

Ebola Sudan virus - 2022 outbreak

Factsheet and news

UPDATE OF 15 NOVEMBRE 2022

This document is composed of 3 different tabs: General information, Relevant news, and Scientific articles
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Every information presented comes from a valid and credible source.

The redaction of this document is coordinated by:

Erica Telford, Nicolas Pulik, Inmaculada Ortega-Perez (ANRS | Emerging Infectious Diseases)

The "General information" tab presents an overview, case definitions, guidelines, reported cases

Overview

Source: <https://www.who.int/news-room/fact-sheets/detail/ebola-virus-disease>

Timeline

- The first EVD outbreaks occurred in remote villages in Central Africa, near tropical rainforests. The 2014–2016 outbreak in West Africa was the largest and most complex Ebola outbreak since the virus was first discovered in 1976. There were more cases and deaths in this outbreak than all others combined. It also spread between countries, starting in Guinea then moving across land borders to Sierra Leone and Liberia.
- On 20 September 2022, Uganda health authorities declared an outbreak of Ebola disease, caused by Sudan virus, following laboratory confirmation of a patient from a village in Madudu sub-county, Mubende district, central Uganda. As of 25 September 2022, a cumulative number of 18 confirmed and 18 probable cases have been reported from Mubende, Kyegegwa and Kassanda districts, including 23 deaths, of which five were among confirmed cases (CFR among confirmed cases 28%). This is the first Ebola disease outbreak caused by Sudan virus (SUDV) in Uganda since 2012.

Epidemiology

- The virus family Filoviridae includes three genera: Cuevavirus, Marburgvirus, and Ebolavirus. Within the genus Ebolavirus, six species have been identified: Zaire, Bundibugyo, Sudan, Taï Forest, Reston and Bombali.
- Ebola virus disease (EVD), formerly known as Ebola haemorrhagic fever, is a severe, often fatal illness affecting humans and other primates. The virus is transmitted to people from wild animals (such as fruit bats, porcupines and non-human primates) and then spreads in the human population through direct contact with the blood, secretions, organs or other bodily fluids of infected people, and with surfaces and materials (e.g. bedding, clothing) contaminated with these fluids. The average EVD case fatality rate is around 50%. Case fatality rates have varied from 25% to 90% in past outbreaks. It is thought that fruit bats of the Pteropodidae family are natural Ebola virus hosts.
- The incubation period is from 2 to 21 days. A person infected with Ebola cannot spread the disease until they develop symptoms. Symptoms of EVD can be sudden and include: fever, fatigue, muscle pain, headache, and sore throat. This is followed by vomiting, diarrhea, rash, symptoms of impaired kidney and liver function, and in some cases internal and external bleeding. Laboratory findings include low white blood cell and platelet counts and elevated liver enzymes. It can be difficult to clinically distinguish EVD from other infectious diseases such as malaria, typhoid fever and meningitis. A range of diagnostic tests have been developed to confirm the presence of the virus.
- Supportive care - rehydration with oral or intravenous fluids - and treatment of specific symptoms improves survival. A range of potential treatments including blood products, immune therapies and drug therapies are currently being evaluated. Two monoclonal antibodies (Inmazed and Ebanga) were approved for the treatment of Zaire ebolavirus (Ebolavirus) infection in adults and children by the US Food and Drug Administration in late 2020. The Ervebo vaccine has been shown to be effective in protecting people from the species Zaire ebolavirus, and is recommended by the Strategic Advisory Group of Experts on Immunization as part of a broader set of Ebola outbreak response tools. In December 2020, the vaccine was approved by the US Food and Drug Administration and prequalified by WHO for use in individuals 18 years of age and older (except for pregnant and breastfeeding women) for protection against Ebola virus disease caused by Zaire Ebola virus. In May 2020, the European Medicines Agency recommended granting marketing authorization for a 2-component vaccine called Zabdeno-and-Mvabea for individuals 1 year and older. The vaccine is delivered in 2 doses: Zabdeno is administered first and Mvabea is given approximately 8 weeks later as a second dose. This prophylactic 2-dose regimen is therefore not suitable for an outbreak response where immediate protection is necessary.
- **Based on available evidence the ERVEBO vaccine — used in the recent responses against the Ebola virus disease outbreaks — will not provide cross-protection against the Sudan virus disease. The Johnson & Johnson (Janssen) vaccine called Zabdeno/Mvabea against Ebola has only been approved by the European Medicines Agency (EMA) against Ebola virus disease and has not been tested against Sudan virus disease.**

WHO surveillance case definitions for Ebola outbreaks

Source : <https://apps.who.int/iris/handle/10665/146397>

Laboratory confirmed	Any suspected or probably cases with a positive laboratory result. Laboratory confirmed cases must test positive for the virus antigen, either by detection of virus RNA by reverse transcriptase-polymerase chain reaction (RT-PCR), or by detection of IgM antibodies directed against Marburg or Ebola.
Probable	<p>a. Any suspected case evaluated by a clinician;</p> <p>OR</p> <p>b. Any deceased suspected case (where it has not been possible to collect specimens for laboratory confirmation) having an epidemiological link with a confirmed case</p>

Suspected	a. Any person, alive or dead, suffering or having suffered from a sudden onset of high fever and having had contact with: <ul style="list-style-type: none"> - a suspected, probable or confirmed Ebola or Marburg case; - a dead or sick animal (for Ebola) - a mine (for Marburg);
	OR
	b. Any person with sudden onset of high fever and at least three of the following symptoms: <ul style="list-style-type: none"> - headaches - lethargy - anorexia / loss of appetite - aching muscles or joints - stomach pain - difficulty swallowing - vomiting - difficulty breathing - diarrhea - hiccups;
	OR
	c. Any person with inexplicable bleeding;
	OR
	d. Any sudden, inexplicable death
Non-case	Any suspected or probable case with a negative laboratory result. "Non-case" showed no specific antibodies, RNA or specific detectable antigens.

Background information on Ebola

WHO	Webpage on Ebola	https://www.who.int/news-room/fact-sheets/detail/ebola-virus-disease
WHO	Ebola Virus Disease Q&A	https://www.who.int/news-room/questions-and-answers/item/ebola-virus-disease
WHO	Ebola Virus Vaccine Q&A	https://www.who.int/news-room/questions-and-answers/item/ebola-vaccines
WHO	Safety of two Ebola virus vaccines	https://www.who.int/groups/global-advisory-committee-on-vaccine-safety/topics/ebola-virus-vaccines
WHO	Repository for Ebola publications at WHO	https://www.who.int/publications/i?healthtopics=b57416ee-a885-403f-a50d-59ca9d5bb707
CDC	What is Ebola Virus Disease?	https://www.cdc.gov/vhf/ebola/about.html

Guidelines and practical information from French authorities, ECDC, and WHO

MSS	Maladie à virus Ebola	https://solidarites-sante.gouv.fr/soins-et-maladies/maladies/maladies-infectieuses/ebola/article/maladie-a-virus-ebola
WHO	Ebola/Marburg Research and Development (R&D) Roadmap	https://www.who.int/publications/m/item/ebola-marburg-draft-r-d-roadmap
WHO	Sudan Virus Vaccine Tracker - List of vaccine candidates in research & development	https://www.who.int/publications/m/item/sudan-virus-vaccine-tracker---list-of-vaccine-candidates-in-research---development
WHO	Therapeutics for Ebola virus disease	https://www.who.int/publications/i/item/9789240055742
WHO	Ebola and Marburg virus disease epidemics: preparedness, alert, control, and evaluation	https://www.who.int/publications/i/item/WHO-HSE-PED-CED-2014.05

WHO	Interim infection prevention and control guidance for care of patients with suspected or confirmed filovirus haemorrhagic fever in health-care settings, with focus on Ebola	https://www.who.int/publications/i/item/WHO-HIS-SDS-2014.4-Rev.1
WHO	Interim advice on the sexual transmission of the Ebola virus disease	https://www.who.int/publications/m/item/interim-advice-on-the-sexual-transmission-of-the-ebola-virus-disease
WHO	Guidelines for the management of pregnant and breastfeeding women in the context of Ebola virus disease	https://www.who.int/publications/i/item/9789240001381
WHO	Clinical care for survivors of Ebola virus disease	https://www.who.int/publications/i/item/WHO-EVD-OHE-PED-16.1
WHO	Roadmap for introduction and roll-out of Merck rVSV-ZEBOV Ebola Virus Disease vaccine in African countries	https://www.who.int/publications/m/item/merck-EVD-vax-intro-roadmap
WHO	Optimized supportive care for Ebola virus disease: clinical management standard operating procedures	https://apps.who.int/iris/handle/10665/325000
WHO	Personal protective equipment for use in a filovirus disease outbreak: rapid advice guideline	https://apps.who.int/iris/handle/10665/251426
WHO	Framework and toolkit for infection prevention and control in outbreak preparedness, readiness and response at the health care facility level	https://www.who.int/publications/i/item/framework-and-toolkit-for-infection-prevention-and-control-in-outbreak-preparedness--readiness-and-response-at-the-health-care-facility-level
HAS	ERVEBO (vaccin contre Ebola Zaïre, vivant atténué)	https://www.has-sante.fr/jcms/p_3159838/fr/ervebo-vaccin-contre-ebola-zaire-vivant-attenué
HAS	Utilisation du vaccin contre la maladie à virus Ebola ERVEBO	https://www.has-sante.fr/jcms/p_3159895/fr/utilisation-du-vaccin-contre-la-maladie-a-virus-ebola-ervebo
EMA	Zabdeno	https://www.ema.europa.eu/en/medicines/human/EPAR/zabdeno

Confirmed cases and deaths (12/11)

Source: <https://www.health.go.ug/ebola/>

WHO Africa reports

Country	Cases confirmed	Deaths confirmed
Uganda	139	55

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The "Relevant news" tab presents official reports from health agencies and rapidly reported information from reliable news sources

Date	Source	Type of publication	Title	Key facts	Link
13/11/2022	CIDRAP	News	Ebola spreads to southeastern Uganda	Uganda's health ministry yesterday reported that Ebola has spread to Jinja district in the southeastern part of the country.	https://www.cidrap.umn.edu/news-perspective/2022/11/ebola-spreads-southeastern-uganda
12/11/2022	WHO Africa	Report	Ebola Virus Disease - Republica of Uganda	WHO / Ministry of Health Uganda report on current Ebola outbreak, including situation report (cases, deaths, recoveries, etc), actions to date critical challenges, key messages to the public.	https://www.afro.who.int/sites/default/files/2022-11/Ug_EVD_SitRep%2348.pdf
11/11/2022	ECDC	Report	Ebola outbreak in Uganda, as of 7 November 2022	According to the WHO, as of 7 November 2022, there have been 136 confirmed cases of Ebola virus disease (EVD), including 53 deaths (case fatality rate: 39%). Among these, at least 18 healthcare workers were infected, of whom seven died. There are also 21 probable cases who died before samples were obtained for confirmation. 62 cases have recovered.	https://www.ecdc.europa.eu/en/news-events/ebola-outbreak-uganda
10/11/2022	WHO	Report	Ebola disease caused by Sudan ebolavirus – Uganda	From when the outbreak was declared on 20 September until 7 November, a total of 136 confirmed cases and 53 confirmed deaths (CFR 38.9%) from Ebola disease caused by the Sudan ebolavirus (SUDV) have been reported in 8 districts, representing an increase of 18% and 66% respectively since the last DON published on 28 October 2022.	https://www.who.int/emergencies/disease-outbreak-news/item/2022-DON423
07/11/2022	UKHSA	Guidance	Ebola: overview, history, origins and transmission	The history of Ebola virus disease, animal reservoirs, routes of transmission and an overview of diagnosis and management.	https://www.gov.uk/government/publications/ebola-origins-reservoirs-transmission-and-guidelines
03/11/2022	WHO	News	Global health agencies outline plan to support Ugandan government-led response to outbreak of Ebola virus disease	The Ministry of Health has designated the Makerere University Lung Institute to conduct vaccine and therapeutics clinical trials. The clinical trial to evaluate candidate vaccines against this ebolavirus is co-sponsored by the Ministry of Health in Uganda and WHO, and involves support from partners. A Principal investigator from Makerere University Lung Institute will lead the vaccine trial. WHO, CEPI and Gavi are providing support to ensure that sufficient doses of candidate vaccines are available for the trial and beyond.	https://www.gavi.org/news/media-room/global-health-agencies-outline-plan-support-ugandan-government-led-response
02/11/2022	ECDC	Report	Ebola outbreak in Uganda, as of 2 November 2022	According to the World Health Organization (WHO), as of 2 November 2022, there have been 131 confirmed cases of Ebola virus disease (EVD), including 48 deaths (case fatality rate: 37%). Among these, at least 18 healthcare workers were infected, of whom six died. There are also 21 probable cases who died before samples were obtained for confirmation. 54 cases have recovered.	https://www.ecdc.europa.eu/en/news-events/ebola-outbreak-uganda
29/10/2022	WHO Africa	Report	Ebola Virus Disease - Republica of Uganda	WHO / Ministry of Health Uganda report on current Ebola outbreak, including situation report (cases, deaths, recoveries, etc), actions to date critical challenges, key messages to the public.	https://www.afro.who.int/sites/default/files/2022-10/Ug_EVD_SitRep%2338.pdf
28/10/2022	WHO	Report	Ebola Disease caused by Sudan virus - Uganda	As of 26 October, a total of 115 confirmed and 21 probable cases, including 32 confirmed and 21 probable deaths (CFR among confirmed cases: 27.8%) have been reported. 15 cases with four deaths have been reported among HCW. 1844 contacts were under surveillance in 9 districts of the country. A cumulative total of 3166 contacts have been listed since the start of this outbreak, of which 1194 (37.7%) have completed the follow-up period of 21 days. A total of 94 safe and dignified burials (SDB) have been undertaken since the beginning of the outbreak, of which 97.9% (n=92) were community burials.	https://www.who.int/emergencies/disease-outbreak-news/item/2022-DON421
28/10/2022	ECDC	Report	Ebola outbreak in Uganda, as of 26 October 2022	According to the World Health Organization (WHO), as of 26 October 2022, there have been 115 confirmed cases of Ebola virus disease (EVD), including 32 deaths (CFR: 28%). At least 11 healthcare workers were infected, of whom 4 died. There are also 20 deaths among individuals who died before a sample could have been taken but who were linked to confirmed cases. 34 cases have recovered.	https://www.ecdc.europa.eu/en/news-events/ebola-outbreak-uganda

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28/10/2022	MoH Uganda	Press release	All contacts to ebola confirmed cases are not allowed to travel locally or internationally for 21 days	All contacts to Ebola confirmed cases in Uganda are NOT allowed to travel locally or internationally for 21 days.	https://twitter.com/MinoffHealthUG/status/1586035843139264513
27/10/2022	WHO	News	Contact tracers and village health teams take on Ebola in Uganda	WHO has provided four Ebola kits to Mubende Regional Hospital and redeployed 108 technical staff to assist with case management, risk communication, community engagement and laboratory testing.	https://www.afro.who.int/countries/uganda/news/contact-tracers-and-village-health-teams-take-ebola-uganda
26/10/2022	IAVI	News	IAVI to accelerate promising investigational Sudan ebolavirus vaccine development for potential outbreak research and response	IAVI and Merck (MSD) intend to enter into an agreement to enable IAVI to accelerate the entry of a promising Sudan ebolavirus (SUDV) vaccine candidate that IAVI is developing into clinical evaluation. Merck hopes to be able to deliver approximately 50,000 doses by the end of the year.	https://www.iavi.org/news-resources/press-releases/2022/iavi-to-accelerate-promising-investigational-sudan-ebolavirus-vaccine-development-for-potential-outbreak-research-and-response
24/10/2022	US CDC	Report	September 2022 Uganda	On September 20, 2022, the Ugandan Ministry of Health confirmed an outbreak of Ebola virus disease (EVD) (Sudan virus) in Mubende District, in western Uganda.	https://www.cdc.gov/vhf/ebola/outbreaks/uganda/2022-sep.html
24/10/2022	CIDRAP	News	As Uganda's Ebola outbreak intensifies, cases expand in Kampala	Uganda over the past few days reported a surge in new Sudan Ebola cases, with lab-confirmed cases rising to 90, including 9 more in Kampala, the country's capital and most populated city.	https://www.cidrap.umn.edu/news-perspective/2022/10/ugandas-ebola-outbreak-intensifies-cases-expand-kampala
24/10/2022	Reuters	News	Uganda says 9 more Ebola cases confirmed in Kampala, urges vigilance	Uganda has reported nine more Ebola cases in the capital Kampala, bringing the total number of known infections to 14 in the last two days, the health minister said on Monday.	https://www.reuters.com/business/healthcare-pharmaceuticals/uganda-says-9-more-ebola-cases-confirmed-kampala-toll-rises-14-2022-10-24/
21/10/2022	ECDC	Report	Ebola outbreak in Uganda, as of 21 October 2022	According to the World Health Organization (WHO), as of 19 October 2022, there have been 64 confirmed cases of Ebola virus disease (EVD), including 25 deaths (Case fatality rate: 39%; including probable deaths: 54%).	https://www.ecdc.europa.eu/en/news-events/ebola-outbreak-uganda
20/10/2022	CIDRAP	News	Uganda's Ebola cases rise amid concern over undetected spread	On Twitter, the health ministry said there are now 64 lab-confirmed cases. Also, it reported 25 deaths among confirmed patients, 1 more than yesterday.	https://www.cidrap.umn.edu/news-perspective/2022/10/ugandas-ebola-cases-rise-amid-concern-over-undetected-spread
20/10/2022	WHO	News	WHO: 'Concerned' about Ebola spread as latest eight cases not contacts of others infected	The eight most recent Ebola cases reported during the outbreak in Uganda have no known links with current patients, raising concerns over the spread of the disease.	https://www.reuters.com/business/healthcare-pharmaceuticals/who-concerned-about-ebola-spread-latest-eight-cases-not-contacts-others-infected-2022-10-19/
18/10/2022	Reuters	News	U.S. sends experimental antibody, antiviral drug to Uganda for Ebola outbreak	The United States sent Gilead Sciences' remdesivir and Mapp Biopharmaceutical Inc's experimental Ebola antibody drug MBP134 to Uganda last week to help safeguard healthcare workers responding to an outbreak that has infected 60 people and killed 44.	https://www.reuters.com/business/healthcare-pharmaceuticals/us-sends-experimental-antibody-antiviral-drug-uganda-ebola-outbreak-2022-10-18
18/10/2022	US CDC	News	The U.S. Response to Ebola Outbreaks in Uganda	Measures implemented by the U.S. to address the outbreak with the international community. The U.S. CDC and the USAID are working closely with public health departments, public health laboratories, and healthcare workers throughout the U.S., Uganda, and neighboring countries to raise awareness and address this outbreak.	https://www.cdc.gov/media/releases/2022/s1018-ebola-outbreaks-uganda.html
17/10/2022	The Conversation	News	Ebola : que se passe-t-il en Ouganda ?	Comment a-t-elle commencé ? Que sait-on de la souche Soudan qui en est responsable ? Faut-il craindre une épidémie d'ampleur ?	https://theconversation.com/ebola-que-se-passe-t-il-en-ouganda-192448
17/10/2022	Reuters	News	Serum Institute to produce Ebola vaccine for use in Uganda outbreak	The Serum Institute of India plans to manufacture 20,000 to 30,000 doses of the Oxford University experimental Ebola vaccine by the end of November for use in trials against an outbreak in Uganda.	https://www.reuters.com/world/africa/serum-institute-produce-ebola-vaccine-use-uganda-outbreak-2022-10-17/
17/10/2022	MoH Uganda	News	Ebola Outbreak Statistics 2022	The new cases lift the number of lab-confirmed cases to 60. So far, 24 deaths have been reported among the patients with confirmed infections. Uganda also has 20 suspected cases from earlier in the outbreak, all of them fatal.	https://www.health.go.ug/ebola/
16/10/2022	BBC	News	Ebola in Uganda: Three-week lockdown announced for two districts	A three-week lockdown has been declared in two districts of Uganda as the country battles an Ebola outbreak.	https://www.bbc.com/news/world-africa-63273603
14/10/2022	ECDC	Report	Communicable disease threats report, 9-15 October 2022, week 41	According to World Health Organisation (WHO) and the Ugandan officials, as of 12 October 2022, there have been 54 confirmed cases of Ebola virus disease (EVD), including 19 deaths. Among these, 11 healthcare workers were infected and four died.	https://www.ecdc.europa.eu/en/publications-data/communicable-disease-threats-report-9-15-october-2022-week-41

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13/10/2022	UKHSA	News	UK announces support to help Uganda manage Ebola outbreak	The support includes £2.2m - UGX9.3bn - for UN agencies working with the Government of Uganda in the Ebola response.	https://www.gov.uk/government/news/uk-announces-support-to-help-uganda-manage-ebola-outbreak
13/10/2022	WHO	Report	Highlights from the Meeting of the Strategic Advisory Group of Experts (SAGE) on Immunization – 3-6 October 2022	SAGE recommendations on the current Monkeypox, Poliomyelitis, Respiratory Syncytial Virus, COVID-19, and the Sudan ebolavirus outbreak	https://cdn.who.int/media/docs/default-source/immunization/sage/2022/october/highlights_sage_oct_2022.pdf?sfvrsn=69f947c4_5
13/10/2022	WHO	Report	WEEKLY BULLETIN ON OUTBREAKS AND OTHER EMERGENCIES	There have been 20 suspected cases, all fatal. Between Sep 19 and Oct 9, 68 cases of the virus were detected, including the 20 suspected cases and 48 lab-confirmed cases. 37 fatalities have been registered including 17 confirmed cases, for an overall case fatality ratio of 54.4%, and 35.4% among confirmed cases. Cases seem to be declining, though deaths are increasing.	https://apps.who.int/iris/bitstream/handle/10665/363497/OEV41-0309102022.pdf
13/10/2022	The Observer	News	Uganda to trial two vaccines for rare Ebola virus strain	The ministry of Health and the World Health Organization (WHO) are planning to try out two vaccines for the Ebola Sudan virus to try and curb the spread of the rare strain. The vaccines include one developed at the University of Oxford in the United Kingdom, and the other manufactured by Sabin in the United States.	https://www.observer.ug/news/headlines/75503-uganda-to-trial-two-vaccines-for-rare-ebola-virus-strain
12/10/2022	ECDC	Report	Ebola outbreak in Uganda under ECDC monitoring	The outbreak is still relatively limited in size (48 cases). More importantly, transmission has not been documented in densely populated areas. The spread of the ongoing outbreak to other areas within Uganda and/or in neighbouring countries cannot be excluded.	https://www.ecdc.europa.eu/en/news-events/ebola-outbreak-uganda-under-ecdc-monitoring
07/10/2022	MoH Uganda	Guidelines	TRAVEL ADVISORY ON EBOLA VIRUS DISEASE (EVD) OUTBREAK	Mudembe district is the epicenter of the outbreak with sporadic cases in Kassanda, Kyegegwa, Kagadi and Bunyagabu districts. All these districts are more than 100km away from the capital city, Kampala. The rest of the country is free from Ebola and there are no travel restrictions. The country is safe for all national and international travelers within the country.	https://www.health.go.ug/2022/10/07/travel-advisory-on-ebola-virus-disease-evd-outbreak/
06/10/2022	UKHSA	Guidelines	Public health message to all NHS service providers regarding Ebola virus outbreak in Uganda (Sudan ebolavirus)	Recommendations to public health service providers in response to the Ebola outbreak (SUDV) in Uganda.	https://www.gov.uk/government/publications/ebola-outbreak-of-sudan-ebolavirus-in-uganda/public-health-message-to-all-nhs-service-providers-regarding-ebola-virus-outbreak-in-uganda-sudan-ebolavirus
06/10/2022	UKHSA	News	UKHSA monitoring Ebola outbreak in East Africa	The UK Health Security Agency (UKHSA) is currently monitoring an outbreak of Ebola virus disease cases in Uganda.	https://www.gov.uk/government/news/ukhsa-monitoring-ebola-outbreak-in-east-africa
06/10/2022	US Embassy in Uganda	News	Health Alert – Enhanced Screening at Designated U.S. Airports-U. S. Embassy Kampala, Uganda – October 6, 2022	As of October 6, at 11:59 p.m. ET, all U.S.-bound passengers who have been in Uganda in the 21 days prior to their arrival will be routed to one of five designated airports for enhanced screening.	https://ug.usembassy.gov/health-alert-enhanced-screening-at-designated-u-s-airports-u-s-embassy-kampala-uganda-october-6-2022/
06/10/2022	US CDC	Guidelines	HAN - Outbreak of Ebola virus disease (Sudan ebolavirus) in Central Uganda	CDC is issuing this Health Alert Network (HAN) Health Advisory to summarize CDC's recommendations for U.S. public health departments and clinicians, case identification and testing, and clinical laboratory biosafety considerations.	https://emergency.cdc.gov/han/2022/han00477.asp
05/10/2022	CIDRAP	News	Ebola kills another health worker in Uganda outbreak	63 confirmed and probable cases have been reported, including 29 deaths.	https://www.cidrap.umn.edu/news-perspective/2022/10/ebola-kills-another-health-worker-uganda-outbreak
04/10/2022	ASPR	News	ASPR awards \$110 million to advance development, procure therapeutic for Sudan ebolavirus	The Administration for Strategic Preparedness and Response (ASPR) today announced a \$109.8 million contract with Mapp Biopharmaceutical Inc., for the advanced development and potential purchase of MBP134, a monoclonal antibody therapeutic to treat Sudan ebolavirus (SUDV).	https://aspr.hhs.gov/newsroom/Pages/Sudan-ebolavirus-Sept2022.aspx
04/10/2022	European Commission	News	Ebola outbreak: EU provides immediate support to Uganda	The EU has mobilised an initial €200,000 in emergency funding to support the Uganda Red Cross. The actions focus on coordination, surveillance with contact tracing, risk communication, community engagement, and safe and dignified burials.	https://civil-protection-humanitarian-aid.ec.europa.eu/news-stories/news/ebola-outbreak-eu-provides-immediate-support-uganda-2022-10-04_en
04/10/2022	NCDC	News	NCDC on Alert Mode Following the Outbreak of Ebola Virus Disease (EVD) Detected in Uganda	Based on available data, the overall risk of importation of the Ebola virus and the impact on the health of Nigerians has been assessed as high. Despite this risk assessment, Nigeria has the capacity – technical, human (health workforce), and diagnostic - to respond effectively in the event of an outbreak.	https://ncdc.gov.ng/news/418/ncdc-on-alert-mode-following-the-outbreak-of-ebola-virus-disease-%28evd%29-detected-in-uganda
04/10/2022	US CDC	News	Ebola in Uganda - Traveler notice	The Ministry of Health of Uganda has declared an Ebola outbreak in several districts in Uganda. Avoid non-essential travel to these regions.	https://wwwnc.cdc.gov/travel/notices/alert/ebola-in-uganda

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03/10/2022	UKHSA	Guidelines	Ebola: returning workers scheme (RWS)	Advice for people returning to the UK after working in an Ebola affected area.	https://www.gov.uk/guidance/ebola-returning-workers-scheme
03/10/2022	CIDRAP	Report	Ebola sickens 8 more in Uganda; doctor among latest deaths	Over the past 3 days, Uganda's health ministry has reported 8 more Ebola Sudan cases, along with 2 more deaths, with officials also announcing that a doctor is among the fatal cases.	https://www.cidrap.umn.edu/news-perspective/2022/10/ebola-sickens-8-more-uganda-doctor-among-latest-deaths
01/10/2022	WHO Africa	News	Uganda Defines Priorities and Needs in Its Ebola Response Plan	The Ministry of Health and health development partners in Uganda, including the World Health Organization (WHO), have launched the country's Ebola response plan highlighting planned activities, priority needs and gaps.	https://www.afro.who.int/countries/uganda/news/uganda-defines-priorities-and-needs-its-ebola-response-plan
30/09/2022	UKHSA	Guidance	Ebola and Marburg haemorrhagic fevers: outbreaks and case locations	Information about incidents and outbreaks of Ebola and Marburg, both viral haemorrhagic fevers (VHF).	https://www.gov.uk/guidance/ebola-and-marburg-haemorrhagic-fevers-outbreaks-and-case-locations
30/09/2022	ECDC	Report	Communicable disease threats report, 25 September - 1 October 2022, week 39	The ECDC Communicable Disease Threats Report (CDTR) is a weekly bulletin for epidemiologists and health professionals on active public health threats. This issue covers the period 25 September - 1 October 2022 and includes updates on COVID-19, Ebola, West Nile Virus, Chikungunya and dengue, influenza A, swine flu, and hepatitis.	https://www.ecdc.europa.eu/en/publications-data/communicable-disease-threats-report-25-september-1-october-2022-week-39
30/09/2022	CIDRAP	News	Uganda Ebola cases jump to 50, with 1 more death	The number of people infected in Uganda's Ebola Sudan outbreak jumped to 50 today, with 14 more cases added to the total. One more person died, raising the fatality count to 24.	https://www.cidrap.umn.edu/news-perspective/2022/09/uganda-ebola-cases-jump-50-1-more-death
29/09/2022	STAT NEWS	Article	Ebola experimental vaccine trial may begin soon in Uganda	There are two licensed vaccines that protect against the Ebola Zaire species, but the Zaire and Sudan versions of these viruses are different enough from one another that those two vaccines will not work against this virus. There are six candidate vaccines, as experimental vaccines are called, that target Ebola Sudan. But only three have advanced to the stage where human clinical trials have begun.	https://www.statnews.com/2022/09/29/ebola-experimental-vaccine-trial-may-begin-soon-in-uganda/
29/09/2022	CIDRAP	News	Uganda Ebola cases jump to 50, with 1 more death	The number of people infected in Uganda's Ebola Sudan outbreak jumped to 50 today, with 14 more cases added to the total, the World Health Organization (WHO) African region said today on Twitter.	https://www.cidrap.umn.edu/news-perspective/2022/09/uganda-ebola-cases-jump-50-1-more-death
26/09/2022	WHO	Report	Sudan Virus Vaccine Tracker - List of vaccine candidates in research & development	The WHO is tracking advances and ongoing progress from research and development to clinical trials of vaccines for Sudan virus (SUDV).	https://www.who.int/publications/m/item/sudan-virus-vaccine-tracker---list-of-vaccine-candidates-in-research---development
26/09/2022	US CDC	Report	September 2022 Uganda, Mubende District	On September 20, 2022, the Ugandan Ministry of Health confirmed an outbreak of Ebola virus disease (EVD) (Sudan virus) in Mubende District, in western Uganda.	https://www.cdc.gov/vhf/ebola/outbreaks/uganda/2022-sep.html
26/09/2022	WHO	Disease Outbreak News	Ebola Disease caused by Sudan virus - Uganda	On 20 September 2022, Uganda health authorities declared an outbreak of Ebola disease, caused by Sudan virus, following laboratory confirmation of a patient from a village in Madudu sub-county, Mubende district, central Uganda. As of 25 September 2022, a cumulative number of 18 confirmed and 18 probable cases have been reported from Mubende, Kyegegwa and Kassanda districts, including 23 deaths, of which five were among confirmed cases (CFR among confirmed cases 28%).	https://www.who.int/emergencies/disease-outbreak-news/item/2022-DON410
20/09/2022	Africa CDC	Report	Uganda Reported an Outbreak of Ebola Virus Disease	Announcement of first ebola case of the Uganda 2022 outbreak by the Africa CDC	https://africacdc.org/news-item/uganda-reported-an-outbreak-of-ebola-virus-disease/
21/12/2020	FDA	News	FDA approves treatment for ebola virus	Ebanga (Ansuvimab-zykl), a human monoclonal antibody, for the treatment for Zaire ebolavirus (Ebolavirus) infection in adults and children. Ebanga blocks binding of the virus to the cell receptor, preventing its entry into the cell.	https://www.fda.gov/drugs/news-events-human-drugs/fda-approves-treatment-ebola-virus
14/10/2020	FDA	News	FDA Approves First Treatment for Ebola Virus	Inmazeb (atoltivimab, maftivimab, and odesivimab-ebgn), a mixture of three monoclonal antibodies, as the first FDA-approved treatment for Zaire ebolavirus (Ebola virus) infection in adult and pediatric patients. Inmazeb targets the glycoprotein that is on the surface of Ebola virus and block the entry into the cell.	https://www.fda.gov/news-events/press-announcements/fda-approves-first-treatment-ebola-virus

Ebola Sudan virus - 2022 outbreak

Factsheet and news

UPDATE OF 15 NOVEMBRE 2022

This document is composed of 3 different tabs: **General information**, **Relevant news**, and **Scientific articles**
The content and presentation of this document are subject to change as the situation evolves.
Every information presented comes from a valid and credible source.

The redaction of this document is coordinated by:

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The "Scientific articles" tab presents relevant articles published on peer-reviewed scientific journals or pre-print platforms since May 2022

Date	Source	Type of publication	Title	Key facts	Link
09/11/2022	Lancet Infect Dis	Research article	Differential symptomatology of possible and confirmed Ebola virus disease infection in the Democratic Republic of the Congo: a retrospective cohort study	Establishing the exact time an individual first had symptoms is essential to assessing their infection risk. An individual's exposure history remains of paramount importance, especially in the early phase. Ebola virus disease vaccination reduces symptom severity and should also be considered when assessing the likelihood of infection.	https://doi.org/10.1016/S1473-3099(22)00584-9
09/11/2022	Commun Biol	Research article	Persistent intraocular Ebola virus RNA is associated with severe uveitis in a convalescent rhesus monkey	We show the clinical natural history, resultant ocular pathology, intraocular antigen-specific antibody detection, and persistent intraocular EBOV RNA detected long after clinical resolution.	https://www.nature.com/articles/s42003-022-04158-2
07/11/2022	Nature	News	Can mRNA vaccines transform the fight against Ebola?	On the heels of successful COVID-19 mRNA vaccines, the technology could hold promise in protecting against another deadly pathogen.	https://www.nature.com/articles/d41586-022-03590-y
30/10/2022	Nature	News	Research successfully integrated into the Ebola outbreak response in Africa	New knowledge opens the door for testing new tools and vaccine disease outbreaks in Uganda.	https://www.nature.com/articles/d44148-022-00153-1
28/10/2022	BMJ	Opinion	Pregnancy in an Ebola outbreak—protecting women and health workers	Efforts to contain the spread of Ebola shouldn't compromise healthcare for women experiencing pregnancy complications	https://doi.org/10.1136/bmj.o2579
28/10/2022	BMJ	News	Ebola: Uganda plans trials of two vaccines as cases rise	Ugandan officials are set to start trials of two vaccines against Ebola virus disease in an attempt to halt further spread of the infection.	https://doi.org/10.1136/bmj.o2589
27/10/2022	Emerg Microbes Infect	Research article	Natural history of Sudan ebolavirus infection in rhesus and cynomolgus macaques	Infected macaques exhibited hallmark features of human EVD. The early stage was typified by viremia, granulocytosis, lymphopenia, albuminemia, thrombocytopenia, and decreased expression of HLA-class transcripts. At mid-to-late disease, animals developed fever and petechial rashes, and expressed high levels of pro-inflammatory mediators, pro-thrombotic factors, and markers indicative of liver and kidney injury. End-stage disease was characterized by shock and multi-organ failure. In summary, macaques recapitulate human SUDV disease, supporting these models for use in the development of vaccines and therapeutics.	https://doi.org/10.1080/22221751.2022.2086072
26/10/2022	Science	News	Merck locates frozen batch of undisclosed ebola vaccine, will donate for testing in Uganda's outbreak	Merck locates frozen batch of undisclosed ebola vaccine, will donate for testing in Uganda's outbreak	https://www.science.org/content/article/uganda-may-use-destroyed-ebola-vaccine-merck-fight-its-growing-outbreak
02/11/2022	Vaccine	Research article	Immunogenicity of rVSVΔG-ZEBOV-GP Ebola vaccine (ERVEBO®) in African clinical trial participants by age, sex, and baseline GP-ELISA titer: A post hoc analysis of three Phase 2/3 trials	These data demonstrate that rVSVΔG-ZEBOV-GP elicits a robust and durable immune response through 12 months postvaccination in participants regardless of age, sex, or BL GP-ELISA titer. The higher immune responses observed in women and participants with pre-existing immunity are consistent with those described previously and for other vaccines.	https://doi.org/10.1016/j.vaccine.2022.09.037
20/10/2022	Lancet Infect Dis	Research article	Safety and immunogenicity of an Ad26.ZEBOV booster dose in children previously vaccinated with the two-dose heterologous Ad26.ZEBOV and MVA-BN-Filo Ebola vaccine regimen: an open-label, non-randomised, phase 2 trial	A booster dose of Ad26.ZEBOV in children who had received the two-dose Ad26.ZEBOV and MVA-BN-Filo vaccine regimen more than 3 years earlier was well tolerated and induced a rapid and robust increase in binding antibodies against Ebola virus. These findings could inform Ebola vaccination strategies in paediatric populations.	https://doi.org/10.1016/s1473-3099(22)00594-1
15/10/2022	Vaccines	Research article	Development of a Well-Characterized Cynomolgus Macaque Model of Sudan Virus Disease for Support of Product Development	The primary objective of this study was to characterize the disease course in cynomolgus macaques exposed to Sudan virus (SUDV), to determine if infection in this species is an appropriate model for the evaluation of filovirus countermeasures under the FDA Animal Rule.	https://www.mdpi.com/2076-393X/10/10/1723
10/10/2022	BMJ	News	Ebola: Uganda battles fresh epidemic as infections threaten to spread	The outbreak has so far claimed the lives of 10 people, including a doctor and three other health workers, out of the total number of 43 confirmed cases. The health ministry tweeted on 6 October that four patients had been discharged from Mubende Hospital, with 39 continuing to receive treatment.	https://doi.org/10.1136/bmj.o2420

Ebola - Factsheet and news

08/10/2022	Lancet	Report	Experts hopeful about Ebola control in Uganda	Although there is no vaccine for the Sudan strain of Ebola virus, understanding of how best to prevent and manage Ebola virus infections has improved in the past decade.	https://doi.org/10.1016/S0140-6736(22)01924-9
07/10/2022	medRxiv	Preprint	Predicting the combined effects of case isolation, safe funeral practices, and contact tracing during Ebola virus disease outbreaks	In the absence of an approved vaccine and treatment, EVD management by proper and fast diagnostics in combination with epidemic awareness are fundamental. Awareness will particularly facilitate contact tracing and safe funeral practices. Moreover, proper and fast diagnostics are a major determinant of case isolation.	https://www.medrxiv.org/content/10.1101/2022.10.06.22280767v1
07/10/2022	Nature	News	Ebola outbreak in Uganda: how worried are researchers?	The rapid rise and spread of the lethal virus across five districts in Uganda have alarmed scientists, and raised fears that the outbreak will not be easy to contain.	https://www.nature.com/articles/d41586-022-03192-8
03/10/2022	PLoS One	Research article	First-in-human study to evaluate safety, tolerability, and immunogenicity of heterologous regimens using the multivalent filovirus vaccines Ad26.Filo and MVA-BN-Filo administered in different sequences and schedules: A randomized, controlled study	Phase 1, randomized, double-blind, placebo-controlled study enrolled healthy adults into four groups, to assess different Ad26.Filo and MVA-BN-Filo vaccine directionality and administration intervals. The primary endpoint was safety; immune responses against EBOV, SUDV, and MARV GPs. Twenty-one days post-dose 2, 100% of participants on active regimen responded to vaccination and exhibited binding antibodies against EBOV, SUDV, and MARV GPs; neutralizing antibody responses were robust against EBOV (85.7–100%), but lower against SUDV (35.7–100%) and MARV (0–57.1%) GPs. An Ad26.Filo booster induced a rapid further increase in humoral responses.	https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0274906
03/10/2022	Virological.org	Report	September 2022 Sudan Ebola virus disease outbreak in Uganda	The new Mubende Sudan Ebolavirus genome is 99.6% complete and most closely related to Nakisamata Sudan Ebolavirus strain that emerged in Luwero District, Uganda in May 2011.	https://virological.org/t/september-2022-sudan-ebola-virus-disease-outbreak-in-uganda/902
29/09/2022	Science	Editorial	Scientists race to test vaccines for Uganda's Ebola outbreak	An editorial on the prompt launch of clinical trial in Uganda to test the Sudan virus vaccines available in clinical phases through a ring-vaccination strategy.	https://www.science.org/content/article/scientists-race-test-vaccines-uganda-s-ebola-outbreak
29/09/2022	Lancet Infect Dis	News	New guidelines for treatment of Ebola virus disease	New guidelines recommend mAb114 and REGN-EB3 for the treatment of Ebola virus disease, but countries endemic for the disease may have trouble accessing them.	https://doi.org/10.1016/s1473-3099(22)00607-7
23/09/2022	Clin Microbiol Infect	Review	The Diagnostic Accuracy of Rapid Diagnostic Tests for Ebola Virus Disease: a Systematic Review	RDTs possess both a high sensitivity and specificity compared to RT-PCR amongst symptomatic patients presenting to Ebola Treatment Units. Our findings support the use of RDTs as a 'rule in' test to expedite treatment and vaccination.	https://doi.org/10.1016/j.cmi.2022.09.014
03/09/2022	Lancet Microbe	Review	Effects of therapies for Ebola virus disease: a systematic review and network meta-analysis	REGN-EB3 and mAb114 separately reduce mortality compared with ZMapp, remdesivir, or standard care in patients with Ebola virus disease. These findings suggest that health-care workers should prioritise the use of REGN-EB3 and mAb114 for patients with Ebola virus disease during future outbreaks.	https://doi.org/10.1016/s2666-5247(22)00123-9
01/09/2022	Vaccines	Review	Lessons Learned from the Development and Roll-Out of the rVSVΔG-ZEBOV-GP Zaire ebolavirus Vaccine to Inform Marburg Virus and Sudan ebolavirus Vaccines	This article provides insights into how the example of rVSVΔG-ZEBOV-GP can inform the development of vaccines for Sudan ebolavirus, Marburg virus, and other emerging epidemic diseases in terms of the types of approaches and data needed to support product registration, availability, and the use of a filovirus vaccine.	https://doi.org/10.3390/vaccines10091446
01/07/2022	Bull WHO	Review	Rapid diagnostic tests versus RT-PCR for Ebola virus infections: a systematic review and meta-analysis	The included rapid diagnostic tests did not detect all the Ebola virus disease cases. While the sensitivity and specificity of these tests are moderate, they are still valuable tools, especially useful for triage and detecting Ebola virus in remote areas.	https://doi.org/10.2471/blt.21.287496
01/03/2022	J Infect Public Health	Review	A systematic review of Ebola virus disease outbreaks and an analysis of the efficacy and safety of newer drugs approved for the treatment of Ebola virus disease by the US Food and Drug Administration from 2016 to 2020	Overall, Inmazeb is the preferred drug of choice over ZMapp or other drugs for the treatment of EVD, and Ebanga is a choice in patients with cardiovascular complications. In addition to that, supportive care is very essential to control the mortality rate.	https://doi.org/10.1016/j.jiph.2022.01.005
30/08/2021	Front Immunol	Research article	Review: Insights on Current FDA-Approved Monoclonal Antibodies Against Ebola Virus Infection	In this review, we summarize the efficacy and safety results of the PALM study and review current research questions for the further development of mAbs in pre-exposure or emergency post-exposure use.	https://doi.org/10.3389/fimmu.2021.721328
16/07/2021	Hum Vaccin Immunother	Review	Immunogenicity and safety of Ebola virus vaccines in healthy adults: a systematic review and network meta-analysis	A total of 21 randomized controlled trial, evaluating seven different vaccines with different doses, and 5,275 participants were analyzed. The best vaccine to be used to stop future outbreak of Ebola is the rVSVΔG-ZEBOV-GP vaccine at dose of 2 × 10 ⁷ PFU.	https://doi.org/10.1080/21645515.2021.1932214