

**Title:** Marburg Outbreak in Equatorial Guinea – 2023

**Activities:** Procure diagnostics and laboratory testing material; Perform active case finding; Monitor and manage suspected cases; Document and communicate the results of epidemiological investigation; Promote good hygiene practices; Train workforce on infection prevention & control (IPC) guidelines; Declare that the outbreak is over; Declare outbreak nationally; Issue request for assistance; Conduct disease surveillance; Carry out screening/testing activities; Provide mental health and counseling services; Engage in ongoing dialogue with community; Provide safe and respectful burials; Provide clinical care; Implement infection prevention and control (IPC) measures; Mobilize and train volunteers; Collect biological and environmental samples; Transport samples internationally; Provide technical assistance; Coordinate national response across sectors; Coordinate with security sector and law enforcement; Coordinate response with international partners; Create inter-agency coordinating committee; Count deaths; Initiate epidemiological investigation; National-level notification of potential public health emergency; Develop hypothesis to explain specific exposure that caused disease; Count cases; Confirm diagnoses; Determine the existence of an outbreak; Conduct and assess statistical analysis; Collect data on population impacts; Perform contact tracing activities; Share information and key messages with the public; Consider enforcing physical distancing measures of infectious patients; Provide funding and/or financing; Assess ability to rapidly transfer funds; Request financial resources from global, regional, or bilateral funders; Train community on surveillance and/or contact tracing

**Stakeholders:** International NGOs; Health authorities; UN Children’s Fund; World Health Organization; Security authorities

**Phases:** Detection; Early response; Intervention; Post-intervention & recovery; Surveillance & preparedness

**Years:** 2023

**Countries:** Equatorial Guinea

**Agent:** Marburg virus

**Case study prepared by:** Samantha Lau, July 17, 2023

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Marburg virus disease (MVD) causes severe hemorrhagic fever and is caused by infection with viruses from the genus Marburgvirus. Belonging to the Filoviridae family, MVD is closely

related to the more widely known Ebola virus disease (EVD).<sup>1</sup> Common symptoms of Marburg include high fever, severe headache, muscle aches, and vomiting, among others.<sup>2</sup> Currently, there are no effective medical countermeasures for Marburg, which has a case fatality rate (CFR) ranging from 24% to 88%, with a 50% average.<sup>2,3</sup> Marburg is transmitted through direct contact with bodily fluids, secretions, and contaminated surfaces.<sup>2</sup> It was first discovered in 1967 in Germany and Yugoslavia during simultaneous outbreaks after exposure to imported African green monkeys. Marburg is commonly found in sub-Saharan Africa where Egyptian rousette bats (*Rousettus aegyptiacus*) serve as a reservoir for the disease.<sup>1</sup>

On February 7, 2023, a hemorrhagic fever case was detected in the Ebebiyin district and was suspected to be Marburg, the first of its kind in Equatorial Guinea. At the time, 9 recorded deaths were suspected to be related to the epidemiological situation. Local health authorities notified the government and sent 16 samples to two World Health Organization (WHO) laboratories in Africa, the Interdisciplinary Center for Medical Recherches de Franceville in Gabon and the Pasteur Institute in Dakar, Senegal. On February 13, 2023, after one sample in Senegal tested positive for Marbug, the Ministry of Health and Social Welfare of Equatorial Guinea declared an outbreak of MVD.<sup>4,5</sup> Some early cases were linked to a rural region in the northeastern part of the country, where evidence suggested that certain bats kept for human consumption may be responsible for the initial outbreak.<sup>6</sup> The outbreak spread throughout Equatorial Guinea, with an impact reaching five districts (Bata, Ebebiyin, Evinaayong, Nsok Nsomo, and Nsork) within four provinces (Centro Sur, Kie Ntem, Litoral, and Wele-Nzas).<sup>7</sup> The last confirmed case was diagnosed on April 20, 2023, and the outbreak was declared over on June 8, 2023, once there were no new cases reported 42 days after the last patient was discharged from care.<sup>8,9</sup> By the end of the outbreak, a total of 17 laboratory-confirmed cases and 23 probable cases were recorded,

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<sup>1</sup> About Marburg Virus Disease | Marburg (Marburg Virus Disease). (2023, April 19). CDC. Retrieved July 31, 2023, from <https://www.cdc.gov/vhf/marburg/about.html>

<sup>2</sup> Marburg virus disease. (n.d.). World Health Organization (WHO). Retrieved July 31, 2023, from <https://www.who.int/health-topics/marburg-virus-disease>

<sup>3</sup> What are VHFs? | Viral Hemorrhagic Fevers (VHFs). (n.d.). CDC. Retrieved July 31, 2023, from <https://www.cdc.gov/vhf/about.html>

<sup>4</sup> Página Oficial del Gobierno de la República de Guinea Ecuatorial. (2023, February 14). Página Oficial del Gobierno de la República de Guinea Ecuatorial. Retrieved July 31, 2023, from [https://www.guineaecuatorialpress.com/noticias/rueda\\_de\\_prensa\\_sobre\\_un\\_caso\\_positivo\\_de\\_marburg\\_o\\_en\\_ebebiyin](https://www.guineaecuatorialpress.com/noticias/rueda_de_prensa_sobre_un_caso_positivo_de_marburg_o_en_ebebiyin)

<sup>5</sup> Peyton, N., Miridzhanian, A., Reese, C., & Webber, C. (2023, February 14). Equatorial Guinea confirms country's first Marburg virus disease outbreak -WHO. Reuters. Retrieved July 31, 2023, from <https://www.reuters.com/world/africa/who-equatorial-guinea-confirms-first-ever-marburg-virus-disease-outbreak-2023-02-13/>

<sup>6</sup> Geddes, L. (2023, April 19). How health teams are working to contain outbreaks of Marburg virus in Equatorial Guinea and Tanzania. Gavi, the Vaccine Alliance. Retrieved July 31, 2023, from <https://www.gavi.org/vaccineswork/how-health-teams-are-working-contain-outbreaks-marburg-virus>

<sup>7</sup> Marburg virus disease - Equatorial Guinea. (2023, April 15). World Health Organization (WHO). Retrieved July 31, 2023, from <https://www.who.int/emergencies/disease-outbreak-news/item/2023-DON459>

12 of the confirmed cases and all of the probable cases died.<sup>8</sup> Bata district recorded the highest number of confirmed cases and the most deaths, documenting 11 laboratory-confirmed cases and 7 deaths.<sup>7</sup> The Marburg outbreak in Equatorial Guinea had a CFR in the upper bounds of the average Marburg CFR, reaching 75% percent by the end of the outbreak. The majority of the cases occurred among females (62.5%) and the most affected age group was from 40-49 years old (37.5%).<sup>9</sup> In addition, infections in five healthcare workers (31%) were confirmed, and two died, making the CFR among healthcare workers 40%.<sup>10</sup> The progression of the outbreak was traced through social gatherings and public events, where individuals may have unknowingly contracted the disease or spread it to others.<sup>11</sup>

The government response of Equatorial Guinea was directed by the Political Committee on Health Emergencies, headed by the Vice-President of the Republic H.E. Nguema Obiang Mangue, and the Ministry of Health and Social Welfare, headed by Mitoha Ondo'o Ayecaba.<sup>4, 10</sup> Once the first case of Marburg was identified on February 13, 2023, the Ministry of Health and Social Welfare (MINSABS) issued a public health alert that declared an outbreak of Marburg. However, during a meeting with the Political Health Committee, the Vice-President advised the Ministry to be cautious in disseminating health information to the public, as to prevent confusion.<sup>12</sup> After the initial outbreak, Equatorial Guinea established an emergency response structure under leadership from the Ministry of Health. In conjunction with the World Health Organization (WHO) and other partners, this structure mobilized response activities including case management, epidemiology, laboratory, and surveillance functions.<sup>10</sup>

In an attempt to prevent the further proliferation of the disease, the Political Committee on Health Emergencies issued an Emergency Committee action plan, which detailed a 45-day quarantine for the entire Kie-Ntem province and part of the Wele-Nzas district, the northeastern sector where the first Marburg cases were detected. It was estimated that over 210 families were put in quarantine. The government's main objective was to contain the disease by restricting

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<sup>8</sup> Marburg Virus Disease outbreak in Equatorial Guinea ends. (2023, June 8). WHO | Regional Office for Africa. Retrieved July 31, 2023, from <https://www.afro.who.int/countries/equatorial-guinea/news/marburg-virus-disease-outbreak-equatorial-guinea-ends>

<sup>9</sup> Marburg virus disease - Equatorial Guinea and the United Republic of Tanzania. (2023, May 8). World Health Organization (WHO). Retrieved July 31, 2023, from <https://www.who.int/emergencies/disease-outbreak-news/item/2023-DON467>

<sup>10</sup> Marburg virus disease - Equatorial Guinea. (2023, June 9). World Health Organization (WHO). Retrieved July 31, 2023, from <https://www.who.int/emergencies/disease-outbreak-news/item/2023-DON472>

<sup>11</sup> Equatorial Guinea, Africa - Marburg Virus Disease Emergency Appeal (MDRGQ003) - Equatorial Guinea. (2023, March 27). ReliefWeb. Retrieved July 31, 2023, from <https://reliefweb.int/report/equatorial-guinea/equatorial-guinea-africa-marburg-virus-disease-emergency-appeal-mdrgq003>

<sup>12</sup> Página Oficial del Gobierno de la República de Guinea Ecuatorial. (2023, February 16). Página Oficial del Gobierno de la República de Guinea Ecuatorial. Retrieved July 31, 2023, from [https://www.guineaecuatorialpress.com/noticias/alerta\\_sanitaria\\_en\\_la\\_provincia\\_de\\_kie\\_ntem\\_y\\_en\\_el\\_distrito\\_de\\_mongomo](https://www.guineaecuatorialpress.com/noticias/alerta_sanitaria_en_la_provincia_de_kie_ntem_y_en_el_distrito_de_mongomo)

movement within the affected towns, all while providing food, drinking water, health care, and fuel throughout this timeframe. The contingency plan enlisted the cooperation of various government ministries such as Finance, Social Affairs, Security, Information, Interior, Justice, MINSABS, and several international organizations.<sup>13</sup> Restricted mobility in quarantined areas was mainly enforced by the Ministries of National Defense and Security, at the instruction of the President of the Political Committee on Health Emergencies, H.E. Ngueme Obang Mangué.<sup>14</sup>

To finance these initiatives, Vice-President Ngueme Obiang Mangué gave permission for the utilization of both Covid-19 funds and materials originally allocated for the 2015 Africa Cup of Nations (CAN 2015) to prevent potential Ebola cases during the tournament.<sup>12</sup> Contributions were also made from other countries, including the United States government which provided more than \$3 million in funds, laboratory equipment, resources, and personnel to mitigate the effects of Marburg in Equatorial Guinea. These funds were used for surveillance, contact tracing, laboratory diagnostics, risk communication, infection prevention and control, waste management, border health, and safe and dignified burials.<sup>15</sup>

The government of Equatorial Guinea also officially requested international assistance with the Marburg outbreak. Though many international actors supported outbreak response activities, the main international organizations involved were the International Federation of Red Cross and Red Crescent Societies (IFRC), WHO, the African Centers for Disease Control and Prevention (CDC), and the United Nations Children's Fund (UNICEF). Specifically, the IFRC proposed an operational strategy that focused on Risk Communication and Community Engagement (RCCE), hygiene promotion, and safe and dignified burials for the Kie-Ntem area with a total budget of 299,929 CHF (Swiss Francs). They implemented community health initiatives by increasing community health literacy with trained volunteers and supported safe and dignified burials through the rapid mobilization of burial units.<sup>16</sup> International bodies like WHO, Africa CDC, and UNICEF primarily supported response activities involving surveillance, laboratory, clinical care, infection prevention and control, border health, and operational support. WHO assisted with establishing alert centers for case management and training for surveillance and investigation activities.<sup>10</sup> In the initial stages of the outbreak, samples collected by the government of

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<sup>13</sup> Página Oficial del Gobierno de la República de Guinea Ecuatorial. (2023, February 16). Página Oficial del Gobierno de la República de Guinea Ecuatorial. Retrieved July 31, 2023, from [https://www.guineaecuatorialpress.com/noticias/guinea\\_ecuatorial\\_traza\\_el\\_plan\\_de\\_accion\\_del\\_comite\\_de\\_emergencia\\_respecto\\_al\\_virus\\_de\\_marburgo](https://www.guineaecuatorialpress.com/noticias/guinea_ecuatorial_traza_el_plan_de_accion_del_comite_de_emergencia_respecto_al_virus_de_marburgo)

<sup>14</sup> Página Oficial del Gobierno de la República de Guinea Ecuatorial. (2023, March 24). Página Oficial del Gobierno de la República de Guinea Ecuatorial. Retrieved July 31, 2023, from [https://www.guineaecuatorialpress.com/noticias/nguema\\_obiang\\_mangué\\_analiza\\_los\\_efectos\\_del\\_paque\\_de\\_medidas\\_contra\\_el\\_virus\\_marburgo\\_en\\_el\\_pais](https://www.guineaecuatorialpress.com/noticias/nguema_obiang_mangué_analiza_los_efectos_del_paque_de_medidas_contra_el_virus_marburgo_en_el_pais)

<sup>15</sup> U.S. Embassy Malabo. (2023, June 15). The U.S. Government Contributed More than \$3 million to Help End the Marburg Virus Outbreak in Equatorial Guinea. U.S. Embassy in Equatorial Guinea. Retrieved July 31, 2023, from <https://gq.usembassy.gov/the-u-s-government-contributed-more-than-3-million-to-help-end-the-marburg-virus-outbreak-in-equatorial-guinea/>

Equatorial Guinea were sent to WHO for testing, and assisted by the Centers for Disease Control and Prevention (CDC), they continued to support laboratory operations and specimen transportation throughout the epidemic.<sup>10, 16</sup> To offset the limited diagnostic capacity in Equatorial Guinea, WHO and the US CDC established a laboratory in Bata with reverse transcription polymerase chain reaction (RT-PCR) capabilities for MVD diagnosis to increase the number of samples analyzed per day.<sup>7</sup>

Although the Marburg outbreak was officially declared over on June 8, 2023, WHO continued to collaborate with Equatorial Guinea to sustain surveillance and testing to ensure swift responses to potential virus flare-ups and continue the training conducted during the outbreak to enhance preparedness capabilities.<sup>8</sup> Four patients that recovered from the virus are now enrolled in survivors programs to receive post-recovery support. On June 7th and 8th, the government of Equatorial Guinea held a seminar and round table ceremony in Bata for the international declaration of the end of the Marburg epidemic.<sup>8, 17</sup>

**Please include case study summary text below this line.**

An outbreak of Marburg virus was reported in Equatorial Guinea in early 2023, with the case fatality rate reaching 75% by the end of the outbreak. The outbreak was the first of its kind in the country. Rapid detection and reporting ensured swift cross-sector collaboration and international response.

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<sup>16</sup> International Federation of Red Cross and Red Crescent Societies. (2023, January 3). Equatorial Guinea Marburg Outbreak, DREF Application. IFRC.

<sup>17</sup> Página Oficial del Gobierno de la República de Guinea Ecuatorial. (2023, June 4). Página Oficial del Gobierno de la República de Guinea Ecuatorial. Retrieved July 31, 2023, from [https://www.guineaecuatorialpress.com/noticias/declaracion\\_internacional\\_del\\_fin\\_de\\_la\\_epidemia\\_de\\_marburgo\\_en\\_guinea\\_ecuatorial](https://www.guineaecuatorialpress.com/noticias/declaracion_internacional_del_fin_de_la_epidemia_de_marburgo_en_guinea_ecuatorial)