Infectious Disease Surveillance and Monitoring for Animal and Human Health: summary of notable incidents of public health significance. June 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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<tr>
<th>Notable incidents of public health significance</th>
<th>Incident assessment*</th>
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<tr>
<td><strong>Ebola virus disease (EVD), Democratic Republic of Congo</strong></td>
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The Ebola outbreak continues with moderate intensity and has now been in progress for over 11 months. As of **01 July**, there have been 2,260 confirmed and 94 probable cases in 23 health zones across North Kivu and Ituri provinces. A total of 356 cases were reported during June (compared to 459 in May), from 20 of the 23 affected health zones.

This indicated both widespread transmission and that reintroduction of Ebola to areas not reporting recent cases has become a frequent occurrence. The milestone of 2000 cases was reached on **2nd June**, a period of just 71 days since the first 1000 cases were reached. A **new health zone in Ituri province, Ariwara**, reported its first confirmed case on **30 June**. The patient had fled there from Beni after being identified as a contact (her 5 children were all confirmed cases). Ariwara is located the farthest north so far in this outbreak, some 500 km from Beni, and about 70 km from the border with South Sudan [map].

Sadly the **challenges remain the same**: high proportion of community deaths: a low proportion of new cases who were recognised contacts or contacts under surveillance: nosocomial transmission: and persistent delays in detection and isolation in Ebola treatment centres.

**Security incidents and violent attacks** against the response have continued to occur sporadically, and **ongoing inter-ethnic violence is fuelling increased migration out of the region**. Within DRC the outbreak has been contained within Ituri and North Kivu Provinces [map], but for the first time there was international spread when three cases were reported from Uganda.

**Uganda cases**

On 11 June 2019, **the Ugandan Ministry of Health reported a confirmed Ebola case** in Kasese district [map], bordering the DRC. This was a child who usually resided in Kasese, but who had travelled from Mabalako DRC with his family after attending a funeral. Two other family members were also rapidly confirmed as cases, and all cases returned to DRC for treatment. In the period since, there have been no further cases in Uganda and all identified contacts **completed 21 days of follow-up** without developing symptoms.
Consideration of PHEIC by WHO IHR Committee

Following the occurrence of cases in Uganda, the WHO IHR committee met for the third time on 14 June. Although disparate views were considered, its conclusion was that the outbreak is a health emergency in DRC and the region, but did not meet all the criteria for a Public Health Emergency of International Concern (PHEIC). This decision has been controversial.

Funding gaps

The WHO reiterated the importance of continued funding by member states and stated that the overall outbreak response is currently struggling to maintain at full scale all its activities in the context of a $54 million funding shortage. Without adequate funding, response activities will be compromised. Cessation of operations must not be allowed to occur as the prognosis for sustained outbreak control could be devastating. A summary of the outbreak to date was published in NEJM.

Other incidents of interest

- the longstanding cholera outbreak in Yemen saw a stabilisation in case numbers this month: 73,601 cases in June, compared to 80,778 in May. However, after multiple weeks of decline, the trend of suspected cases increased again during June.
- autochthonous dengue cases were detected on the island of Mayotte for the first time since 2015
- Peru declared a 90-day health emergency due to an unusually large number of cases of Guillain-Barré syndrome across five regions. 619 cases were reported between 19 May and 29 June, with a peak during 2-8 June. Investigations to identify the cause of the outbreak are ongoing, but no clear cause has yet been identified. A similar increase in cases was seen at around the same time last year.
- an upsurge in hantavirus infections (report in German) has been detected in several regions of Germany, reflecting a periodic increase that is known to occur every 2-3 years.
- juvenile stages of non-native Hyalomma ticks (species not yet determined) have been found on horses in Germany, suggesting that these ticks have overwintered locally after introduction via migratory birds. Such ticks can be vectors of infectious agents such as CCHF virus
- the US FDA issued a safety alert regarding the risks of multi-drug resistant organisms acquired through fecal microbiota for transplantation (FMT). This follows the detection of two invasive ESBL-producing Escherichia coli infections, including one death, in immunocompromised adults who had received FMT derived from the same donor.
- a single laboratory-confirmed case of Nipah virus infection was reported in Kerala, India, almost a year after the first outbreak in that state. 330 contacts (from the patient’s college and a training camp) were quarantined but no other cases were detected. The patient survived. Of 141 bats sampled from the area, one was PCR positive for the virus
- two countries newly reported vaccine-derived polioviruses during June: Angola, affected by 2 new virus emergences, and Ethiopia, linked to an ongoing outbreak in Somalia. Additionally, the DRC reported 2 new emergences, bringing the number of separate outbreaks in that country to 6
Publications of interest

- the *Bacillus cereus* group contains diverse bacteria that are ubiquitous in the environment. Some members of the group are typically pathogenic and toxin producing, such as *B. cereus* and *B. anthracis*. Anthrax is classically associated with *B. anthracis*, and infection can occur through foodborne, inhalation and cutaneous routes of transmission. Twelve cases of severe anthrax-like cutaneous infection occurred amongst otherwise healthy newborns in India, attributed to *B. cereus*. Cutaneous lesions on the face, neck and arms developed in all 12, while 2 also developed gas gangrene-like lesions. 19 *B. cereus* strains isolated from infants, staff and the environment were selected for detailed analysis. All were closely related to the anthracis lineage, but none had genes encoding *B. anthracis* plasmid-mediated virulence factor.

- Crimean-Congo hemorrhagic fever (CCHF) virus was detected in a tick collected from a migratory bird in Italy. Phylogenetic analysis of the viral genome and identification of the tick species (*Hyalomma rufipes*) placed the likely origin of the virus in Africa. This finding confirms that avian migration can play a role in dispersion of the virus, as previously demonstrated in Spain.

- Middle East Respiratory Syndrome (MERS) treatment in Saudi Arabia: in a retrospective cohort study of 349 seriously ill patients with PCR-confirmed MERS, treatment with ribavirin and recombinant interferon was not associated with a reduction in 90-day mortality or with faster viral clearance.

- noroviruses are believed to be transmitted mainly via contact with infected persons and contaminated environments. However, in a study investigating airborne transmission, norovirus RNA was found in air samples collected close to infected patients. Detections were strongly associated with a shorter time since a patient’s last vomiting episode, suggesting that vomiting is a major source of airborne norovirus. Viral RNA was found in aerosol particles of different sizes, including sub-µm particles, confirming that airborne norovirus can play an important role in transmission.

- Powassan virus is a tickborne flavivirus found in North America. Infection in humans starts with a non-specific prodrome which may evolve to central nervous system presentations. A case was described in whom infection presented as a polio-like illness. It was known from studies in mice that, like polioviruses, Powassan virus can affect motor neurons in the spinal cord, but such spinal cord involvement had rarely been documented before in human cases.

- a case report from the USA described a human case of rabies with unusual cardiac involvement on presentation, with electrocardiogram showing ST-elevation and a myocardial infarction was diagnosed. Rabies was only considered subsequently after more typical signs emerged, and a history of dog bite in India was then elicited. Cardiac signs have been observed as late consequences of rabies virus dissemination.

- trends in human rabies deaths and exposures in the US: of the 125 human rabies cases diagnosed since 1960, most (89) were autochthonous cases predominantly (62, 70%) attributed to bats. A minority (36, 28%) were acquired from dogs while travelling abroad. Following elimination of canine rabies in the US, achieved in 2004, wildlife reservoirs such as skunks, foxes, raccoons, and bats have assumed importance. Wildlife rabies is found in all states except Hawaii.

- report from European Academies' Science Advisory Council: Imperative of climate action to protect human health - on wider health impacts (communicable and non-communicable diseases) from climate change.
**Novel agents, rare pathogens and disorders**

- *Diaporthe phaseolorum* is a fungal plant pathogen. Human infections with *Diaporthe* species are rare, with most cases involving highly immunosuppressed persons and acquired via inoculation injury. A new case report describes a soft tissue infection with *D. phaseolorum* in a heart transplant patient (10 years previously) with end-stage renal failure. The patient presented with a slowly growing subcutaneous cyst on the lower leg. An aspirate was examined histologically revealing extensive fungal elements subsequently isolated in culture. Treatment included surgical excision and prolonged antifungal therapy for 7 months.

- The fungus *Pneumocystis jirovecii* is an important respiratory pathogen in the immunocompromised, particularly in persons with HIV. In contrast, *Histoplasma capsulatum*, a dimorphic fungus, causes primary infections in healthy individuals as well as being an AIDS defining illness. Co-infections with these fungi have been reported on rare occasions, mostly in hospitalised AIDS patients. A new study investigated the frequency of such co-infections in hospitalised patients with acute pulmonary disease in Mexico. All patients underwent bronchoalveolar lavage (BAL) for investigation of hypoxic pneumonia. Using molecular detection methods, microscopy and culture on 289 patients’ BAL samples, histoplasmosis was diagnosed in 60, pneumocystosis in 45, and 12 patients were dually infected. Nine of the 12 were HIV positive, but the remaining three had no sign of any immunocompromise. Although the case fatality rate was higher (33%) in dually infected individuals compared to single infections (13% for pneumocystosis, 16.6% for histoplasmosis), this difference was not statistically significant.

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