	Comunidad Saludable	Lic. Zarella Pintado
	José Cayetano Heredia Hospital Piura	Dr. Margarita Cano
	Jorge Reategui Hospital Piura	Lic. Luis Zapata
	Tambogrande	Lic. Iris Vásquez
	Santa Julia	Lic. Luis Farfán
	Los Algarrobos	Lic. Alicia Villegas Avendaño

<b>ASSIST Coaches in Peru</b>	
<b>Region</b>	<b>Name</b>
Tumbes	Jency García
	Cintha Laqui
Piura	Einstein Zegarra
	Flavio Jimenez
	María Tinoco
	Robert Loayza

<b>Technical Staff Supporting the Care and Support Collaborative in Peru</b>		
<b>Region</b>	<b>Name</b>	<b>Position</b>
Piura and Tumbes	Christian Requena Palacios	Country Coordinator of the Care and Support Collaborative
Piura and Tumbes	Jennifer Ortiz Sernaqué	Assistant for the Care and Support Collaborative

## **Annex B: List of Materials Produced by ASSIST for the Care and Support Collaborative**

### **Norms, protocols, guides, and manuals**

- Child care norms for the MOH
- Guide for the clinical management of the child with microcephaly or CSaZ (Paraguay)
- Care protocol for the management of children affected by CSaZ (Dominican Republic)
- Protocol for the follow-up of pregnant women and children suspected of or affected by Zika virus infection in the Tumbes Region of Peru, 2019
- Diagnostic assessment and treatment of children 0-6 years with auditory deficits in the context of Zika (El Salvador)
- Ophthalmological assessment of children in the context of Zika (El Salvador)
- National norms: Guide for early stimulation of children from birth to five years of age, for Family Health Unit personnel (Paraguay)
- Technical Norms for Growth and Development of Children under Five Years (R.M - Ni 537-2017/MINSA) (Nicaragua)
- Manual for the support of early infant stimulation
- Early stimulation for children with Congenital Syndrome associated with Zika (El Salvador)
- Disability and rehabilitation for children with Congenital Syndrome associated with Zika (El Salvador)
- Guide for volunteers on notification to the health system and community follow-up of pregnant women and children affected by Zika (El Salvador, material developed by ASSIST with Save the Children)
- Guide for basic psycho-social support for pregnant women and families affected by microcephaly and other neurological complications associated with Zika (El Salvador, material developed by ASSIST with Save the Children)
- Operational guide for the implementation of the Model of Integrated Care for Infant Development (MAIDIT) in the first level of care (Paraguay)
- Technical orientation for the implementation of care modalities for early infant development (Paraguay)
- Guide for basic psycho-social support (Guatemala, El Salvador)

### **Training materials**

- Training plans
- Training of trainers course on emotional support (Ecuador)
- Support materials for training on neurodevelopment of children 0-5 years in the context of Zika (El Salvador)
- Instructions for care and integrated follow-up of children affected by Zika by case managers (El Salvador)
- Manual for the course on visual rehabilitation (El Salvador)
- Plan for training providers on growth and development, including early stimulation

- Development curriculum addressing five main areas: Cognition, communication, social adaptation, fine motor skills, and gross motor skills. Allows adaptation of the exercises according to the child's limitations (visual, auditory, or motor) and facilitates integration of activities into daily living.
- UNICEF curricular guide on early stimulation: knowing, being, speaking, and living. The intervention areas are: sensory stimulation (music), socialization, psycho-motor, language and communication, sensory perception, environmental awareness, personality, and values.
- Material on disability and rehabilitation of children with CSaZ.
- Manual on the use of the ACCESS database to register and follow up children with microcephaly or CSaZ (Guatemala)
- Training videos on the application of Battelle tests

### **Job aids for health workers**

- Poster: Recommended management of children affected by Zika (El Salvador)
- Flipchart on tools for growth monitoring and early infant stimulation in the context of Zika (Guatemala)
- Battelle developmental inventory with instruction manual (Paraguay)
- Child growth cards (one for boys and one for girls) with developmental milestones (Honduras)
- Form for assessing developmental milestones (Guatemala)
- Tables with care milestones by age according to national norms (Dominican Republic)
- Card "Play with your baby" for physicians in charge of child growth and development (Dominican Republic)
- Flipchart: Guidelines for early stimulation of visual development in children 0-10 years and guidelines for early stimulation of auditory development in children 0-6 years (El Salvador)
- Quick reference card: milestones and alarm signs for visual development (El Salvador)
- Quick reference card: milestones and alarm signs for auditory development (El Salvador)
- Plasticized wall chart of the Peruvian Test for Child Development (dimensions: 1 m x 0.5 m) (Peru)
- Kit for neuro-developmental assessment
- Multi-sensory stimulation kit (Ecuador)
- Kits for early stimulation in health facilities (El Salvador, Guatemala, Honduras)
- Guide/manual/instructions for use of the early stimulation kit (El Salvador, Honduras)
- Instructions for the use and creation of toys and teaching materials for community-based rehabilitation
- Materials and furniture for hospitals and first-level health facilities to equip early stimulation rooms: rugs, rollers, rattles, etc. (El Salvador, Guatemala, Honduras, Paraguay)
- Brochure on basic psycho-social support (Guatemala)

- Poster and checklist on emotional and social support when providing bad news in the context of Zika (El Salvador, Ecuador, Peru)
- Poster and checklist on psycho-social support: Crisis counseling in the context of Zika (El Salvador, Peru)
- Guide to the Care Pathway for Care and Psycho-social Support for Cases of Disability Associated or Not with Zika (Guatemala)
- Pocket guide for case managers of Zika-affected children and other disabilities (Guatemala)
- Reference table for assessment and follow-up of children up to 24 months of age with CSaZ, according to age and national norms (Dominican Republic, El Salvador, Guatemala, Honduras)
- Flipchart on psycho-emotional support for health professionals (Ecuador)
- Pocket guide for follow-up of children with CSaZ (Ecuador)
- Form for follow-up consultations for the newborn at risk (containing the reference table of assessments required for clinical management) (Paraguay)
- Intervention plan for early stimulation (Paraguay)

### **Material for affected children and their families**

- Posters for waiting rooms with developmental milestones and alarm signs: How to care for and stimulate children 0-12 months and 12-24 months (Guatemala)
- Kits for families for early stimulation in the home (some donated by UNICEF, Ecuador, Guatemala, Peru)
- Guide for the use of the multi-sensory stimulation bag (Ecuador)
- Guide for the use of the home early stimulation kit (Peru)
- Play with Your Baby (UNICEF pamphlet, Dominican Republic)
- Videos with early stimulation exercises (UNICEF)
- Cards for visual stimulation (black and white) (El Salvador)
- Cards for visual stimulation (contrasts) (El Salvador)
- Parents' guide for detection and early care for children with vision limitations in the context of Zika (El Salvador)

## Annex C: Catalogue of Effective Change Ideas or Best Practices Tested in the Care and Support Collaborative by Country

Process gap	Effective change ideas	Countries where these were implemented
<b>Regional strategies: Case managers and tele-mentoring clinics</b>		
Delay in cases accessing health services	Selection, training, and deployment of “case managers” adapted to the national context and health system governance structure. Existing personnel already defined in the health system with a similar role were engaged as “linkage personnel” (El Salvador, 74 managers trained) or Coordinating Teams for Health Networks (ECORs) (Honduras).	Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Nicaragua
Lack of defined processes for requesting consultations with specialists in the regional referral hospital		
Limited communication between case managers at the primary, secondary, and tertiary levels	Periodically convene “inter-level” coordinating meetings among case managers to improve communication, case identification, and completion of all required assessments for the identified cases.	Dominican Republic, Ecuador, El Salvador, Guatemala, Nicaragua
Lack of awareness of the functions of each type of case manager, linkage nurse, or network coordinating team	Involve hospital case manager in regional meetings. Case managers also participate in learning sessions, giving testimonials (Dominican Republic).	Dominican Republic, Ecuador, El Salvador, Nicaragua
Difficulties in managing specific cases of microcephaly or CSaZ	ECHO tele-clinics with national hospitals (15 hospitals were equipped for ECHO in El Salvador).	All
<b>Cross-cutting strategies: norms, training, job aids</b>		
Lack of norms and protocols for the management of children and families affected by Zika	Support to the MOH to update or develop norms and protocols for the management of microcephaly and CSaZ.	Ecuador, Guatemala, Honduras, Nicaragua
Weak knowledge of health personnel on how to manage cases of Congenital Syndrome associated with Zika	Trainings using different modalities: virtual, in-person, workshops of varying length (El Salvador: virtual course on psycho-emotional support; personnel trained in person on the diagnosis and management of CSaZ; and personnel trained in person on basic psycho-social support).	All
	Develop training plans and support materials (El Salvador: Development of 16 job aids about	All

Process gap	Effective change ideas	Countries where these were implemented
	recommended clinical care and 4 job aids on basic psycho-social support).	
	Training plans and training delivered in universities.	Nicaragua
<b>Identification of affected children</b>		
Incomplete or inconsistent processes for case identification between levels of care	Carry out retrospective search for possible cases in delivery books and begin prospective active search.	Dominican Republic, Ecuador, El Salvador, Nicaragua
	Active search for cases through vaccination campaigns, traditional birth attendants, and key informants.	El Salvador, Guatemala, Honduras, Nicaragua
	Active search for cases in the MOH information system and at the local level.	El Salvador, Peru
	Design of individual and consolidated forms to record cases identified.	Guatemala, Nicaragua
Failure to notify the case manager of new cases identified	Meetings with all the actors involved at the health facility, municipal, and regional levels; cross-sharing information.	El Salvador, Honduras, Nicaragua
Newborns in rooming-in are not listed in the newborn log book to be evaluated	Evaluation of newborns in rooming-in before discharge. Introduce a log book where nurses can request assessment of newborns in rooming-in who are at risk that lists the criteria for assessment (head circumference at birth and at 24 hours).	Paraguay
<b>Localization of affected children</b>		
They don't record the address and telephone number of the parents in order to contact cases	Design of records that list all the information required.	Ecuador, El Salvador
	Active search of cases through vaccination campaigns, traditional birth attendants, and key informants; georeferencing (Guatemala)	Honduras, Guatemala, Nicaragua
<b>Linkage of affected children</b>		
Failure to link cases with health services	Actions of the ECOR to coordinate resources between institutions and coordinate actions at the different levels of care.	Honduras
	Activities of case managers.	Dominican Republic, El Salvador, Guatemala, Honduras
<b>Care for affected children</b>		
Hospitals not able to provide all of the services that Zika-	Coordination between hospitals and with other governmental and non-governmental	All



Process gap	Effective change ideas	Countries where these were implemented
affected children require	institutions, other USAID projects, and other donors.	
Lack of human resources for support case management	Identification of new human resources to support case management.	El Salvador
There is no uniform process for referral of cases to the regional hospital	Development of care pathways for internal and external services; flow diagrams (El Salvador: review and validation of the care process with case managers).	Ecuador, El Salvador, Guatemala
	Updating referral/counter-referral guidelines and forms (El Salvador: creation of a referral and counter-referral form for follow-up of the high-risk newborn, including CSaZ).	Ecuador, El Salvador, Guatemala
Not all newborns receive early stimulation	Issuance of a directive (memorandum from the Director General) requiring that all mothers of newborns should receive orientation on early infant stimulation before discharge.	Paraguay
The involvement of mothers of newborns and infants at risk in the hospital in the process of early stimulation is minimal	Engagement of mothers in providing early stimulation to newborns and infants at risk.	Paraguay
Difficulties in obtaining appointments with specialists or excessive waiting times	Bring all the specialists to the hospital on the same day so that children and families can receive all required services: health fairs (El Salvador: They conducted health fairs in the Department of Chalatenango, San Salvador SIBASI South, and San Salvador SIBASI East).	Ecuador, El Salvador, Guatemala, Honduras, Nicaragua
Difficulties in accessing referral services	Arranging transport of children and their mothers to the hospitals to receive all required services (El Salvador: Engaging other USAID partners like Save the Children and mayor's offices to finance the transportation of families).	El Salvador, Guatemala, Honduras, Nicaragua
Information on required follow-up comes late or incomplete	Meetings with all the actors involved at the health facility, municipal, and regional levels; cross-sharing information (El Salvador: learning sessions, feedback sessions, and health fairs).	El Salvador, Honduras
<b>Psycho-emotional/psycho-social support to mothers and families of affected children</b>		
Lack of documentation of the psycho-emotional support provided in the clinical record	Stamp created to add to the clinical record a place to record information on basic psycho-emotional support provided; implementation of other stamps to prompt documentation.	El Salvador





**USAID APPLYING SCIENCE TO STRENGTHEN  
AND IMPROVE SYSTEMS PROJECT**

University Research Co., LLC  
5404 Wisconsin Avenue, Suite 800  
Chevy Chase, MD 20815

Tel: (301) 654-8338

Fax: (301) 941-8427

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