Better Pandemic Response through Digital Health Solutions
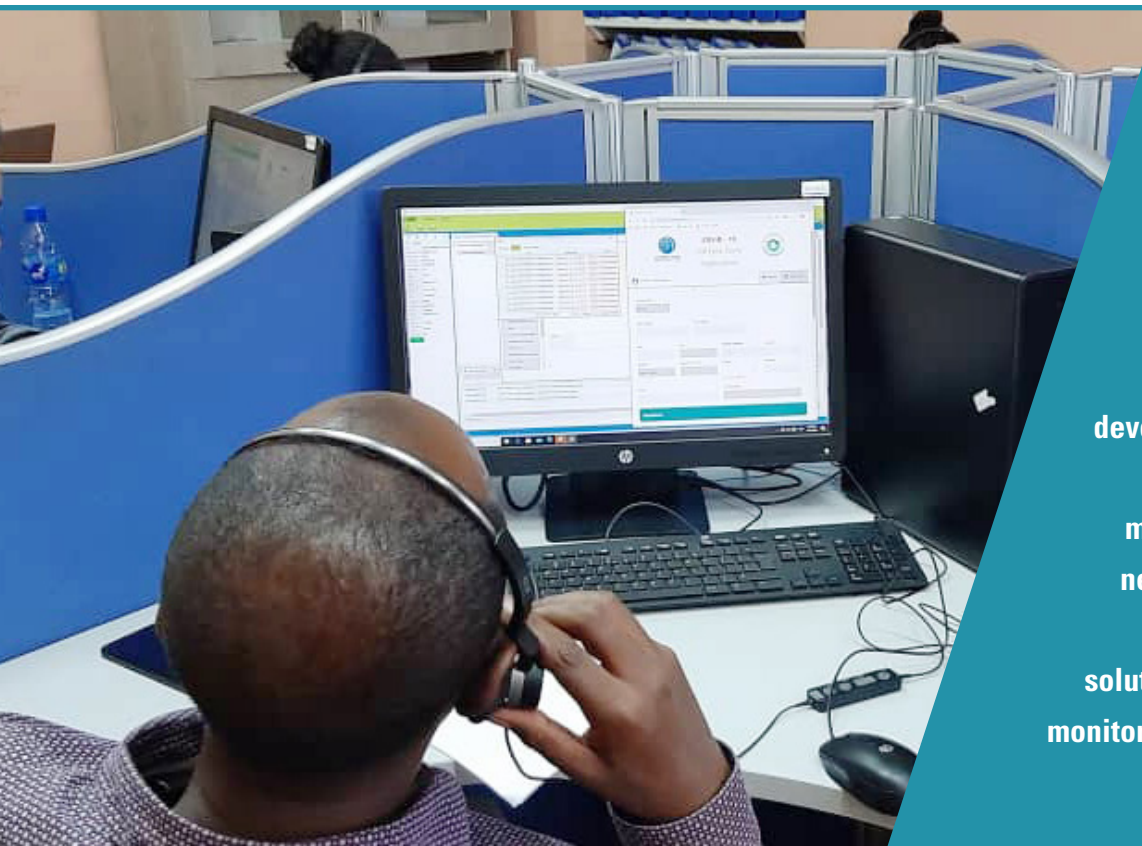
JSI's Center for Digital Health helps countries implement sustainable, interoperable, data-driven solutions. Over the past few months, the Center has developed technical interventions that provide access to and manipulation of significant data needed to manage the COVID-19 pandemic. These tools and solutions are critical for following, monitoring, and overcoming the virus.

Surveillance, Tracking, and Contact Tracing

As countries mobilize rapid response teams to identify, test, isolate, and track cases of COVID-19, they generate vast amounts of data that must be made available to stakeholders in near real-time. JSI is helping country partners adapt, configure, and deploy digital surveillance systems to protect populations from potential runaway outbreaks.
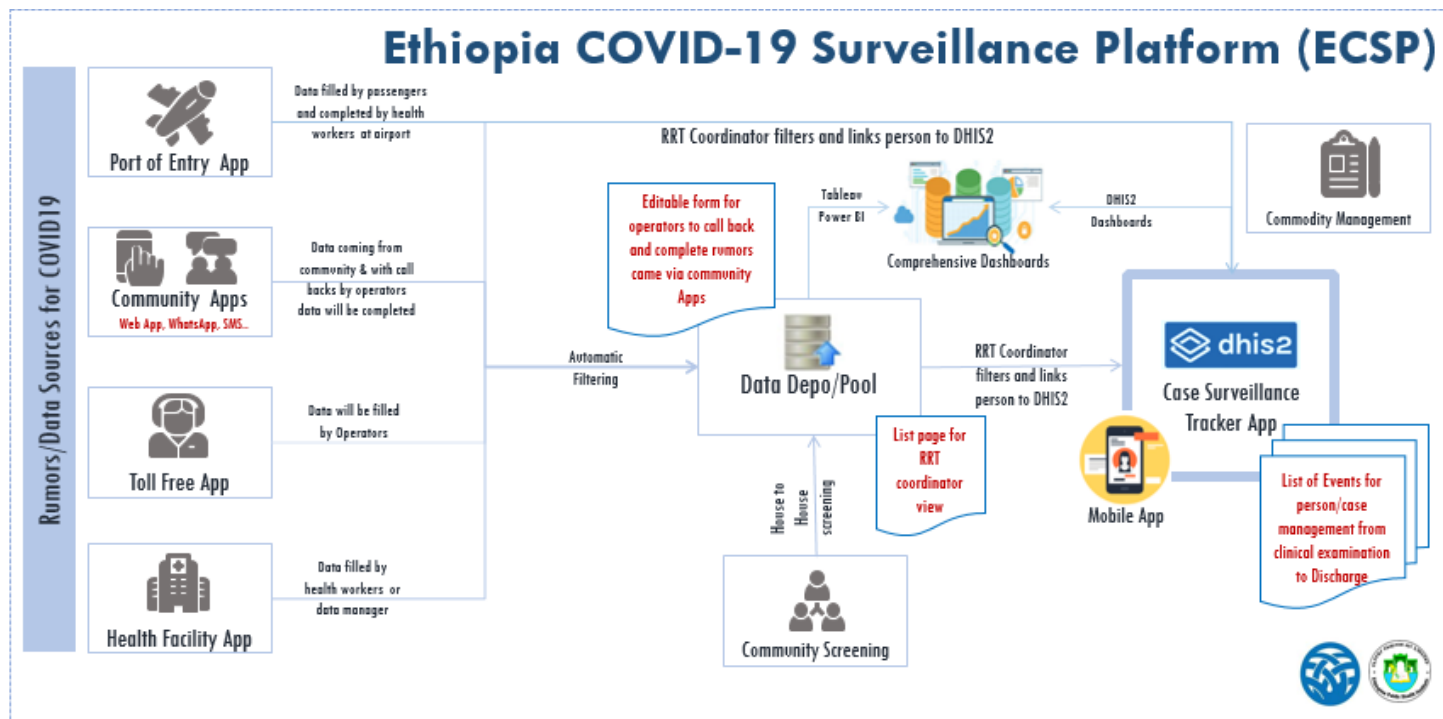
System solutions begin at ports of entry, where identification and screening of travelers first occurs. In Zambia and Ethiopia, JSI is helping ministries of health and public health authorities protect communities by providing standard tracking protocols that enroll, follow, and track travelers' symptoms for 14 days. In Ethiopia, JSI has one team managing USAID's Digital Health Activity (DHA), and another team leading the Bill & Melinda

Gates Foundation's Ethiopia Data Use Partnership (DUP). The teams collaborated on an application that allows travelers to provide their contact information, travel history, geo-location, and symptoms to help support rapid tracking and tracing.

In Ethiopia, JSI is supporting customization and configuration of the District Health Information System 2nd edition (DHIS2) COVID-19 modules as the core surveillance and tracking system. In Zambia, John Snow Health Zambia, in partnership with JSI, implements the USAID eSCMIS project using the CommCare platform to digitize the government's screening protocols. Regardless of the system used in either country, a traveler's record transfers to the surveillance system if identified through symptoms or contact with another individual.

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Ethiopia COVID-19 Digital Systems Diagram

Case-based surveillance is the backbone of the public health response to COVID-19. JSI's project teams in Burkina Faso, Ethiopia, and Zambia developed tools to facilitate surveillance workflows and analyses for active monitoring that align with national protocols. These tools support enrollment and tracking of suspected cases; capture symptoms, demographics, risk factors, and exposure; create lab requests; link confirmed cases with contacts; and monitor patient outcomes. Health facility staff, rapid response teams, laboratory staff, and national and local public health authorities use this interconnected suite of tools.

Both Burkina Faso and Ethiopia leverage the DHIS2 reference application for COVID-19 with specificity for each country's setting. Zambia uses CommCare to digitize its COVID-19 response forms and protocols.

Rapid response teams in Ethiopia conduct active case-finding using a screening tool developed by the JSI DHA and DUP teams on the CommCare platform with support from JSI's L10K program for house-to-house screening. The tool allows rapid response teams in urban and rural settings to conduct symptom and contact screenings at every residence; these teams flag suspected cases for surveillance.

CONTACT TRACING

To remain ahead of the outbreak, public health authorities need to move swiftly to identify and isolate people who are exposed to COVID-19. JSI teams have deployed applications for active case detection through contact-tracing activities. In Ethiopia, the Contact Registration and Follow-up Program registers each contact of a confirmed case as a newly tracked instance and links that person to the COVID-19 Case Surveillance Program, marked as a "relationship"- capturing another piece of a much larger puzzle. The system has a simple, repeatable function for registering symptoms and follow-up.

Supporting Health Workers to Care for People who have COVID-19

Well-equipped health facilities and workers are central to the COVID-19 response. Health workers need the right information to diagnose and treat cases, provide quick ways to flag cases, and trigger investigations.
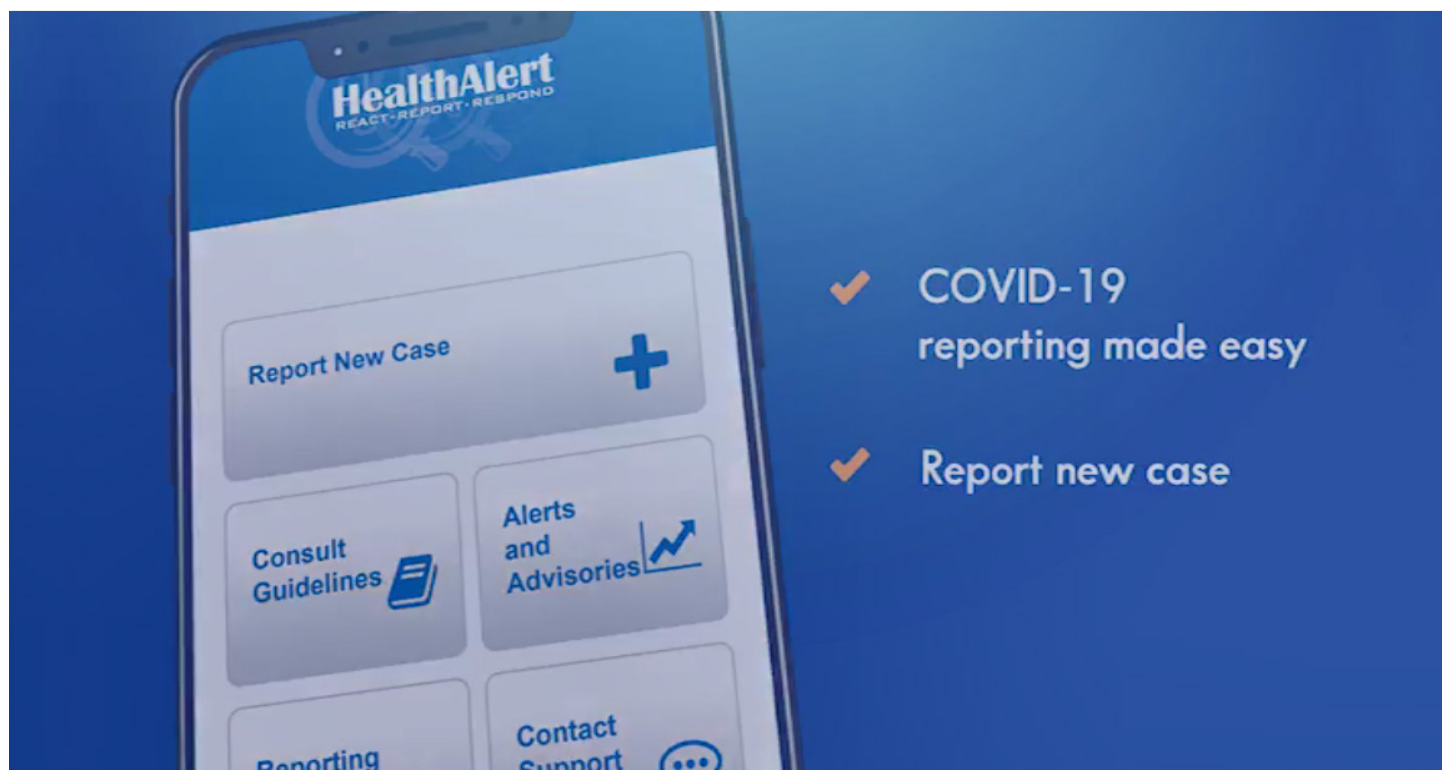
In Pakistan, under USAID's Integrated Health Systems Strengthening & Service Delivery Activity, JSI deploys the HealthAlert® application nationally. This comprehensive tool allows public and private health care providers to report suspected cases and contacts; review COVID-19 diagnoses and treatment guidelines; follow government advisories; and request support and information.

In Ethiopia and Burkina Faso, laboratory staff enter results directly into the DHIS2-based surveillance system, availing information to colleagues and clinical providers immediately. In Ethiopia, DHIS2 generates certificates for people whose test results are negative.

Engaging the Community in Ethiopia

JSI's teams in Ethiopia help the Federal Ministry of Health (FMOH) and the Ethiopian Public Health Institute reach the community through several channels. The FMOH set up a call center to field questions about COVID-19 and to capture symptomatic self-reporting. The DHA and DUP teams developed a toll-free recording application to collect self-reported data and to report concerns about the health status of others.

In collaboration with Praekelt.org, DHA and DUP developed a WhatsApp helpline to connect users with queries to reliable, accurate resources. Additional helplines are available using text bots and a similar tool to WhatsApp that is more widely used in Ethiopia called "Telegram". The helplines provide automated answers to frequently asked questions to relieve the burden on call centers. The mobile app is accessible to community members to download and use it for self-reporting if they have COVID-19 symptoms. It is also a virtual way people can volunteer, request help, learn more about the pandemic, and report hearsay.

Health Alert Application, Pakistan

Ensuring Adequate Regulation to Safeguard Citizens in a Crisis

In response to the COVID-19 pandemic, the Ethiopian Food and Drug Administration's (EFDA) is granting manufacturers temporary certificates of competency (COC) to mass-produce hand sanitizer. DHA developed a tool that manufacturers that receive a provisional license to produce alcohol-based sanitizer use to track quality consistent with WHO standards.
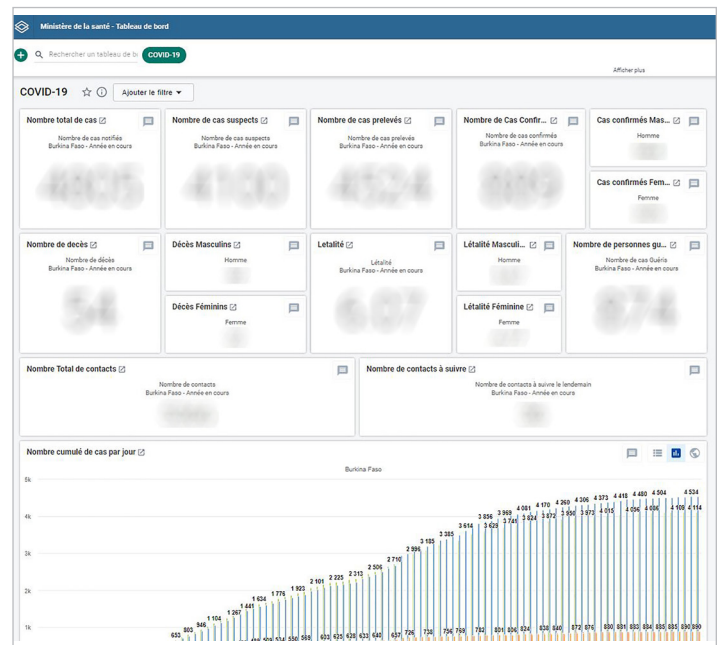
A subsystem of the EFDA's eRIS is iLicense, which issues COCs for food and medicine manufacturers, importers, wholesalers, and exporters. In this latest version of eRIS, applicants for licensing, such as alcohol-based sanitizer manufacturers, are expedited due to the pandemic. The normal licensing process, meanwhile, has been simplified and requires less documentation than before. The resulting new method entails only a 10-minute online registration and a 1-hour facility inspection, culminating in the issuance of a license within minutes after completing these steps. The process reduces physical time spent at the EFDA, protecting both the applicants and EFDA staff from potential exposure. Increased efficiency of goods to market is another advantage of this acceleration.

Teaching and Learning at a Distance

Under USAID's IHSS-SD project in Pakistan, JSI has used platforms like Zoom to train more than 12,000 public and private health care workers to use Health Alert®. In Burkina Faso, JSI, under the MEASURE Evaluation, provided the MOH with remote conference capabilities to hold surveillance calls and training. The MEASURE Evaluation team also created short video sessions on COVID-19 surveillance and made them available on YouTube and OneHealth. In both Burkina Faso and Pakistan, JSI used WhatsApp to support distance-learning and COVID-19 mentoring.

Bringing it all Together: Data Analytics and Visualization

To fully leverage the array of digital tools, key people need access to the data. In Ethiopia, a central dashboard monitors the data to identify COVID-19 cases and visualize epidemiological information to inform preparedness measures. The dashboard integrates data from the DHIS2 COVID-19 Case Surveillance Application and the data depot aggregated from the COVID-19 collection tools—powered by Microsoft PowerBI. In Burkina Faso, COVID-19 data rapidly added to the government's OneHealth platform. This platform was developed under MEASURE Evaluation to support case tracking and reporting across 57 zoonotic diseases and information sharing across three ministries (Health, Environment and Livestock, and Fisheries). Overall, the dashboards facilitate access to timely COVID-19 information that serves as a hub for tools, resources, and solutions.

Burkina Faso OneHealth Dashboard, COVID-19 Response. For privacy reasons, we have obscured the health data.

For more information, check out the Center for Digital Health at jsi.com/expertise/digital-health or email digitalhealth@jsi.com