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

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<thead>
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<th>Incident assessment*</th>
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<td>Ebola virus disease (EVD), Democratic Republic of Congo</td>
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Thirteen months into the outbreak, transmission continued with moderate intensity and further spread during August. As of 1 September 2019, there had been 2,931 confirmed and 105 probable cases across 3 provinces. Over 2,000 patients have died (overall case fatality ratio 67%), over a quarter (28%) of cases are in children, and confirmed cases still occur in healthcare workers.

One new province and 3 new health zones reported their first confirmed cases in August: Lolwa (Ituri province), Pinga (North Kivu), and Mwenga (South Kivu). There are now 29 affected health zones in 3 provinces. A total of 307 cases were reported during August, a decline compared to June (344) and the lowest monthly total since March 2019. The first cases in South Kivu province were 2 individuals (mother and child) who had had contact with a confirmed case in Beni (North Kivu) before travelling south to Mwenga health zone. In total, 6 cases were confirmed here in 2 family clusters, the second of which followed a nosocomial transmission.

On 29 August 2019, a new EVD case was confirmed in Uganda. The patient was a young child who had been exposed and developed symptoms in DRC and was taken by her mother to seek medical care in Uganda. She was detected at the Mpondwe-Kasindi border point and immediately transported to an Ebola Treatment Centre in Kasese district, Uganda. There have not been any further cases associated with this incident in Uganda to date.

Concerns about the need for better coordination of many levels of the response have been raised. Outbreak response activities continue to be intermittently hampered by security incidents, nosocomial transmission persists, and there is ongoing uncertainty regarding the completeness of surveillance and detection of all new cases. The WHO considers that national and regional risk levels remain very high, while global risk levels remain low.

An interactive visual presentation of genomic epidemiology (354 genomes) of the outbreak is available here: [https://nextstrain.org/community/inrb-drc/ebola-nord-kivu](https://nextstrain.org/community/inrb-drc/ebola-nord-kivu)

ECDC updated its EVD risk assessment on 7 August.
Other incidents of interest

- a **human case of avian influenza H5N6** was reported in Beijing, **China**. This is the first reported H5N6 case since November 2018 and the first outside southern China.
- the longstanding cholera outbreak in **Yemen** saw a decrease in cases this month, from 91,559 in July to 64,265 in August. A **vaccination campaign** took place in Aden, Al Dhale’e and Taizz. However, the UN reported that many **humanitarian programmes in the country have shut down due to lack of funding**, affecting the provision of food rations, healthcare and clean water.
- dengue is known to occur cyclically in endemic countries, giving rise to peak years. Large increases in dengue incidence have been observed in many parts of Asia and the Americas. Particularly affected are **the Philippines, Thailand, Vietnam, Malaysia, Bangladesh, Brazil, Honduras** (which declared a **national emergency**), and **Nicaragua**.
- locally-acquired dengue cases were reported in **Florida, USA**, all in **Miami-Dade County**.
- WHO reported that **falsified Augmentin** (amoxicillin-clavulanic acid) had been found in **Uganda** and **Kenya**.
- 17 polio cases due to vaccine-derived polioviruses were reported this month from 6 countries. **Benin** reported its first ever cVDPV2 case linked to an outbreak in Nigeria. **Ghana** also detected its first case, after reporting an environmental isolate in July. As of 27 August, 59 **cVDPV cases** were reported this year.
- a milestone was passed in August: **3 years since the last detection of wild poliovirus in the African region** in **Nigeria**. A rigorous process towards certification of wild poliovirus freedom is underway.
- **human hepatitis due to the rat hepatitis E virus** was reported in **Hong Kong**. This is the seventh in Hong Kong and the eighth globally since September 2018 when it was first reported. The patient had underlying disease, as have all except one diagnosed cases to date. The source of infection could not be determined.
- **Rift Valley fever** has been reported by the **Central African Republic** (CAR), the first time this has been diagnosed in that country. There was a single confirmed human case, with 7 suspected cases detected on case finding; all were in Bossembélé health district, in western CAR (map). Sick livestock cattle and sheep were also identified. Investigations are ongoing, while the current rainy season is likely to increase density of the mosquito vectors.
- **Sweden** reported an unusual **increase in tularemia** cases, ongoing since the end of July. There have been ~100-150 cases each week, and as of 2 September, 690 cases had been confirmed. Although case incidence has been high, the outbreak is limited to known risk areas, such as Dalarna and Gävleborg regions, with most cases coming from central Sweden.

Publications of interest

- in alternate years since 2014, outbreaks of acute flaccid myelitis (AFM) in children have been observed. The cause remains unclear; enteroviruses (EV) have been implicated but rarely detected in CSF samples from AFM cases. In a **new study**, sequencing was combined with screening for antibodies against EV proteins, in CSF and sera from AFM patients (n=14) and controls (n=24). Whilst EV-RNA was only found in CSF from a single AFM case and one control, antibodies to EV were found in CSF from 79% of AFM cases, a significantly higher proportion than in any of the controls. Additionally, an EV-D68-specific peptide was immunoreactive only in samples from AFM patients. These findings further support the link between EV infections and AFM.
- Human angiostrongyliasis caused by the rat lungworm *Angiostrongylus cantonensis* is endemic in the Caribbean, Pacific Islands and Asia, but is expanding in geographic range. *A. cantonensis was detected in 2 hedgehogs on Majorca, Spain*, in the first report in Western European wildlife. Both animals had signs of an acute neurological disorder and were from different parts of the island. Large tourist numbers and the ubiquity of rats and snails on the island could facilitate spread of *A. cantonensis*. Given the importance of snails in local cuisine, the authors call for more research into intermediate host species and increased public awareness.

- Despite intensive research efforts, cholera ecology remains mysterious, in particular the mechanism by which *Vibrio cholerae* crosses bodies of water as big as oceans. A recent review provides support to the hypothesis that *waterbirds can act as vectors in the global dissemination of cholera*. The evidence includes ingestion and carrying of living copepods and/or chironomids (*cholerae reservoirs*) by waterbirds, detection of *V. cholerae* in samples taken from waterbirds and fish, and experimental infections in cormorants fed colonised tilapia. Nonetheless, many questions remain unanswered.

- An investigation of a MERS outbreak in a women-only dormitory in Saudi Arabia found variable attack rates, which were as high as 35.3% in one building. This was probably due to the extremely cramped and crowded conditions. Direct contact and sharing a bedroom with a case were independent risk factors for infection; having air conditioning in the bedroom was protective. A specific source could not be determined but may have been a hospital where 2 cases in the cluster worked as cleaners and where several confirmed MERS cases had previously been cared for. This highlights the potential role of healthcare workers who are not responsible for direct patient care (such as hospital cleaners) in the spread of MERS-CoV.

- The US FDA approved a new drug for treatment of highly treatment-resistant forms of pulmonary tuberculosis. Pretomanid in combination with bedaquiline and linezolid was approved for treating a specific population of adults with extensively drug-resistant, treatment-intolerant or nonresponsive multidrug-resistant pulmonary TB. Safety and effectiveness were shown in a study where 89% of recipient patients were successfully treated, significantly exceeding success rates of currently used treatments.

- A review of human rabies cases presenting with abnormal sexual behaviours was conducted after management of a confirmed rabies case who initially sought medical care because of repetitive spontaneous ejaculation. A total of 55 cases were identified, mostly male (51 of 55), and most from China and India. In 46 cases, the initial symptoms were unusual sexual behaviours without typical signs of rabies, resulting in misdiagnosis. Major presenting manifestations were priapism and ejaculation in males and hypersexuality in females. The pathogenesis of these presentations in rabies is not fully understood.

- *Salmonella Typhimurium* infects numerous wild and domestic animal species and is the second most common cause of salmonellosis in the UK. In 2016, an outbreak of a *Salmonella Typhimurium* (STm) variant historically associated with passerine birds occurred among birds, cats and humans in Sweden. Outbreak investigation was combined with retrospective analysis of data for 2009-16. Annual case numbers were significantly correlated for humans and cats, with patterns suggesting links between birdwatchers’ counts and cases in all 3 host types. The findings are suggestive of seasonal migrations of birds causing feline STm outbreaks in some years, followed by outbreaks in humans, presumably through contact with infected cats or environmental contamination.

- *Sporothrix schenckii*, a dimorphic fungus found in soil and vegetation, can cause human infections after traumatic disruption of skin by plant materials. Immunocompetent patients usually present with nodules, which can develop into ulcers, without systemic
symptoms. A case report describes disseminated sporotrichosis, initially diagnosed as pyoderma gangrenosum (a non-infectious skin condition treated with steroids). S. schenkii was isolated from blood and skin lesions, treatment was prolonged and healing eventually achieved after 6 months.

- *Strongyloides stercoralis* is a soil-transmitted nematode that is the predominant cause the human strongyloidiasis. There are 2 different strains, one that infects humans and dogs, and one that is dog-specific, but the role of zoonotic transmission is unclear. A recent study investigated the diversity of *Strongyloides* in humans and dogs in remote communities in Australia. In these locations, human infection remains common despite control programmes based on human treatment interventions. *S. stercoralis* haplotypes that relate to the human-infective strain were found in the dogs, providing support for a zoonotic reservoir for human strongyloidiasis.

- climate change and human health: several perspectives and editorials published
  - A New Era of Climate Medicine — Addressing Heat-Triggered Renal Disease
  - The Climate Crisis — Health and Care Delivery
  - Prioritizing Health in a Changing Climate
  - Human Health on an Ailing Planet — Historical Perspectives on Our Future
  - Urgent action is needed to protect human health from the increasing effects of climate change

- 2 perspectives supporting opposite sides in the polio eradication versus sustained control debate, and an article discussing fears of a polio resurgence similar to measles

- a Philosophical Transactions of the Royal Society B theme issue on ‘Dynamic and integrative approaches to understanding pathogen spillover’

- WHO’s review of *yellow fever in Africa and the Americas* for the year 2018

### Novel agents, rare pathogens and disorders

- In the USA, over 200 cases of severe pulmonary disease, including one death, in people with a history of vaping have been reported, across at least 25 states. Initial investigations do not point to an infectious aetiology. Inhalation of cannabinoid products may be contributory, but no single substance or product has yet been consistently associated with illness.