Photo: Patrick Adams/RTI International

Building Resilient Systems to Fight Emerging Pandemic Threats

More Information

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Progress against infectious diseases such as malaria, tuberculosis and HIV has been significant in the past 20 years, with the realistic prospect to end these mass killers in our lifetime. We understand that strong health systems, capable of detecting and responding quickly to new disease outbreaks are critical for Global Health Security (GHS). The emergence and spread of H5N1, Ebola, Zika, severe acute respiratory syndrome (SARS), Middle East respiratory syndrome (MERS) and now COVID19 (coronavirus disease 2019) reinforces the importance of building resilient health systems that will both prevent and control infectious disease outbreaks.

For more than 25 years, RTI International has been a global leader in the prevention and control of infectious diseases. Our experience in carrying out complex, multi-sector projects that strengthen national and local systems enables us to plan, implement, monitor, and evaluate infectious disease programs, including against emerging pandemic threats.

We have productive and established relationships with host government ministries and counterparts, academia, the private sector and community-based organizations, and have project offices in over 40 countries, including Guinea, Democratic Republic of the Congo (DRC), India, Indonesia, Kenya, Nigeria, Philippines, Senegal, Tanzania, Thailand and Uganda.

Our staff possess the local knowledge, context, and language ability to conduct innovative research, build capacity, and work through and with local entities to implement effective, sustainable, and locally owned programs.

Deploying Rapid and Flexible Responses to Emerging Pandemic Threats

At RTI, we understand the importance of rapid and effective responses to prevent the spread and lessen the impact of emerging infectious diseases. Our expertise, global experience, and long history working with host country governments enable us to respond quickly to infectious disease outbreaks and emerging pandemic threats.

As COVID19 emerged, RTI **surveyed over 2,000 Americans** in April 2020 to capture their awareness of COVID19, their understanding of how the virus is transmitted, and their levels of support for potential community mitigation strategies. Moreover, we are **adapting a previously developed healthcare facility network model to simulate the spread of SARS-CoV-2, the virus that causes COVID19**. Our model, which includes detailed information about patient movement among acute care hospitals, long-term care facilities, and the community will inform interventions that prevent transmission, and thus save lives and lessen the economic impact of the pandemic.

During the **Ebola outbreak in Guinea** in 2014–2016, RTI provided technical assistance to the Guinean government and other key partners on activities to **strengthen surveillance and health systems** under the **Global Health Technical Assistance IDIQ** (Centers for Disease Control and Prevention [CDC], 2015–2016). Also, in Guinea, the **Epi-Détecte** project (CDC, 2015–2019) strengthened information systems, **improved health facility triage and screening protocols**, and **increased health worker capacity** to detect and respond to infectious disease outbreaks.

Following the **emergence of Zika virus** in Latin America and Caribbean (LAC), RTI worked with the CDC and stakeholders to develop a **communication campaign** (*Detén el Zika*) targeting pregnant women and healthcare providers in Puerto Rico, the U.S Virgin Islands, American Samoa, and other LAC countries to increase women's awareness and use of personal prevention behaviors (e.g., use of insect repellent and wearing long sleeve shirts).

Under the **Regional Disaster Assistance Program** (RDAP) (United States Agency for International Development [USAID], 2015–2020), RTI supports USAID's Office of U.S. Foreign Disaster Assistance in disaster response and disaster risk reduction in the Latin America and Caribbean region. Among many other activities, RDAP supported **H1N1 influenza monitoring** in Costa Rica, **Zika virus monitoring** throughout LAC, and mobilized surge support to conduct **a situation report on COVID19 in Ecuador**.

Key Impacts

Guinea: Epi-Détecte
Triage structures—staffed by RTI-trained health workers—were constructed outside 42 health facilities in Ebola-affected districts to examine and admit suspected cases of Ebola without endangering other patients.

Latin America and Caribbean: Regional Disaster Assistance Program
RTI supports USAID to maximize response, planning, training, and risk reduction efforts in 27 countries.

Latin America and the Caribbean: Detén el Zika
This 9-month health communications campaign to encourage pregnant women, their partners, and the community to take action against Zika in Puerto Rico resulted in over 581 million total ad impressions across all traditional and digital media.

Photo: Nathan Gonzales/RTI International

Strengthening Local Policies, Services, and Systems to Improve Health

RTI works with all levels of government and various stakeholders to ensure health system interventions respond to the root causes of system challenges, incorporate bottom-up health service planning and budgeting, and improve government and citizen relations through social accountability.

In the **Philippines**, under the **USAID-funded ReachHealth project** (2018–2023), RTI works to improve access to and quality of health services in 32 provinces. In response to COVID19, ReachHealth conducted a **rapid phone survey** in March 2020 of health facilities across the country to assess the continuity of family planning services during the pandemic. The project also supported the **dengue outbreak** response in 2019 by ensuring that key messages on dengue prevention were disseminated during health events and integrated in health classes.

RTI leads the **Act to End Neglected Tropical Diseases | East** program (USAID, 2018–2023), a project working with ministries of health (MOH) in 13 countries to control and eliminate neglected tropical diseases (NTDs). While focused on NTDs, the program promotes and **builds capacity for strong health systems**, including at the community level, that help achieve sustainable health programming by **strengthening data reporting and management, bolstering government planning, and facilitating advocacy for domestic resource mobilization**.

Under the **Recipient Epidemiology and Donor Evaluation Study-III (REDS-III)** (National Institutes of Health [NIH], 2011–2019), RTI served as the data coordinating center for a multi-country blood research program that strengthened capacity and improved the safety and availability of blood for transfusion in the United States, Brazil, China, and South Africa. This work included **developing investigational protocols for surveillance and assessment of emerging and re-emerging viral infections** transmissible by blood, such as dengue, chikungunya and Zika.

RTI has implemented various projects that improve health worker capacity for disease surveillance and data-driven decision making at the district, provincial/regional, and national levels in multiple countries in Latin America, Africa, and Asia. For example, RTI supported the **CDC's Field Epidemiology Training Program**, ranging from short topic-based modules to a Master's degree program, in Central America and select countries such as the DRC, Fiji, Guinea, Haiti, Tanzania, and Jordan.

Key Impacts

Philippines: ReachHealth
Supported the Philippines Department of Health to respond to measles outbreak in 2019, with 44,000 children vaccinated and over 45,000 caretakers provided with key messages on measles.

Global: ENVISION
Provided 1.4 billion neglected tropical disease treatments in 19 countries, with more than 214 million people treated over the life of the project. This resulted in more than 208 million people no longer being at risk for lymphatic filariasis and more than 73 million no longer being at risk for trachoma.

Guinea: Health Communication for Ebola Prevention
Supported social mobilization for Ebola prevention and reduction of community resistance via networks of local NGOs and community health workers, including organizing 24,000 home visits and distributing 25,000 wash kits.

Integrating Governance Approaches into the Health Sector

We promote collaboration between government, civil society, and the private sector to ensure government responsiveness and to maximize the use of limited resources.
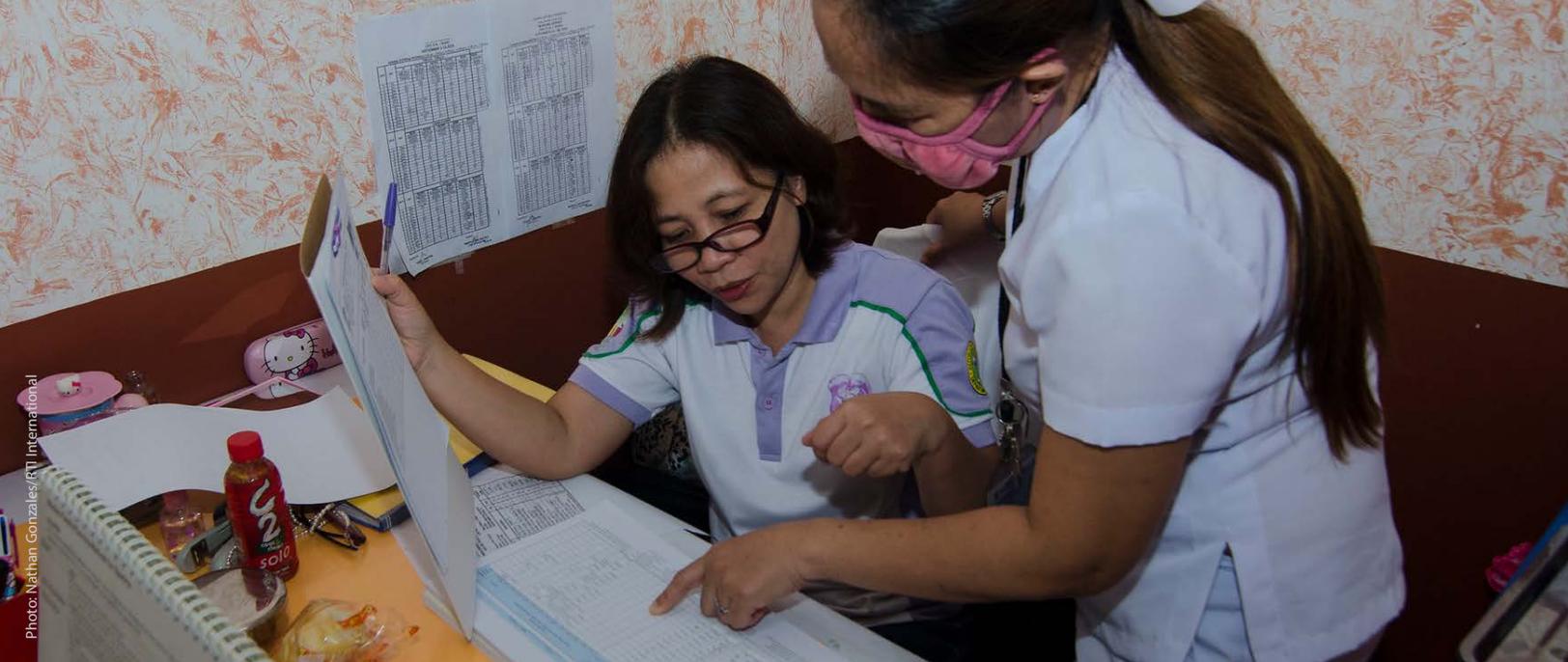
RTI supports **health governance interventions** in ten countries under the **Health Policy Plus Project (HP+)** (USAID, 2015–2022). We currently lead the design and implementation of community engagement strategies in Nigeria, reaching over 100,000 community members with health coverage information and are supporting the roll-out of health sector reform in Guatemala. In Kenya, we helped align roles and responsibilities following decentralization reforms and strengthened quality of care to fight discrimination of key affected populations in Ghana, Jamaica, and Tanzania.

In **Senegal**, the **Governance for Local Development (GOLD)** program (USAID, 2016–2021) has built a culture of stakeholder collaboration and openness focused on strengthening the capacity of local governments to respond to citizen demands, mobilizing and improving the use of public resources for basic health services, and increasing community capacity to advocate for better health services. In response to COVID19, the project leads the coordination of 17 multi-sectoral projects, helping **galvanize key stakeholders** to immediately help prevent the spread of COVID19 and promote socioeconomic stability.

The **Nigeria Leadership, Empowerment, Advocacy, and Development** (**LEAD**) project (USAID, 2014–2019) built partnerships between state and local governments, civil society, and the private sector to improve state and local governance capacity to meet national health goals. LEAD enhanced health budgets and improved human meet for health planning as part of its efforts to improve health outcomes.

The **Kinerja Local Governance Service Improvement project in Indonesia** (USAID, 2013–2018) supported the national government to expand access to quality health services. Interventions empowered communities and strengthened social accountability mechanisms, particularly by encouraging the district-level use of data to advocate for political, budgetary, and community support for health.

Since 2017, RTI has been working in **partnership with the CDC to review and evaluate the impact of the Global Health Security programs** being implemented in GHS Phase I countries in order to assess outcomes of investments and impact on epidemiological indicators (e.g., cases averted).

Key Impacts

Senegal: GOLD
Support to local government to improve resource mobilization and participatory budgeting and planning resulted in significant increases in funding for health services.

Nigeria: LEAD
Through a participatory budgeting process, the project helped Bauchi and Sokoto become the only two states in Nigeria to allocate 15% of their state budget to health.

Indonesia: Kinerja
216 new district-level regulations were passed to improve governance and services in the health, education, and business sectors.

Phillippines: ReachHealth
Ensured sustained health service provision and commodity security during emergencies by supporting the development of guides for local governments on topics such as Implementation of the Minimum Initial Service Package.

Data Collection, Analytics, and Data Use

RTI has supported and strengthened MOH health information systems (HIS) in more than 50 countries. Systems support is complemented by a deep bench of epidemiologists, surveillance specialists, social scientists and data analysts who provide technical assistance to host governments and stakeholders across a range of tasks.

During the early phase of COVID19 RTI researchers **analyzed human mobility patterns** of people who had been in Wuhan, China, to **predict the possible spread of COVID19 cases** using geotagged data from the social media platform Twitter. Analyses predicted 74% of locations where COVID19 cases would occur outside of China.

In response to the COVID19 pandemic, **RTI is leveraging its Synthetic Household Population™ to better understand the disease's spread** and what public health measures may be most effective in slowing or halting the pandemic. This tool, first developed to support the NIH-funded Modeling of Infectious Disease Agents Study, provides an accurate representation of household and person populations across the U.S. and includes locations and descriptive sociodemographic attributes derived from public sources.

In **Tanzania**, we worked with the MOH and stakeholders to develop the **National eHealth Strategy**, Data Dissemination and Use Strategy, data warehouse, health facility registry, guidelines and standard operating procedures to implement a new health management information system. In **Guinea**, we assessed and prioritized **surveillance system needs** and introduced aggregate and case-based disease surveillance reporting in collaboration with HIS strengthening.

During the **Zika epidemic**, **RTI researchers analyzed news coverage, social media discourse, and online search behavior to understand how news coverage can drive information-seeking behaviors**. We found that activity across these channels was highest when the WHO declared Zika a public health emergency for pregnant women, which suggests a short window of opportunity to engage people and share information following a major health event.

Key Impacts

Estimating the Spread of Coronavirus using Twitter
RTI research, using geotagged data from Twitter, accurately estimated 74% of locations where COVID19 cases would occur outside of China.

Zimbabwe: Health Information and Support
RTI supported the MOH to develop and maintain HMIS and patient-level record systems, improving national disease surveillance detection and response rates by 90%. We linked national laboratory information systems with eHealth record systems, integrated facility registries, and scaled up DHIS2 in more than 1,500 facilities.

Zika in Infants and Pregnancy (ZIP) Study
RTI serves as the data coordinating center for this multi-country study which follows 100,000 pregnant women through pregnancy and other children through their first year of life to assess the strength of the association between Zika virus infection (ZIKV) during pregnancy and adverse maternal/fetal outcomes.

Crosscutting Areas of Expertise

Our expertise and capabilities in global health, including infectious diseases—along with capabilities in survey research, procurement supply chains, vector control, noncommunicable diseases, health economics, food security and agriculture, nutrition, wildlife conservation, and monitoring, evaluation, research, learning, and adapting (MERLA)—help us to effectively engage with governments and stakeholders in the response to emerging pandemic threats.

Other Health Services and Interventions

We manage high-impact, integrated health service delivery projects at global, regional, and bilateral levels.

Mapping disease burdens. We have assessed the distribution and burden of various infectious diseases at global, regional and national levels.

Managing procurement for large-scale programs. Our experienced team of global supply chain, logistics, and procurement experts purchase and deliver health commodities, including diagnostics, drugs, equipment, and other materials necessary to respond to emerging pandemic threats.

For example, in 2018 alone, We processed $8.8 billion worth of donated medicines for global distribution to control and eliminate NTDs.

Conducting case management. We strengthen services and systems that improve access and adherence to high-quality diagnosis and treatment for infectious diseases. This includes reducing stigma and discrimination towards individuals accessing health services, supporting community health workers to provide rapid diagnostic tests and treatment for infectious diseases, and developing social behavior change communication messaging to ensure patients follow prevention measures and treatment and that health providers adhere to national / global guidelines.

Leading vector control. We have extensive experience managing large-scale indoor residual spraying of households with insecticide, insecticide-treated bed net distribution, environmental compliance, entomological surveillance, and insecticide resistance monitoring in more than 20 countries globally. This technical and operational expertise is applicable to vector-borne diseases such as dengue, chikungunya, malaria, Zika and yellow fever.

Preventing and managing noncommunicable diseases (NCDs). Reducing the burden of NCDs and their risk factors is necessary to build the resilience of populations and strengthen global health security for emerging infectious disease outbreaks. We analyze how NCDs and their risk factors contribute to the health burden of pandemic disease, conduct economic and policy analyses to identify areas for investment, develop tailored sustainable financing models, and apply implementation science to develop NCD program solutions. We also create innovative solutions using digital communication technologies and behavioural science that encourage health promoting behaviors and self-management of these conditions.

Cost and cost-effectiveness of health policies and programs. Our health economics experts work closely with Ministries of Health to analyze the costs and economic benefits of policies. We have conducted investment cases on tobacco control and noncommunicable disease risk factors to inform priority setting in more than 20 countries. We have also developed tools and methodologies to cost the implementation of health policies, programs, and treatment protocols, including the WHO Global HEARTS Initiative.

Health financing. Our researchers design and evaluate health financing and reimbursement programs, including insurance, payment, and financing systems. We conduct evaluations of health financing and payment programs to analyze costs, financial outcomes, utilization, quality, and efficiency, with attention to the role of financial incentives in health care.

Food Safety and Agriculture

The demand for animal protein is rapidly increasing and with that the use of antimicrobials. Animals are host for several foodborne pathogens and the use of antimicrobials in food animals can accelerate the development of antimicrobial resistance. *Salmonella* and *Campylobacter* are common zoonotic pathogens and cause annually approximately 174 million foodborne illness and almost 81,000 deaths worldwide. RTI relies on a broad team of experts in food safety systems, which includes food science, animal science and veterinary medicine, epidemiology, microbiology, environmental health and engineering, toxicology, social science, mathematical modeling, and data analytics. Our scientists have expertise in a wide range of food production systems, and all elements from farm to fork, including consumer behavior.

Wildlife Conservation

We manage conservation and counter wildlife crime projects at global, regional, and bilateral levels.

Institutional Strengthening and Capacity Building. We enhance the capacity of local governments to facilitate conservation practice through increased support of effective natural resources management. We provide technical guidance and grants to local institutions, training centers, and civil society organizations to build their capacity to address current and future natural resource challenges such as wildlife poaching, changes in resource availability, and ever increasing demands on ecosystem services including fresh water, land, forests, grazing land, and coastal areas. We also work to build the capacity of local and regional law enforcement to respond to Counter Wildlife Crime (CWC) and coordinate effectively across Southeast Asia and East Africa, with specific focus on the following countries: China, Cambodia, Lao PDR, Thailand, Vietnam, and Tanzania.

Reducing Consumer Demand. Through the USAID Wildlife Asia (2016–2021) program, RTI uses social and behavior change communication to reduce consumer demand for wildlife and wildlife products in China, Vietnam, and Thailand. Using social campaigns with high profile individuals, knowledge sharing within the regional network, and digital deterrence campaigns, the program is adapting methodology primarily used in other sectors.

Coordination Support. RTI implements both USAID Wildlife Asia and USAID Tanzania PROTECT (2015–2020), two programs which support information exchange, alignment, and coordination amongst both U.S. Government and non-government actors in conservation and CWC, including focal country governments, development partners, the private sector, other USAID implementing partners, and NGOs.

(Continued)

Increasing Political Will through Policy, Research, and Advocacy. Our programs strengthen policy frameworks and their enforcement to create the enabling environment for simultaneous biodiversity conservation and local economic growth. We work to increase the political commitment to biodiversity programming, wildlife conservation, and CWC. We promote research, analysis, and information dissemination to better inform policy makers, implementers, civil society groups, communities, and the donor community to advocate for a more harmonized, integrated enabling environment for sustainable natural resource management.

Private Sector Engagement in Conservation: By supporting an improved business enabling environment, innovative financial investment mechanisms and improved marketing of tourism, we provide leadership and support to increase engagement of the private sector in wildlife conservation and CWC in Tanzania and Southeast Asia. We strengthens national level government and non-government institutions to improve national level strategies and policies and to facilitate private sector investment in the wildlife conservation sector.

Monitoring, Evaluation, Research, Learning, and Adoption (MERLA)

Learnings from monitoring, evaluation, and operations research are used to refine and improve program implementation. Highlights include the following:

Conducting data quality assessments. RTI-developed protocols and tools evaluate the quality of reported data and data management systems at multiple health system levels.

Assessing impact and disease surveillance. Working with host country governments and stakeholders, we demonstrate impact and document progress towards country and global goals.

Conducting operational research. Multidisciplinary teams generate evidence on the programmatic effectiveness and impact of tools, interventions, and approaches.

Expanding the use of information and communications technologies. Our experts ensure technologies—such as mobile phones/smartphones and open-source software—serve transformational purposes, including improving data collection and reporting, and ensure data is used for evidence-based decision-making.

Turning data into actionable insights. Using predictive analytics, modeling, and data visualization, our data scientists use historic and real-time data to anticipate future events, inform decisions, and classify new observations to guide actions and interventions.