Güncel Ebola ve Marburg Salgınları Ne öğrendik?

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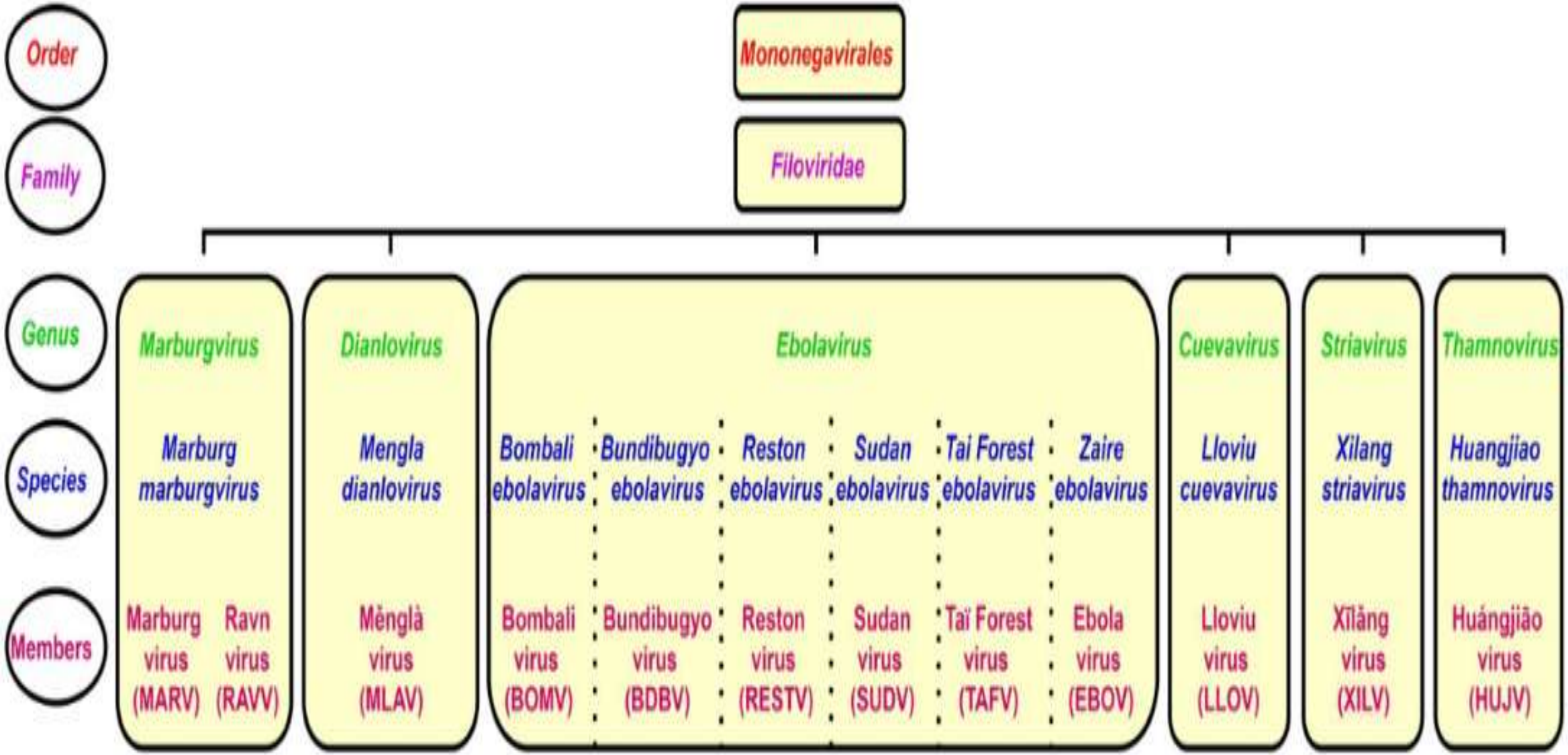
İnfeksiyon Hastalıkları ve Klinik Mikrobiyoloji Kliniği, İstanbul


Order
Mononegavirales
Family
Filoviridae
Genus
Marburgvirus
Dianlovirus
Ebolavirus
Cuevavirus
Striavirus
Thamnovirus
Species
Marburg marburgvirus
Mengla dianlovirus
Bombali ebolavirus
Bundibugyo ebolavirus
Reston ebolavirus
Sudan ebolavirus
Tai Forest ebolavirus
Zaire ebolavirus
Lloviu cuevavirus
Xilang striavirus
Huangjiao thamnovirus
Members
Marburg virus (MARV)
Ravn virus (RAVV)
Měnglà virus (MLAV)
Bombali virus (BOMV)
Bundibugyo virus (BDBV)
Reston virus (RESTV)
Sudan virus (SUDV)
Taï Forest virus (TAFV)
Ebola virus (EBOV)
Lloviu virus (LLOV)
Xīlàng virus (XILV)
Huángjiāo virus (HUJV)

Postgraduate Medical Journal (August 1973) **49**, 542–546.

Marburg virus disease

G. A. MARTINI
M.D.

University of Marburg, West Germany

Summary

In the late summer of 1967 an epidemic in thirty-one patients in Germany and Yugoslavia of a disease transmitted from African green monkeys occurred; seven patients died. The incubation period was from 4 to 7 days. The main clinical features were headache, high fever, diarrhoea, a very characteristic rash, severe bleeding tendency and involvement of the central nervous system. Nearly all organs were involved and showed severe cell necroses. The aetiological agent was identified as an RNS-virus and was named Marburg virus. It was detected in the blood, urine, throat-washing and seminal fluid.

In August 1967 a hitherto unknown severe infectious disease with features of haemorrhagic fever was observed simultaneously in Germany and Yugoslavia which could be traced to imported monkeys (*Cercopithecus aethiops*) from Uganda.

Until then only single cases of diseases transmitted by monkeys were known (e.g. herpes simiae, rabies, hepatitis). The new disease was the first to occur as an epidemic.

Within a few hours the fever increased to 39°C without rigors and reached a maximum on the 3rd and 4th days; the temperature fell gradually afterwards with a second peak between the 12th and 20th days.

Relative bradycardia occurred, especially in the early days, whereas tachycardia was only found in the fatal cases. Many patients complained from the beginning about nausea and suffered from frequent, and occasionally uncontrollable, vomiting. Watery diarrhoea with blood or mucus occurred up to ten times daily with symptoms and signs of severe dehydration and acute renal failure.

All patients developed a characteristic maculopapular rash on the 5th to 8th days. It began on the face and on the buttocks, then progressed to the trunk and extremities. Most characteristic were dark red pinhead papules round the hair follicles. After 1 or 2 days it developed into a sharply delineated maculo-papular lesion which coalesced into a more diffuse and dark red erythema. Cutaneous purpura was rare. The rash was in many patients accompanied by scrotal dermatitis or erythema of the greater labia. About the end of the second week

- 1967'de, çocuk felci aşısı üretiminde çalışan birkaç işçi, Uganda'dan ithal yeşil maymun ile ilişkili, genellikle ölümcül yeni bir hastalığa yakalanarak Avrupa'daki üç farklı yerde hastalandı (Marburg, Frankfurt ve Belgrad)

Bulletin of the World Health Organization, 56 (2): 271-293 (1978)

Ebola haemorrhagic fever in Zaire, 1976

Report of an International Commission [1]

Between 1 September and 24 October 1976, 318 cases of acute viral haemorrhagic fever occurred in northern Zaire. The outbreak was centred in the Bumba Zone of the Equateur Region and most of the cases were recorded within a radius of 70 km of Yambuku, although a few patients sought medical attention in Bumba, Abumombazi, and the capital city of Kinshasa, where individual secondary and tertiary cases occurred. There were 280 deaths, and only 38 serologically confirmed survivors.

The index case in this outbreak had onset of symptoms on 1 September 1976, five days after receiving an injection of chloroquine for presumptive malaria at the outpatient clinic at Yambuku Mission Hospital (YMH). He had a clinical remission of his malaria symptoms. Within one week several other persons who had received injections at YMH also suffered from Ebola haemorrhagic fever, and almost all subsequent cases had either received injections at the hospital or had had close contact with another case. Most of these occurred during the first four weeks of the epidemic, after which time the hospital was closed, 11 of the 17 staff members having died of the disease. All ages and both sexes were affected, but women 15–29 years of age had the highest incidence of disease, a phenomenon strongly related to attendance at prenatal and outpatient clinics at the hospital where they received injections. The overall secondary attack rate was about 5%, although it ranged to 20% among close relatives such as spouses, parent or child, and brother or sister.

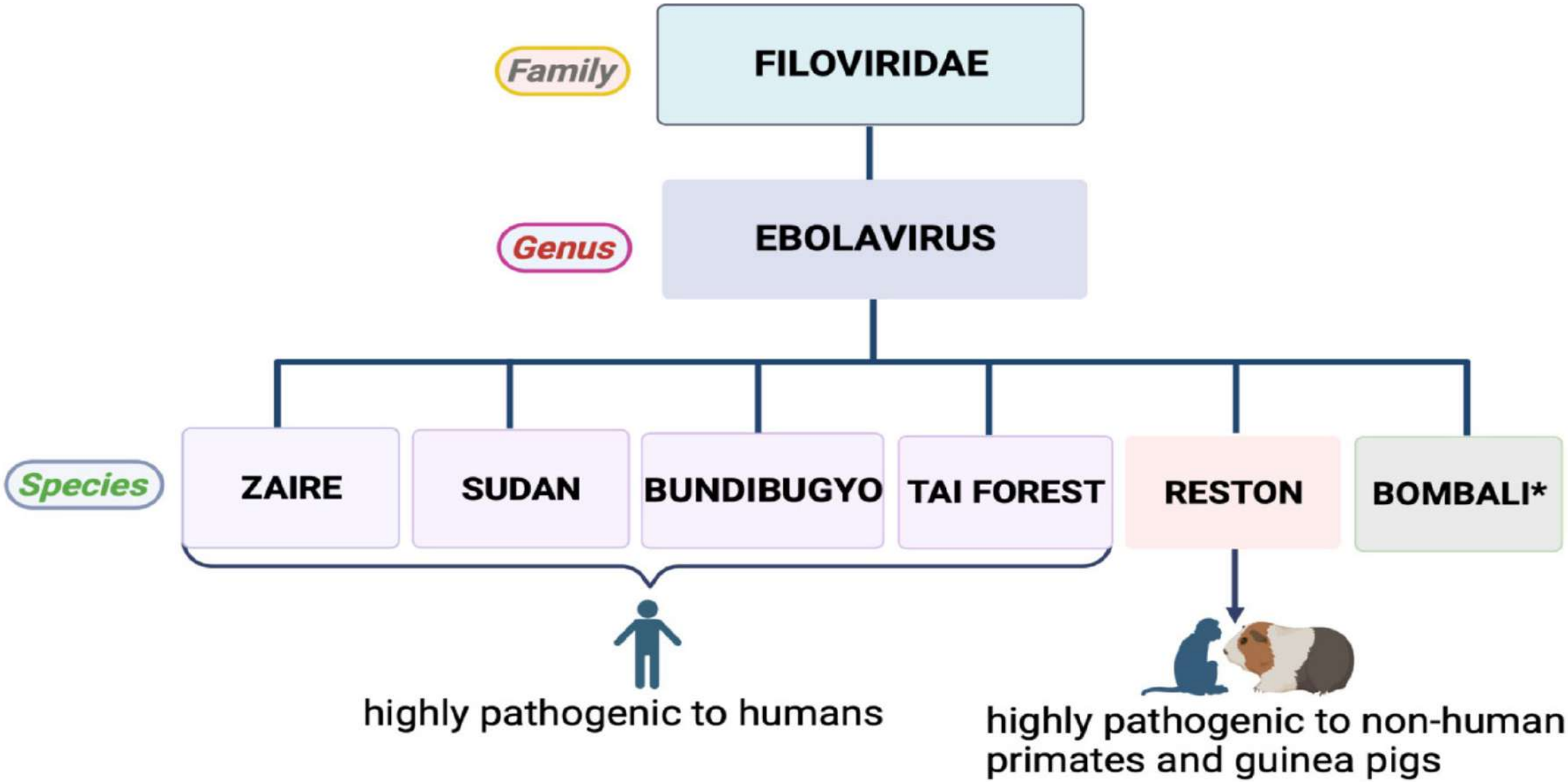
Active surveillance disclosed that cases occurred in 55 of some 550 villages which were examined house-by-house. The disease was hitherto unknown to the people of the affected region. Intensive search for cases in the area of north-eastern Zaire between the Bumba Zone and the Sudan frontier near Nzara and Maridi failed to detect definite evidence of a link between an epidemic of the disease in that country and the outbreak near Bumba. Nevertheless it was established that people can and do make the trip between Nzara and Bumba in not more than four days: thus it was regarded as quite possible that an infected person had travelled from Sudan to Yambuku and transferred the virus to a needle of the hospital while receiving an injection at the outpatient clinic.

Both the incubation period, and the duration of the clinical disease averaged about one week. After 3–4 days of non-specific symptoms and signs, patients typically experienced progressively severe sore throat, developed a maculopapular rash, had intractable abdominal pain, and began to bleed from multiple sites, principally the gastrointestinal tract. Although laboratory determinations were limited and not conclusive, it was concluded that pathogenesis of the disease included non-icteric hepatitis and possibly acute pancreatitis as well as disseminated intravascular coagulation.

This syndrome was caused by a virus morphologically similar to Marburg virus, but immunologically distinct. It was named Ebola virus. The agent was isolated from the blood from one patient disclosed persistent viraemia of $10^{6.5}$–$10^{4.5}$ infectious units from the third day of illness until death on the eighth day. Ebola virus particles were found in formalin-

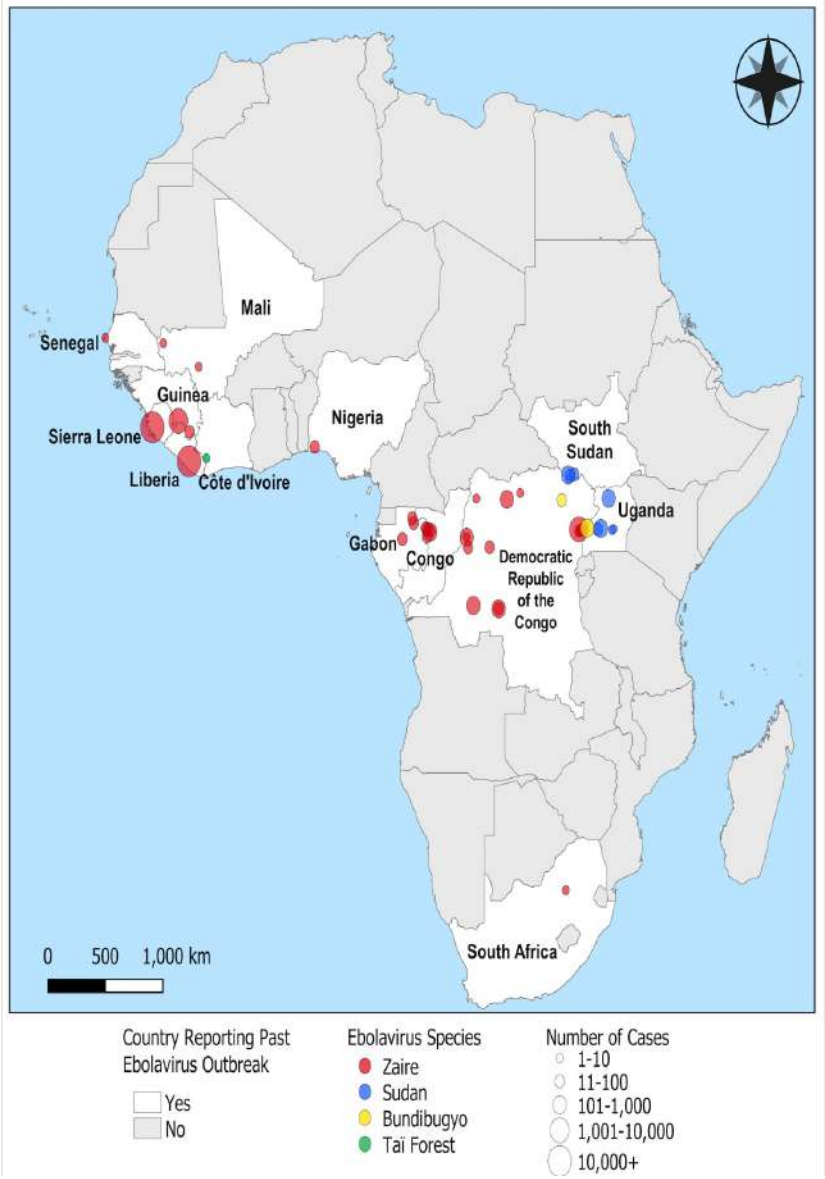
Fig. 1. Locations of the principal centres of the outbreaks of Ebola haemorrhagic fever, Sudan-Zaire, 1976.

- 1 Eylül - 24 Ekim 1976, Zaire'de 318 akut viral hemorajik ateş olgusu
- İndeks vaka, Yambuku Hastanesi'nde ayakta tedavi kliniğinde sıtma için klorokin enjeksiyonu olan Sudan'dan gelen kişi
- Morfolojik olarak Marburg virusuna benzeyen, ancak immünolojik olarak farklı virus *Ebolavirus* olarak adlandırıldı


Family
FILOVIRIDAE
Genus
EBOLAVIRUS
Species
ZAIRE
SUDAN
BUNDIBUGYO
TAI FOREST
RESTON
BOMBALI*
highly pathogenic to humans
highly pathogenic to non-human primates and guinea pigs

- *Zaire ebolavirus* ilk keşfedilen tür
- *Sudan ebolavirus* 1976'da tanımlandı
- *Tai Forest ebolavirus* 1994’de sadece bir kişi, Fildişi sahili
- *Bundibugyo ebolavirus* 2007’de tanımlandı,

Uganda ve DKC’de küçük salgınlardan sorumlu



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Disease Outbreak News (DONs)

Ebola disease | From | To

Regions | Countries/Areas

Disease Outbreak News
14 January 2023 | Ebola disease caused by Sudan ebolavirus – Uganda

Disease Outbreak News
8 December 2022 | Ebola disease caused by Sudan ebolavirus – Uganda

Disease Outbreak News
24 November 2022 | Ebola disease caused by Sudan ebolavirus – Uganda

Disease Outbreak News
10 November 2022 | Ebola disease caused by Sudan ebolavirus – Uganda

Disease Outbreak News
28 October 2022 | Ebola Disease caused by Sudan virus - Uganda

MAY 6, 2024

Outbreak History

AT A GLANCE

Ebola disease was first identified in 1976 after an outbreak in what is now the Democratic Republic of Congo. Since then, these viruses have emerged periodically from the unknown animal that carries them and infected people in several African countries. Expand the sections below to read a brief summary of all known cases and outbreaks, organized by year.

Ebola Disease Outbreaks by Species and Size, Since 1976

ON THIS PAGE

Cases and Outbreaks of Ebola Disease by Year

COLLAPSE ALL —

2022 +

2021 +

2020 +

2018 +

2017 —

Democratic Republic of the Congo

- Species: ***Zaire ebolavirus***
- Reported number of cases: **8**
- Reported number of deaths and percentage of fatal cases: **4 (50%)**

On May 11, 2017, the Ministry of Public Health of the Democratic Republic of the Congo notified international public health agencies of a cluster of suspected cases of Ebola Virus Disease (EVD) in the Likati health zone of the province of Bas Uélé. The

A TIMELINE OF PANDEMICS

Time and again, humanity suffered through large pandemics

Our World in Data

Historical knowledge about many pandemics in the past is sparse. Pandemics with unknown death tolls are shown as triangles, while those with an estimated death toll are shown as circles.

Pandemics before the 19th century, with an estimated death toll

1347–1353 Black Death
Killed **50-60% of Europe's population**[1], an estimated **50 million** people[1], within 6 years. Its global death toll is unknown. Recurring outbreaks followed, making up what's known as the second plague pandemic (1347–c.1690).

1492–1600 Columbian Exchange
Native Americans had a pre-1492 population size of around 54 million people.[2] The Columbian Exchange killed around **90%** of the population[2,3], an estimated **48 million** people, over the following century, through the introduction of diseases such as smallpox, cholera, measles, diphtheria, flu, typhoid fever, and bubonic plague, along with conquest, slavery and war.

Pandemics since the 19th century

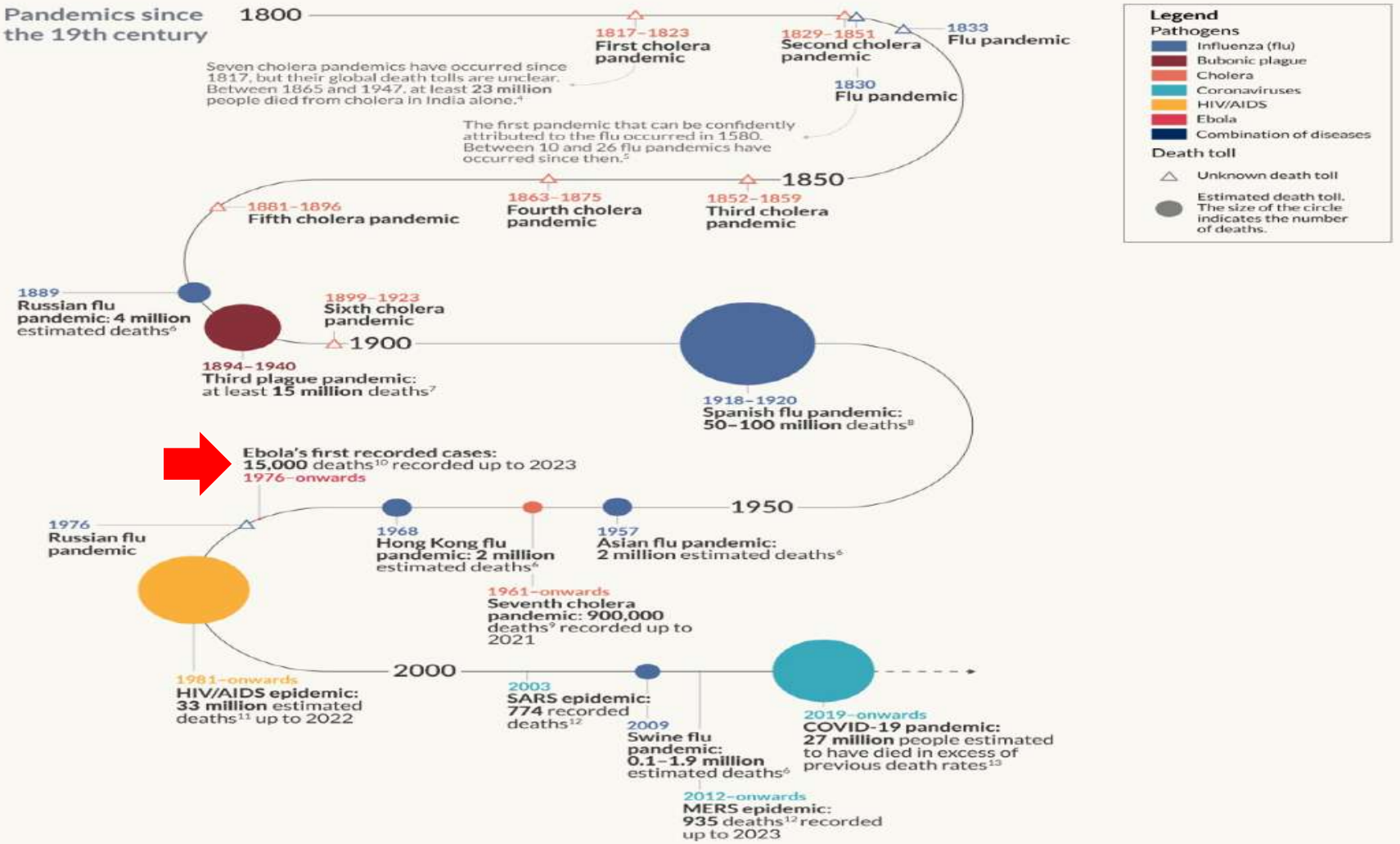


Table 1.

Previous Ebola outbreaks/infections in humans. (Adapted from CDC [6].)

year	countries	no. outbreaks	no. cases	no. deaths	viral st
1970–1979	Zaire, 1976[a]	2	319	281	*Zaire*
	Sudan, 1976[b]	2	318	173	*Sudan*
	United Kingdom, 1976	1	1	0	*Sudan*
1980–1989	Philippines, 1989–1990	1	3[c]	0	*Reston*
1990–1999	USA, 1990	1	4[c]	0	*Reston*
	Gabon, 1994	3	149	97	*Zaire*
	Côte d'Ivoire, 1994[d]	1	1	0	*Taï Forest*
	DRC, 1995	1	315	250	*Zaire*
	Gabon/South Africa, 1996[e]	1	2	1	*Zaire*
	Russia, 1996	1	1	1	*Zaire*
2000–2009	Uganda, 2000–2001	2	574	261	*Sudan/Bundibugyo*
	Gabon, 2001–2002	1	65	53	*Zaire*
	Republic of Congo, 2001–2002	3	235	200	*Zaire*
	Sudan[b], 2004	1	17	7	*Sudan*
	Russia, 2004	1	1	1	*Zaire*
	DRC, 2007	2	296	202	*Zaire*
	Philippines, 2008	1	6[c]	0	*Reston*
2010–2013	Uganda, 2011–2013	3	18	8	*Sudan*
	DRC, 2012	1	36	13	*Bundibugyo*

[a]Now Democratic Republic of Congo (DRC).
[b]Now South Sudan.
[c]Asymptomatic infection.

Ebola nehri yakınındaki bir hastane ve çevresinde, ölüm %88
Kontamine iğnelerin yeniden kullanımının virüs yayılmasında en önemli etken olduğunu öğrendik

> Emerg Infect Dis. 2005 Feb;11(2):283-90. doi: 10.3201/eid1102.040533.

Wild animal mortality monitoring and human Ebola outbreaks, Gabon and Republic of Congo, 2001–2003

Pierre Rouquet [1], Jean-Marc Froment, Magdalena Bermejo, Annelisa Kilbourn, William Karesh, Patricia Reed, Brice Kumulungui, Philippe Yaba, André Délicat, Pierre E Rollin, Eric M Leroy

Affiliations + expand

PMID: 15752448 PMCID: PMC3320460 DOI: 10.3201/eid1102.040533

Abstract

- 2001-2003 arasında Gabon ve DKC arasındaki alanda görülen insan *Ebolavirus* salgınları infekte vahşi hayvan leşlerinin ellenmesinden kaynaklanmış

outbreaks, weeks before they occurred.

Review > Philos Trans R Soc Lond B Biol Sci. 2017 May 26;372(1721):20160297.
doi: 10.1098/rstb.2016.0297.

The Ebola outbreak, 2013–2016: old lessons for new epidemics

Cordelia E M Coltart [1], Benjamin Lindsey [2], Isaac Ghinai [3], Anne M Johnson [3], David L Heymann [2 4]

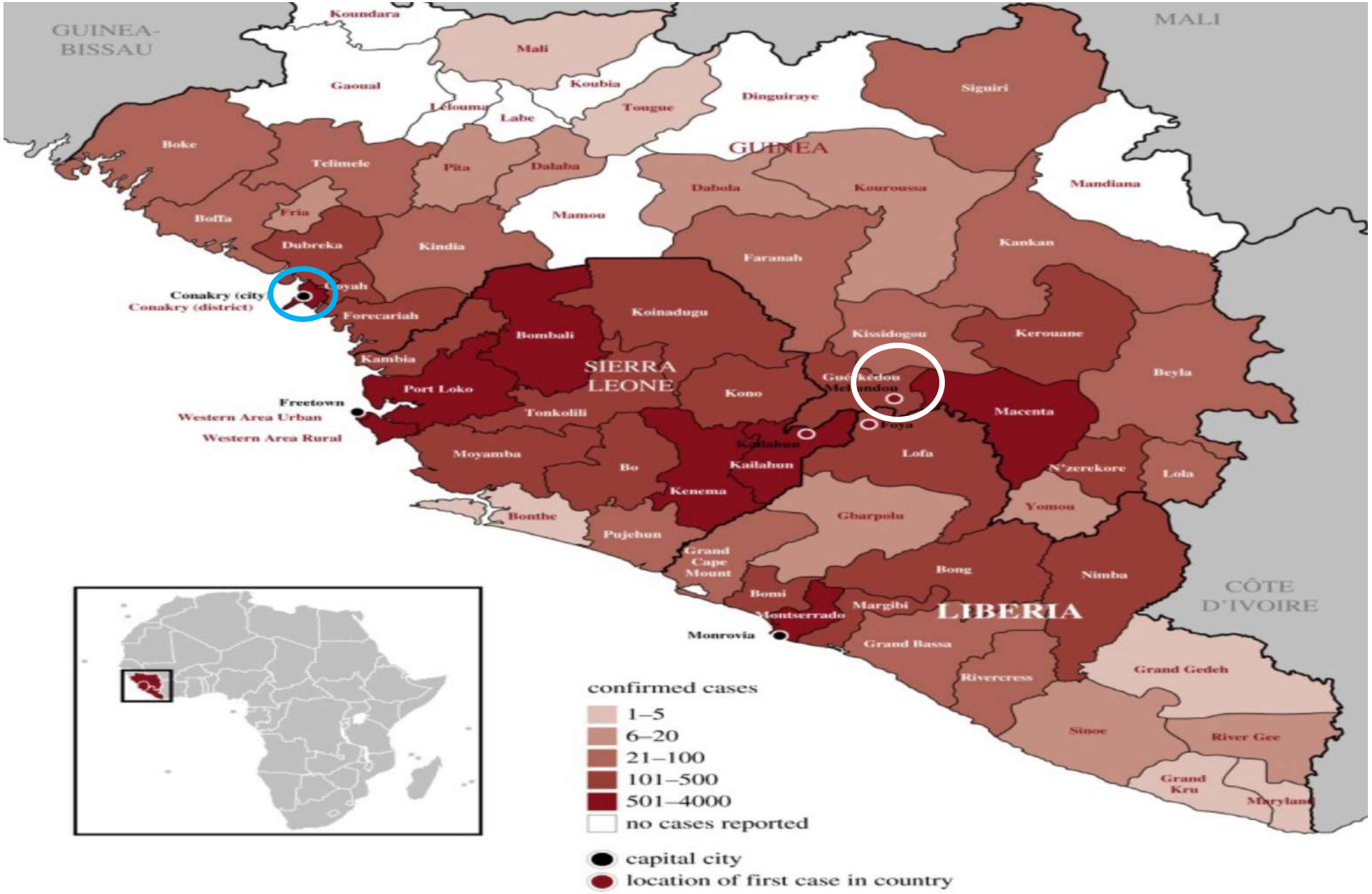
Affiliations + expand

PMID: 28396469 PMCID: PMC5394636 DOI: 10.1098/rstb.2016.0297

Abstract

Ebola virus causes a severe haemorrhagic fever in humans with high case fatality and significant epidemic potential. The 2013–2016 outbreak in West Africa was unprecedented in scale, being larger than all previous outbreaks combined, with 28 646 reported cases and 11 323 reported deaths. It was also unique in its geographical distribution and multicountry spread. It is vital that the lessons learned from the world's largest Ebola outbreak are not lost. This article aims to provide a detailed description of the evolution of the outbreak. We contextualize this outbreak in relation to previous Ebola outbreaks and outline the theories regarding its origins and emergence. The outbreak is described by country, in chronological order, including epidemiological parameters and implementation of outbreak containment strategies. We then summarize the factors that led to rapid and extensive propagation, as well as highlight the key successes, failures and lessons learned from this outbreak and the response.This article is part of the themed issue 'The 2013–2016 West African Ebola epidemic: data, decision-making and disease control'.

- Virusun uluslararası sınırı aştığı ve küresel halk sağlığı tehdidine yol açan ilk salgın
- *Zaire* suşunun neden olduğu bu salgın, 28.646 vaka ve 11.323 ölümle önceki tüm salgınların toplamından daha büyük
- Bundan önce, *Zaire ebolavirus*'un etken olduğu tüm salgınlar Orta Afrika'da


GUINEA-BISSAU
MALI
GUINEA
SIERRA LEONE
LIBERIA
CÔTE D'IVOIRE
Koundara
Mali
Gaoual
Koubia
Tougue
Dinguiraye
Siguiri
Labe
Boke
Telimele
Pita
Dalaba
Dabola
Kouroussa
Mandiana
Boffa
Fria
Mamou
Dubreka
Kindia
Faranah
Kankan
Conakry (city)
Conakry (district)
Forecariah
Koinadugu
Bombali
Kambia
Kissidogou
Kerouane
Port Loko
Kono
Beyla
Freetown
Western Area Urban
Western Area Rural
Tonkolili
Macenta
Moyamba
Bo
Kailahun
Lofa
N'zerekore
Lola
Kenema
Yomou
Bonthe
Gbarpolu
Pujehun
Grand Cape Mount
Bong
Nimba
Bomi
Margibi
Montserrado
Monrovia
Grand Bassa
Rivercress
Grand Gedeh
Sinoe
River Gee
Grand Kru
Maryland
confirmed cases
1–5
6–20
21–100
101–500
501–4000
no cases reported
capital city
location of first case in country

Olgu sayıları azalmadı. Komplo teorileri !!!!!!

- Kan ve organların çalınması için salgın çıkarıldı

- Pazarı dezenfekte edenler aslında insanları infekte ediyor

Bandits in Guinea steal blood samples believed to be infected with Ebola

- Heist occurred from a taxi van on a road known for banditry
- 'There's no way we can secure transport in all of this area'
- Officials appealed on radio for the return of the samples

Associated Press in Conakry
Fri 21 Nov 2014 19.05 CET
Share 75

American virologist David Safronetz carries buckets containing blood samples from suspected Ebola patients. Such blood samples were stolen by bandits from a taxi van outside Conakry, Guinea, on Friday. Photograph: John Moore/Getty Images

Ebola outbreak: Guinea health team killed

19 September 2014

Some villagers in Guinea have been scared by the appearance of health workers trying to combat Ebola

Eight members of a team trying to raise awareness about Ebola have been killed by villagers using machetes and clubs in Guinea, officials say.

ALJAZEERA News War on Gaza US Election Opinion Sport Video

Guinea residents 'refusing' Ebola treatment

Residents say people frightened to go to clinics because of conspiracy theories that they will be killed by doctors.

Many Guineans say local and foreign healthcare workers are part of a conspiracy [AFP]

- Veriler düzenli toplanamadı
- Kaynaklar klinik bakıma odaklandı
- Ramazan bayramı kutlamaları yasaklandı
- Bulaşma devam etti
- Kasım 2014’te kan örneklerini taşıyan kurye taksi soyuldu. Soyguncular, içinde infekte kan olan soğutucuyu çaldı ve bu çanta bulunamadı
- Halkta ve yetkililerde güvensizlik
- Hastaları saklayanlara 2 yıl hapis cezası getirildi

SALGIN: KONTROL EDİLEMEMESİNİN NEDENLERİ

Table 4.

Factors leading to failure to control the outbreak.

factors	
population structure/geography	mobile populations rural to urban migration affecting densely populated areas zoonotic emergence event at the intersection of three countries and near a road network porous national borders (figure 4) multicountry spread
economic factors/lack of infrastructure	fragile states following recent civil wars lack of trust in government following historic corruption weak health systems road networks along which infection spreads poor transportation networks poor telecommunication networks international air links lack of vehicles to access remote sites
cultural and behavioural factors	traditional burial rituals dependence on traditional healers secret societies community resistance, fuelled by lack of trust and disregard to cultural sensitivities at times conspiracy theories, e.g. hiding cases civil disobedience
interventions/failure in response	delayed identification delayed and poorly coordinated international response

En önemli ders: Mücadeleye toplum katılımını sağlamak şart

Ebola'ya karşı etkili bir müdahalenin ilk 10 bileşeni.

1. Salgının erken teşhisi ve tanınması.
2. Ulusal ve uluslararası aktörler arasında etkin işbirliği ve koordinasyon, sağlam yönetim.
3. Mesleki ve toplumsal kaynakların hızlı bir şekilde harekete geçirilmesi.
4. İletişim ve farkındalığın artması.
5. Topluluk katılımının iyileştirilmesi.
6. Sağlık çalışanlarının enfeksiyon kontrolü konusunda eğitilmesi.
7. Temas takibi ve izolasyonun organizasyonu.
8. İyi gözetim ve vaka tespiti.
9. Güvenli defin uygulamaları.
10. Aşılama stratejilerinin en son kanıtlara dayalı olarak değerlendirilmesi.

Salgın sırasında önemli ilerleme alanları

- acil durumlarda klinik terapötik denemeler
- aşı ve terapötiklerin geliştirilmesi
- moleküler tekniklerin çalışmalara dahil edilmesi

Hızlandırılmış etik onaylar, gecikme olmadan bilimsel tedavilerin kullanılabilmesi

Bu aşılar/tedaviler sağlam kanıt tabanı yok, potansiyel riskleri var. Ancak ölüm oranı yüksek

> Bull World Health Organ. 1978;56(2):271-93.

Ebola haemorrhagic fever in Zaire, 1976

Report of an International Commission

> Bull World Health Organ. 1978;56(2):247-7

Ebola haemorrhagic fever in Su
WHO/International Study Team

Report of a WHO/International Study Team

Klinik
ve
laboratuvar bulgularını
öğrendik

Case Reports > J Infect Dis. 1999 Feb:179 Suppl 1:S76-86. doi: 10.1086/514306.

The reemergence of Ebola hemorrhagic fever, Democratic Republic of the Congo, 1995. Commission de Lutte contre les Epidémies à Kikwit

, B Le Guenno, P Nabeth, B Kerstiëns, Y Fleerackers,
llin, A Sanchez, S R Zaki, R Swanepoel, O Tomori, S T Nichol,
siazek

ver in Kikwit, Democratic
Clinical Observations in 103

Mpia A. Bwaka, Marie-José Bonnet, Philippe Calain, Robert Colebunders, Ann De Roo, Yves Guimard, Kasongo R. Katwiki, Kapay Kibadi, Mungala A. Kipasa, Kivudi J. Kuvula ...
Show more

The Journal of Infectious Diseases, Volume 179, Issue Supplement_1, February 1999,

Batı Afrika salgınındaki Ebola virus hastalığında

- Majör kanama daha önce tanımlanandan daha az yaygındı. Bu nedenle, hastalığın adı "**Ebola hemorajik ateşi**"nden "**Ebola virus hastalığı**"na değiştirildi
- Kusma ve ishalden kaynaklanan hacim kayıplarının, daha önce bilinenden daha fazla ciddi hastalığa neden olduğu ortaya çıktı

EVH tedavi etmiş sağlık çalışanlarının izolasyonu

- Bulaşma semptomatik bir kişinin vücut sıvılarıyla temasla oluyor. Asemptomatik kişi bulaştırıcı değil
- Asemptomatik bir sağlık çalışanı, infekte olsa bile bulaştırıcı olmaz (Ebola PCR, ateş veya diğer semptomlar başladığı gün genellikle negatiftir, semptomların başlamasından ancak 2-3 gün sonra pozitif olur)

The NEW ENGLAND JOURNAL of MEDICINE

EDITORIALS

Ebola and Quarantine

Jeffrey M. Drazen, M.D., Rupa Kanapathipillai, M.B., B.S., M.P.H., D.T.M.&H., Edward W. Campion, M.D., Eric J. Rubin, M.D., Ph.D., Scott M. Hammer, M.D., Stephen Morrissey, Ph.D., and Lindsey R. Baden, M.D.

The governors of a number of states, including New York and New Jersey, recently imposed 21-day quarantines on health care workers returning to the United States from regions of the world where they may have cared for patients with Ebola virus disease. We understand their motivation for this policy — to protect the citizens of their states from contracting this often-fatal illness. This approach, however, is not scientifically based, is unfair and unwise, and will impede essential efforts to stop these awful outbreaks of Ebola disease at their source, which is the only satisfactory goal. The governors' action is like driving a carpet tack with a sledgehammer: it gets the job done but overall is more destructive than beneficial.

Health care professionals treating patients with this illness have learned that transmission arises from contact with bodily fluids of a person who is symptomatic — that is, has a fever, vomiting, diarrhea, and malaise. We have very strong reason to believe that transmission occurs when the viral load in bodily fluids is high, on the order of millions of virions per n
tion has led to the dictum
person is not contagious; f
Africa has shown that c
Therefore, an asymptoma
returning from treating pa
if he or she were infected
gious. Furthermore, we no
cedes the contagious sta
who are unknowingly infe
selves before they become
munity. This understanding
clinical observation: the

merase-chain-reaction (PCR) test for Ebola is often negative on the day when fever or other symptoms begin and only becomes reliably positive 2 to 3 days after symptom onset. This point is supported by the fact that of the nurses caring for Thomas Eric Duncan, the man who died from Ebola virus disease in Texas in October, only those who cared for him at the end of his life, when the number of virions he was shedding was likely to be very high, became infected. Notably, Duncan's family members who were living in the same household for days as he was at the start of his illness did not become infected.

A cynic would say that all these "facts" are derived from observation and that it pays to be 100% safe and to isolate anyone with a remote chance of carrying the virus. What harm can that approach do besides inconveniencing a few health care workers? We strongly disagree. Hundreds of years of experience show that to stop an epidemic of this type requires controlling it at its source. Médecins sans Frontières, the World
gency for Inter-
and many other
of thousands of
he epidemic. We
need for workers
ponsible, skilled
sking their lives
by stemming the
barriers making
to their commu-

ble, and we think
The health care

J Infect Dis. 2018 Jan 4;217(2):232-237. doi: 10.1093/infdis/jix579.

Variability in Intrahousehold Transmission of Ebola Virus, and Estimation of the Household Secondary Attack Rate

Judith R Glynn [1], Hilary Bower [1], Sembia Johnson [2], Cecilia Turay [2], Daniel Sesay [2], Saidu H Mansaray [2], Osman Kamara [2], Alie Joshua Kamara [2], Mohammed S Bangura [2], Francesco Checchi [3]

Affiliations + expand

PMID: 29140442 PMCID: PMC5853870 DOI: 10.1093/infdis/jix579

Abstract

Transmission between family members accounts for most Ebola virus transmission, but little is known about determinants of intrahousehold spread. From detailed exposure histories, intrahousehold transmission chains were created for 94 households of Ebola survivors in Sierra Leone: 109 (co-)primary cases gave rise to 317 subsequent cases (0–100% of those exposed). Larger households

- Kalabalık ailelerde olgu sayısı yüksek
- Yaşlılardan bulaşma daha fazla
- Şiddetli hastalığı olanlardan bulaşma daha fazla

> MMWR Morb Mortal Wkly Rep. 2015 Apr 17;64(14):386-8.

Ebola transmission linked to a single traditional funeral ceremony – Kissidougou, Guinea, December, 2014–January 2015

Kerton R Victory, Fátima Coronado, Sâa O Ifono, Therese Soropogui, Benjamin A Dahl;
Centers for Disease Control and Prevention (CDC)

PMID: 25879897 PMCID: PMC5779538

Abstract

On December 18, 2014, the Guinea Ministry of Health was notified by local public health authorities in Kissidougou, a prefecture in southeastern Guinea (pop. 284,000), that the number of cases of Ebola virus disease (Ebola) had increased from one case reported during December 8-14, 2014, to 62 cases reported during December 15-21. Kissidougou is one of the four Guinea prefectures (the others are Macenta, Gueckedou, and Conakry) where Ebola was first reported in West Africa in March 2014, and the mid-December increase was the largest documented by any prefecture in Guinea in a single week since the beginning of the epidemic. The Guinea Ministry of Health requested assistance from CDC and the World Health Organization to investigate the local outbreak, identify and isolate persons with suspected Ebola, assess transmission chains, and implement control measures. The investigation found that 85 confirmed Ebola cases were linked to one traditional funeral ceremony, including 62 (73%) cases reported during December 15-21. No additional cases related to this funeral ceremony were reported after January 10, 2015. After the outbreak was identified, rapid implementation of interventions limited additional Ebola virus transmission. Improved training for prompt reporting of cases, investigation, and contact tracing, and community acceptance of safe burial methods can reduce the risk for Ebola transmission in rural communities.

Tek cenaze töreniyle bağlantılı

85 olgu

> MMWR Morb Mortal Wkly Rep. 2014 Dec 12;63(49):1168-71.

Ebola virus disease in health care workers--Sierra Leone, 2014

Peter H Kilmarx, Kevin R Clarke, Patricia M Dietz, Mary J Hamel, Farah Husain, Jevon D McFadden, Benjamin J Park, David E Sugerman, Joseph S Bresee, Jonathan Mermin, James McAuley, Amara Jambai; Centers for Disease Control and Prevention (CDC)

PMID: 25503921 PMCID: PMC4584541

Abstract

Health care workers (HCWs) are at increased risk for infection in outbreaks of Ebola virus disease (Ebola). To characterize Ebola in HCWs in Sierra Leone and guide prevention efforts, surveillance data from the national Viral Hemorrhagic Fever database were analyzed. In addition, site visits and interviews with HCWs and health facility administrators were conducted. As of October 31, 2014, a

Hastalık sağlık çalışanlarında genel nüfusa göre **X100** daha fazla. Nedenleri;

- Triyajda yapılan hatalar
- EVH olanları ve cesetleri tanıyamama
- Gecikmiş laboratuvar tanısı
- Uygun KKE ve el yıkamanın sınırlı olması
- Kontamine atıkların yönetimi ve cesetlerin gömülmesi konusunda yetersiz eğitim

Health Policy and Planning, 32, 2017, 205–214
doi: 10.1093/heapol/czw113
Advance Access Publication Date: 29 October 2016
Original Article

OXFORD

Impact of interventions and the incidence of ebola virus disease in Liberia—implications for future epidemics

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Accepted on 1 August 2016

Abstract

To better understand the impact of national and global efforts to contain the Ebola virus disease epidemic of 2014–15 in Liberia, we provide a detailed timeline of the major interventions and relate them to the epidemic curve.

In addition to personal experience in the response, we systematically reviewed situation reports from the Liberian government, UN, CDC, WHO, UNICEF, IFRC, USAID, and local and international news reports to create the timeline. We extracted data on the timing and nature of activities and compared them to the timeline of the epidemic curve using the reproduction number—the estimate of the average number of new cases caused by a single case.

Interventions were organized around five major strategies, with the majority of resources directed to the creation of treatment beds. We conclude that no single intervention stopped the epidemic; rather, the interventions likely had reinforcing effects, and some were less likely than others to have made a major impact. We find that the epidemic's turning coincided with a reorganization of the response in August–September 2014, the emergence of community leadership in control efforts, and changing beliefs and practices in the population. Ebola Treatment Units were important for Ebola treatment, but the vast majority of these treatment centre beds became available after the epidemic curve began declining. Similarly, the United Nations Mission for Ebola Emergency Response was launched after the epidemic curve had already turned.

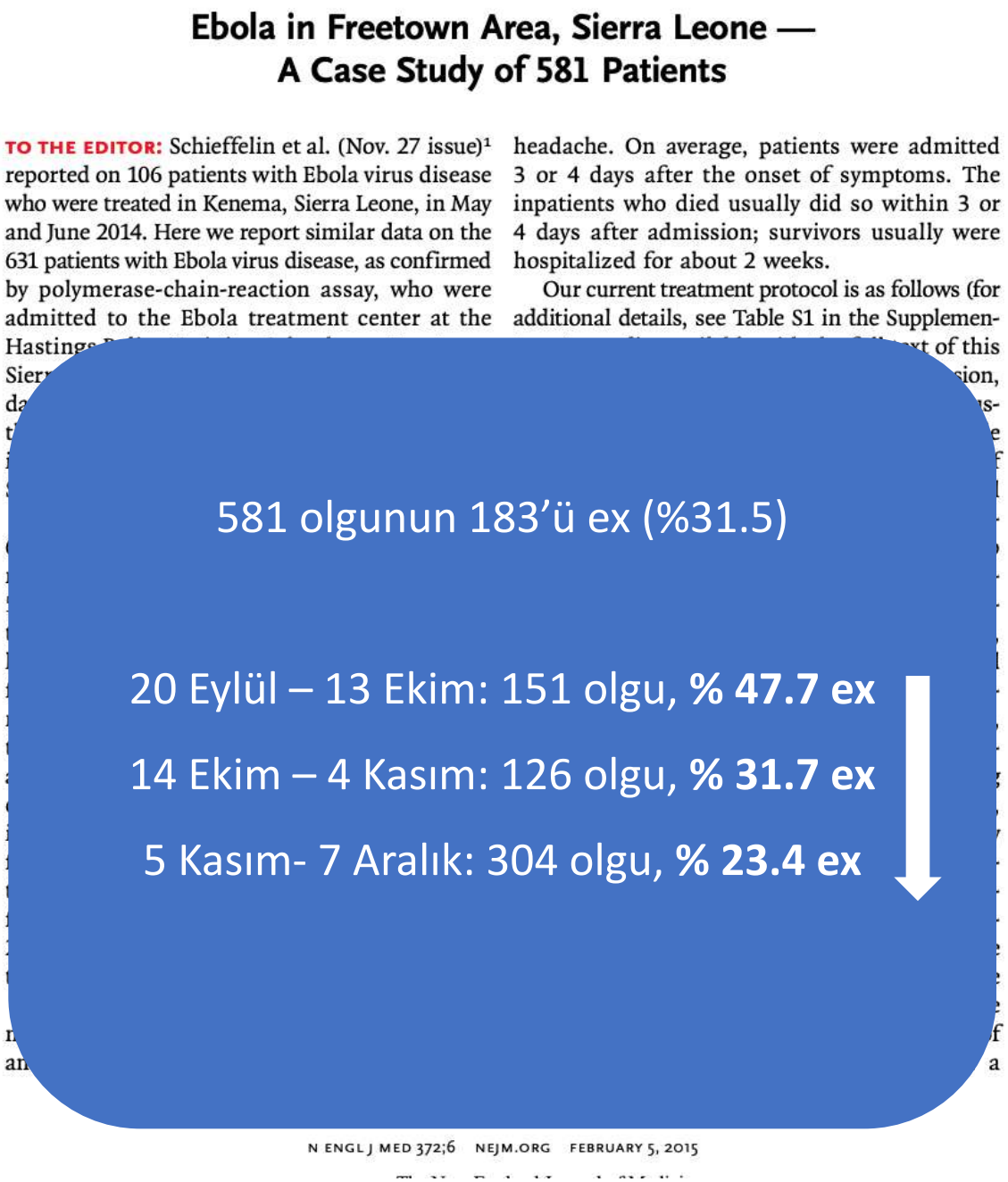
These findings have significant policy implications for future epidemics and suggest that much of the decline in the epidemic curve was driven by critical behaviour changes within local communities, rather than by international efforts that came after the epidemic had turned. Future global interventions in epidemic response should focus on building community capabilities, strengthening local ownership, and dramatically reducing delays in the response.

Liberia hükümeti, UN, CDC, WHO, UNICEF, IFRC, USAID, ve lokal/uluslararası raporlar değerlendirildiğinde

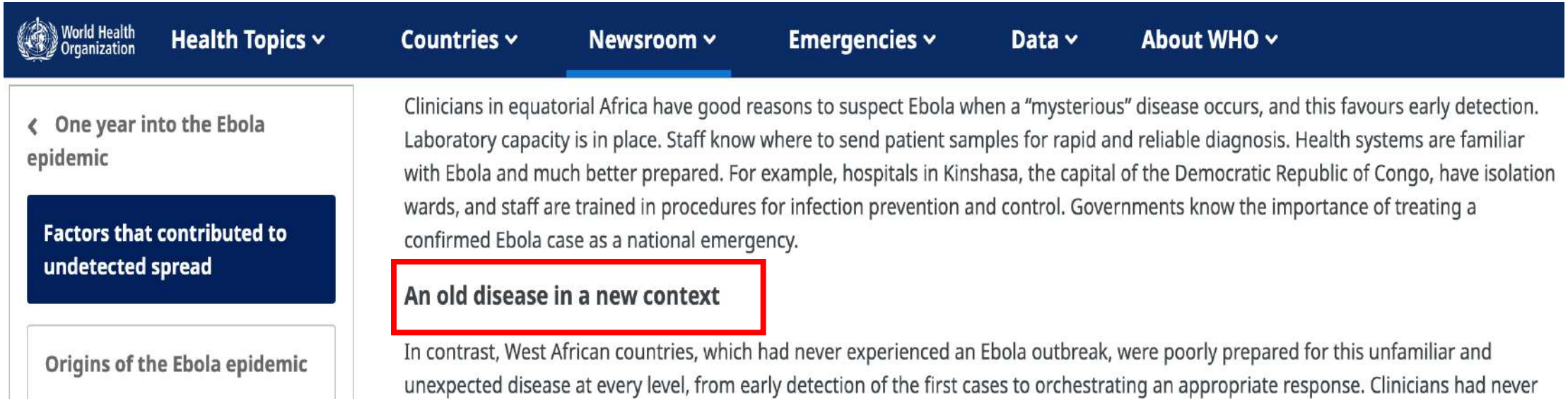
- Hiçbir müdahele tek başına etkili değil !

Salgının gerilemesi

- toplum liderliğinin ortaya çıkması
- toplumdaki inanç ve uygulamaların değişmesiyle



- Ölüm oranlarının salgın boyunca düşüş gösterdiğini öğrendik
- Salgının başlarında daha hafif vakaların eksik bildirilmesi, vaka bildirimi ile vaka iyileşmesi /ölüm arasındaki süre sonuçları değiştirmiş olabilir
- İyileşmiş sağkalım oranları sağlık sistemine olan güveni, tedavi arayışını arttırmış ve daha iyi temas takibine yol açmış olabilir



- Geçmişteki salgınlarda, birincil amaç hızlı izolasyonla bulaşma zincirlerini kırmaktı
- Bugün bu amaca agresif destekleyici bakım, özellikle rehidrasyon ve elektrolit dengesizliklerinin düzeltilmesi eklenmelidir

- Batı Afrika ve DKC salgınları (2018-2019) sırasında hastalara deneysel antiviral tedaviler uygulandı
- Bunlardan monoklonal antikor (mAb) preparatları REGN-EB3 ve mAb114, *Zaire ebolavirus* infeksiyonu tedavisinde etkiliydi ve destekleyici bakıma ek olarak kullanılabilir

ORIGINAL ARTICLE

A Randomized, Controlled Trial of ZMapp for Ebola Virus Infection

The PREVAIL II Writing Group, for the Multi-National PREVAIL II Study Team*

- REGN-EB3 (bir kez)
- mAb114 (bir kez)
- ZMapp (Ebola virüsü yüzey glikoproteinini hedefleyen üç mAb'nin bir kombinasyonu) 3 gün ara ile 3 kez
- Remdesivir (10 gün, IV)

- ZMapp kontrol kolu - önceki randomize çalışmada ZMapp ile plaseboya kıyasla daha az ölüm olduğu bulunmuştu (%22'ye karşı %37)

Destek tedavisi yanında bu 4 tedaviden birini aldılar

Çalışma erken durduruldu

- 499 olgunun ara analizinde, düşük viral yükü olup **REGN-EB3** ve **mAb114** alanlarda **sağ kalım daha yüksek**

673 hastalık son analizde ZMapp'a kıyasla mortalite

- REGN-EB3 alanlarda %17.8
- mAb114 alanlarda. %14.6 azalmış

Viral yükü yüksek olanlarda mortalite tüm gruplarda yüksek bulunmuş

ORIGINAL ARTICLE

Evaluation of Convalescent Plasma for Ebola Virus Disease in Guinea

J. van Griensven, T. Edwards, X. de Lamballerie, M.G. Semple, P. Gallian, S. Baize, P.W. Horby, H. Raoul, N. Magassouba, A. Antierens, C. Lomas, O. Faye, A.A. Sall, K. Fransen, J. Buyze, R. Ravinetto, P. Tiberghien, Y. Claeys, M. De Crop, L. Lynen, E.I. Bah, P.G. Smith, A. Delamou, A. De Weggheleire, and N. Haba, for the Ebola-Tx Consortium*

ABSTRACT

BACKGROUND

In the wake of the recent outbreak of Ebola virus disease (EVD) in several African countries, the World Health Organization prioritized the evaluation of treatment with convalescent plasma derived from patients who have recovered from the disease. We evaluated the safety and efficacy of convalescent plasma for the treatment of EVD in Guinea.

METHODS

In this nonran[illegible]arative st[illegible]s of various ages (including preg-nant wome[illegible]EVD[illegible]cutive transfusions of 200 to 250 ml of A[illegible]h unit of plasma obtained from a separat[illegible]re initiated on the day of diagnosis or up t[illegible]ng antibodies against Ebola virus in the plasma w[illegible]istration. The control group was 418 patients who had [illegible]ter during the previous 5 months. The primary outcon[illegible]g the period from 3 to 16 days after diagnosis with a[illegible]line cycle-threshold value on poly-merase-chain-[illegible]before day 3 were excluded. The clinically in[illegible]e reduction in mortality of 20 percentage p[illegible]ared with the control group.

RESULTS

A total of 84 patien[illegible]ere treated w[illegible] were included in the primary analysis. At baseline, th[illegible]valescent-plasma g[illegible]had slightly higher cycle-threshold values and a shorter duration of symptoms than did the control group, along with a higher frequency of eye redness and difficulty in swallowing. From day 3 to day 16 after diagnosis, the risk of death was 31% in the convalescent-plasma group and 38% in the control group (risk difference, −7 percentage points; 95% confidence interval [CI], −18 to 4). The difference was reduced after adjustment for age and cycle-threshold value (adjusted risk difference, −3 percentage points; 95% CI, −13 to 8). No serious adverse reactions associated with the use of convalescent plasma were observed.

The authors' full names, academic degrees, and affiliations are listed in the Appendix. Address reprint requests to Dr. van Griensven at the Institute of Tropical Medicine, Nationalestr. 155, B2000 Antwerp, Belgium, or at jvangriensven@itg.be.

*A complete list of collaborators in the Ebola-Tx Consortium is provided in the Supplementary Appendix, available at NEJM.org.

This article was updated on January 7, 2016, at NEJM.org.

N Engl J Med 2016;374:33-42.
DOI: 10.1056/NEJMoa1511812

Treatment of Ebola Hemorrhagic Fever with Blood Transfusions from Convalescent Patients

K. Mupapa, M. Massamba, K. Kibadi, K. Kuvula, A. Bwaka, M. Kipasa, R. Colebunders, and J. J. Muyembe-Tamfum on behalf of the International Scientific and Technical Committee

Kinshasa University, Ministry of Public Health, and Kikwit General Hospital, Kikwit, and National Institute for Biomedical Research, Kinshasa, Democratic Republic of the Congo; Institute of Tropical Medicine, Antwerp, Belgium

Between 6 and 22 June 1995, 8[illegible]ikwit, Democ[illegible]of the Congo, who met the case definition used in K[illegible]nsfused with blood donated by 5 convalescent patients[illegible]O antibodies but no EBO antigen. EBO antigens were detected in [illegible]just before transfusion. The 8 transfused patients had clinical sympt[illegible]BO patients seen during the epidemic. All were seriously ill wi[illegible]rhagic manifestations, and 2 became comatose as t[illegible]. On[illegible](12.5%) died; this number is significantly lower than[illegible]case fatality r[illegible]or the EBO epidemic in Kikwit and than the rates for other EBO epidemics. The reason for this low fatality rate remains to be explained. The transfused patients did receive better care than those in the initial phase of the epidemic. Plans should be made to prepare for a more thorough evaluation of passive immune therapy during a new EBO outbreak.

The Journal of Infectious Diseases

MAJOR ARTICLE

IDSA Infectious Diseases Society of America · hivma hiv medicine association

Laboratory Findings, Compassionate Use of Favipiravir, and Outcome in Patients With Ebola Virus Disease, Guinea, 2015—A Retrospective Observational Study

Romy Kerber, Eva Lorenz, Sophie Duraffour, Daouda Sissoko, Martin Rudolf, Anna Jaeger, Sekou Ditinn Cisse, Alseny-Modet Camara, Osvaldo Miranda, Carlos M. Castro, Joseph Akoi Bore, Fara Raymond Koundouno, Johanna Repits, Babak Afrough, Beate Becker-Ziaja, Julia Hinzmann, Marc Mertens, Ines Vitoriano, Christopher Hugh Logue, Jan-Peter Böttcher, Elisa Pallasch, Andreas Sachse, Amadou Bah, Mar Cabeza-Cabrerizo, Katja Nitzsche, Eeva Kuisma, Janine Michel, Tobias Holm, Elsa Gayle Zekeng, Lauren A. Cowley, Isabel Garcia-Dorival, Nicole Hetzelt, Jonathan Hans Josef Baum, Jasmine Portmann, Lisa Carter, Rahel Lemma Yenamaberhan, Alvaro Camino, Theresa Enkirch, Katrin Singethan, Sarah Meisel, Antonio Mazzarelli, Abigail Kosgei, Liana Kafetzopoulou, Natasha Y. Rickett, Livia Victoria Patrono, Luam Ghebreghiorghis, Ulrike Arnold, Géraldine Colin, Sylvain Juchet, Claire Levy Marchal, Jacques Seraphin Kolie, Abdoul Habib Beavogui, Stephanie Wurr, Sabrina Bockholt, Ralf Krumkamp, Jürgen May, Kilian Stoecker, Erna Fleischmann, Giuseppe Ippolito, Miles W. Carroll, Lamine Koivogui, N'Faly Magassouba, Sakoba Keita, Céline Gurry, Patrick Drury, Boubacar Diallo, Pierre Formenty, Roman Wölfel, Antonino Di Caro, Martin Gabriel, Xavier Anglaret, Denis Malvy, and Stephan Günther

[1]Bernhard Nocht Institute for Tropical Medicine and [2]European Mobile Laboratory Consortium, Hamburg, [3]German Center for Infection Research, Braunschweig, [4]Robert Koch Institute, Berlin, [5]Friedrich Loeffler Institute, Federal Research Institute for Animal Health, [6]Division of Veterinary Medicine, [7]Institute of Virology, Technische Universität München, and [8]Bundeswehr Institute of Microbiology, Munich, Germa... 1219, Bordeaux University, and ...niversity Hospital, Bordeaux, France; [11]Ministry of Health Guinea, [12]Institut National de Santé Publique, [13]Laboratoire des Fièvres Hé... Université Gamal Abd... and [15]World Health Organization, Conakry, and [16]Centre de Recherche en Santé Rurale, Maférinya, Guinea; [17]Hospital Milit... Havana, Cuba; ... Sweden; [19]Public Health England, Porton Down, [20]Public Health England and [21]University College London, London, [21]... ity of Bath, ... Global Health, University of Liverpool, Liverpool, and [23]University of Southampton, South General Hospital, So... ...ical ... ...al Office for Civil Protection, Spiez Laboratory, Spiez, and [26]World Health Organization, Geneva, Switzerland; [27]Ni... ...a Medical Research Institute, Nairobi, Kenya; [29]KU Leuven–University of Leuven, Rega Institute for Medical Resea... ...ersity Hospital, Abidjan, Côte d'Ivoire

Background. In 2015, the laboratory at th... ...uinea, confirmed Ebola virus disease (EVD) in 286 patients. The cycle threshold (Ct) of an Ebola v... ...on–polymerase chain reaction assay and 13 blood chemistry parameters were measured on admissio... Favipiravir treatment was offered to patients with EVD on a compassionate-use basis.

Methods. To reduce biases in the raw fiel... ...atients with EVD for a retrospective study to assess associations between potential risk f... ...favipiravir treatment, and outcome.

Results. The case-fatality rate in fa... ...d patients (42.5% [31 of 73] vs 57.8% [52 of 90]; $P = .053$ by univariate anal... ...ressio... ...d a younger age were associated with survival ($P < .001$), while favipiravir trea... ...tatistically ... ...= .11). However, Kaplan-Meier analysis indicated a longer survival time in the favip... ...group ($P = .015$)... ...also showed characteristic changes in blood chemistry findings in patients who died, compa... ...n survivors.

Conclusions. Consistent with the JIKI trial, this retrospective study revealed a trend toward improved survival in favipiravir-treated patients; however, the effect of treatment was not statistically significant, except for its influence on survival time.

- Favipiravir ile tedavi edilen hastalardaki ölüm oranı, tedavi edilmeyen hastalara göre daha düşüktü (%42,5 - %57,8)
- Çok değişkenli regresyon analizinde, daha yüksek Ct ve daha genç yaş sağ kalımla ilişkilendirildi ($P < .001$)
- **Favipiravir tedavisi istatistiksel olarak anlamlı bir etki göstermedi**

Clinical Trial > N Engl J Med. 2016 Apr 28;374(17):1635-46. doi: 10.1056/NEJMoa1411627.
Epub 2015 Jan 28.

A Monovalent Chimpanzee Adenovirus Ebola Vaccine Boosted with MVA

Katie Ewer [1], Tommy Rampling [1], Navin Venkatraman [1], Georgina Bowyer [1], Danny Wright [1], Teresa Lambe [1], Thomas Strecke[r] [1], J Edwards [1], Emma M Bentle[y] [1], Alice Minhinnic[k] [1], Felicity Hartnell [1], Richard Tedder [1], ...eanor Berrie [1], ... [1]

Klinik deneylerde geç kalındı

Aşıların etkili ve güvenli olduğu gösterildi

Clinical Trial > Lancet. 2017 Feb 11;389(10069):62[1]
doi: 10.1016/S0140-6736(16)32617-4. Epub 2016 Dec 2[3]

Safety and immunogenicity of [a] adenovirus type-5 vector-based Ebola vaccine in healthy adults in Sierra Leone: a single-centre, randomised, double-blind, placebo-controlled, phase 2 trial

Feng-Cai Zhu [1], Alie H Wurie [2], Li-Hua Hou [3], Qi Liang [1], Yu-Hua Li [4], James B W Russell [2], Shi-Po Wu [3], Jing-Xin Li [1], Yue-Mei Hu [1], Qiang Guo [3], Wen-Bo Xu [5], Abdul R Wurie [2], Wen-Juan Wang [1], Zhe Zhang [3], Wen-Jiao Yin [5], Manal Ghazzawi [2], Xu Zhang [6], Lei Duan [6], Jun-Zhi Wang [7], Wei Chen [8]

...cet. 2017 Feb 4;389(10068):505-518.
... Epub 2016 Dec 23.

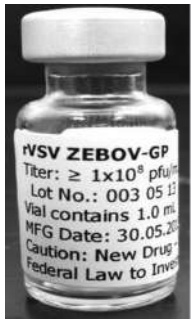
...eness of an rVSV-vectored ...vaccine in preventing Ebola virus disease: final results from the Guinea ring vaccination, open-label, cluster-randomised trial (Ebola Ça Suffit!)

Ana Maria Henao-Restrepo [1], Anton Camacho [2], Ira M Longini [3], Conall H Watson [2], W John Edmunds [2], Matthias Egger [4], Miles W Carroll [5], Natalie E Dean [3], Ibrahima Diatta [6], Moussa Doumbia [7], Bertrand Draguez [8], Sophie Duraffour [9], Godwin Enwere [10], Rebecca Grais [11], Stephan Gunther [9], Pierre-Stéphane Gsell [10], Stefanie Hossmann [6], Sara Viksmoen Watle [12], Mandy Kader Kondé [13], Sakoba Kéïta [14], Souleymane Kone [10], Eewa Kuisma [9], Myron M Levine [15], Sema Mandal [5], Thomas Mauget [10], Gunnstein Norheim [12], Ximena Riveros [10], Aboubacar Soumah [11], Sven Trelle [6], Andrea S Vicari [10], John-Arne Røttingen [16], Marie-Paule Kieny [10]

Comment > J Infect Dis. 2015 Feb 15;211(4):504-7. doi: 10.1093/infdis/jiu513.
Epub 2014 Sep 14.

How the current West African Ebola virus disease epidemic is altering views on the need for vaccines and is galvanizing a global effort to field-test leading candidate vaccines

Myron M Levine [1], Milagritos Tapia [1], Adrian V Hill [2], Samba O Sow [3]



Randomized Controlled Trial > Lancet. 2015 Aug 29;386(9996):857-66.
doi: 10.1016/S0140-6736(15)61117-5. Epub 2015 Aug 3.

Efficacy and effectiveness of an rVSV-vectored vaccine expressing Ebola surface glycoprotein: interim results from the Guinea ring vaccination cluster-randomised trial

Ana Maria Henao-Restrepo [1], Ira M Longini [2], Matthias Egger [3], Natalie E Dean [2], W John Edmunds [4], Anton Camacho [4], Miles W Carroll [5], Moussa Doumbia [6], Bertrand Draguez [7], Sophie Duraffour [8], Godwin Enwere [1], Rebecca Grais [9], Stephan Gunther [10], Stefanie Hossmann [11], Mandy Kader Kondé [12], Souleymane Kone [1], Eeva Kuisma [5], Myron M Levine [13], Sema Mandal [14], Gunnstein Norheim [15], Ximena Riveros [1], Aboubacar Soumah [9], Sven Trelle [11], Andrea S Vicari [1], Conall H Watson [4], Sakoba Kéïta [16], Marie Paule Kieny [17], John-Arne Røttingen [18]

Batı Afrika'daki salgında

rVSV-ZEBOV aşısı — veziküler stomatit virusu-*Zaire ebolavirus* aşısı. Canlı-attenüe, tek doz

- Gine'deki salgında etkin bulundu
- Mayıs-Temmuz 2018 DKC'deki salgında 4000'den fazla kişiye uygulandı
- DKC'de salgında 300.000 kişiye uygulandı, önleyici etkinliği %97.5

Ad26.ZEBOV/MVA-BN-Filo aşısı — 8 hf arayla uygulanan iki farklı aşı

- Birinci bileşen, *Zaire ebolavirus* glikoproteinini kodlayan rekombinant insan adenovirus 26
- İkinci doz ise *Zaire* ve *Sudan ebolavirus* ile Marburg Musokevirus glikoproteinlerini ve *Tai Forest ebolavirus* nükleoproteinini kodlayan modifiye edilmiş Ankara vaksinya virüsü

- Batı Afrika salgını sırasında sağlıklı gönüllüler üzerinde test edildi ve Tanzanya ve Uganda'daki denemelerde daha ileri düzeyde değerlendirildi
- Ayrıca iki dozluk aşıyı gönüllü olarak alan Ruanda sakinleri arasında yapılan geniş bir çalışmada da değerlendirildi
- **Aşıların hem ayrı ayrı, hem de kombinasyon halinde güvenli ve immünojenik olduğu bulundu**

› Int J Infect Dis. 2021 Dec:113:166-167. doi: 10.1016/j.ijid.2021.09.053.
Epub 2021 Sep 26.

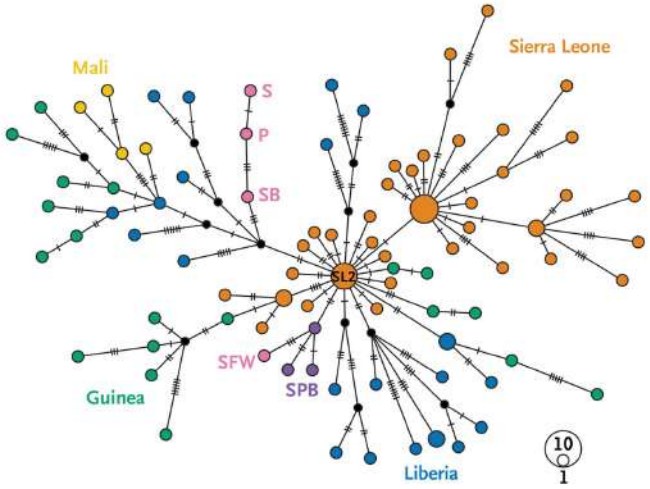
Post-exposure prophylaxis following high-risk contact with Ebola virus, using immunotherapies with monoclonal antibodies, in the eastern Democratic Republic of the Congo: an emergency use program

Marie Jaspard [1], Sylvain Juchet [2], Béatrice Serra [3], Baweye Mayoum [4], Issa Malam Kanta [5], Mohamed Seto Camara [6], Placide Mbala [7], Richard Kojan [8], Denis Malvy [9]

Temas sonrası profilaksi

- Yüksek ve orta riskli temaslılara mAb'ler (mAb114 veya REGN-EB3)
- 23 kişiye temastan sonra 1 gün içinde uygulandı
- Hiçbirinde hastalık gelişmedi

Moleküler epidemiyoloji



İki şekilde kullanıldı

- Şüpheli vakaların hızlı ve doğru teşhisi için hızlı PCR kullanıma sunuldu, erken izolasyonları kolaylaştırıldı
- Salgın incelemesi – dizileme (belirli kümeleri tanımlamaya yardımcı oldu- Kenema'da cenaze töreniyle ilgili büyük salgın)

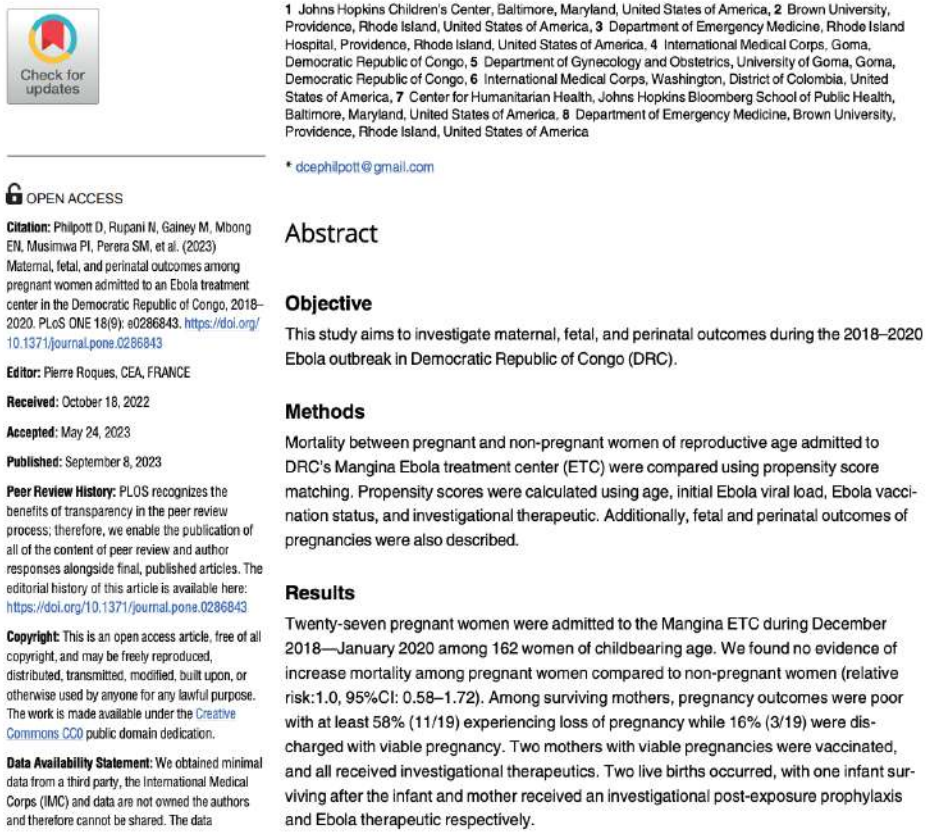
Salgında bulaşın tekrarlanan zoonotik olaylardan ziyade, ülke içinde insandan insana olduğunu gösterdi

Comparative Study > PLoS One. 2019 Mar 7;14(3):e0212113.
doi: 10.1371/journal.pone.0212113. eCollection 2019.

Comparative performance of four rapid Ebola antigen-detection lateral flow immunoassays during the 2014-2016 Ebola epidemic in West Africa

Betsy Wonderly [1], Sophie Jones [1], Michelle L Gatton [2], John Barber [1], Marian Killip [1], Chris Hudson [1], Lisa Carter [1], Tim Brooks [3], Andrew J H Simpson [3], Amanda Semper [3], Willy Urassa [4], Arlene Chua [5], Mark Perkins [1], Catharina Boehme [1]

- *Ebolavirus* için hızlı lateral akışlı immünolojik analizler ilk olarak Batı Afrika salgını sırasında geliştirilmiştir



RESEARCH ARTICLE

Maternal, fetal, and perinatal outcomes among pregnant women admitted to an Ebola treatment center in the Democratic Republic of Congo, 2018–2020

David Philpott[1]*, Neil Rupani[2], Monique Gainey[3], Eta N. Mbong[4], Prince Imani Musimwa[5], Shiromi M. Perera[6], Razia Laghari[4], Mija Ververs[7], Adam C. Levine[8]

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OPEN ACCESS

Citation: Philpott D, Rupani N, Gainey M, Mbong EN, Musimwa PI, Perera SM, et al. (2023) Maternal, fetal, and perinatal outcomes among pregnant women admitted to an Ebola treatment center in the Democratic Republic of Congo, 2018–2020. PLoS ONE 18(9): e0286843. https://doi.org/10.1371/journal.pone.0286843

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Data Availability Statement: We obtained minimal data from a third party, the International Medical Corps (IMC) and data are not owned the authors and therefore cannot be shared. The data

Abstract

Objective

This study aims to investigate maternal, fetal, and perinatal outcomes during the 2018–2020 Ebola outbreak in Democratic Republic of Congo (DRC).

Methods

Mortality between pregnant and non-pregnant women of reproductive age admitted to DRC's Mangina Ebola treatment center (ETC) were compared using propensity score matching. Propensity scores were calculated using age, initial Ebola viral load, Ebola vaccination status, and investigational therapeutic. Additionally, fetal and perinatal outcomes of pregnancies were also described.

Results

Twenty-seven pregnant women were admitted to the Mangina ETC during December 2018—January 2020 among 162 women of childbearing age. We found no evidence of increase mortality among pregnant women compared to non-pregnant women (relative risk:1.0, 95%CI: 0.58–1.72). Among surviving mothers, pregnancy outcomes were poor with at least 58% (11/19) experiencing loss of pregnancy while 16% (3/19) were discharged with viable pregnancy. Two mothers with viable pregnancies were vaccinated, and all received investigational therapeutics. Two live births occurred, with one infant surviving after the infant and mother received an investigational post-exposure prophylaxis and Ebola therapeutic respectively.

2018-2020 yıllarında DKC'de yaşanan salgında

- gebelerde ve
- doğurganlık çağında gebe olmayanlarda EVH sonuçları değerlendirildi

Her iki grupta ölüm riski benzer olsa da, hayatta kalan gebelerin %60'ı fetüs kaybı yaşadı

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PMCID: PMC4318555
NIHMSID: NIHMS650127
PMID: 25353969

Clinical Illness and Outcomes in Patients with Ebola in Sierra Leone

J.S. Schieffelin, J.G. Shaffer, A. Goba, M. Gbakie, S.K. Gire, A. Colubri, R.S.G. Sealfon, L. Kanneh, A. Moigboi,* M. Momoh, M. Fullah,* L.M. Moses, B.L. Brown, K.G. Andersen, S. Winnicki, S.F. Schaffner, D.J. Park, N.L. Yozwiak, P.-P.

> N Engl J Med. 2014 Nov 27;371(22):2054-7. doi: 10.1056/NEJMp1413084. Epub 2014 Nov 5.

Ebola virus disease in West Africa--clinical manifestations and management

Daniel S Chertow [1], Christian Kleine, Jeffrey K Edwards, Roberto Scaini, Ruggero Giuliani, Armand Sprecher

> J Infect Dis. 1999 Feb:179 Suppl 1:S24-7. doi: 10.1086/514311.

Ebola hemorrhagic fever, Democratic Republic of the Congo, 1995: determinants of survival

R F Sadek [1], A S Khan, G Stevens, C J Peters, T G Ksiazek
Affiliations + expand
PMID: 9988161 DOI: 10.1086/514311

> J Virol. 2004 Oct;78(19):10370-7. doi: 10.1128/JVI.78.19.10370-10377.2004.

Analysis of human peripheral blood samples from fatal and nonfatal cases of Ebola (Sudan) hemorrhagic fever: cellular responses, virus load, and nitric oxide levels

Anthony Sanchez [1], Matthew Lukwiya, Daniel Bausch, Siddhartha Mahanty, Angela J Sanchez, Kent D Wagoner, Pierre E Rollin

Mortalite risk faktörleri

- Erken tanı, tedavi desteği olumlu etki
- Genç yaş düşük ölüm riski

- İshal olanlarda mortalite yüksek (%94 vs %65)
- Viral yükü yüksek olanlarda mortalite yüksek

> J Infect Dis. 1999 Feb:179 Suppl 1:S177-87. doi: 10.1086/514321.

Clinical virology of Ebola hemorrhagic fever (EHF): virus, virus antigen, and IgG and IgM antibody findings among EHF patients in Kikwit, Democratic Republic of the Congo, 1995

T G Ksiazek [1], P E Rollin, A J Williams, D S Bressler, M L Martin, R Swanepoel, F J Burt, P A Leman, A S Khan, A K Rowe, R Mukunu, A Sanchez, C J Peters

Affiliations + expand

PMID: 9988182 DOI: 10.1086/514321

Abstract

Ebola hemorrhagic fever (EHF) patients treated at Kikwit General Hospital during the 1995 outbreak were tested for viral antigen, IgG and IgM antibody, and infectious virus. Viral antigen could be detected in virtually all patients during the acute phase of illness, while antibody was not always detectable before death. Virus was also isolated from patients during the course of their febrile illness, but attempts to quantify virus in Vero E6 cells by standard plaque assay were often unsuccessful. IgG and IgM antibody appeared at approximately the same time after disease onset (8-10 days), but IgM persisted for a much shorter period among the surviving convalescent patients. IgG antibody was detectable in surviving patients through about 2 years after onset, the latest time that samples were obtained. Detection of Ebola virus antigens or virus isolation appears to be the most reliable means of diagnosis for patients with suspected acute EHF, since patients with this often-fatal disease (80% mortality) may not develop detectable antibodies before death.

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SPECIALTIES TOPICS MULTIMEDIA CURRENT ISSUE LEARNING/CME AUTHOR CENTER PUBLICATIONS

PERSPECTIVE

Ebola Virus Disease in West Africa — Clinical Manifestations and Management

Authors: Daniel S. Chertow, M.D., M.P.H., Christian Kleine, M.D., Jeffrey K. Edwards, M.D., M.P.H., Roberto Scaini, M.D., Ruggero Giuliani, M.D., and Armand Sprecher, M.D., M.P.H. Author Info & Affiliations

Published November 27, 2014 | N Engl J Med 2014;371:2054-2057 | DOI: 10.1056/NEJMp1413084

Hasta takibinde öğrendiklerimiz

- 1995 salgını - Virusa özgü IgM ve IgG'nin ortaya çıkmasıyla viremi 2. hf ortadan kalkar

- Ebola virüsü hastalığından kurtulanlarda genellikle hastalığın 2. hf'da klinik iyileşme belirtileri görülmeye başlar

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PERSPECTIVE

Ebola Virus Disease in West Africa — Clinical Manifestations and Management

Authors: Daniel S. Chertow, M.D., M.P.H., Christian Kleine, M.D., Jeffrey K. Edwards, M.D., M.P.H., Roberto Scaini, M.D., Ruggero Giuliani, M.D., and Armand Sprecher, M.D., M.P.H. Author Info & Affiliations

Published November 27, 2014 | N Engl J Med 2014;371:2054-2057 | DOI: 10.1056/NEJMp1413084

Batı Afrika salgınına ilişkin çalışmalara dayanarak DSÖ;

- EVH'na özgü semptomları kalmayan kişiler, en az 48 saat arayla, kanda iki negatif PCR testi varsa taburcu edilebilir

> J Infect Dis. 2007 Nov 15:196 Suppl 2:S142-7. doi: 10.1086/520545.

Assessment of the risk of Ebola virus transmission from bodily fluids and fomites

Daniel G Bausch [1], Jonathan S Towner, Scott F Dowell, Felix Kaducu, Matthew Lukwiya, Anthony Sanchez, Stuart T Nichol, Thomas G Ksiazek, Pierre E Rollin

Affiliations + expand

PMID: 17940942 DOI: 10.1086/520545

Abstract

Although Ebola virus (EBOV) is transmitted by unprotected physical contact with infected persons, few data exist on which specific bodily fluids are infected or on the risk of fomite transmission. Therefore, we tested various clinical specimens from 26 laboratory-confirmed cases of Ebola hemorrhagic fever, as well as environmental specimens collected from an isolation ward, for the presence of EBOV. Virus was detected by culture and/or reverse-transcription polymerase chain reaction in 16 of 54 clinical specimens (including saliva, stool, semen, breast milk, tears, nasal blood, and a skin swab) and in 2 of 33 environmental specimens. We conclude that EBOV is shed in a wide variety of bodily fluids during the acute period of illness but that the risk of transmission from fomites in an isolation ward and from convalescent patients is low when currently recommended infection control guidelines for the viral hemorrhagic fevers are followed.

Case Reports > Clin Infect Dis. 2017 Feb 15;64(4):513-516. doi: 10.1093/cid/ciw793.

Ebola Virus Persistence in Breast Milk After No Reported Illness: A Likely Source of Virus Transmission From Mother to Child

Daouda Sissoko [1 2], Mory Keïta [3], Boubacar Diallo [3], Negar Aliabadi [4], David L Fitter [4], Benjamin A Dahl [4], Joseph Akoi Bore [5 6], Fara Raymond Koundouno [5 6], Katrin Singethan [5 7]

- 2000 yılında Uganda'da *Sudan ebolavirus* salgınında, virusun kanda tespit edilemediği dönemde, hastanın anne sütünde tespit edildi
- İnfekte anneler tarafından emzirilen iki çocuk hastalıktan öldü
- Batı Afrika salgınında 9 aylık bir bebek

Rehberler, EVH'dan kurtulan ve emzirmeye devam etmek isteyen kadınlara;

- Anne sütünde en az 24 saat arayla iki ardışık negatif RNA sonuçlanana kadar emzirmeyi durdurmayı önermektedir

The NEW ENGLAND JOURNAL of MEDICINE

BRIEF REPORT

Molecular Evidence of Sexual Transmission of Ebola Virus

S.E. Mate, J.R. Kugelman, T.G. Nyenswah, J.T. Ladner, M.R. Wiley, T. Cordier-Lassalle, A. Christie, G.P. Schroth, S.M. Gross, G.J. Davies-Wayne, S.A. Shinde, R. Murugan, S.B. Sieh, M. Badio, L. Fakoli, F. Taweh, E. de Wit, N. van Doremalen, V.J. Munster, J. Pettitt, K. Prieto, B.W. Humrighouse, U. Ströher, J.W. DiClaro, L.E. Hensley, R.J. Schoepp, D. Safronetz, J. Fair, J.H. Kuhn, D.J. Blackley, A.S. Laney, D.E. Williams, T. Lo, A. Gasasira, S.T. Nichol, P. Formenty, F.N. Kateh, K.M. De Cock, F. Bolay, M. Sanchez-Lockhart, and G. Palacios

SUMMARY

A suspected case of sexual transmission from a male survivor of Ebola virus disease (EVD) to his female partner (the patient in this report) occurred in Liberia in March 2015. Ebola virus (EBOV) genomes assembled from blood samples from the patient and a semen sample from the survivor were consistent with direct transmission. The genomes shared three substitutions that were absent from all other Western African EBOV sequences and that were distinct from the last documented transmission chain in Liberia before this case. Combined with epidemiologic data, the genomic analysis provides evidence of sexual transmission of EBOV and evidence of the persistence of infective EBOV in semen for 179 days or more after the onset of EVD. (Funded by the Defense Threat Reduction Agency and others.)

> J Infect Dis. 1999 Feb:179 Suppl 1:S170-6. doi: 10.1086/514291.

Persistence and genetic stability of Ebola virus during the outbreak in Kikwit, Democratic Republic of the Congo, 1995

L L Rodriguez [1], A De Roo, Y Guimard, S G Trappier, A Sanchez, D Bressler, A J Williams, A K Rowe, J Bertolli, A S Khan, T G Ksiazek, C J Peters, S T Nichol

- Şubat 2015'de Liberia'da salgın sonlanmış iken Mart 2015'de yeni olgu
- EVH geçirip düzelen bir erkekten kadına cinsel temasla geçtiği
- Semende 179 gün kadar infektif olarak kalabildiğini öğrendik (4 yıl olan da var)
- Vajinal sıvıda 33 güne kadar

Late Ebola virus relapse causing meningoencephalitis: a case report

Michael Jacobs, Alison Rodger, David J Bell, Sanjay Bhagani, Ian Cropley, Ana Filipe, Robert J Gifford, Susan Hopkins, Joseph Hughes, Farrah Jabeen, Ingolfur Johannessen, Drosos Karageorgopoulos, Angie Lackenby, Rebecca Lester, Rebecca S N Liu, Alisdair MacConnachie, Tabitha Mahungu, Daniel Martin, Neal Marshall, Stephen Mepham, Richard Orton, Massimo Palmarini, Monika Patel, Colin Perry, S Erica Peters, Duncan Porter, David Ritchie, Neil D Ritchie, R Andrew Seaton, Vattipally B Sreenu, Kate Templeton, Simon Warren, Gavin S Wilkie, Maria Zambon, Robin Gopal, Emma C Thomson

Lancet 2016; 388: 498-503
Published Online May 18, 2016 http://dx.doi.org/10.1016/S0140-6736(16)30386-5

See Perspectives page 455

Department of Infection M Jacobs FRCP, S Bhagani FRCP, I Cropley FRCP, S Hopkins FRCP, D Karageorgopoulos MRCP, R Lester MRCP, T Mahungu MRCP, S Mepham FRCPath, S Warren FRCPath), Department of Neurology (R S N Liu FRCP), Department of Radiology (F Jabeen FRCR), and Pharmacy (N Marshall MRPharmS), Royal Free London NHS Foundation Trust, London, UK; Division of Surgery (D Martin FRCA), and Research Department of Infection and Population Health (A Rodger FRCP), University College London, London, UK; Queen Elizabeth University Hospital, Glasgow, UK (E C Thomson FRCP, S E Peters MRCP, D J Bell MRCP,

Summary

Background There are thousands of survivors of the 2014 Ebola outbreak in west Africa. Ebola virus can persist in survivors for months in immune-privileged sites; however, viral relapse causing life-threatening and potentially transmissible disease has not been described. We report a case of late relapse in a patient who had been treated for severe Ebola virus disease with high viral load (peak cycle threshold value 13·2).

Methods A 39-year-old female nurse from Scotland, who had assisted the humanitarian effort in Sierra Leone, had received intensive supportive treatment and experimental antiviral therapies, and had been discharged with undetectable Ebola virus RNA in peripheral blood. The patient was readmitted to hospital 9 months after discharge with symptoms of acute meningitis, and was found to have Ebola virus in cerebrospinal fluid (CSF). She was treated with supportive therapy and experimental antiviral drug GS-5734 (Gilead Sciences, San Francisco, Foster City, CA, USA). We monitored Ebola virus RNA in CSF and plasma, and sequenced the viral genome using an unbiased metagenomic approach.

Findings On admission, reverse transcriptase PCR identified Ebola virus RNA at a higher level in CSF (cycle threshold value 23·7) than plasma (31·3); infectious virus was only recovered from CSF. The patient developed progressive meningoencephalitis with cranial neuropathies and radiculopathy. Clinical recovery was associated with addition of high-dose corticosteroids during GS-5734 treatment. CSF Ebola virus RNA slowly declined and was undetectable following 14 days of treatment with GS-5734. Sequencing of plasma and CSF viral genome revealed only two non-coding changes compared with the original infecting virus.

Interpretation Our report shows that previously unanticipated, late, severe relapses of Ebola virus can occur, in this case in the CNS. This finding fundamentally redefines what is known about the natural history of Ebola virus infection. Vigilance should be maintained in the thousands of Ebola survivors for cases of relapsed infection. The potential for these cases to initiate new transmission chains is a serious public health concern.

- Geç ve şiddetli EVH nüksleri SSS'de meydana gelebilir

The Journal of Infectious Diseases

SUPPLEMENT ARTICLE

IDSA Infectious Diseases Society of America hivma hiv medicine association OXFORD

The Multiple Origins of Ebola Disease Outbreaks

Seth D. Judson[1] and Vincent J. Munster[2]

[1]Division of Infectious Diseases, Department of Medicine, Johns Hopkins University School of Medicine, Baltimore, Maryland, USA; and [2]Laboratory of Virology, Division of Intramural Research, National Institute of Allergy and Infectious Diseases, National Institutes of Health, Hamilton, Montana, USA

Background. The origins of Ebola disease outbreaks remain enigmatic. Historically outbreaks have been attributed to spillover events from wildlife. However, recent data suggest that some outbreaks may originate from human-to-human transmission of prior outbreak strains instead of spillover. Clarifying the origins of Ebola disease outbreaks could improve detection and mitigation of future outbreaks.

Methods. We reviewed the origins of all Ebola disease outbreaks from 1976 to 2022 to analyze the earliest cases and characteristics of each outbreak. The epidemiology and phylogenetic relationships of outbreak strains were used to further identify the likely source of each outbreak.

Results. From 1976 to 2022 there were 35 Ebola disease outbreaks with 48 primary/index cases. While the majority of outbreaks were associated with wildlife spillover, resurgence of human-to-human transmission could account for roughly a quarter of outbreaks caused by Ebola virus. Larger outbreaks were more likely to lead to possible resurgence, and nosocomial transmission was associated with the majority of outbreaks.

Conclusions. While spillover from wildlife has been a source for many Ebola disease outbreaks, multiple outbreaks may have originated from flare-ups of prior outbreak strains. Improving access to diagnostics as well as identifying groups at risk for resurgence of ebolaviruses will be crucial to preventing future outbreaks.

1976'dan 2022'ye kadar bilinen tüm *Ebolavirus* salgınlarının incelenmesi;

- ¼'ünün daha önceki bir salgından kurtulan birinin latent infeksiyonuna maruz kalmaktan kaynaklanmış olabileceğini göstermektedir

DSÖ

- Taburculuktan 2 hf sonra
- Altı ay boyunca ayda bir
- Bir yılı tamamlayana kadar üç ayda bir takip önerir

Erkekler, *Ebolavirus* RNA'sı negatif olana kadar bu ziyaretler sırasında semen testi yaptırmalıdır. RNA iki kez negatif çıkana kadar güvenli cinsel temas (prezervatif)

Üveit ve menenjit, EVH nüksünün göstergesidir

Menenjitten şüpheleniliyorsa, kanda *Ebolavirus* RNA negatif olsa bile LP yapılmalıdır

Matematiksel modellemeyi kullanma

Mathematical models for devising the optimal Ebola virus disease eradication

Shuo Jiang, Kaiqin Wang, Chaoqun Li, Guangbin Hong, Xuan Zhang, Menglin Shan, Hongbin Li & Jin Wang

Journal of Translational Medicine **15**, Article number: 124 (2017) | Cite this article

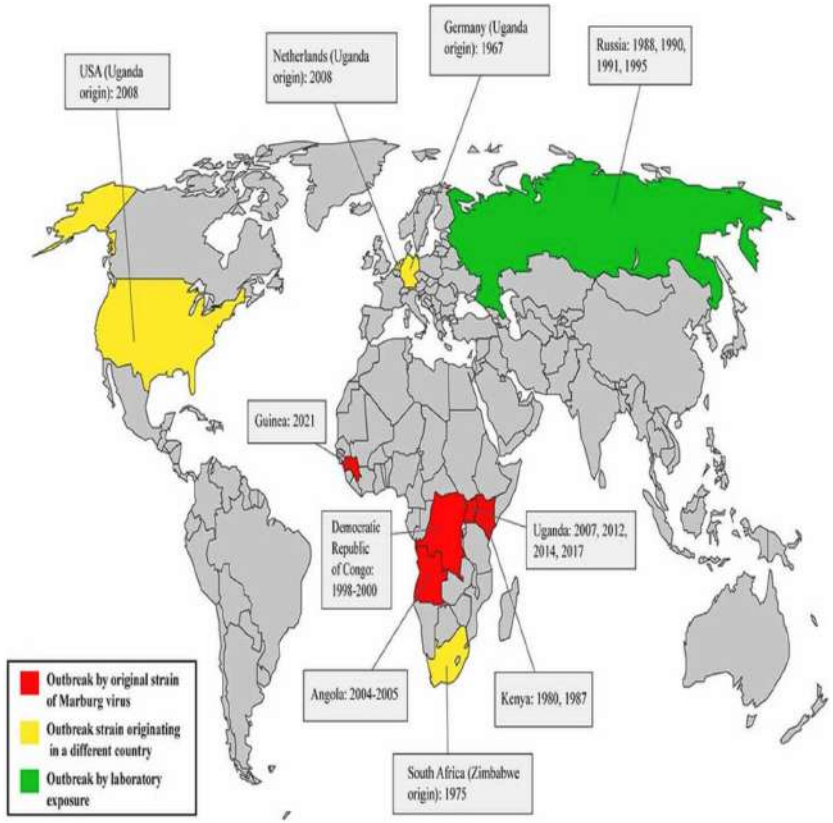
- Kıt kaynakların nereye tahsis edileceği
- Kontrol önlemlerinin olmadığı durumda salgının olası kapsamının nasıl tanımlanacağı
- Uluslararası örgütleri ve ulusal hükümetleri gerekli desteği sağlamaya teşvik eden «en kötü durum senaryolarının» nasıl tanımlanacağı
- Etkili müdahaleler ile faydası sınırlı olanların nasıl ayrılacağı
- Gelecekteki salgınlarda modellemenin daha da iyileştirilmesi için öneriler

Marburg virus hastalığı

Tüm insan enfeksiyonları Afrika'da, ölüm %80-%90

- 1998-99 DKC’de altın madencilerinde, 154 olgu
- 2007- Uganda, Kitaka Mağarası'nda çalışan madencilere
- 2007- Uganda, Kamwenge ve Ibanda bölgelerinde madenciler
- 2009- Uganda, yarasa istilasına uğramış mağaraya giren turistler
- 2017- Uganda, kaya tuzu madeninde aynı ailenin 4 üyesi

Kaynak meyve yarasaları !!!!



Nyakarahuka *et al. BMC Infectious Diseases* (2020) 20:461
https://doi.org/10.1186/s12879-020-05187-0

BMC Infectious Diseases

RESEARCH ARTICLE Open Access

A retrospective cohort investigation of seroprevalence of Marburg virus and ebolaviruses in two different ecological zones in Uganda

Luke Nyakarahuka[1,2*], Ilana J. Schafer[3], Stephen Balinandi[1], Sophia Mulei[1], Alex Tumusiime[1], Jackson Kyondo[1], Barbara Knust[3], Julius Lutwama[1], Pierre Rollin[3], Stuart Nichol[3] and Trevor Shoemaker[3]

Abstract

Background: Uganda has experienced seven Ebola Virus Disease (EVD) outbreaks and four Marburg Virus Disease (MVD) outbreaks between 2000 and 2019. We investigated the seroprevalence and risk factors for Marburg virus and ebolaviruses in gold mining communities around Kitaka gold mine in Western Uganda and compared them to non-mining communities in Central Uganda.

Methods: A questionnaire was administered and human blood samples were collected from three exposure groups in Western Uganda (gold miners, household members of miners, non-miners living within 50 km of Kitaka mine). The unexposed controls group sampled was community members in Central Uganda far away from any gold mining activity which we considered as low-risk for filovirus infection. ELISA serology was used to analyse samples, detecting IgG antibodies against Marburg virus and ebolaviruses (filoviruses). Data were analysed in STATA software using risk ratios and odds ratios.

Results: Miners in western Uganda were 5.4 times more likely to be filovirus seropositive compared to the control group in central Uganda (RR = 5.4; 95% CI 1.5–19.7) whereas people living in high-risk areas in Ibanda and Kamwenge districts were 3.6 more likely to be seropositive compared to control group in Luweeero district (RR = 3.6; 95% CI 1.1–12.2). Among all participants, filovirus seropositivity was 2.6% (19/724) of which 2.3% (17/724) were reactive to Sudan virus only and 0.1% (1/724) to Marburg virus. One individual seropositive for Sudan virus also had IgG antibodies reactive to Bundibugyo virus. The risk factors for filovirus seropositivity identified included mining (AOR = 3.4; 95% CI 1.3–8.5), male sex (AOR = 3.1; 95% CI 1.01–9.5), going inside mines (AOR = 3.1; 95% CI 1.2–8.2), cleaning corpses (AOR = 3.1; 95% CI 1.04–9.1) and contact with suspect filovirus cases (AOR = 3.9, 95% CI 1.04–14.5).

(Continued on next page)

- Madencilerin serumlarında Marburg virusa karşı antikor, ülkenin madencilik yapılmayan bir bölgesindeki bir kontrol grubuna kıyasla **X5 fazla**
- Yarasa maruziyeti !!

Postgrad Med J. 1973 Aug;49(574):542-6. doi: 10.1136/pgmj.49.574.542.

Marburg virus disease

G A Martini

Bulaşma yolları Ebola virus ile aynı

- Almanya-Yugoslavya'daki salgında hasta bakımı ve kadavra yıkanması- 6 sağlık çalışanı infekte
- Bu salgında iyileşen bir erkek hastadan eşine cinsel temasla bulaş

- Angola'da 2004'deki salgında enjeksiyon ekipmanı ile bulaş

Klinik ve laboratuvar özellikleri de Ebola virus ile benzer

Tanıda

- RT-PCR ile spesifik RNA dizileri veya ELISA ile viral antijenler saptanır
- Batı Afrika salgınında Ebola VH'da hızlı tanı testleri sahada denenmişken Marburg virus için hızlı testler hala araştırma laboratuvarıyla sınırlıdır

Şok gelişimini önlemek için agresif destekleyici bakım. Onaylı spesifik tedavi yok

Afrika'da yeni ve büyük bir Marburg salgını olması durumunda;

- **Monoklonal antikorlar** (MR191-N, MR186-YTE)
- Favipiravir (Batı Afrika'daki Ebola virüsü hastalığı olan hastalarda etkililik hedeflerini karşılamadı ve kullanımı durduruldu)
- **Remdesivir,** makaklarda olumlu sonuçlar
- **BCX4430 (galidesivir),** erken dönemde başlanan tedavi kobaylarda olumlu sonuç

- Marburg VH önlenmesi için **onaylanmış aşı yoktur** ve Ebola VH’nı önlemek için kullanılanlar Marburg'a karşı hiçbir fayda sağlamayacaktır
- Marburg aşılarını geliştirme çabaları, DSÖ tarafından desteklenen bir konsorsiyumun (MARVAC) rehberliğinde devam etmektedir

Sonuç olarak

- Küreselleşme nedeniyle dünyanın herhangi bir yerindeki salgın hepimizi etkiliyor
- Salgının ortaya çıktığı bölgenin özellikleri (sosyal, kültürel, coğrafi, ekonomik,…) dikkate alınarak hem bölgesel hem de uluslararası işbirliği önemli
- Salgınlar kanıta dayalı protokoller geliştirmek ve test etmek için benzersiz bir fırsat
- Önceki salgınlardan öğrendiklerimiz gelecekte binlerce hayat kurtarabilir