Infectious Disease Surveillance and Monitoring for Animal and Human Health: summary of notable incidents of public health significance. July 2019

*Incident assessment:

<table>
<thead>
<tr>
<th>Deteriorating</th>
<th>No Change</th>
<th>Improving</th>
<th>Undetermined</th>
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<tr>
<td>Incident is deteriorating with increased implications for public health</td>
<td>Update does not alter current assessment of public health implications</td>
<td>Incident is improving with decreasing implications for public health</td>
<td>Insufficient information available to determine potential public health implications</td>
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<th>Notable incidents of public health significance</th>
<th>Incident assessment*</th>
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<td>Ebola virus disease (EVD), Democratic Republic of Congo</td>
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01 August 2019 marked the one year anniversary of the confirmation of this Ebola outbreak, which has continued with moderate intensity and increased spread over the past month. As of 30 July, there had been 2,604 confirmed and 94 probable cases across North Kivu and Ituri provinces. Three new health zones reported their first confirmed cases in July: Mambasa (Ituri province), Goma (North Kivu), Nyiragongo (which is a peripheral zone of the city of Goma). A total of 344 cases were reported during July (compared to 356 in June), from 19 of the 26 affected health zones. The percentage of new cases not coming from contact lists remains high.

On 14 July, a confirmed case was reported in Goma in a man who had travelled from Butembo. Goma is a city of two million people with an international airport close to the Rwandan border. A case in Goma had been anticipated and response activities were quickly implemented. All contacts were identified and followed-up and vaccination of high-risk contacts began on 15 July. A second case was confirmed in Goma on 30 July. This latest case became symptomatic on 22 July, after arriving from Bunia, Ituri province. Investigations are underway to determine where infection occurred, but initial reporting indicates that the case is not linked with the first Goma case.

A change in outbreak response management was reported on 22 July with the President's Office taking oversight and the Minister of Health resigning. A new technical committee was created, with Dr. Jean-Jacques Muyembe taking over leadership of the response. Daily public updates were suspended, but the WHO EVD dashboard remains in operation.

On 25 July, Uganda declared the Ebola outbreak contained after more than 42 days since the death of the last confirmed case.

An analytical study in DRC has confirmed the adverse impact that violent events have on Ebola transmission. Transmission was increased and sometimes sustained for weeks after such events.

Lacking a virus isolate from the current EVD outbreak in the DRC, a CDC study used reverse genetics to generate an “outbreak virus” for in vitro testing of candidate therapies and diagnostic tests. The recombinant virus was compared to a similarly engineered Makona virus from the West African outbreak. The results demonstrated the utility of...
reverse genetics to inform outbreak responses, but also raised questions as to why outbreak isolates were not made available.

**Consideration of PHEIC by WHO IHR Committee**

On **17 July 2019** the WHO Director-General declared the Ebola outbreak a Public Health Emergency of International Concern (PHEIC), following a meeting of the fourth IHR Committee for Ebola. The Committee cited recent developments in the outbreak in making its recommendation, including the first confirmed case in Goma. The committee determined that risk of spread remains very high at national and regional levels, but still low at global level. No restrictions on trade or travel are recommended. Despite this, the risk to the UK from the current outbreak remains unchanged at negligible to very low.

**Other incidents of interest**

- an outbreak of **viral haemorrhagic fever** was detected in La Paz department, **Bolivia**, with the aetiology subsequently identified as a **New World arenavirus similar to Chapare virus**. There were **five cases**: two agricultural workers infected during the rice harvest, and three healthcare workers infected through nosocomial person-to-person transmission. Three cases, including two healthcare workers, died. Chapare virus was **first discovered** in Bolivia in a small outbreak in 2003, with no additional cases reported since then.

- A **first locally-acquired chikungunya case** was reported in **Taiwan**, not unexpected as chikungunya is **known to circulate throughout South East Asia**.

- the longstanding cholera outbreak in **Yemen** saw a small increase in case numbers this month, from 85,950 in June to **90,783** in July.

- widespread increases in dengue transmission have been noted in many countries, including the **Philippines, Bangladesh, the Americas**. Dengue classically occurs cyclically and 2019 appears on track to be a peak year, the first since 2016.

- vaccine-derived polioviruses were reported in three new countries this month: two cases due to a newly emerged cVDPV1 in **Myanmar**; one case of cVDPV2 in **China**, linked to an Chinese environmental isolate from 2018; and an environmental cVDPV2 in **Ghana** linked to an outbreak in Nigeria.

- In a situational update on **cVDPV2 outbreaks in Africa**, WHO assessed the risk of international spread and/or emergence as high due to suboptimal immunity of population, ongoing population movement, and increasing mucosal immunity gaps to type 2 poliovirus.

- In **Pakistan**, **wild poliovirus type 1 transmission** continues with the total to end July 2019 (47) far exceeding that for the whole of 2018 (12). Environmental isolates have been **detected in many areas of the country**, indicating a risk of further spread and transmission.

- Concurrent dengue and yellow fever outbreaks are taking place in **Côte d'Ivoire**, centered around Abidjan. As of 30 July, **2,919 suspected dengue cases**, of which 302 were confirmed, and **89 yellow fever cases**, including one death, have been reported.

- HIV outbreak in children, **Pakistan**: in Larkana district, Sindh province, WHO reported that 876 individuals tested positive, with the majority (82%, 719) below the age of 15 years. Several risk factors were identified, including unsafe intravenous injections and blood bank practices; unsafe child delivery practices; poorly implemented infection control programs; and improper collection, storage, segregation and disposal of hospital waste. This is the fourth reported outbreak of HIV in Larkana district since 2003.

- WHO announced that three different **falsified rabies vaccines**, and a falsified anti-rabies serum for equine use, were identified in the **Philippines**. Investigations are ongoing to
assess the potential risk to public health. Alerts were posted by PHE, NaTHNaC, and ECDC. This is the second alert regarding falsified rabies vaccines in the Philippines in 2019

### Publications of interest

- Alongshan virus (ALSV) is a novel tick-borne virus associated with human illness (fever and headache) in China. It has now been detected in 2 of 198 *Ixodes ricinus* ticks in south-eastern Finland. However, neither ALSV RNA nor antibodies were detected in sera from 879 patients with suspected tick-borne encephalitis virus infections.

- bejel (non-venereal or endemic syphilis) is caused by *Treponema pallidum* subspecies *endemicum*, and is most commonly transmitted by skin-to-skin contact among children. It is endemic in dry and hot areas of the world but has not been reported in eastern Asia and the Pacific. In Japan, where syphilis is a re-emerging disease, a molecular epidemiological study of isolates from suspected syphilis patients revealed five cases of bejel. All were men who have sex with men (MSM) and were suspected to be acquired locally. The findings demonstrate the circulation of *T. pallidum* subspecies *endemicum* in Japan, and suggest transmission among MSM.

- a review of the evidence linking BK polyomavirus with bladder carcinoma concluded that the virus should be considered a known, rather than a possible, carcinogen.

- Bombali virus, a novel virus in the genus *Ebolavirus*, was discovered in bats in Sierra Leone in 2018, and subsequently also found in bats in Kenya. A new study reports detection of *Bombali virus in Mops condylurus bats in Guinea*, suggesting that the virus may be more widely distributed than initially suspected.

- factors behind the recent emergence of *Candida auris* as a human pathogen remain a mystery. Mammals are relatively resistant to fungal pathogens, thought to be due to their high basal temperature. In a phylogenetic study, *C. auris* was shown to grow at higher temperatures than its close relatives. The authors hypothesise that *C. auris* gained thermal tolerance, allowing growth in mammals, by adapting to climate change-related increases in environmental temperatures.

- drug-resistant HIV: in a new report from WHO, it was revealed that in 12 countries in Africa, Asia and the Americas, levels of drug resistance against efavirenz and nevirapine (the two drugs that constitute the backbone of HIV treatment) exceeded 10% amongst adults starting first line therapy.

- Japanese encephalitis (JE) is an arboviral disease found in Asia, transmitted in an enzootic cycle mainly by *Culex* mosquitoes. *JE virus (JEV) has been identified for the first time in seals*. The virus was detected by PCR and isolated in culture from brain tissue from two young seals with lethal encephalitis in a Chinese aquarium. No other pathogens were detected. The findings suggest that JEV infects and causes disease in more animal species than previously thought.

- Lassa fever only recently emerged in Benin and Togo. Small mammal sampling was conducted in an outbreak area in Benin, and *Lassa virus (LAV) was detected in 3 pygmy mice (Mus baoulei)*. Surprisingly few *Mastomys natalensis* (the usual reservoir species) were recovered, and none was LAV positive. Viral sequences clustered with a sequence from a pygmy mouse in Ghana, and more remotely, with strains from humans in Togo (known to be similar to human viruses from Benin). This implicates *M. baoulei* as reservoir host species spreading LAV in Benin, Togo and Ghana, and is the fourth such species identified to date (along with *M. natalensis, M. erythroleucus* and the soft-furred mouse *Hylomyscus pamfi*).

- a systematic review of ribavirin treatment for Lassa fever (LF) which included recently released data, concluded that benefit is limited to patients with severe forms of LF.
while its use in mild disease may be potentially harmful. Re-assessment of the benefit of ribavirin in the treatment of LF seems urgently required.

- during the investigation and management of a case of leprosy in pregnancy, Mycobacterium leprae was detected in the placenta. Although multiple maternal samples were positive, no DNA or RNA of M. leprae were detected in her breast milk, and the neonate was not infected. This finding provides support for the placenta effectively stopping vertical transmission, and that breast-feeding by women receiving multidrug leprosy therapy is safe for their infants.
- a fatal case of yellow fever encephalitis was reported in a vaccinated three-year-old child in Brazil. The child presented with severe central nervous system manifestations but did not show any classical signs or symptoms of yellow fever. Wild-type yellow fever virus RNA, identical to that circulating during a concurrent outbreak, was detected in the cerebrospinal fluid.
- WHO updated its yellow fever recommendations and certificate requirements, including a general country list of vaccination requirements and recommendations and a list of yellow fever risk countries (Annex 1). NaTHNaC published a summary of changes.
- Sequelae of Zika infection in children at 2yrs: new research and associated commentary provide more insight into longer term effects on neurological development in children infected in utero. 216 surviving children (with and without recognised effect at birth) born to PCR positive mothers were followed for up to 32 months and underwent detailed developmental examinations. Language function was most affected, but other less common findings included resolution of microcephaly with normal neuro-development (n=2), development of secondary microcephaly (n=2), and autism spectrum disorder in three previously healthy children in the second year of life.
- the annual report on malaria imported into UK was published on GOV.UK.
- PHE and NaTHNaC published a new leaflet on rabies risks for travellers.
- a spatial database of public health facilities in sub-Saharan Africa has been compiled and is freely available to download.

Novel agents, rare pathogens and disorders

The concept of novel foods increasingly considers the use of insects as proteinaceous foods. A recent study examined parasites in edible insects from household farms and pet stores in Central Europe to determine the potential risk of parasitic infections for humans and animals. Over 80% of insects tested from 300 farms contained parasites, and ~30% were human pathogens. These included Cryptosporidium, Isospora and Entamoeba. The real threat to human health is yet to be determined.