



Ebola Transmission Prevention Two Years into the Post-Ebola Period: Use of Sentinel Sites for Community-Based Surveillance in Guinea

INTRODUCTION

The Ebola outbreak of 2014–16 in West Africa has been called a “public health emergency of international concern” by the World Health Organization, one of only four such emergencies in the last decade. Much of the world was mobilized to assist the three most-affected countries—Guinea, Liberia, and Sierra Leone—to stop the spread of the virus and implement measures to prevent Ebola resurgence.

In March 2014, the first Ebola cases were confirmed in the eastern region of Guinea, with the virus quickly spreading across the borders with Liberia and Sierra Leone. By the time the outbreak was contained, there had been 28,616 cases in the three countries; in Guinea alone, there were 3,814 cases, of which 2,544 resulted in death (U.S. Centers for Disease Control and Prevention).¹ The epidemic caused global concern as individuals with Ebola traveled to and were identified in seven countries across three continents. International travel around the world was significantly affected, and transmission concerns triggered policy decisions by countries seeking to protect their citizens.



Sentinel site committees in 60 communities across Guinea meet weekly to monitor the health and well-being of Ebola survivors. Photo: Eidolon

¹ <https://www.cdc.gov/vhf/ebola/outbreaks/2014-west-africa/case-counts.html>.

With the support of USAID-funded Advancing Partners & Communities (APC) project's Ebola Transmission Prevention & Survivor Services (ETP&SS) program, the government of Guinea implemented community-based active ring surveillance using sentinel sites to monitor survivors and their immediate contacts and prevent further disease transmission. Each sentinel site is community-based, linked to a health center, and collects and reports detailed health data on Ebola survivors and their immediate contacts living in its catchment area to local health authorities and the National Agency for Health Security (Agence Nationale de Sécurité Sanitaire, ANSS).

ACTIVE RING SURVEILLANCE

Governments and international organizations provided unprecedented resources to assist the three countries most affected, which in turn made tremendous efforts to contain the outbreak. The government of Guinea established an Ebola Coordination Unit (ECU), supported by the head of state to oversee the many international aid organizations working in the country. Post-outbreak, the ECU became the ANSS, with a broader mandate for responding to all infectious disease outbreaks. In April 2016, ANSS launched an active ring surveillance program, Surveillance Active en Ceinture (SA-Ceint), to monitor symptoms of Ebola survivors and their immediate contacts to ensure early detection and rapid response/containment in the event of another outbreak. Every reported symptom was sent to ANSS and implementing partners for action to prevent a resurgence of Ebola.

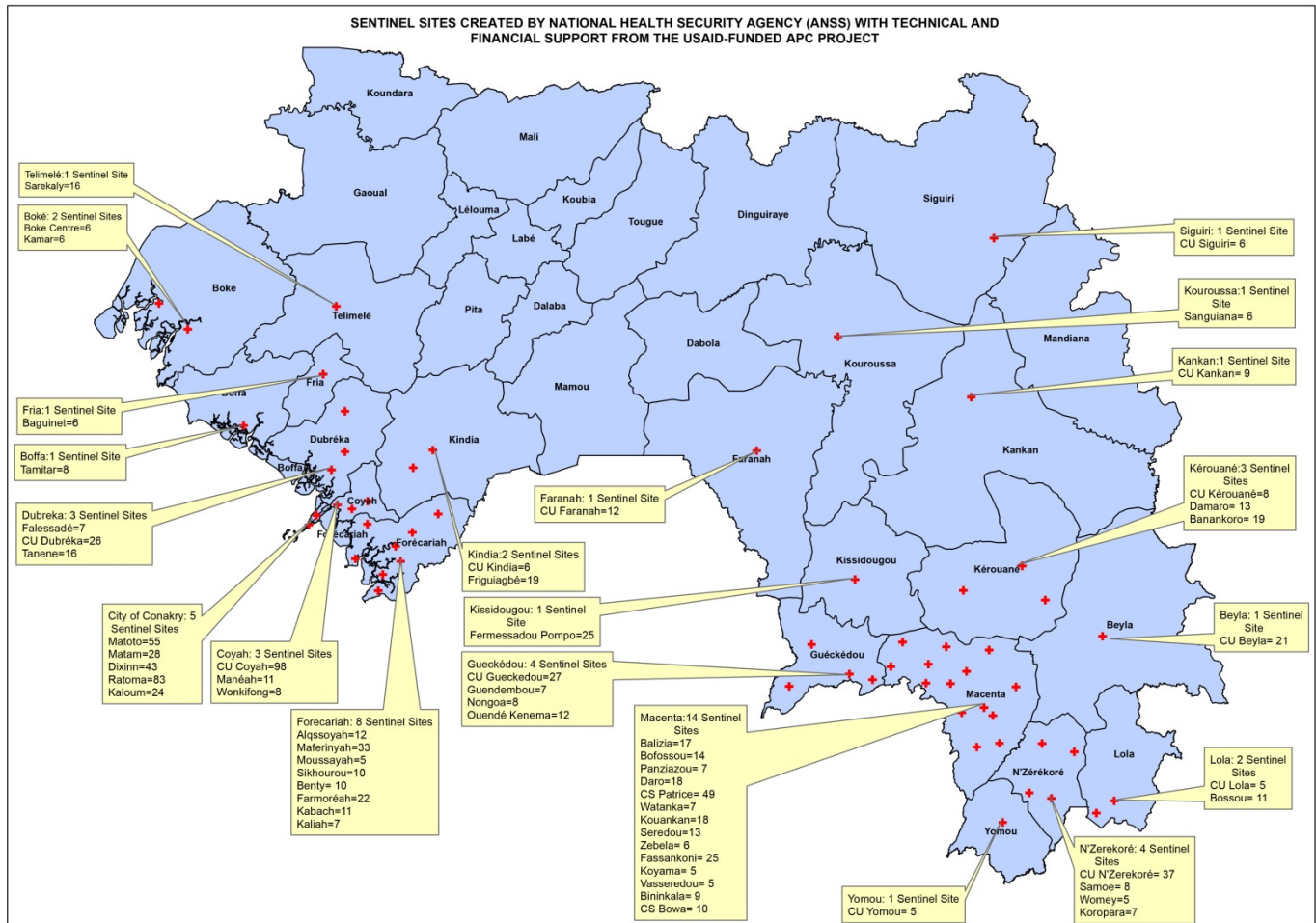
The initial design of the active ring surveillance program was broad, relying on more than 700 community committees across the country to report Ebola survivors' health data. These committees consisted of survivors and their family and community members; religious leaders; and health facility and local administration representatives, all of whom reported health events directly to the district level. The large number of committees made it challenging to ensure regular weekly data reporting, distribute telephone cards and monetary incentives, and provide supervision. After the initial period from April to September 2016, APC, the government, and WHO reviewed and subsequently streamlined the surveillance approach from relying on 700 local committees to 60 community-based sentinel sites instead, and assigned special responsibilities to the health facility representative of each committee.

The active ring surveillance system was crucial when, in March 2016,² after the (first) declaration of the end of the epidemic in Guinea, a resurgence of Ebola virus occurred in the Nzérékoré region at the sub-district of Koropara, and spread across the Liberian border. An Ebola survivor who appeared healthy and was thought to have recovered spread the virus directly or indirectly to eight people who later died. During a regional meeting organized by APC in December 2016 and attended by an official delegation from ANSS, researchers in Liberia reported that an Ebola survivor may retain the virus in certain bodily fluids (i.e., sperm, breast milk, and spinal fluid) for up to 32 months after testing negative. Previously, it was believed that Ebola virus could not last longer than three months in the body. These research results demonstrated to the ANSS in Guinea the value of continuing the community-based surveillance program beyond the initial six-month plan. It also confirmed the need to pursue semen testing of all male survivors 15 years and older until more definitive guidance was available.

Based on the recommendations of the SA-Ceint review conducted [in March 2017, for the program as implemented between November-April 2016 and through January 2017](#), ANSS and APC established sentinel sites as a key component of the overall surveillance approach at the sub-district level and in urban areas judged to be at elevated risk for a disease outbreak. These sites were created in places where at least five Ebola survivors lived, or where one male survivor's semen tested positive for Ebola virus. Survivors who live in districts that have between fewer than five Ebola survivors get care at the closest sentinel site.

² <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5091350/>.

Figure 1. Sentinel Site Locations Established by ANSS with Technical and Financial Support from the USAID-funded APC Project



The program covers the city of Conakry and five regions (Nzérékoré, Kankan, Faranah, Boké, and Kindia), and relies on a robust system for tracking each survivor. If a survivor moves to a new town, s/he needs to enroll at the sentinel site closest to his/her new residence.

Each of the 60 sentinel sites has two facilitators: the director of the health center for the sub-district and a representative of the local Ebola survivors association. Facilitators are responsible for monitoring and reporting the health status of survivors and their immediate contacts. They also educate survivors about the risks of Ebola resurgence; an important part of this surveillance approach is biological monitoring of survivor body fluids, especially semen. Sentinel sites are supported by a committee that includes a religious leader, a community leader, an administrative official, a health facility representative, a representative of the family members of survivors, and a survivor. After completing training provided by APC sub-grantee International Medical Corps (IMC), the community committee helps survivors reintegrate into their communities, works with the community to eliminate stigma toward survivors, and explains the purpose of semen collection. They also support data collection and reporting.

DATA COLLECTION AND REPORTING

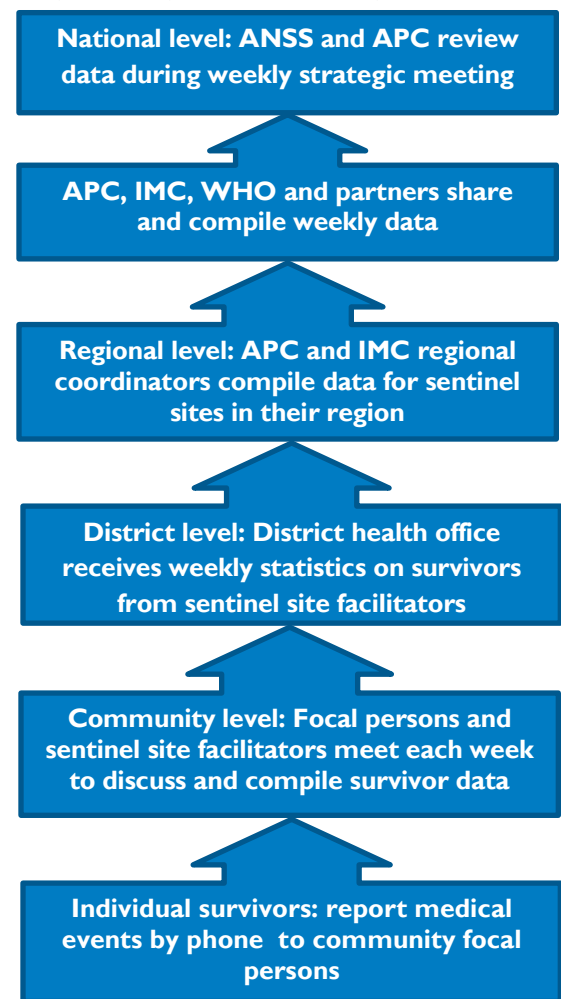
As noted, the community committee members at the 60 sentinel sites collect weekly surveillance data on the health status of Ebola survivors and their family members. These data are submitted to the health facility at the district level and communicated to IMC, APC, and the ANSS for national aggregation. The 10 indicators collected include the number of survivors reporting an illness and the number referred for care at a secondary or tertiary health facility.

Implementing partners and Ministry of Health representatives review epidemiological data during weekly strategic meetings at the ANSS, evaluating potential disease outbreaks by analysis of cases reported and confirmed, as well as timeliness and completeness of sentinel site data. Based on the previous week's data, participants discuss follow-up actions and referrals. The system also allows the immediate review of urgent cases, which are directly reported to ANSS by the health facility receiving the patient. Reporting rates have continued to increase since the inception of the sentinel site surveillance program (see Table 1).

Table 1. Sentinel Site Reporting Rates

Sentinel site reporting (reported to USAID quarterly)	December 2017	March 2018	June 2018	Source
Percentage (number) of 60 sentinel sites reporting weekly	85 (51)	97 (58)	98.3 (59)	Focal person from DPS

Figure 2: Design of Sentinel Site Program



The Ministry's active ring surveillance program includes biological monitoring through quarterly semen collection and testing of survivors 15 years and older. APC supported the follow-up program for all eligible males during three rounds of testing, and ensured that the semen was transported to one of the three Laboratory of Hemorrhagic Fevers sites in Conakry, Kindia, and Nzérékoré, where it was tested under ANSS supervision. The sentinel sites' community committees were crucial to obtaining survivor consent for participation in semen testing. Before each campaign, IMC and Guinea's national Ebola survivor network, RENASEG, encouraged targeted survivors to provide their semen for testing. Over the three quarterly rounds of testing supported by APC, participation increased due to outreach by the project and its partners, with an average of 87 percent of eligible survivors submitting semen samples for testing (see Table 2).

Table 2. Semen Testing Participation

Semen testing (3 rounds supported by ETP&SS)	Oct Nov 2017	January 2018	April 2018	Source
Percentage of registered male survivors age 15+ who have submitted semen samples for testing at least once in a 3-month period	83.6	88.4	89.5	APC and ANSS

SUPERVISION

Supportive supervision visits occur quarterly at the regional level and monthly at the lower district level by teams composed of representatives of the regional and district health offices, respectively, and IMC regional medical doctors and program officers, respectively. During supervision visits, IMC confirms that community committees have been meeting on a weekly basis and are working to raise awareness to strengthen data collection and reduce stigmatization of Ebola survivors. Over time, IMC has found that district health authorities have a good understanding of the sentinel site strategy.

RESULTS OF THE SENTINEL SITE SURVEILLANCE PROGRAM

The streamlined sentinel site surveillance program covered close to 100 percent of Ebola survivors in the six regions hardest hit by the epidemic. A small number of survivors in the other two regions were guided to the nearest sentinel site in case of need. This resulted in higher-quality data, and survivor events were reported more frequently than through a more standard routine health information reporting system. Even when there were no survivor health events, each site submitted a weekly report that was analyzed by Ministry, APC, and IMC representatives for decision-making and action as needed.

Table 3. Sample of Weekly Indicators Reported from Community Committees, by Region: Week of May 28–June 3, 2018

No.	Indicators	Conakry	Kindia	N zérékoré	Faranah	Kankan	Boke	Total
1	Number of community focal persons reporting each week	95	196	180	4	14	13	502
2	Number of Ebola survivors receiving sensitization	61	189	131	12	11	13	417
3	Number of Ebola survivors who visited a health facility	5	2	0	0	0	0	7

N.B. The project's primary focus regions are Conakry, Kindia, and N'zérékoré, where the vast majority of Ebola survivors live. The regions of Faranah, Kankan, and Boke were added halfway through the project implementation period.

APC and partners currently support the sentinel site program's surveillance, community engagement, supervision, and training costs. When the program ends, sentinel sites will need financial support to continue operations. The Director General of the ANSS asked APC to examine how to integrate Ebola surveillance into MOH general surveillance.

CONCLUSIONS AND LESSONS LEARNED

APC and Guinea's National Agency for Health Security have demonstrated that the sentinel site approach to monitor Ebola survivors and their immediate contacts in Guinea is a best practice. This approach relies on a manageable number of carefully selected sites that can cover a high percentage of Ebola survivors (or other post-epidemic individuals) for monitoring. Unlike routine health reporting, sentinel sites can actively monitor key indicators related to the health status of individuals and immediate contacts, and can submit these data weekly to the district and national levels and partners. This facilitates follow-up of individual survivor health status, which supports early detection and rapid response in the event of a suspected case. Other countries can adapt best practices from this sentinel site surveillance program for their own public health surveillance programs.

The sentinel sites operate in conjunction with existing health facilities and incorporate community and religious leaders, factors critical to their success. In the case of Ebola, survivors themselves conduct community outreach and health education. Each site's community committee can assist with reintegration into society through livelihood support and training to reduce stigma against Ebola survivors.

Because the sentinel sites maintain direct contact with Ebola survivors, they are also able to assist with biological monitoring, in particular regular semen testing, and support awareness for testing campaigns. This is crucial because the Ebola virus has been identified in the sperm of survivors for as long as 32 months after an initial negative test.

The operation of sentinel sites requires funding to cover surveillance, community engagement, supervision, and training. In Guinea, the ANSS expressed interest in continuing program support for the sentinel sites until 2020. Given that the ETP&SS program in Guinea will end on July 31, 2018, it is essential to examine ways to integrate the Ebola surveillance program into the broader surveillance program of the ANSS.

The ETP&SS program is funded by USAID and implemented by the APC project, managed by JSI Research & Training, Inc. The program supports recovery from the Ebola outbreak in Guinea, Liberia, and Sierra Leone; it mitigates the risk of Ebola resurgence and improves access to health care services for Ebola survivors. Targeted interventions include improving access to health services by training health workers; renovating and equipping selected health facilities that see a high volume of Ebola survivors; reducing stigma among health care providers and community leaders; and building health system capacity for specialized services.