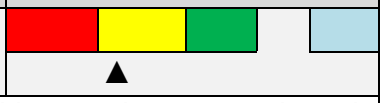
HM Government

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

***Incident assessment:**

Deteriorating	No Change	Improving	Undetermined
Incident is deteriorating with increased implications for public health	Update does not alter current assessment of public health implications	Incident is improving with decreasing implications for public health	Insufficient information available to determine potential public health implications

Notable incidents of public health significance	Incident assessment*
Ebola virus disease (EVD), Democratic Republic of Congo	

During October, EVD transmission was maintained at low level with a total of 76 confirmed cases during the month (see graph of cases by reporting date). This is a decline from 157 in September and was the lowest monthly total since September 2018. As of 31 October 2019, there had been 3,156 confirmed and 118 probable cases across 3 provinces (North Kivu, Ituri and South Kivu), with over 2,180 deaths (overall case fatality ratio 67%).

No new health zones or provinces in DRC were affected during October. Eight health zones (of the 29 ever affected) reported cases in the 21 days to 31 October, compared to 13 in the similar period in September.

Security issues and poor access continue to slow response activities in certain health zones. Violent attacks against response activities continued to occur, with destruction of health facilities and the death of an Ebola response worker.

A modelling study quantified the impact of unrest and conflict events on EVD control activities and persistence of the outbreak. Conflict events affected the rapidity of case isolation and population-level effectiveness of vaccination, and reversed declining trends of the epidemic trajectory.

Other incidents of interest

Arboviruses in Europe

- **France** reported 3 locally acquired Zika cases in the Var department, Provence-Alpes-Côte d'Azur region. This is probably the first local vector-borne transmission of Zika virus in Europe. All 3 cases resided in the same neighbourhood and all had onset of symptoms in late July-early August. ECDC published a risk assessment: with decreasing temperatures during autumn, environmental conditions are currently not favourable for sustained transmission
- **France** reported 3 new autochthonous cases of dengue, in the same areas as last month's cases: Alpes-Maritimes (total 7 cases) and Rhône (total 2 cases)
- **Germany** reported 2 new autochthonous cases of West Nile fever, with onset of symptoms in late August-early September. One case, in Berlin, could have been infected through exposure to dead birds, or via local vector-borne transmission. The second case, presumed to be mosquito-transmitted, was in Wittenberg, Saxony-Anhalt

- polio due to vaccine-derived polioviruses continues to be reported from many countries, with 31 cases reported in October. **Chad**, **Togo** and **Zambia** reported their first cVDPV2 cases. Additionally, **Ukraine** reported a case of vaccine-associated paralytic polio. As of 29 October, 117 cVDPV cases had been reported in 2019
- the **United Arab Emirates** reported its first locally acquired confirmed Middle East respiratory syndrome (MERS) case since May 2018. The patient had contact with dromedary camels at local farms prior to disease onset
- **Sudan** is experiencing a Rift Valley fever outbreak, with 248 human cases, including 7 deaths, reported in Red Sea, River Nile, Khartoum, White Nile, Gedaref and Kassala states, as of 30 October. Livestock disease has been confirmed in Red Sea and River Nile states
- the WHO reported that falsified quinine bisulphate and quinine sulphate had been found in **Uganda**, and **Central African Republic** and **Chad**, respectively; and falsified amoxicillin-clavulanic acid products had been found in **Haiti**

Publications of interest

- a serological study provides further evidence linking enteroviruses (EV) to biennial acute flaccid myelitis (AFM) outbreaks in the USA. Cerebrospinal fluid samples from a) 42 children with AFM and b) 58 controls with other neurologic disease were probed for antiviral antibodies, using a comprehensive viral library previously used to detect antibodies to all known human viruses. Deep sequencing was also performed with no viruses detected other than a single EV. High levels of CSF specific immunoreactivity to EV was detected in AFM cases compared to controls
- ECDC published a risk assessment following the nosocomial outbreak of carbapenemase-producing (NDM-1 and OXA-48) and colistin-resistant *Klebsiella pneumoniae* sequence type (ST) 307 in north-east **Germany**. Seventeen patients in 4 healthcare settings were affected. *K. pneumoniae* ST307 is a high-risk clone expanding globally, and the German outbreak strain has virulence markers associated with increased ability to cause disease. The concomitant increase in virulence, transmissibility and antimicrobial resistance among certain *K. pneumoniae* strains indicates a need for early detection to facilitate control measures
- Lassa virus (LV) is maintained in nature in its rodent reservoir, the multimammate rat (*Mastomys natalensis)*. A characterisation of 23 LV genomes from Liberia compared with viruses from elsewhere in the region, revealed that they were divergent from strains circulating elsewhere in West Africa. The Liberian viruses were also highly diverse within country, which created challenges for sequence-based molecular diagnostic methods. Awareness of this is important for local diagnostic testing as well as in other countries. See also associated commentary
- A new study provides evidence of long-distance, windborne migration of malaria vectors in the semi-arid desert Sahel, a possible explanation for malaria persistance in areas where surface water is absent for long periods each year. Aerial sampling captured *Anopheles* mosquitoes, most of which were female and had taken a blood meal, at 40-290m above ground. Findings were similar across years and locations, but with marked seasonality. Contrary to the conventional view that dispersal of anophelines in Africa occurs over distances of less than 5 km, modelling of flight trajectories estimated displacements between 120 and 300km. Further studies may determine whether such wind-borne migration includes malaria-infected mosquitoes
- A systematic review of human monkeypox outbreaks found that recent outbreaks had occurred in areas (particularly Nigeria) where it had not been reported for 20 years, leading the authors to postulate the presence of a possible new and widespread

zoonotic reservoir. DRC remains the country which consistently reports high numbers of suspected cases

- A study in Puerto Rican infants found that prenatal Zika virus exposure was associated with lower receptive language scores, but not other domains of cognitive development.
- highly pathogenic avian influenza A(H5N8) virus was found in lung samples of 2 gray seals (*Halichoerus grypus*) stranded on the Baltic coast of Poland in 2016 and 2017. The virus was closely related to the avian H5N8 strain circulating in Europe at the time. The exact transmission route remains unclear as natural transmission from birds to seals has not been documented
- the zoonotic parasite *Babesia venatorum* is usually associated with wild deer. It has recently been reported for the first time in the UK. Sheep (n=93), cattle (n=107) and deer (n=84) in northeast Scotland were sampled in 2014. Sheep were the only animals to be positive, a finding not previously documented elsewhere. Positive animals were in areas where migratory bird landings take place, so birds may have acted as tick vectors. These findings suggest a previously unrecognised threat to animal and human health in the UK, and that livestock may act as a major host for *B. venatorum*, effecting spread of babesiosis across Europe
- A study looking at the emergence of *Cryptococcus gattii* in the North American Pacific Northwest theorises that ancestors of *C. gattii* clones first arrived in the area by ship-borne transport (in contaminated ballast water), and that tsunami floods transported them far inland, where evolution to virulence took place over time. The paper includes an interetsing discussion of pathogen dispersal, emergence and 'black swan' events
- Sweden's 2019 tularaemia outbreak with over 900 cases, is its largest in >50 years. Central and northern areas were affected. Wildlife trapping and testing showed an increase in positive hares compared with previous years (54 vs an average of 9). The seasonality and type of symptoms in cases suggested that transmission was predominantly via mosquito bites
- first confirmation of cat-to-human *Mycobacterium bovis* transmission: human infections with *M. bovis* are relatively rare in the UK with most cases reporting historical exposures to unpasteurised milk. Investigation of an unusual outbreak in cats in Berkshire in 2012-13 included TB screening for human contacts, and resulted in the identification of several infected individuals. Two of these subsequently developed active disease, and *M. bovis* was isolated. Whole-genome sequencing revealed that isolates from one human patient and their cat were indistinguishable
- tick-borne encephalitis virus (TBEV) has been detected in ticks in UK for the first time. A surveillance study in sentinel animals and ticks in England and Scotland resulted in detection of TBEV in a tick from Thetford Forest (East of England). TBEV was also found in an area on the border between Hampshire and Dorset, and a highly probable case of tick-borne encephalitis was diagnosed in a European tourist who visited the New Forest area. These latest findings have just been published in Eurosurveillance. The risk from TBEV is currently assessed as very low for the general population
- A systematic review of global human toxoplasmosis outbreaks found that sources of infection varied by decade: meat contaminated with cysts predominated in the 1960s and 1990s; milk contaminated with tachyzoites in the 1980s; oocysts in water, sand and soil in the 2000s; and oocysts in raw fruits and vegetables in the most recent decade. The authors suggest that greater attention should be paid to production and disinfection of vegetables and to the quality of drinking and irrigation water
- "Making a Difference? The past, present, and future of typhoid control" a themed supplement of Clinical Infectious Diseases

- The Johns Hopkins Center for Health Security released a new Global Health Security Index, based on a comprehensive assessment across 195 countries. It found that not a single country is fully prepared for epidemics or pandemics

Novel agents, rare pathogens and disorders

- Extrapulmonary *Legionella* infections are rare. A case of *L. bozemanii* septic arthritis was diagnosed in an immunosuppressed individual. The diagnosis was delayed but finally made by joint fluid culture and PCR, and serology. A literature review revealed 9 other cases. Mono-arthritis was more likely in therapeutically immunosuppressed patients, after inoculation with environmental non-*Legionella pneumophila* serogroup 1 (Lp1) strains. In contrast, polyarthritis was more likely in immunocompetent individuals, and to be concomitant with or secondary to typical pneumonia-associated Lp1
- Hazard of a cow's tail - a case of exogenous *Listeria monocytogenes* endophthalmitis, Symptom onset with redness, pain, photophobia, and change in vision occurred 3 days after a traumatic cow's tail sweep. Microbiological diagnosis was delayed resulting in a substantial delay in appropriate antibiotic treatment. Reduced vision was present at long term follow-up, but ~40% of patients with *Listeria* endophthalmitis remain completely blind
- Spondweni virus is the closest relative of Zika virus. The epidemiology of these viruses shows some parallels: both cause mild disease in humans in Africa, and both crossed the Atlantic to the Americas. In a new study [NB: preprint], Spondweni virus was shown to cause foetal harm in a mouse model, and vector competence demonstrated in *Aedes aegypti* mosquitoes. These early findings raise the possibility that, like Zika virus, Spondweni virus could cause medically significant future outbreaks
- in the USA, a laboratory-acquired vaccinia virus infection was treated with the novel antiviral tecovirimat and intravenous vaccinia immunoglobulin. The unvaccinated patient presented with a vesicular lesion on the finger and then developed a fever. The necrotic lesion took 94 days to resolve and they were excluded from work for 4 months. The effect of tecovirimat on the clinical course is unclear, although previous similar incidents have been more severe requiring hospitalisation
- A first case report of keratitis caused by *Vibrio cholerae* non-O1, in a fisherman struck in the eye by a marine shrimp

This document has been produced by Public Health England on behalf of the Human Animal Infections and Risk Surveillance group. For more information or to sign up to the distribution list, please contact EpiIntel@phe.gov.uk