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List of Infectious Agents and Associated Traffic Lights

Infectious Agent/Disease	Type of Agent	Threat Level	Action	Status Changed
Chronic wasting disease	Prion	Green	<p>Two cases of men who developed CJD and died after consuming meat from the same population of deer infected with chronic wasting disease (CWD) were recently reported. The second of the two cases was confirmed postmortem as sporadic CJD. Given the history of the two cases and the difficulty in distinguishing between CWD and sporadic CJD (requires detailed prion protein characterisation), the authors are suspicious of a possible novel animal-to-human transmission of CWD. (Trout J, Roberts M, Tabet M, et al. Two hunters from the same lodge afflicted with sporadic CJD: Is chronic wasting disease to blame? [Abstract P7-13.002]. Neurology. 2024 Apr; 102(17 Suppl 1): 216.)</p> <p><u>A laboratory study using human cerebral organoids has concluded that humans are extremely unlikely to contract a prion disease because of inadvertently eating CWD-infected cervid meat. The organoids were directly exposed to high concentrations of CWD prions from white-tailed deer, mule deer or elk, and none became infected with CWD within 6 months. The positive control exposed to human CJD prions under the same conditions was infected.</u> (Grovesman B, Williams K, Race B, et al. Lack of transmission of chronic wasting disease prions to human cerebral organoids. Emerg Infect Dis. 2024 Jun; 30(6): 1193.)</p> <p><u>California reported its first detections of chronic wasting disease in May 2024. The samples were from two deer in separate counties.</u></p>	
Sporadic, acquired and inherited forms of human prion diseases (other than vCJD)	Prion	Green	<p>Consistent with previous studies, a 28-year US lookback study of recipients of blood from donors who subsequently developed CJD did not identify any cases of transmission. Follow-up was available for 1,245 recipients of components from 84 donors, totalling 6,795 person-years of observation. From a total of 973 recipient deaths, 36 had a neurologic cause and none were due to CJD. This included 641 recipients transfused within 5 years of the donor's death and 438 who survived more than 5 years after transfusion; there were 182 recipients in both categories. The consensus of this and comparable studies is that the risk of transfusion transmission of classic CJD is extremely low, if it exists at all. (Crowder LA, Dodd RY, Schonberger LB. Absence of evidence of transfusion transmission risk of Creutzfeldt-Jakob disease in the United States: Results from a 28-year lookback study. Transfusion. 2024 Jun; 64(6): 980-985.)</p> <p><u>In a recent series of mouse experiments, humanised mice overexpressing the human prion protein were intracerebrally inoculated with brain homogenates containing atypical scrapie (AS) prions. Out of approximately 120 mice, none developed clinical disease or accumulated detectable PrP^{res} in brain or spleen. When an additional group of 72 mice received intracerebral inoculation with brain homogenate pools from the original mice, one developed clinical disease with detectable PrP^{res} in the brain. These adapted AS prions closely mimicked</u></p>	

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			the phenotype of genuine human sporadic CJD prions but differed from them structurally. The conclusion of the experiments was that AS prions have a limited capacity to convert human PrP and thus the zoonotic risk is low, but rare adaptation may allow the emergence of prions resembling those spontaneously forming in humans. (Marín-Moreno A, Reine F, Herzog L, et al. Assessment of the zoonotic potential of atypical scrapie prions in humanized mice reveals rare phenotypic convergence but not identity with sporadic Creutzfeldt-Jakob disease prions. J Infect Dis. 2024 Jul; 230(1): 161-171.)	
vCJD	Prion	Green	<p>A simulation model by both Canadian blood services has estimated the risk of collecting a vCJD-contaminated blood donation as zero if current deferral criteria were lifted. In the most pessimistic scenario (using high prevalence that is likely overestimated), the risk was 1 in 157 million donations at Héma-Québec and 1 in 21 million donations at Canadian Blood Services. (Pozzo di Borgo A, Germain M, O'Brien SF, et al. Risk of variant Creutzfeldt–Jakob disease in a simulated cohort of Canadian blood donors. Vox Sang. 2023 Sep; 118(9): 738-745.)</p> <p>New Zealand Blood Service lifted their vCJD geographical restriction on 29/2/2024. Their restriction was more conservative than Lifeblood's, covering the UK, France and Ireland (six months' residence/visit between 1980-1996). The NZ regulator, Medsafe, approved the submission last year based on the model that supported Lifeblood's removal of the UK deferral adapted for New Zealand. It showed that the risk of removing the vCJD geographical deferral in NZ was negligible.</p> <p>As of 31 May 2024, the European Medicines Agency Committee for Medicinal Products for Human Use no longer recommends a geographical UK deferral for vCJD risk for plasma for fractionation donors.</p>	21/09/2011
Non-prion proteins associated with neurodegenerative diseases (tau, α-synuclein, amyloid-β)	Prion-like	Green	In an exploratory analysis of patients who received red blood cell transfusions, patients who underwent transfusion with red blood cells from donors who later developed multiple spontaneous intracerebral haemorrhages (ICHs) were at significantly increased risk of spontaneous ICH themselves. The Hazard Ratio was 2.73 for the Swedish cohort. However, only 0.1% of total transfusions were from a donor who subsequently developed multiple ICH and the majority of events in donors did not occur until more than 10 years after their blood was transfused. Whilst selection bias and residual confounding cannot be ruled out, even if this is a true association the attributable risk is small. (Zhao J, Rostgaard K, Lauwers E, et al. Intracerebral hemorrhage among blood donors and their transfusion recipients. JAMA. 2023 Sep; 330(10): 941-950.)	

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			<u>Between 2017 and 2022, eight individuals with a history of human cadaveric pituitary-derived growth hormone (c-hGH) treatment were referred to the UK's National Prion Monitoring Cohort after developing new and progressive disturbances of cognition. Five cases met standard definitions for dementia and one for mild cognitive impairment. Changes were consistent with Alzheimer's disease (definite for four cases, suggestive for two). Iatrogenic CJD and inherited causes were excluded, and sporadic Alzheimer's disease was unlikely due to young age. Based on this and biomarker findings, the authors concluded that their symptoms are a consequence of amyloid-beta (Aβ) transmission from contaminated c-hGH from batches known to contain quantifiable Aβ. Note that CJD has been demonstrated to be transmitted via contaminated hGH despite no evidence of it being transfusion transmitted, therefore the finding of this study is not directly applicable to the risk of transmission in blood. (Banerjee G, Farmer SF, Hyare H, et al. Iatrogenic Alzheimer's disease in recipients of cadaveric pituitary-derived growth hormone. Nat Med. 2024 Feb; 30(2): 394-402.)</u>	
Arboviruses miscellaneous (not elsewhere included)	Viral	Green	<p>November 2023 update</p> <p>Work in Germany has shown a broad distribution of Alongshan virus (ALSV) in ticks in Lower Saxony, with <i>Ixodes ricinus</i> and <i>Dermacentor reticulatus</i> both confirmed as competent vectors (replication and transmission of ALSV observed). Game and domestic animals from different locations in the state were also seropositive. (Ebert CL, Söder L, Kubinski M, et al. Detection and characterization of Alongshan virus in ticks and tick saliva from Lower Saxony, Germany with serological evidence for viral transmission to game and domestic animals. Microorganisms. 2023 Feb; 11(3): 543.)</p> <p>Echarate virus (ECHV) is a phlebovirus that causes febrile illness and is known to be present in Peru. A novel variant of ECHV (not close enough to be considered the same species) has recently been discovered in a febrile patient there. The acute serum sample caused cytopathic effect in Vero cells and the ECHV variant was the only pathogen present. (Troncos G, Popuche D, Adhikari B, et al. Novel Echarate virus variant isolated from patient with febrile illness, Chanchamayo, Peru. Emerg Infect Dis. 2023 Sep; 29(9): 1908.)</p> <p>Between 2016 and 2022, 19 cases of Powassan-related illness were reported in the state of Connecticut, including 6 in 2022. An additional four cases occurred in July 2023.</p> <p>February 2024 update</p> <p>A sequencing study in southern Spain found 8 cases of Toscana virus infection among 23 patients who were hospitalised between 2015-2019 with aseptic</p>	Added Aug 2019 by combining other entries

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			<p>meningitis for which no aetiology had been found. (Gámbaro F, Pérez AB, Prot M, et al. Untargeted metagenomic sequencing identifies Toscana virus in patients with idiopathic meningitis, southern Spain, 2015 to 2019. <i>Eurosurveillance</i>. 2023 Nov; 28(45): pii=2200913.)</p> <p>Significant transmission of Western equine encephalitis virus (WEEV) is occurring in Argentina. Extensive rains in the centre and north of the country has caused an abundance of vector mosquitoes and large numbers (>1,000) of equine outbreaks. The first human case since 1996 was reported on 20 Dec 2023, and there are 21 laboratory confirmed cases as of 30 Dec 2023. Argentina has also identified the first reported case of WEEV infection in a sheep, which was exposed to infected, symptomatic horses. Uruguay has detected 56 equine cases.</p> <p>May 2024 update</p> <p>A risk assessment regarding WEEV in the Region of the Americas was issued by PAHO/WHO on 29 Feb 2024. As of 14 Feb 2024, 73 confirmed cases of western equine encephalitis in humans had been reported from Argentina (69 cases) and Uruguay (4); in these countries and Brazil, almost 2,500 outbreaks in animals had been recorded. The human cases were reported from areas with higher numbers of suspected and confirmed equine cases. (Uruguay subsequently reported a fifth human case on 29 March.) The overall risk for the region is assessed as moderate, with moderate confidence.</p> <p>The numbers of human cases of tick-borne encephalitis have more than doubled in Poland over the last four years. In 2023, 659 cases were recorded.</p> <p>August 2024 update</p> <p>The first documented case of Yezo virus with simultaneous detection of the YEZV nairovirus in a patient's serum and the attached tick has been published. This supports the hypothesis of YEZV as a tickborne infection. (Ogata Y, Sato T, Kato K, Kikuchi K, Mitsuhashi K, Watari K, et al. A case of tick-borne Yezo virus infection: Concurrent detection in the patient and tick. <i>Int J Infect Dis</i>. 2024 Jun; 143: 107038.)</p> <p>Increasing numbers of acute encephalitis syndrome and associated deaths are occurring in the state of Gujarat, India. The cases are believed to be attributable to Chandipura virus, a sandfly-transmitted rhabdovirus. Chandipura virus is ubiquitous on the Indian subcontinent in humans and other mammals and was considered benign until reports of encephalitis in 2004. During a period of 1-2 months, Gujarat has reported 133 suspected cases with 48 deaths.</p>	

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			<u>The Czech Republic reported approximately 1200 cases of Lyme disease and 162 of tick-borne encephalitis during the first half of 2024. There is reference to approximately double the number of cases reported in the same period of 2023, but it is unclear whether this relates to TBEV, Lyme or both.</u>	
Arenaviruses	Viral	Green	No significant developments to report.	
Barmah Forest virus	Viral	Green	In 2023, there were 345 notifications of BFV infection, compared to 340 in 2022. Of these, the majority (>200 in both years) were reported from QLD.	25/05/2011
Bornaviruses (BoDV-1, VSBV-1)	Viral	Green	One human case of bornavirus 1 infection was reported from Bavaria, Germany, in November 2023. The source of infection is unknown.	
Chikungunya virus	Viral	Green	<p>November 2023 update</p> <p>Results have been reported from the phase 3 clinical trial of the virus-like particle-based chikungunya virus vaccine candidate produced by Bavarian Nordic, CHIKV VLP. Among all participants, 97% at 2 weeks and 86% at 6 months post-vaccination had seroprotective levels of neutralising antibody. The vaccine was well tolerated.</p> <p>Senegal reported its first CHIKV outbreak since 2015 in August 2023, when 47 cases were reported from the Kédougou region.</p> <p>February 2024 update</p> <p>Safety and immunogenicity data from the phase 3 clinical trial for the live, attenuated chikungunya virus vaccine candidate VLA1553 manufactured by Valneva have been published. After a single vaccination, VLA1553 induced seroprotective chikungunya virus neutralising antibody levels in 263 (98.9%) of 266 participants in the VLA1553 group (95% CI 96.7-99.8; p <0.0001) 28 days post-vaccination, independent of age. Analysis to day 180 after vaccination showed VLA1553 was generally safe, with an adverse event profile similar to other licensed vaccines. (Schneider M, Narciso-Abraham M, Hadl S, et al. Safety and immunogenicity of a single-shot live-attenuated chikungunya vaccine: a double-blind, multicentre, randomised, placebo-controlled, phase 3 trial. Lancet. 2023 Jun; 401(10394): 2138-2147.)</p> <p>This same vaccine (VLA1553) was approved by the FDA for use in adults under the brand name Ixchiq in November 2023.</p> <p>There were 40 notifications of CHIKV infection in Australia in 2023, the same as in 2022.</p> <p>May 2024 update:</p>	30/08/2016

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			<p>It was reported in February that Timor-Leste was experiencing its first outbreak of chikungunya.</p> <p>During 2023, 17 countries and territories in the Region of the Americas reported 410,754 cases of chikungunya, including 419 deaths. This figure is higher than that observed in the same period in 2022 (273,841 cases, including 87 deaths) and is the highest number of cases reported in recent years. In 2024, up to epidemiological week 14, 186,274 cases were reported, including 60 deaths due to chikungunya, with 97% of the cases reported in Brazil (n=180,600).</p> <p>August 2024 update</p> <p>An outbreak of CHIKV has been active in Senegal since July 2023. Characterisation of the circulating strains has identified a novel strain of the West African genotype, phylogenetically distinct from strains circulating in previous outbreaks. (Not yet peer reviewed: Padane A, Tegally H, Ramphal Y, et al. An emerging clade of chikungunya West African genotype discovered in real-time during 2023 outbreak in Senegal. medRxiv. 2023; doi: 10.1101/2023.11.14.23298527.)</p> <p>A matched cohort study of more than 140,000 CHIKV cases over 2015-2018 in Brazil concludes that CHIKV disease is associated with an increased risk of death for up to 84 days after symptom onset. The incidence rate ratio of death among cases compared to the unexposed was 8.4 within 7 days of symptom onset, decreasing to 2.26 at 57-84 days. Diabetes and ischaemic heart disease were significant causes of death within 28 days of symptom onset. (Cerqueira-Silva T, Pescarini JM, Cardim LL, et al. Risk of death following chikungunya virus disease in the 100 Million Brazilian Cohort, 2015-2018: a matched cohort study and self-controlled case series. Lancet Infect Dis. 2024 May; 24(5): 504-513.)</p> <p>Ixchig (VLA1553) was granted marketing authorisation in the European Union in June 2024, making it the first CHIKV vaccine to be approved in Europe.</p> <p>The 95% limit of detection for CHIKV for the Roche cobas CHIKV/DENV assay is reported as 4.76 IU/mL (95% CI 3.08-8.94). (Gallian P, Dupont I, Lacoste M, Brisbarre N, Isnard C, Delouane I, et al. Evaluation of assays for nucleic acid testing for the prevention of chikungunya and dengue virus transmission by blood transfusion. Transfusion. 2024; doi: https://doi.org/10.1111/trf.17921.)</p>	
Crimean-Congo haemorrhagic fever virus	Viral	Green	<p>November 2023 update</p> <ul style="list-style-type: none"> The University of Oxford's vaccine candidate against CCHFV, ChAdOx2, commenced its first clinical trial on 4 August 2023. It is 	

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			<p>being administered to healthy volunteers in the UK in two doses 12 weeks apart.</p> <ul style="list-style-type: none"> Afghanistan – 949 CCHFV infections Jan-Aug 2023, with 96 deaths. Iraq – 545 confirmed cases of CCHF in 2023 to the end of September, including 70 deaths. <p><u>In 2024, CCHFV was reported to be detected in ticks from France, its territorial collectivity Corsica, and Spain. Human cases were reported from Iraq and Pakistan.</u></p> <p><u>During 2013-2023, inclusive, 51 human infections with CCHFV were reported by EU/EEA countries, all of which were acquired in either Bulgaria (39 cases) or Spain (12).</u></p>	
Cytomegalovirus	Viral	Green	<p>The CMV vaccine candidate mRNA-1647 was found in a phase 1 trial to produce increased neutralising antibody, binding antibody, and antigen-specific cell-mediated responses among vaccinated participants, regardless of CMV serostatus. It also had an acceptable safety profile. The same vaccine candidate has also been shown to elicit long-lasting CMV-specific responses from several types of immune cells, outperforming a previous vaccine candidate on multiple measures.</p> <p>(Fierro C, Brune D, Shaw M, et al. Safety and immunogenicity of a messenger RNA-based cytomegalovirus vaccine in healthy adults: Results from a phase 1, randomized, clinical trial. J Infect Dis. 2024; doi: 10.1093/infdis/jiae114.</p> <p>Hu X, Karthigeyan KP, Herbek S, et al. Human cytomegalovirus mRNA-1647 vaccine candidate elicits potent and broad neutralization and higher antibody-dependent cellular cytotoxicity responses than the gB/MF59 vaccine. J Infect Dis. 2024; doi: 10.1093/infdis/jiad593.)</p>	08/05/2015
Dengue viruses	Viral	Green	<p>November 2023 update</p> <p>In August 2023, six locally acquired DENV-1 infections were detected in Lodi province, Lombardy Region, in northern Italy, where the vector <i>Aedes albopictus</i> is present. The viruses clustered with Peruvian and Brazilian strains collected between 2021 and 2023. (Cassaniti I, Ferrari G, Senatore S, et al. Preliminary results on an autochthonous dengue outbreak in Lombardy Region, Italy, August 2023. Euro Surveill. 2023 Sep; 28(37): 2300471.)</p> <p>A dengue outbreak was declared in Chad in August. To 1 October, there were 1,342 suspected cases, including 41 confirmed cases reported from four provinces. This is the first dengue outbreak reported in Chad. For various reasons including limited response capacities, WHO assesses the risk posed by this outbreak as high at the national level.</p>	04/09/2014

Deleted: February 2024 update: France reported its first detection of CCHFV in ticks in November 2023, from the Eastern Pyrenees (Occitanie). (Bernard C, Joly Kukla C, Rakotoarivony I, et al. Detection of Crimean–Congo haemorrhagic fever virus in Hyalomma marginatum ticks, southern France, May 2022 and April 2023. Euro Surveill. 2024 Feb; 29(6): pii=2400023.)¶
 May 2024 update: Detection of CCHFV RNA in ticks collected from cattle in distinct geographical areas has established that CCHFV is circulating in Corsica (a territorial collectivity of France). (Kiwan P, Masse S, Piorkowski G, et al. Crimean-Congo hemorrhagic fever virus in ticks collected from cattle, Corsica, France, 2023. Emerg Infect Dis. 2024; doi: 10.3201/eid3005.231742.)

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			<p>The first confirmed locally acquired case of dengue in California was reported in October, in Pasadena (LA County). Testing to date has not identified any dengue-infected mosquitos in the area around the patient's home. Local transmission of DENV in the continental US (other than in Florida) is extremely rare and the risk of additional cases in California is very low.</p> <p>In 2023 to 20 October, 12 African countries have reported a total of 89,377 cases (20,390 confirmed) of dengue fever. The most cases were reported by Burkina Faso (73,596 cases), Ethiopia (10,199), Sudan (1,664) and Sao Tome and Principe (1,227). In the most recent reporting week, new cases were reported by Burkina Faso, Ethiopia, Mali and Mauritius.</p> <p>February 2024 update</p> <p>Bermuda reported one confirmed case of dengue virus in 2023 as of early August. There are no relevant travel deferrals for blood donors in place for Bermuda.</p> <p>A locally acquired case of dengue occurred in a second city of Los Angeles County in November 2023. No DENV-infected mosquitoes were detected in the city.</p> <p>Between August and September 2023, three distinct autochthonous dengue virus transmission events occurred in the Lazio Region of Italy. The events involved three different dengue serotypes. (De Carli G, Carletti F, Spaziant M, et al. Outbreaks of autochthonous dengue in Lazio region, Italy, August to September 2023: preliminary investigation. Eurosurveillance. 2023 Nov; 28(44): pii=2300552.)</p> <p>All autochthonous cases of dengue in France to date have occurred in the south of France. The first cases outside of this area occurred in September 2023. Three family members became ill with acute DENV infection at this time and had not travelled outside of the Paris Region, where they lived. (Zatta M, Brichler S, Vindrios W, et al. Autochthonous dengue outbreak, Paris Region, France, September–October 2023. Emerg Infect Dis. 2023 Dec; 29(12): 2538.)</p> <p>PAHO/WHO assess the overall risk of dengue for the Region of the Americas as high, with moderate confidence. More than 4.1 million new infections were registered in the Americas to December 2023, which is the highest historical record. WHO later assessed the risk to also be high globally considering the increasing risk of transmission and spread to previously unaffected regions and the upsurge of cases and deaths.</p>	

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			<p>From 2012 to 2022 there were 13,343 cases of dengue in Australia, 4.4% of which were locally acquired. Locally acquired cases peaked in 2013, attributed to the <i>Wolbachia</i> replacement method. There were only 24 locally acquired cases outside of Queensland. The risk of local outbreaks has changed significantly, and the risk associated with travel into a local outbreak has also decreased. (Sohail A, Anders KL, McGuinness SL, et al. The epidemiology of imported and locally-acquired dengue in Australia, 2012–2022. J Travel Med. 2024 Mar; 31(2): taae014.)</p> <p>There were 1,102 notifications of DENV infection in Australia in 2023. This is higher than the 536 notifications in 2022 but equivalent to the 1,504 notifications in 2019 prior to the pandemic. In 2023, all cases were imported, with no locally acquired dengue outbreaks during the year. Based on this and the study above, it is recommended that the Lifeblood dengue strategy to local outbreaks is reconsidered in the context of the current risk, i.e. small outbreaks could be managed with a local plasma restriction instead of asking every donor in Australia if they have been in the area as the risk of cases in other states is negligible.</p> <p>May 2024 update</p> <p>To 21 March in 2024, five African Union member states have reported a total of 6,796 cases of dengue, including 2,759 confirmed. The highest number has been reported from Ethiopia (1,725 cases), followed by Mali, Mauritius, Sao Tome & Principe and Senegal.</p> <p>In the Region of the Americas, 5,214,480 dengue cases have been reported in 2024 to 17 April 2024. This is already more than the total number of cases for the entire year 2023 (4.6 million), which itself represents the highest annual number of dengue cases for the Region. Each of the four subregions reported an increase over the same period in 2023 and the average of the last 5 years. Brazil has reported the majority of cases and has also become the first country to roll out dengue vaccination (using Takeda’s Qdenga) at a national level.</p> <p>Dengue transmission in Bali has increased recently, and Australian health authorities have also reported an increase in dengue infections in people returning from Bali in recent years.</p> <p>Phase 3 results for the candidate dengue vaccine Butantan D-V, which is a single-dose tetravalent vaccine, show overall efficacy of 79.6%. Butantan D-V appears to be safe for people who have never had dengue, and by serostatus, there was 73.6% protection for participants with no evidence of prior infection and 89.2% for those previously exposed. (Kallas EG, Cintra MAT, Moreira JA, et al. Live,</p>	

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			<p>attenuated, tetravalent Butantan-dengue vaccine in children and adults. N Engl J Med. 2024 Feb; 390(5): 397-408.)</p> <p><u>August 2024 update</u></p> <p><u>A dengue outbreak occurred on Mer Island in the Torres Strait Regional Local Government Area between May and 26 July 2024. There were a total of 47 cases, plus one probable and one suspected case on Warraber Island (reported 13 June). Mer has around 450 inhabitants and is about 800kms north of Cairns. The risk to blood safety was low given the small population and isolation of the islands.</u></p> <p><u>A substantial increase in dengue cases has been reported globally in the last five years. More than 7.6 million dengue cases, including 3.4 million confirmed cases, were reported to WHO in 2024 to 30 April. There are 90 countries with known active dengue transmission in 2024. WHO assesses the overall risk at the global level as high. The Region of the Americas in particular is exceeding historical records; the case count in the first 19 weeks of 2024 represents an increase of 226% over the same period in 2023 and an increase of 416% over the five-year average. Also, Iran has recently reported its first known autochthonous cases.</u></p> <p><u>TAK-003 became the second dengue vaccine to receive WHO prequalification on 10 May 2024 and is recommended for children in settings with high dengue burden and transmission intensity. This live-attenuated quadrivalent vaccine is administered in a two-dose schedule with a three-month interval.</u></p> <p><u>A cohort study of children in Nicaragua found that primary ZIKV infection increased the risk of disease caused by DENV3 and DENV4. The relative risks of symptomatic infection for this group, compared to participants who were flavivirus-naïve, were 2.90 (95% CI 1.34-6.27) for DENV3 and 2.62 (95% CI 1.48-4.63) for DENV4. (Zambrana JV, Hasund CM, Aoqo RA, Bos S, Arguello S, Gonzalez K, et al. Primary exposure to Zika virus is linked with increased risk of symptomatic dengue virus infection with serotypes 2, 3, and 4, but not 1. Sci Transl Med. 2024; 16: eadn2199.)</u></p> <p><u>Limits of detection have been calculated for the DENV NAT assays manufactured by Roche (cobas CHIKV/DENV) and Grifols (Procleix Dengue). The only significant difference was that the Procleix assay was more sensitive for DENV-3. The 95% LODs in IU/mL (95% CI) for the cobas and Procleix assays, respectively, were as follows:</u></p> <ul style="list-style-type: none"> • <u>DENV-1: 5.33 (2.88-18.81) [cobas] vs 5.84 (3.84-10.77) [Procleix]</u> • <u>DENV-2: 4.1 (2.70-8.19) vs 4.98 (3.25-9.92)</u> 	

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			<ul style="list-style-type: none"> • DENV-3: 5.89 (3.84–11.11) vs 2.19 (1.53–3.83) • DENV-4: 7.07 (4.34–14.89) vs 5.11 (3.48–9.07). <p><small>(Gallian P, Dupont I, Lacoste M, Brisbarre N, Isnard C, Delouane I, et al. Evaluation of assays for nucleic acid testing for the prevention of chikungunya and dengue virus transmission by blood transfusion. Transfusion. 2024; doi: https://doi.org/10.1111/trf.17921.)</small></p>	
Eastern equine encephalitis virus	Viral	Green	No significant developments to report.	
Ebola virus	Viral	Green	<p>November 2023 update: Ervebo (rVSV-ZEBOV-GP) vaccine was approved for children from 1 year of age by the FDA in August and the European Commission in September.</p> <p>May 2024 update: A non-human primate study has found that 5 of 5 monkeys survived lethal challenge with Sudan virus when treatment with the antiviral drug obeldesivir was commenced within 24 hours. (Cross RW, Woolsey C, Chu VC, et al. Oral administration of obeldesivir protects nonhuman primates against Sudan ebolavirus. Science. 2024 Mar; 383(6688): eadk6176.)</p>	09/06/2016
Enteroviruses	Viral	Green	No significant developments to report.	
Epstein-Barr virus	Viral	Green	No significant developments to report.	
Hantaviruses	Viral	Green	<p>A novel orthohantavirus, putatively named Ozark orthohantavirus, has been identified in the US. It was detected in hispid cotton rats captured in Arkansas and phylogenetically clusters with other orthohantaviruses that cause severe human disease. (Mull N, Erdin M, Smura T, et al. Novel Ozark orthohantavirus in hispid cotton rats (Sigmodon hispidus), Arkansas, USA. Emerg Infect Dis. 2023 Dec; 29(12): 2576.)</p> <p>A small cluster of Seoul hantavirus transmissions from pet rats to humans has been identified in Germany. Three clinical cases and one likely previous subclinical infection were identified. (Hofmann J, Ulrich R, Mehl C, et al. Hantavirus disease cluster caused by Seoul virus, Germany. Emerg Infect Dis. 2024 Jan; 30(1): 133-135.)</p>	27/11/2012
Hendra virus	Viral	Green	A literature review of human infections and animal models relating to henipaviruses found that animals infected with HeV shed more virus in the respiratory tract than those infected with Nipah virus Malaysia (for which there is some evidence of person-to-person transmission). This suggests that there may also be potential for transmission of HeV among humans. (Hegde ST, Lee KH, Styczynski A, et al. Potential for person-to-person transmission of henipaviruses: A systematic review of the literature. J Infect Dis. 2024 Mar; 229(3): 733-742.)	20/11/2013
Hepatitis A virus	Viral	Green	November 2023 update	03/03/2016

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			<ul style="list-style-type: none"> The number of hepatitis A cases in Lebanon has sharply increased since the beginning of 2023. There were fewer than 600 cases in the entire year 2022; as of 26 Aug, 1,785 cases have been detected in 2023. The HAV outbreak in the US associated with frozen organic strawberries from Baja California, Mexico is over. In total there were 10 cases of illness, with most recent onset in late May 2023. The 2023 outbreak strain was genetically identical to the outbreak strain from the 2022 outbreak caused by fresh organic strawberries, also imported from Baja California. The investigation found that strawberries from a single farm were the ultimate source of both outbreaks. In the US, almost 45,000 cases of hepatitis A associated with person-to-person transmission have been reported from 37 states since 2016. <p>February 2024 update: There were 214 notifications of hepatitis A in Australia in 2023. This is higher than the 144 notifications in 2022 but consistent with the 243 notifications in 2019, prior to the pandemic.</p> <p>May 2024 update: An outbreak of hepatitis A with 23 cases between 1 Jan and 5 Mar 2024 has been reported from Portugal, mostly among men "in the context of" sexual transmission. Usually, less than 10 cases are reported during January and February. Six cases have the same strains that were circulating during the European outbreak in 2016-2018. There does not appear to be an association with consumption of specific foods.</p> <p><u>August 2024 update:</u></p> <p><u>A confirmed transfusion transmission of HAV occurred in the UK in 2023. The donor developed symptoms of acute hepatitis within two weeks of their most recent donation. The donor and the red cell recipient were both positive for HAV RNA with identical viral sequences and the recipient developed transaminitis. (Annual SHOT Report 2023, https://www.shotuk.org/shot-reports/)</u></p> <p><u>Kerala (India) is experiencing its worst outbreak of hepatitis A in several years. The number of confirmed cases Jan-May 2024 was higher than the number reported in any entire calendar year back to at least 2017. Poor quality pipelines for water and waste are contributing factors.</u></p> <p><u>An outbreak of HAV associated with MSM is ongoing in Portugal. There were 71 confirmed cases between 7 Oct 2023 and 24 Apr 2024, identified as one of the strains from the 2016-2018 multi-country outbreak. (Rosendal E, von Schreeb S,</u></p>	

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			<p>Gomes A, et al. Ongoing outbreak of hepatitis A associated with sexual transmission among men who have sex with men, Portugal, October 2023 to April 2024. Euro Surveill. 2024 May; 29(21): pii=2400272.</p> <p>A city in the Brazilian state of Paraná has identified 353 cases of hepatitis A in 2024 as of 21 June. The majority of infections are in young men, and transmission appears to be occurring via sexual contact.</p>	
Hepatitis B virus	Viral	Green	<p>A study of French haemovigilance data from the 21-year period 2000-2020 identified two instances of transfusion transmission, both from HBV seroconverting donors before the introduction of HBV NAT. (Laperche S, Sauvage C, Gallian P, et al. Human immunodeficiency virus, hepatitis C virus and hepatitis B virus incidence in blood donors from 2000 to 2020 in France: Trends and lessons from haemovigilance surveillance. Vox Sang. 2023 Oct; 118(10): 843-853.)</p> <p>As part of a lookback study, the Japanese Red Cross Society investigated possible TT-HBV cases from blood components collected between April 2014 and March 2022. TT-HBV was established in eight cases from seven implicated donors. Six of the implicated donors were determined to be in the early stages of acute HBV infection (i.e. window period infection), with the seventh implicated donor described above (Satake et al., 2023). The implicated blood components were all platelet concentrates apart from one FFP, with high volumes of plasma (range of 163-218mL), indicating extremely low viraemia likely below the level of assay detection. The authors indicate the current screening strategy using ID-NAT and anti-HBc has reduced the frequency of TT-HBV to 1 in 5.2 million donations. (Tanaka A, Yamagishi N, Hasegawa T, et al. Marked reduction in the incidence of transfusion-transmitted hepatitis B virus infection after the introduction of antibody to hepatitis B core antigen and individual donation nucleic acid amplification screening in Japan. Transfusion. 2023 Nov; 63(11): 2083-2097.)</p> <p>May 2024 update</p> <p>There were a total of 5,075 hepatitis B notifications in Australia in 2022, with 53% among males. There was a decline of 33% in the notification rate between 2013 (28.8 per 100,000 population) and 2022 (19.3). By age, people aged 35 to 39 and 30-34 had the highest notification rate; among younger age groups, there have been considerable declines since 2013, likely reflecting hepatitis B vaccination programs. (King J, McManus H, Kwon J et al. HIV, viral hepatitis and sexually transmissible infections in Australia: Annual surveillance report 2023. 2023. Kirby Institute, UNSW Sydney. https://doi.org/10.26190/f5ph-f97z.)</p> <p>GSK has developed an antisense oligonucleotide drug, bepirovirsen, that has shown the potential to achieve a functional cure of hepatitis B when combined with standard nucleoside or nucleotide analogue drugs. Phase 2b results show</p>	30/08/2016

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			<p>that bepiroviren treatment for 24 weeks resulted in sustained HBsAg and HBV DNA loss in 9-10% of participants with chronic HBV infection. This is approximately tenfold higher than can be expected with the current standard of care. Patients with low baseline HBsAg levels were most likely to benefit, with approximately 25% achieving functional cure. (Yuen MF, Lim SG, Plesniak R, et al. Efficacy and safety of bepiroviren in chronic hepatitis B infection. N Engl J Med. 2022 Nov; 387(21): 1957-1968.)</p> <p>NHSBT has concluded that sequential screening with two anti-HBc assays effectively delineates true and false reactivity, based on additional testing of 397 samples that were repeat reactive on the Architect anti-HBc assay, negative on HBsAg and MP-NAT screening and had anti-HBs levels less than 100 IU/L. The positive and negative predictive values when using the Architect and Murex anti-HBc assays sequentially were both 99%, compared to a positive predictive value of 79% for Architect alone. (Fu MX, Ingram J, Roberts C, Nurmi V, Watkins E, Dempsey N, et al. Blood donation screening for hepatitis B virus core antibodies: The importance of confirmatory testing and initial implication for rare blood donor groups. Vox Sang. 2024. May; 119(5): 447-459.)</p> <p><u>August 2024</u></p> <p><u>In Germany, there were 11 instances of confirmed transfusion-transmitted HBV during 2001-2005 (0.39 per million transfused units). This decreased to 5 (0.07 per million) during 2007-2020, after the introduction of single anti-HBc donor testing. Germany conducts NAT testing in pools of 96. (Berg P, Heiden M, Müller S, Meyer B, Witzhausen C, Ruppert-Seipp G, et al. A national surveillance system for continuous monitoring of blood transfusion safety: German haemovigilance data. Vox Sang. 2024; doi: https://doi.org/10.1111/vox.13694.)</u></p> <p><u>A patient in the UK who had received multiple recent transfusions developed acute HBV in 2023. The genotype was identified as recombinant D/E. Archive samples from two of the associated donors were positive for anti-HBc without detectable HBV DNA. One of the donors had low anti-HBs and originated from a region where the recombinant D/E genotype is prevalent. This donor was assessed as the most likely source of infection and the event was classified as a probable transfusion transmission. (Annual SHOT Report 2023. https://www.shotuk.org/shot-reports/)</u></p>	
Hepatitis C virus	Viral	Green	Egypt has successfully transitioned from having one of the highest rates of hepatitis C in the world to one of the lowest by reducing the prevalence of hepatitis C from 10% to 0.38% in just over a decade. In October 2023, it	(Added to traffic lights to track updates and

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			<p>became the first country to achieve WHO-certified gold tier status on the path to elimination of hepatitis C.</p> <p>May 2024 update: There were a total of 6,728 hepatitis C notifications in Australia in 2022, with 68% among males. There was a decline of 42% in the notification rate between 2013 (44.6 per 100,000 population) and 2022 (25.8), and a decrease of 43% in the estimated number of people living with hepatitis C between 2015 and 2022. The incidence of hepatitis C among people tested at ACCESS primary care sites was 0.5 new infections per 100 person-years, down from 1.2 in 2015. (King J, McManus H, Kwon J et al. HIV, viral hepatitis and sexually transmissible infections in Australia: Annual surveillance report 2023. 2023. Kirby Institute, UNSW Sydney. https://doi.org/10.26190/f5ph-f972.)</p> <p><u>August 2024 update: Nosocomial HCV transmission is believed to have occurred in a Hong Kong hospital. A patient who was previously negative stayed in the same ward cubicle as another patient known to be a carrier, and subsequently developed infection. The isolates from both patients are identical.</u></p>	surveillance in May 2017)
Hepatitis E virus	Viral	Green	<p>November 2023 update</p> <p>There are several recent studies that support the fact that the need for blood donor HEV screening is dependent on the underlying prevalence in that area or country. Australia is a low prevalence area and therefore the literature supports that screening is not currently required but HEV should be subject on ongoing surveillance, as is occurring:</p> <ul style="list-style-type: none"> • A 10,000-person study in the US in San Francisco with an ethnically diverse population demonstrated a higher seropositivity than Australia with evidence of continued circulation but no HEV RNA. The authors concluded there was no evidence to support current HEV blood donor screening but periodic monitoring was required. (Mah JK, Keck M, Chu DY, et al. Hepatitis E virus seropositivity in an ethnically diverse community blood donor population. Vox Sang. 2023 Aug; 118(8): 674-680.) • The HEV risk assessment model developed and published by Lifeblood demonstrating our risk was used by Finland to determine their policy on HEV screening. Despite finding a prevalence of HEV RNA of 1 in 5,784, they demonstrated a risk of a severe outcome due to transfusion-transmission of 1 in 1.38 million and concluded the risk of TT-HEV was low and blood donor screening was not indicated. (Mättö J, Putkuri N, Rimhanen-Finne R, et al. Hepatitis E virus in Finland: epidemiology 	<p>8/12/2016 (from red to yellow)</p> <p>28/2/2019 (from yellow to green)</p>

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			<p>and risk in blood donors and in the general population. Pathogens. 2023 Mar; 12(3): 484.)</p> <p>A case of transfusion transmitted HEV from a red cell component occurred in Spain in March 2019. It joins the existing body of probable and confirmed transfusion transmissions that have been reported from several countries and different types of blood components. (Ojea AM, Seco C, Mata P, et al. Transfusion-transmission of hepatitis E virus through red blood cell transfusion but not through platelet concentrates: A case report from Spain. Transfusion. 2023 Sep; 63(9): 1767-1772.)</p> <p>February 2024 update: There were 36 notifications of hepatitis E in Australia in 2023. This is higher than the 13 notifications in 2022, but lower than each of the 5 years prior to the pandemic (2015-2019, range 39 to 52 notifications per year).</p> <p>May 2024 update: ECDC is monitoring HEV in Europe. During January 2024, 520 cases were recorded in 10 countries; no connection between them has been established. By comparison with the same time period in 2023, cases are increased in Belgium, the Czech Republic and Finland.</p> <p><u>August 2024 update</u></p> <p><u>A renal transplant recipient in the UK was diagnosed with HEV infection in 2023. Following exclusion of infection in the transplanted organ, 86 donors associated with the blood components received (red cells and FFP) were identified. Archive samples from two tested positive for HEV RNA with viral load too low for sequencing. The event was classified as a probable transfusion transmission. (Annual SHOT Report 2023. https://www.shotuk.org/shot-reports/)</u></p> <p><u>As of 2021/2022, 'human' HEV has the species name <i>Paslahepevirus balayani</i> and rat HEV is <i>Rocahepevirus rattii</i>, with both belonging to the subfamily <i>Orthohepevirinae</i>.</u></p> <p><u>In Spain, the diagnostic tests for rat HEV have been improved and 45 of 289 patients with acute hepatitis were confirmed as having <i>R. rattii</i> infection. Rodent surveillance found 209/946 (22.1%) animals with detectable <i>R. rattii</i> RNA from 11/12 sampled regions, with higher prevalence in urban than non-urban areas. <i>R. rattii</i> RNA was also detected in pigs for the first time.</u></p> <p>1. Caballero Gómez J, Ruiz Cáceres I, Pereira Pardo S, et al. High prevalence of rat hepatitis E virus after molecular diagnosis optimisation. In: ESCMID Global 2024. Abstract E0241. https://escmid.reg.key4events.com/AbstractList.aspx?e=21&header=0&ai=20778&preview=1&aiq=1</p>	

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			<p>2. Caballero Gómez J, García Bocanegra I, Beato Benítez A, et al. Surveillance of the zoonotic rat hepatitis E virus in rodents in Spain. In: ESCMID Global 2024. Abstract P0051. https://escmid.reg.key4events.com/AbstractList.aspx?e=21&header=0&ai=21396&preview=1&aiq=1</p> <p>3. Rios-Muñoz L, González M, Caballero-Gomez J, et al. Detection of rat hepatitis E virus in pigs, Spain, 2023. Emerg Infect Dis. 2024 Apr; 30(4): 823.</p> <p>One additional case of rat HEV infection in a kidney transplant recipient has been reported, bringing the total to six. The latest case is from Hong Kong. (Cheung CY, Chan KM, Sridhar S. Rat hepatitis E in kidney transplant recipients: Case studies and review of literature. Transpl Infect Dis. 2024; 26: e14266.)</p>	
New hepatitis (NV-F) virus	Viral	Green	No significant developments to report.	
Herpes virus (other than CMV, EBV and HHV-8)	Viral	Green	Hong Kong reported its first human case of B virus, also known as monkey B virus or herpesvirus B, in April 2024. The patient tested positive on 3 April 2024 after sustaining a wound from wild monkey/s during a visit to Kam Shan Country Park in late February 2024. Mainland China previously reported a human case in 2021.	
HHV-8	Viral	Green	No significant developments to report.	22/05/2013
HIV	Viral	Green	<p>November 2023 update: The first case of breakthrough HIV infection with injectable PrEP outside of a clinical trial setting has been reported. The patient transitioned from oral PrEP (due to missed doses) to injectable PrEP (CAB-LA), with no overlap, and tested positive for HIV 91 days later. All injections had been performed on time and CAB concentrations were within expected levels. The patient had a history of syphilis within the preceding 6 months, HIV-positive primary partner who was off ART around the same time (but not documented to be viraemic) and multiple other unique partners. The reason for breakthrough infection remains unclear. (Hazra A, Landovitz RJ, Marzinke MA, et al. Breakthrough HIV-1 infection in setting of cabotegravir for HIV pre-exposure prophylaxis. AIDS. 2023 Sep; 37(11): 1711-1714.)</p> <p>February 2024 update: A proof-of-concept study involving 11 countries has shown that very early antiretroviral therapy for infants who acquired HIV in utero enabled some infants to sustain viral suppression for more than two years. Of children whose HIV remained suppressed, a majority continued to show no evidence of the latent HIV reservoirs that contribute to lifelong persistent infection. (Persaud D, Bryson Y, Nelson BS, et al. HIV-1 reservoir size after neonatal antiretroviral therapy and the potential to evaluate antiretroviral-therapy-free remission (IMPAACT P1115): a phase 1/2 proof-of-concept study. The Lancet HIV. 2024 Jan; 11(1): e20-e30.)</p>	17/3/2010 (Broadened to HIV general to track updates and surveillance in May 2017)

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			<p>May 2024 update</p> <p>There were a total of 555 HIV notifications in Australia in 2022, representing a 38% decline since 2019 (895 notifications). Male-to-male sex (+/- injecting drug use) continues to be the major HIV risk exposure in Australia, accounting for 317 (57%) notifications, although all regions of birth showed declines between 2019 and 2022 in notifications attributed to MSM. Heterosexual sex was reported as the risk exposure for 166 (30%) notifications, and injection drug use for 18 (3%) notifications. There were an estimated 2,020 people living with HIV in Australia in 2022 who were unaware of their HIV status. (King J, McManus H, Kwon J et al. HIV, viral hepatitis and sexually transmissible infections in Australia: Annual surveillance report 2023. 2023. Kirby Institute, UNSW Sydney. https://doi.org/10.26190/5ph-f972.)</p> <p>Australian blood donors are asked about illnesses with both rash and lymphadenopathy at every donation, with the assumption that this combination represents the risk of acute retroviral syndrome (ARS). Analysis of data from 2000-2016 found zero donors whose donation tested HIV-positive and who experienced rash and lymphadenopathy in combination. Likewise, zero donors declared possible ARS and donated an HIV-positive donation. It was concluded that the ARS question does not effectively differentiate HIV-positive from HIV-negative donors and resulted in loss of donors who were unlikely to pose a threat to transfusion safety. (Colbran RE, Dean MM, Harley RJ, et al. Making every question count: the impact of temporary donor deferral for suspected acute retroviral syndrome. <i>Annals of Blood</i>. 2024 Mar; 9: 2.)</p> <p>A cluster of 5 HIV cases in New Mexico (USA) has been associated with receipt of cosmetic injection services, specifically, platelet-rich plasma (PRP) microneedling facial procedures (which use the client's own blood). The spa facility at which they were received was subsequently found to lack appropriate licenses and to have multiple unsafe infection control practices. Four of the new cases were women who received a PRP facial at this facility and the fifth was the male sexual partner of one of these women. Sequence analysis confirmed that all 5 cases were related. The two sexual partners had stage 3 (late) infection, suggesting it pre-dated the female partner's injections. However, the source of contamination for the cluster remains unknown. (Stadelman-Behar AM, Gehre MN, Atallah L, et al. Investigation of presumptive HIV transmission associated with receipt of platelet-rich plasma microneedling facials at a spa among former spa clients - New Mexico, 2018-2023. <i>MMWR Morb Mortal Wkly Rep</i>. 2024 Apr; 73(16): 372-376.)</p> <p><u>August 2024 update</u></p>	

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			<p>Participants recruited for the HIV PrEP phase 3 trial involving women and adolescent girls in South Africa and Uganda were screened for HIV to obtain the background HIV incidence, which was 2.41 per 100 person-years. Those who were negative were randomised to twice-yearly injected lenacapavir, daily oral Descovy (tenofovir alafenamide fumarate/emtricitabine) or daily oral Truvada (tenofovir disoproxil fumarate/emtricitabine), with injected or oral placebo as applicable. The HIV incidence in the lenacapavir group (0 of 2,134) was significantly lower than the background HIV incidence; incidence in the Descovy group (2.02 per 100 person-years) was not. Twice-yearly lenacapavir was also statistically superior to daily oral Truvada. The blinded phase of the study has closed following this interim analysis and all participants are being offered lenacapavir. (Bekker L-G, Das M, Karim QA, et al. Twice-yearly lenacapavir or daily F/TAF for HIV prevention in cisgender women. N Engl J Med. 2024; doi: 10.1056/NEJMoa2407001.)</p> <p>A seventh case of HIV remission following stem cell transplant has been announced and dubbed the "next Berlin patient". The patient is a 60-year-old man who was first diagnosed with HIV in 2009, received a bone marrow transplant for leukaemia in 2015 and stopped HIV ART in late 2018. The case is notable because the stem cells were CCR5Δ32 heterozygous only, unlike previous remissions associated with CCR5Δ32 stem cells, which were homozygous. (https://programme.aids2024.org/Abstract/Abstract/?abstractid=12163)</p>	
HTLV	Viral	Green	<p>A small phase 3 clinical trial in Japan has found that intravenous mogamulizumab was associated with a sustained, significantly decreased HTLV-1 proviral load among patients with HTLV-1-associated myelopathy/tropical spastic paraparesis (HAM/TSP). (Sato T, Nagai M, Watanabe O, Misu T, Takenouchi N, Ohkubo R, et al. Multicenter, randomized, double-blind, placebo-controlled phase 3 study of mogamulizumab with open-label extension study in a minimum number of patients with human T-cell leukemia virus type-1-associated myelopathy. J Neurol. 2024 Jun; 271(6): 3471-3485.)</p> <p>August 2024 update</p> <p>A study in cynomolgus macaques found that a vaccine inducing anti-HTLV-1 Env antibodies produced anti-HTLV-1 neutralising antibodies in 8 of 10 vaccinated animals. When challenged with HTLV-1-producing cells intravenously, these 8 animals were protected from infection, while the 2 non-responders and 10 unvaccinated controls were infected and showed detectable proviral load. (Nakamura-Hoshi M, Ishii H, Nomura T, et al. Prophylactic vaccination inducing anti-Env antibodies can result in protection against HTLV-1 challenge in macaques. Mol Ther. 2024 Jul; 32(7): 2328-2339.)</p>	12/5/2010 (Broadened to HTLV general to track updates and surveillance in May 2017)

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			In vitro studies have demonstrated that antiretrovirals commonly used as HIV PrEP effectively inhibit HTLV-1 cell culture transmission without affecting cell viability. This was shown for the nucleoside reverse transcriptase inhibitor (NRTI) tenofovir (in both TDF and TAF forms), the first-generation integrase strand transfer inhibitor (INSTI) raltegravir, and the second-generation INSTIs bicitgravir, cabotegravir and dolutegravir. The INSTIs appear to be equally as potent against HTLV as HIV. An open letter to the drug manufacturers advocates for the inclusion of HTLV-1 transmission incidence as an outcome measure in clinical trials of these antiretrovirals. (Kalemera MD, Maher AK, Dominguez-Villar M, et al. Cell culture evaluation hints widely available HIV drugs are primed for success if repurposed for HTLV-1 prevention. Pharmaceuticals. 2024 Jun; 17(6): 730. Maertens GN, Purcell DFJ, Rosadas C, et al. Why not eliminate HTLV-1 while eliminating HIV-1? The Lancet. 2024 May; 403(10441): 2288-2289.)	
Human parvovirus B19	Viral	Green	<p>Multiple countries in Europe have reported an increase in parvovirus B19 in the first quarter of 2024, namely, Denmark, Norway, the Netherlands, Ireland and France. Ireland and France have conducted further analysis, finding in both countries that cases have sharply increased.</p> <p>August 2024 update: Between March and early June 2024, nine EU/EEA countries reported increased detections of B19V, mostly during late 2023 and early 2024. Ten countries reported an increase in reactive tests for B19V in blood or plasma donors during the first months of 2024 compared to the same period in 2023. ECDC assessed the risk as low for the general population. Advice for the substance of human origin (SoHO) sectors is that additional testing of donors is not required. However, blood components from donors with suspected or confirmed B19V infection should not be transfused to patients susceptible to severe clinical outcomes of infection. (European Centre for Disease Prevention and Control, Risks posed by reported increased circulation of human parvovirus B19 in the EU/EEA, 2024 Jun 5. https://www.ecdc.europa.eu/en/publications-data/risks-posed-reported-increased-circulation-human-parvovirus-b19-eueea)</p>	17/04/2012
PARV-4	Viral	Green	No significant developments to report.	24/07/2012
Influenza A and B viruses (other than H5N1, H7N9 and H10N8)	Viral	Green	<p>Sporadic isolated cases of human avian influenza A virus infections occurred in 2023: H1N2 (China and/or Taiwan, unclear, UK, USA), H3N8 (China), H3 unspecified (USA), H5N6 (China) and H9N2 (China).</p> <p>The risk of human-to-human transmission of H3N8 is low as the virus does not appear to be able to spread easily among humans. (https://www.who.int/emergencies/disease-outbreak-news/item/2023-DON456) One of the first human cases was later published as a case report. (Zhuang Y, Wang M, Liang L, et</p>	20/11/2013

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			<p>al. First known human death after infection with the avian influenza A/H3N8 virus: Guangdong Province, China, March 2023. Clin Infect Dis. 2024 Mar; 78(3): 646-650.)</p> <p>The final Australian Influenza Surveillance Report for 2023, based on data from 1 Jan to 15 Oct 2023, summarises the Australian 2023 influenza season as follows:</p> <ul style="list-style-type: none"> • There were approximately 250,000 laboratory-confirmed influenza notifications during this period. • Clinical severity was low, as measured by ICU admissions and deaths. • Influenza A accounted for 58% of notifications and influenza B for 40%. • Interim vaccine effectiveness estimates indicated that vaccination with the 2023 seasonal influenza vaccine significantly reduced the risk of general practice attendance and hospitalisation with influenza. • The 2023 season was consistent with the 5 previous reportable years (2016-2019 and 2022) using various different measures. <p>Influenza A virus variant infections in humans in 2024 include: H1N1 (Spain), H1N2 (USA), H5N2 (Mexico, first known human infection), H5N6 (China), H9N2 (China [Hong Kong and mainland], India), H10N5 (China, first known human infection).</p> <p>In Australia, there were 33,325 influenza notifications during 2024 to 7 April, for an overall rate of 125.1 per 100,000 population. The number of notifications is higher than during the same period in 2023 and in the pre-pandemic years.</p> <p>Antibodies that target the underside of the head of the influenza neuraminidase protein (a highly conserved region) have been identified. In vitro, they inhibited propagation of viruses from subtype H2N2, and H3N2 viruses from humans, swine, and birds. The antibodies also protected mice from lethal infection by a subtype H3N2 virus when given to the animals either one day before or two days after infection. (Lederhofer J, Tsybovsky Y, Nguyen L, Raab JE, Creanga A, Stephens T, et al. Protective human monoclonal antibodies target conserved sites of vulnerability on the underside of influenza virus neuraminidase. Immunity. 2024 Mar; 57(3): 574-586.e7.)</p>	
Influenza A virus H5N1 – avian influenza	Viral	Green	November 2023 update: Two human cases of influenza A(H5N1) were reported from Cambodia in October, from different provinces. Both had exposure to dead chickens before the onset of illness. In Cambodia there have now been 3 human cases of H5N1 in 2023 and 59 since 2005.	19/08/2015

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			<p>February 2024 update: Two human cases of influenza A(H5N1) were reported from Cambodia in late November. The cases were neighbours and both had exposure to dead chickens before the onset of illness.</p> <p>May 2024 update.....</p> <p>Sporadic human cases of influenza A(H5N1) continue to be reported in Cambodia. Single cases were also reported from Vietnam (exposed to wild birds) and the US (exposed to infected cattle).</p> <p>Highly pathogenic avian influenza (HPAI) A(H5N1) virus was first detected in dairy cows in March 2024, from two states in the US. Isolates were identified as the same clade that is widespread among birds globally. The US CDC continues to assess the human health risk for the general public as low.</p> <p>Avian influenza A(H5N1) has been confirmed for the first time on Antarctica's mainland. The new detection was from two dead skuas (seabirds) collected at the northern tip of the mainland.</p> <p><u>August 2024 update</u></p> <p><u>Developments since the last update include:</u></p> <ul style="list-style-type: none"> • <u>First human case detected in Australia (acquired in India).</u> • <u>Two human cases in Cambodia.</u> • <u>The total number of infected US dairy workers increased to four (one with respiratory symptoms, three with eye symptoms only).</u> • <u>A small number of H5N1 infections among workers responding to an outbreak at a commercial egg layer in the US. The risk for occupationally exposed individuals in the Americas is assessed as low to moderate.</u> • <u>First detections of H5N1 in wastewater in several Texan cities.</u> • <u>First detections of H5N1 in alpacas, domestic cats and house mice (US).</u> <p><u>Additionally, study findings included:</u></p> <ul style="list-style-type: none"> • <u>Mice consuming raw milk from dairy cows infected with H5N1 experienced high virus levels in their respiratory organs and lower virus levels in other vital organs [1].</u> • <u>The amount of infectious H5N1 in raw milk rapidly decreases with heat treatment, but standard pasteurisation methods may not completely</u> 	

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			<p>remove infectious virus when viral load is high [1,2]. Regulatory bodies such as the FDA assess that the commercial (pasteurised) milk supply remains safe to consume.</p> <ul style="list-style-type: none"> Analysis of currently circulating H5N1 viruses revealed broad susceptibility to antiviral drugs (neuraminidase inhibitors and baloxavir) [3]. Bovine H5N1 viruses may possess features that could facilitate infection and transmission among mammals. However, they currently do not appear capable of efficient respiratory transmission between animals or people [4]. <p>1. Guan L, Eisfeld AJ, Pattinson D, et al. Cow's milk containing avian influenza A(H5N1) virus — heat inactivation and infectivity in mice. N Engl J Med. 2024 Jul; 391(1): 87-90.</p> <p>2. Kaiser F, Morris DH, Wickenhagen A, Mukesh R, Gallogly S, Yinda KC, et al. Inactivation of avian influenza A(H5N1) virus in raw milk at 63 degrees C and 72 degrees C. N Engl J Med. 2024 Jul; 391(1): 90-92.</p> <p>3. Andreev K, Jones JC, Seiler P, Kandeil A, Turner JCM, Barman S, et al. Antiviral susceptibility of highly pathogenic avian influenza A(H5N1) viruses circulating globally in 2022–2023. J Infect Dis. 2024 Jun; 229: 1830-1835.</p> <p>4. Eisfeld AJ, Biswas A, Guan L, Gu C, Maemura T, Trifkovic S, et al. Pathogenicity and transmissibility of bovine H5N1 influenza virus. Nature. 2024; doi: 10.1038/s41586-024-07766-6.</p>	
Influenza A virus H7N9	Viral	Green	The most recent risk assessment by WHO regarding influenza A(H7N9) was issued in February 2015. No significant developments to report.	19/08/2015
Influenza A virus H10N8	Viral	Green	No significant developments to report.	19/08/2015
Japanese encephalitis virus	Viral	Green	November 2023 update: In India, flooding occurred in the state of Assam in August, with a nearly ten-fold increase in Japanese encephalitis cases resulting. In 2023 to early September, 432 cases were recorded. February 2024 update: Routine mosquito and sentinel chicken surveillance in Far Western NSW detected JEV in late December 2023. No human cases of JEV were notified during 2023. With the exception of 2022, when there were 41 notifications, this is consistent with historical notifications, which range between 0 and 4 per year.	15/11/2011 11/3/2022 (from green to yellow) 12/5/2023 (from yellow to green)
Kunjin virus (subtype of West Nile virus)	Viral	Green	In 2023 there were two Kunjin virus notifications: one in April from the NT, and one in May in WA. Since 2014, cases reported have varied from zero to 5 per year.	24/07/2012

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Kyasanur Forest disease virus	Viral	Green	A single-dose candidate vaccine against Kyasanur Forest disease virus has been developed with vesicular stomatitis virus as the platform. VSV-KFDV was safe and protective in mice and pigtail macaques. (Bhatia B, Tang-Huau TL, Feldmann F, et al. Single-dose VSV-based vaccine protects against Kyasanur Forest disease in nonhuman primates. Sci Adv. 2023 Sep; 9(36): eadj1428.) In India, Karnataka state has more than 250 cases of Kyasanur Forest disease in 2024 to mid-April.	Added May 2017
Lassa virus	Viral	Green	Lassa virus in Nigeria in 2023 followed the usual pattern, consisting of a seasonal peak at the beginning of the year with low-level transmission during the remaining months. Lassa virus transmission is ongoing in the Economic Community of West African States (ECOWAS) region. In 2024 as of week 11, 3 member states (Guinea, Liberia and Nigeria) have reported 4,823 suspected cases, 800 confirmed cases, and 153 deaths (CFR 19.1%). <u>In Nigeria in 2024 as of 30 June, there have been 928 confirmed cases of Lassa fever with 162 deaths (CFR 17.5%) from 28 states. The majority of confirmed cases were reported from three states.</u>	
Lujo virus	Viral	Green	No significant developments to report.	17/3/2010
Lymphocytic choriomeningitis virus	Viral	Green	No significant developments to report.	
Lyssavirus	Viral	Green	Routine surveillance of bats in Australia detected 19 cases of Australian bat lyssavirus (ABLV) infection in bats during 2023. Most were detected in QLD (11) and SA (5). This is higher than the number detected nationally in 2022 (12) and the five-year average (16.6), but is not the highest total from the last 5 years.	12/5/2010
Madariaga virus (MADV)	Viral	Green	No significant developments to report.	Separated from EEEV 28/2/2019
Marburg virus	Viral	Green	No significant developments to report.	27/11/2012
Mayaro virus	Viral	Green	The Brazilian state of Acre reported 5 confirmed human infections with Mayaro virus in 2023 to 2 December. <u>During 2018-2021, 3.4% of febrile patients (28/822) from Roraima State, Brazil, tested positive for MAYV RNA.</u> (Forato J, Meira C, Claro I, et al. Molecular epidemiology of	Added August 2017

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			Mayaro virus among febrile patients, Roraima State, Brazil, 2018–2021. Emerg Infect Dis. 2024 May; 30(5): 1013	
Middle Eastern respiratory syndrome coronavirus (MERS-CoV)	Viral	Green	<p>From 13 August 2023 to 1 February 2024, four laboratory-confirmed cases of MERS-CoV, including two deaths, were reported to WHO from Saudi Arabia. All four cases had co-morbidities and two had contact with dromedary camels. No secondary cases were identified.</p> <p>A further three cases of MERS-CoV were reported from Saudi Arabia during 10-17 April 2024. The three cases are epidemiologically linked to exposures in a health-care facility in Riyadh.</p>	18/11/2014
Monkeypox virus	Viral	Green	<p>November 2023 update: As of 11 Oct 2023, a total of 90,656 confirmed cases of mpox have been reported globally, with 161 deaths. There have been 22 cases of mpox in Australia in 2023 compared to 144 in 2022. All 22 cases are in men aged 25-64 years.</p> <p>February 2024 update</p> <p>A total of 906 new laboratory-confirmed cases of mpox were reported globally in November 2023 from 26 countries. The most affected regions, ordered by number of laboratory-confirmed cases, were the WHO Region of the Americas, the European Region, the Western Pacific Region, the South-East Asia Region and the African Region. The risk for the general population in countries not affected prior to the current outbreak is assessed as low.</p> <p>There was a significant increase in the number of suspected mpox cases reported in the DR Congo in 2023, including geographic expansion to several previously unaffected areas. Sexual transmission of mpox due to clade I MPXV was documented for the first time and chains of transmission may have been missed. The 12,569 cases reported from 22 provinces to 12 November is the highest annual number of cases ever recorded; only 11 of these provinces are endemic for MPXV.</p> <p>Sequencing of early cases from the global mpox outbreak in 2022 and analysis of the mutations present in the viral strains suggest that monkeypox virus has been transmitted between humans in a sustained manner for about seven years. The mutations are characteristic of exposure to the human antiviral immune enzyme APOBEC3. (O'Toole A, Neher RA, Ndodo N, et al. APOBEC3 deaminase editing in mpox virus as evidence for sustained human transmission since at least 2016. Science. 2023 Nov; 382(6670): 595-600.)</p>	

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			<p>There were 26 mpox notifications in Australia in 2023, representing a sharp decrease from the outbreak detection year of 2022 (144 notifications).</p> <p>May 2024 update</p> <p>In January 2024, Victoria recorded its first locally-acquired case of mpox in almost six months. This suggests that local transmission may be occurring.</p> <p>The mpox outbreak in the DR Congo has expanded to 23 of 26 provinces. In 2024 as of 29 March, 4,488 cases have been reported. This represents a large increase since December 2023. Children account for 70% of total cases, suggesting that non-sexual human-to-human transmission may be the predominant transmission route in the outbreak. Some cases have also been reported among sex workers in a mining area in South Kivu, which has not historically reported mpox. Phylogenetic analysis of six cases in this region identified a novel clade 1 sub-lineage. This sub-lineage lacks the specific clade 1 virus real-time PCR target, although generic primers and probes still appear to be able to detect infection.</p> <p>(European Centre for Disease Prevention and Control. Outbreak of mpox caused by Monkeypox virus clade 1 in the Democratic Republic of the Congo: Epidemiological update. 5 Apr 2024, https://www.ecdc.europa.eu/en/news-events/outbreak-mpox-caused-monkeypox-virus-clade-i-democratic-republic-congo</p> <p>Masirika LM, Udahemuka JC, Schuele L, et al. Ongoing mpox outbreak in Kamituga, South Kivu province, associated with monkeypox virus of a novel Clade I sub-lineage, Democratic Republic of the Congo, 2024. Euro Surveill. 2024 Mar; 29(11): pii=2400106.)</p> <p>Studies from Spain (cohort study of persons on HIV PrEP) and Canada (case-control study of persons with self-reported risk factors) assessed the effectiveness of the MVA-BN smallpox vaccine (Jynneos) against mpox. Both found a vaccine effectiveness between 65%-79%.</p> <p>(1. Fontán-Vela M, Hemando V, Olmedo C, et al. Effectiveness of modified vaccinia Ankara-Bavaria Nordic vaccination in a population at high risk of mpox: a Spanish cohort study. Clin Infect Dis. 2024 Feb; 78(2): 476-483.</p> <p>2. Brousseau N, Carazo S, Febriani Y, et al. Single-dose effectiveness of mpox vaccine in Quebec, Canada: Test-negative design with and without adjustment for self-reported exposure risk. Clin Infect Dis. 2024 Feb; 78(2): 461-469.)</p> <p><u>August 2024 update</u></p> <p><u>In May 2024, a total of 646 new laboratory-confirmed cases of mpox and 15 deaths were reported from 26 countries. During the month, 15 of these countries showed an increase in cases compared to April. Among countries in the Western Pacific Region, Australia had the highest relative increase.</u></p>	

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			<p><u>In 2024 as of 8 August, 206 cases of mpox in Australia had been notified to NNDSS. Most cases were notified from VIC (97), followed by NSW (75) and QLD (18). Local transmission accounts for the majority of cases in Victoria and NSW, who have expanded vaccination access. MSM continue to be the group most affected.</u></p> <p><u>In DR Congo nationally, 22/26 provinces have reported 7,851 cases of mpox in 2024 as of 26 May, including 384 deaths (confirmed CFR 4.9%). The outbreak of the new variant of clade 1 MPXV in South Kivu has spread within the province and to the neighbouring province of North Kivu. Its mutations indicate adaptation of the virus due to circulation among humans and affect diagnostic testing.</u></p>	
Morbillivirus (measles)	Viral	Green	<p>February 2024 update: As of January 2024, measles outbreaks are occurring in every region of the world. Most of the countries with the highest numbers of cases during June-November 2023 were in Central, West and South Asia. Australia reported only 26 cases during 2023, from all states and territories except the NT. This is much lower than the pre-pandemic five-year average (2015-2019), which was approximately 128 cases.</p> <p>May 2024 update</p> <p>In 2024 to the end of March, England reported 269 measles cases. Since the beginning of the outbreak in October 2023, there have been 934 cases; of these, approximately 54% and 21% have been in the West Midlands and London, respectively.</p> <p>During the first quarter of 2024, CDC was notified of 97 confirmed measles cases, which represents more than seventeenfold increase over the mean number of cases reported during the first quarter of 2020–2023. (Mathis AD, Raines K, Masters NB, et al. Measles - United States, January 1, 2020-March 28, 2024. MMWR Morb Mortal Wkly Rep. 2024 Apr; 73(14): 295-300.)</p> <p><u>August 2024 update:</u></p> <p><u>As of 8 May 2024, 166 countries from all six of the WHO regions had reported 178,768 suspected cases of measles in 2024, of which 121,413 (68%) were confirmed. This represents an increase of 94% compared to the same period in 2023.</u></p> <p><u>Measles-specific IgG antibodies in samples collected from Australian plasmapheresis donors in 2019 were quantified. Mean antibody levels progressively decreased from older to younger birth cohorts, with optical</u></p>	24/01/2012

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			densities of 2.09 and 0.58 in the oldest and youngest groups, respectively. Current normal human immunoglobulin (NHIG) policies target older donors, but measles-specific antibody concentrations in NHIG will progressively reduce with the aging of the donor population. Monitoring is recommended. (Williamson KM, Faddy H, Nicholson S, et al. A cross-sectional study of measles-specific antibody levels in Australian blood donors—implications for measles post-elimination countries. Vaccines. 2024 Jul; 12(7): 818.)	
Mumps virus	Viral	Green	There were 126 mumps notifications in Australia during 2023. NSW (53 cases) and QLD (34) reported the most cases. This is lower than the pre-pandemic five-year average (2015-2019), which was approximately 613 cases, but contributed to by a significant outbreak in Australia.	
Murray Valley encephalitis virus	Viral	Green	February 2024 update: There were 26 human cases of MVEV recorded in Australia in 2023. Cases occurred in all states and territories except Tasmania and the ACT. There have been no cases since quarter 3, 2023 and the outbreak peaked in early 2023. The most recent year in which more than 2 cases were reported was 2011, when there were 16 notifications. May 2024 update: The first detections of MVEV in WA during 2024 were reported in March for the Kimberley region (mosquitoes and sentinel chickens) and April for the Pilbara region (mosquitoes). No human cases have been reported. August 2024 update: Since the last update, four human cases of MVEV have been reported from Western Australia in the Pilbara region. The Department of Health reports elevated mosquito-borne disease risk across a wide area of northern WA.	24/07/2012
Nipah virus	Viral	Green	November 2023 update Six confirmed cases of Nipah virus infection, with two deaths, were recorded in Kerala state (India) in September. Aside from the first case, whose source of infection is unknown, the other cases were family and hospital contacts of the first case. The presence of Nipah virus in bats has been confirmed in 9 states and one union territory in India. A comprehensive survey was conducted which encompassed 14 states and 2 union territories. Previously, the presence of Nipah virus in fruit bats had only been demonstrated in the state of Kerala. This study on the dynamics of NiV concludes that when a great enough proportion of bats are immune to the virus there is little transmission, but when	22/02/2013

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			<p>this fraction drops below a threshold, the colony becomes susceptible with subsequent significant virus transmission throughout the colony. Transmission from bats to humans and from person to person then may ensue. (Epstein JH, Anthony SJ, Islam A, et al. Nipah virus dynamics in bats and implications for spillover to humans. Proceedings of the National Academy of Sciences. 2020 Nov; 117(46): 29190-29201.)</p> <p>February 2024 update: Bangladesh recorded 24 Nipah virus cases with 10 deaths in 2023. This is the highest number of fatalities in 7 years. NiV was also reportedly detected in breast milk for the first time, but no additional detail is available.</p> <p>May 2024 update: Since 1 January and as of 9 February 2024, two laboratory-confirmed cases of NiV have been reported from the Dhaka division of Bangladesh. Both cases had consumed raw date palm sap and both died. WHO assesses the overall risk at the national level to be moderate.</p> <p><u>August 2024 update: In India, one person in the state of Kerala tested positive for Nipah virus in July.</u></p>	
Norovirus	Viral	Green	Added to traffic lights for consistency with EREEIDs. No significant developments to report.	Added 8/3/2024
Oropouche virus	Viral	Green	<p>The Brazilian state of Acre reported 55 confirmed human infections with Oropouche virus in 2023 to 2 December.</p> <p>May 2024 update: In the Region of the Americas, numerous outbreaks of Oropouche virus disease have been reported in the last 10 years from Brazil, Ecuador, French Guiana, Panama, Peru, and Trinidad and Tobago, mainly in the Amazon region. Four countries have reported confirmed infections in 2024 as of 12 April:</p> <ul style="list-style-type: none"> • Bolivia - 1,014 suspected cases in 6 of 9 departments, including 160 RT-PCR-confirmed cases from 3 departments (majority in La Paz). • Brazil - 3,475 confirmed cases in 5 states (majority in Amazonas). The probable site of infection for all cases was in the Northern region of Brazil. • Colombia - 2 confirmed cases from retrospective testing of 187 samples collected in 2024 throughout the country. • Peru - 225 confirmed cases in 4 departments (majority in Loreto). This is the highest number of cases reported to date in the country. <p><u>August 2024 update</u></p>	Added August 2017

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			<p><u>In the Region of the Americas, a total of 7,688 confirmed cases of OROV infection have been reported as of 16 July 2024, including recent cases from areas and countries where autochthonous cases had not previously been reported. The vast majority of cases and newly affected regions are in Brazil (6,976 cases), which has also recently reported the first known OROV-associated deaths. The remaining four countries that have reported cases are Bolivia (313 cases), Colombia (38), Cuba (74, first known outbreak in the country) and Peru (287).</u></p> <p><u>A vertical transmission event is also under investigation in Brazil as of July. Two pregnant women developed symptomatic infection with detectable OROV RNA, with fetal death or miscarriage unfortunately occurring shortly thereafter. In the first case (presumed vertical transmission), fetal death occurred at 30 weeks gestation, with OROV RNA detected in umbilical cord blood and organ tissue samples. The second woman miscarried in the eighth week of gestation (suspected vertical transmission). Retrospective testing of samples from a collection negative for the most common arboviruses also identified four samples from newborns with microcephaly that were positive for IgM antibodies against OROV.</u></p>	
Papillomaviruses	Viral	Green	No significant developments to report.	
Pegivirus A or human pegivirus HPgV (includes the viruses previously referred to as GBV-C/hepatitis G virus (HGV), GBV-A (new world primates) and homologues infecting chimpanzees and Old World monkey species)	Viral	Green	No significant developments to report.	
Pegivirus, novel human (HPgV-2, also known as HHpgV-1)	Viral	Green	No significant developments to report.	
Polyomaviruses	Viral	Green	A recent study of 720 Argentinian blood donors detected the human polyomaviruses BKPyV and JCPyV in 2 and 7 samples, respectively, with an overall prevalence of 1.25%. Both are common childhood infections that cause asymptomatic infection in healthy individuals, with leucocytes as sites of	

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			latency. Polyomaviruses are not known to be transfusion transmitted, infectious viraemia in the donors was not demonstrated, viral load would be greatly reduced by leucodepletion, and the authors were unable to follow up the recipients who received the affected blood and blood components. As such, this study does not provide any evidence of increased risk. (Frutos MC, Blanco S, Barahona NY, et al. Infection by human polyomaviruses JCPyV and BKPyV in blood donors of Argentina. Vox Sang. 2023 Aug; 118(8): 695-699.)	
Porcine endogenous retrovirus (PERV)	Viral	Green	No significant developments to report.	
Porcine parvovirus	Viral	Green	No significant developments to report.	
Rhabdovirus (rabies)	Viral	Green	<p>In January 2021, an 84-year-old man in the US died from rabies six months after being bitten by a rabid bat despite receiving timely rabies post-exposure prophylaxis (PEP). This was the first reported failure of rabies PEP in the Western Hemisphere using a cell culture vaccine. Investigation concluded that the most likely explanation was host-mediated primary vaccine failure attributed to previously unrecognized impaired immunity. (Holzbauer SM, Schrodtt CA, Prabhu RM, et al. Fatal human rabies infection with suspected host-mediated failure of post-exposure prophylaxis following a recognized zoonotic exposure—Minnesota, 2021. Clin Infect Dis. 2023 Oct; 77(8): 1201-1208.)</p> <p>Timor-Leste has been reclassified from a low-risk rabies country to a high-risk country with new transmission in dogs. Its first confirmed fatal human case of rabies was reported on 22 March 2024 and there were a further 29 suspected cases as of 26 March, all of whom had exposure to dogs. (Later published: Amara M, Machado FdN, Moniz FP, et al. The first confirmed human case of rabies, Timor-Leste, 2024. Euro Surveill. 2024 May; 29(18): pii=2400241.)</p> <p><u>PVRV-NG2 is a next-generation Vero cell rabies vaccine based on the same virus strain as the licensed vaccines Verorab and Imovax. A phase 3 study has demonstrated that all three vaccines are equivalent when administered concomitantly with human rabies immunoglobulin, based on the proportion of participants achieving rabies virus neutralising antibody titres of 0.5 IU/mL or more. Geometric mean antibody titres were also similar between groups at all time points. (Pineda-Peña A-C, Jiang Q, Petit C, Koreiwo-Peyramond J, Donazzolo Y, Latreille M, et al. Immunogenicity and safety of a purified Vero rabies vaccine—serum free, compared with 2 licensed vaccines, in a simulated rabies post-exposure regimen in healthy adults in France: A randomized, controlled, phase 3 trial. Clin Infect Dis. 2024 Jun; 78: 1748-1756.)</u></p>	17/3/2010

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Ross River virus	Viral	Green	<p>During 2023, there were 1,694 notifications of RRV infection. This is lower than the 2,904 notifications recorded in 2022, which at the time was the lowest number recorded using the existing case definition (2016 onwards).</p> <p>A recent QLD study found that including mosquito abundance in models based on meteorological and geographical data improved their performance in predicting RRV incidence. This does not change the previous assessment regarding blood safety that the risk of RRV transfusion-transmission is acceptably low and appropriately managed through existing mitigations. (Qian W, Viennet E, Glass K, et al. Prediction of Ross River virus incidence using mosquito data in three cities of Queensland, Australia. <i>Biology</i>. 2023 Nov; 12(11): 1429.)</p> <p><u>During the QLD mosquito surveillance season November 2023 to April 2024, RRV was detected in a record number of mosquito traps (116 of 1,225). A high number of human cases were also detected during the same period, being 2.4 times higher than the five-year average.</u></p>	03/03/2016
Novel coronaviruses	Viral	Green	No significant developments to report.	Broadened from SARS to novel coronaviruses in Feb 2022
SARS-CoV-2 (formerly 2019-nCoV)	Viral	Green	<p>November 2023 update</p> <p>A new omicron subvariant, EG.5 (descended from XBB.1.9.2), was classified as a variant of interest in August. The strain has been reported from 48 countries with increasing prevalence, and has a similar risk profile to the other variants of interest (low). As of 23 October 2023, there are no currently circulating variants of concern, and the variants of interest are XBB.1.5, XBB.1.16 and EG.5.</p> <p>Australia's Communicable Disease Incident of National Significance for COVID-19 was stood down on 20 October 2023. (https://www.health.gov.au/news/end-of-covid-19-emergency-response)</p> <p>February 2024 update</p> <p>Monovalent Omicron XBB.1.5 vaccines by Pfizer and Moderna were approved by the TGA in November 2023 and are now available for use in Australia.</p> <p>In November, WHO reclassified BA.2.86 from a variant under monitoring to a variant of interest due to the steady increase in its global prevalence. Its child lineage JN.1 was separately designated a variant of interest in December 2023</p>	<p>Added Feb 2020 (yellow)</p> <p>10/11/2022 (from yellow to green)</p>

Deleted: Routine mosquito surveillance in QLD has detected more RRV-positive mosquito pools up to mid-February 2024 than during the 2019-2020 summer months, when there was a significant RRV outbreak. Queensland Health is warning of a heightened risk of Ross River virus infection across the state.

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			<p>following its own rapid increase in prevalence. BA.2.86 has also been found to infect cells found in the lower lung more efficiently than other Omicron variants, which could potentially lead to more severe disease. (1. Qu P, Xu K, Faraone JN, et al. Immune evasion, infectivity, and fusogenicity of SARS-CoV-2 BA.2.86 and FLip variants. Cell. 2024 Feb; 187(3): 585-595 e6. 2. Zhang L, Kempf A, Nehlmeier I, et al. SARS-CoV-2 BA.2.86 enters lung cells and evades neutralizing antibodies with high efficiency. Cell. 2024 Feb; 187(3): 596-608 e17.)</p> <p>A study of Japanese blood donors supports the existing assessment of SARS-CoV-2 as a low TTI risk. Among 496 donation samples from donors who reported infection within 2 weeks, only 23 (4.6%) had detectable viral RNA, and 19 were below the limit of quantification. All three patients who had been transfused with positive components tested negative for viral RNA in blood and did not show any symptoms of COVID. (Shinohara N, Ito M, Kai K, et al. Risk of transfusion-transmitted infection with severe acute respiratory syndrome coronavirus 2 from blood donors in Japan. Transfusion. 2024 Jan; 64(1): 116-123.)</p> <p>May 2024 update</p> <p>An evaluation of adverse events following COVID-19 vaccination across 8 countries confirmed pre-established safety signals. The lower bound of the 95% confidence interval of the observed versus expected ratio after the first dose of vaccine was greater than 1.5 for Guillain-Barré syndrome and cerebral venous sinus thrombosis (ChAdOx1 vaccine), acute disseminated encephalomyelitis (mRNA-1273), and myocarditis and pericarditis (BNT162b2, mRNA-1273, and ChAdOx1). (Faksova K, Walsh D, Jiang Y, et al. COVID-19 vaccines and adverse events of special interest: A multinational Global Vaccine Data Network (GVDN) cohort study of 99 million vaccinated individuals. Vaccine. 2024 Apr; 42(9): 2200-2211.)</p> <p>During the 28 days prior to 12 April 2024, JN.1 was the predominant variant of interest (95.1% of sequences during this period), with other VOIs including XBB.1.5, XBB.1.16, EG.5 and BA.2.86. There are no longer any variants under monitoring; the previous variants in this category (XBB, XBB.1.9.1, and XBB.2.3) have been de-escalated after having a prevalence of less than 1% for more than eight epidemiological weeks globally and across the WHO regions. (World Health Organization. COVID-19 epidemiological update – 12 April 2024. https://www.who.int/publications/m/item/covid-19-epidemiological-update-edition-166)</p> <p><u>August 2024 update</u></p> <p><u>The WHO Technical Advisory Group on COVID-19 Vaccine Composition advises the use of a monovalent JN.1 lineage as the antigen in future</u></p>	

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			<p><u>formulations of COVID-19 vaccines, because SARS-CoV-2 is expected to continue to evolve from JN.1.</u></p> <p><u>Four JN.1 descendant lineages (JN.1.7, JN.1.18, KP.2 and KP.3) were added as variants under monitoring during April/May, while two variants of interest (XBB.1.5 and XBB.1.16) were removed in June.</u></p>	
Severe fever with thrombocytopenia syndrome virus (SFTSV)	Viral	Green	A case of human-to-human transmission of severe fever with thrombocytopenia syndrome virus was reported from Japan in March 2024. The case was a doctor who was infected via exposure to a patient who later died from SFTS. Cases of human-to-human transmission have previously been reported from South Korea and China, which also involved exposure to patients with fatal infections.	18/03/2013
Spumavirus (simian foamy virus)	Viral	Green	No significant developments to report.	17/3/2010
St Louis encephalitis virus	Viral	Green	No significant developments to report.	
Torque teno virus (TTV complex)	Viral	Green	No significant developments to report.	
Usutu virus	Viral	Green	<p>According to a recent review of Usutu virus in Europe, 105 autochthonous human cases were reported from 8 countries during 2012-2021, most frequently Italy (n = 56), Austria (n = 27) and the Netherlands (n = 11). None of the countries in the study had implemented specific measures to prevent USUV transmission via substances of human origin (SoHO), although USUV-positive donations are detected and excluded when WNV NAT screening is performed. No donor-derived USUV infections have been reported to date. (Angeloni G, Bertola M, Lazzaro E, et al. Epidemiology, surveillance and diagnosis of Usutu virus infection in the EU/EEA, 2012 to 2021. Euro Surveill. 2023 Aug; 28(33): 2200929.)</p> <p>From the beginning of May to mid-October 2023, 7 human infections with USUV have been recorded in Italy, where they are known to occur sporadically. USUV has also been detected in 65 pools of mosquitoes and 81 birds in 8 areas.</p> <p><u>The THERAFLEX UV-Platelets system (UVC illumination) has been shown to inactivate USUV in spiked platelet concentrates in a dose-dependent manner. (Gravemann U, Boelke M, Könenkamp L, et al. West Nile and Usutu viruses are efficiently inactivated in platelet concentrates by UVC light using the THERAFLEX UV-Platelets system. Vox Sang. 2024; https://doi.org/10.1111/vox.13648.)</u></p>	Added May 2017

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Infectious Agent/Disease	Type of Agent	Threat Level	Action	Status Changed
Vaccinia virus	Viral	Green	No significant developments to report.	
Varicella zoster virus	Viral	Green	Added to traffic lights for consistency with EREEIDs. No significant developments to report.	Added 8/3/2024
Vesivirus	Viral	Green	No significant developments to report.	
West Nile virus	Viral	Green	<p>November 2023 update: Since the beginning of the 2023 European WNV transmission season and as of 11 October, EU/EEA countries have reported 661 human cases of WNV infection with 53 deaths, with most cases from Italy (313) and Greece (161); EU-neighbouring countries reported 90 cases in Serbia (89) and North Macedonia (1), with 2 deaths. Autochthonous human cases of WNV infection have been reported for the first time ever from specific regions in France, Germany, Greece, Italy, Romania and Spain. Note that countries' definitions differ – ie. some require clinical symptoms and others do not – which makes comparisons difficult.</p> <p>February 2024 update</p> <p>The last date of symptom onset from the European WNV season was 5 November 2023. During the 2023 transmission season, 11 EU/EEA and EU-neighbouring countries reported 800 human cases of WNV infection with 69 deaths. Autochthonous human cases were reported for the first time in regions of France, Germany, Greece, Italy, Romania and Spain.</p> <p>An analysis of the 2022 European WNV season found that in comparison with 2021, there were increases in the numbers of i) countries reporting local WNV transmission, ii) cases acquired within the reporting country, and iii) cases in birds and equines. The rate of human infection was 0.26 cases per 100,000 population. The overall trend during the 2018-2022 period did not significantly change. (European Food Safety Authority, European Centre for Disease Prevention and Control. The European Union One Health 2022 Zoonoses Report. EFSA J. 2023 Dec; 21(12): e8442.)</p> <p><u>August 2024 update</u></p> <p><u>The 2024 European WNV transmission season has commenced. Cases identified to date had symptom onset from June onwards, apart from one early case in Spain. As of 31 July 2024, human cases have been reported from Austria, France, Greece, Hungary, Italy, Romania, Serbia and Spain, with approximately half of the affected regions not having previously reported human cases. There appear to be 55 cases but this needs to be confirmed.</u></p>	18/11/2014

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Infectious Agent/Disease	Type of Agent	Threat Level	Action	Status Changed
			<p><u>Additionally, as of 11 July 2024, Israel has recorded 356 human cases of WNV infection since the beginning of May. The 125 cases recorded in June 2024 are unusual compared to the 2014-2023 average of 4 cases in June. However, none of these appear to have been reported to the European Surveillance System (TESSy). (Mor Z, Omari H, Indenbaum V, et al. Early rise of West Nile fever in Israel, June 2024. Euro Surveill. 2024 Jul; 29(30): pii=2400457.)</u></p> <p><u>Jordan detected its first clinical case of human WNV infection in late July.</u></p> <p><u>The THERAFLEX UV-Platelets system (UVC illumination) has been shown to inactivate WNV in spiked platelet concentrates in a dose-dependent manner. (Gravemann U, Boelke M, Könenkamp L, et al. West Nile and Usutu viruses are efficiently inactivated in platelet concentrates by UVC light using the THERAFLEX UV-Platelets system. Vox Sang. 2024; https://doi.org/10.1111/vox.13648.)</u></p>	
Yellow fever virus	Viral	Green	<p>November 2023 update</p> <p>In 2021, four patients who had received solid organ transplants in the USA developed encephalitis beginning after transplantation from a common organ donor. The ultimate cause was a blood transfusion received by the organ donor from a blood donor who had received a yellow fever vaccine 6 days before donation. Two of the organ recipients died. This is the first case of YFV transfusion-transmission with consequences. (Gould CV, Free RJ, Bhatnagar J, et al. Transmission of yellow fever vaccine virus through blood transfusion and organ transplantation in the USA in 2021: report of an investigation. Lancet Microbe. 2023 Sep; 4(9): e711-e721.)</p> <p>Since the beginning of 2023, a total of 2,777 cases (126 confirmed) of yellow fever and 35 deaths (CFR: 1.3%) have been reported in seven African Union countries: Cameroon (43 cases), Central African Republic (326), Congo (320), Gabon (79), Guinea (178), Nigeria (1,819) and Uganda (12). During the most recent reporting week, only 4 cases were reported, from Congo and Gabon.</p> <p>February 2024 update</p> <p>One human and 5 non-human primate cases of yellow fever were reported from Brazil in Oct/Nov 2023.</p> <p>Among member countries of the Economic Community of West African States, 12 recorded suspected cases of yellow fever in 2023; there were 6,435 suspected cases to 11 Nov 2023, with 9 confirmed cases and 32 deaths. The neighbouring country of South Sudan also reported one confirmed case in Dec 2023.</p>	20/2/2015

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Infectious Agent/Disease	Type of Agent	Threat Level	Action	Status Changed
			<p>May 2024 update</p> <p>During the last quarter of 2023 and as of 25 February 2024, a total of eight countries in the WHO African Region (Cameroon, Chad, Congo, DR Congo, Guinea, Niger, Nigeria, and South Sudan), have reported active YFV transmission with confirmed yellow fever cases. There is also a case pending classification in Togo.</p> <p>In 2024 as of 19 March, seven confirmed cases of yellow fever have been reported in the Region of the Americas from three countries: Colombia (3 cases), Guyana (2) and Peru (2). In addition, Brazil has reported confirmed cases of yellow fever in non-human primates.</p>	
Zika virus	Viral	Green	<p>February 2024 update</p> <p>The first evidence of <i>Aedes albopictus</i> mosquitoes naturally infected with Zika virus in the Amazon region was reported. (Gomes EO, Sacchetto L, Teixeira M, et al. Detection of Zika virus in <i>Aedes aegypti</i> and <i>Aedes albopictus</i> mosquitoes collected in urban forest fragments in the Brazilian Amazon. <i>Viruses</i>. 2023 Jun; 15(6): 1356.)</p> <p>The number of cases of ZIKV in Thailand in 2023 (758 cases) was both the highest number since 2016 and an increase of almost 300% over 2022 (190 cases).</p> <p><u>August 2024 update: The FDA has determined that ZIKV is no longer a relevant communicable disease agent or disease for human cells, tissues or cellular/tissue-based products. Establishments may discontinue screening donors of these products for ZIKV.</u></p>	<p>03/03/2016</p> <p>23/8/2017 (changed to green)</p>
<i>Anaplasma</i> species (anaplasmosis)	Rickettsial	Green	<p>A confirmed case of transfusion-transmitted <i>Anaplasma phagocytophilum</i> infection has been reported from the US. The donor had been diagnosed with human granulocytic anaplasmosis (HGA) three weeks after donation. Leucoreduced red cells from the implicated donation were transfusion to the recipient 9 days after collections. TT-HGA is rare, but this is not the first case reported from leucoreduced red cells. (Tonnetti L, Marcos LA, Mamone L, et al. A case of transfusion-transmission <i>Anaplasma phagocytophilum</i> from leukoreduced red blood cells. <i>Transfusion</i>. 2024 Apr; 64(4): 751-754.)</p>	<p>8/7/2010</p> <p>Broadened to general <i>Anaplasma</i> spp. in Nov 2022</p>
<i>Coxiella burnetii</i> (Q fever)	Rickettsial	Green	<p>The Darling Downs South West region of QLD recorded 86 notifications of Q fever in 2023, a near 80% increase in notifications when compared to 2022. Statewide in QLD, there were 324 notifications, which is higher than the 2018-2022 average (236). The number of national notifications for 2023 (538) remains similar to the 2018-2022 average (513).</p>	<p>17/3/2010</p>

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Infectious Agent/Disease	Type of Agent	Threat Level	Action	Status Changed
		Green	In 2024 to mid-March, 89 cases of Q fever were reported from QLD, representing an increase of approximately 90% compared to the same period in 2023.	
<i>Ehrlichia</i> species (ehrlichiosis)	Rickettsial	Green	No significant developments to report.	(Broadened to all <i>Ehrlichia</i> species for consistency with EREEID in August 2018)
<i>Orientia</i> species causing scrub typhus	Rickettsial	Green	Nepal recorded more than 3900 cases of scrub typhus between January and October 2023. People from rural areas still comprise the majority of infections, but incidence in urban areas appears to be increasing.	(Broadened to all <i>Orientia</i> species causing scrub typhus in August 2023)
<i>Rickettsia</i> species	Rickettsial	Green	The US CDC reported a cluster of Rocky Mountain spotted fever among people with recent travel to or residence in the city of Tecate (Baja California state), Mexico. Between late July and 8 December 2023, five confirmed cases were identified, with 3 deaths.	
<i>Bacillus anthracis</i> (anthrax) and anthrax-like disease caused by other <i>Bacillus</i> spp.	Bacterial	Green	A large-scale anthrax outbreak is occurring in Zambia. As of 20 November 2023, 684 suspected human cases were reported from 9 of 10 provinces. The last major outbreak was in 2011 with 511 suspected human cases. WHO assesses the risk of the event spreading within Zambia and within the region to be high.	
<i>Bartonella</i> species (<i>B. henselae</i> – cat scratch fever, <i>B. quintana</i> – Trench fever, <i>B. bacilliformis</i> – Carrion's disease)	Bacterial	Green	No significant developments to report.	
<i>Borrelia burgdorferi</i> (Lyme disease)	Bacterial	Green	The Czech Republic reported approximately 1200 cases of Lyme disease and 162 of tick-borne encephalitis during the first half of 2024. There is reference to approximately double the number of cases reported in the same period of 2023, but it is unclear whether this relates to TBEV, Lyme or both.	17/3/2010
Potential tick-borne pathogen and Lyme-like disease in Australia	Unidentified	Green	No significant developments to report.	

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<i>Borrelia</i> species (borreliosis)	Bacterial	Green	No significant developments to report.	
<i>Brucella</i> species (brucellosis)	Bacterial	Green	<i>Brucella abortus</i> , RB51 strain (live attenuated cattle vaccine) was recently detected in a US plateletpheresis donation via large volume delayed sampling bacterial contamination screening on BacT/ALERT. The donor was a large-animal veterinarian from the Midwest, who administered the RB51 brucellosis vaccine on a weekly basis. No other potential exposures were identified, and the risk of vaccine strain exposure to veterinarians and other vaccine handlers is well-established. He was well and met eligibility criteria for donation. The aerobic BCS bottle gave a positive signal at 89 hours of incubation and the product was recalled prior to transfusion. (Parsons MG, Hermelin D, Hennenfent A, et al. Animal vaccine strain <i>Brucella abortus</i> infection in a plateletpheresis donor: A case report. Transfusion. 2024 May; 64(5): 946-948.)	
<i>Burkholderia pseudomallei</i> (melioidosis)	Bacterial	Green	As of July 2022, <i>Burkholderia pseudomallei</i> has been considered endemic to the American Gulf Coast. The most recent locally acquired case in this region was in Mississippi in January 2023. The investigation of locally acquired cases and findings, including environmental detection of the bacterium, were published in December. (Petras JK, Elrod MG, Ty MC, et al. Locally acquired melioidosis linked to environment - Mississippi, 2020-2023. N Engl J Med. 2023 Dec; 389(25): 2355-2362.) Thailand is experiencing an outbreak of melioidosis. In 2023 to October, 582 cases have been recorded in the lower northeastern provinces, with 6 deaths. Approximately half of the infections occurred in farmers. May 2024 update As of the 14th epidemiological week of 2024, Malaysia has registered 44 cases of melioidosis. This represents an increase of 12.8% over the same period in 2023 (39 cases). Locally acquired cases of melioidosis have also been reported in Baja California Sur (Mexico).	21/09/2011
<i>Chlamydia pneumoniae</i>	Bacterial	Green	No significant developments to report.	
Chlamydia (Lymphogranuloma venereum in MSM)	Bacterial	Green	<u>France has a sentinel network for lymphogranuloma venereum (LGV) whereby laboratories perform routine testing for <i>Chlamydia trachomatis</i> in anorectal specimens and send those that are positive to a national reference laboratory. Since 2016, LGV screening of these samples has been limited to those from people living with HIV and/or with anorectal symptoms. A temporary period of screening all <i>C. trachomatis</i>-positive anorectal specimens for LGV found that</u>	17/3/2010

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			LGV cases were more often asymptomatic than in the past, and the proportion of HIV-negative cases was higher compared with those living with HIV. The authors recommend screening all <i>C. trachomatis</i>-positive anorectal specimens for LGV. (Peuchant O, Laurier-Nadalié C, Albuher L, et al. Anorectal lymphogranuloma venereum among men who have sex with men: a 3-year nationwide survey, France, 2020 to 2022. Euro Surveill. 2024 May; 29(19): pii=2300520.)	
<i>Francisella tularensis</i> (tularemia)	Bacterial	Green	No significant developments to report.	
<i>Leptospira</i> species	Bacterial	Green	Added to traffic lights for consistency with EREEIDs. No significant developments to report.	Added 8/3/2024
<i>Listeria monocytogenes</i> (listeriosis)	Bacterial	Green	<p>Three separate genetically related clusters of listeriosis occurred in Australia in mid-September 2023, with 5 cases in QLD, 3 in NSW and 1 in VIC. The isolates from the QLD patients were the same as those detected in a shredded chicken product sold in commercial quantities and generally used by restaurants, cafes and hospitals.</p> <p>A confirmed transfusion transmission of <i>Listeria monocytogenes</i> from pooled platelet concentrate has been reported from Italy. Bacterial isolates from the donor blood unit, the transfused platelets, and the patient's blood culture were genetically closely related. (Gori M, Bolzoni L, Scaltriti E, et al. <i>Listeria monocytogenes</i> transmission from donated blood to platelet transfusion recipient, Italy. Emerg Infect Dis. 2023 Oct; 29(10): 2108.)</p> <p>This is the second known case of transfusion transmission. Bacterial contamination screening of platelets is not routinely performed in Italy and was done in this case to investigate the septic transfusion reaction. We have previously assessed <i>Listeria</i> to be a negligible risk, and this assessment is unchanged. Bacteraemia with this organism is a rare event, donors are required to be well, and bacterial contamination screening is capable of detecting <i>Listeria</i> species.</p> <p>Ready-to-eat fish products have been implicated as vehicles of infection for an ongoing outbreak of <i>Listeria monocytogenes</i> sequence type (ST) 155, serogroup IIa in multiple countries in the EU/EEA and the UK. The products are linked to two processing plants in Lithuania, with the outbreak strain persisting in one of the plants for over 8 years. Two historical sub-clusters of the outbreak included 30 cases between 2011 and 2021, while the ongoing sub-cluster includes 64 cases reported from 5 countries since 2016. (European Centre for Disease Prevention and Control, European Food Safety Authority. Prolonged</p>	22/05/2013

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			multicountry cluster of <i>Listeria monocytogenes</i> ST155 infections linked to ready-to-eat fish products – 13 December 2023.)	
<i>Mycobacterium tuberculosis</i> transmitted by human cells or tissues	Bacterial	Green	<p>A tuberculosis (TB) outbreak linked to a viable bone allograft product contaminated with <i>Mycobacterium tuberculosis</i> was identified in the US in June 2021. Bone tissue retrieved from a deceased donor with undiagnosed TB disease was implanted into 113 patients in 18 US states. At least 83 (73%) recipients developed extrapulmonary TB disease at a surgical site, and 27 (24%) had pulmonary disease. (Schwartz NG, Hernandez-Romieu AC, Annambhotla P, et al. Nationwide tuberculosis outbreak in the USA linked to a bone graft product: an outbreak report. <i>Lancet Infect Dis.</i> 2022 Nov; 22(11): 1617-1625.)</p> <p>In August 2023 in the US, at least two cases of post-surgical <i>Mycobacterium tuberculosis</i> infection were linked to viable bone matrix product from a single donor lot. At the time of release, the samples were negative for <i>M. tuberculosis</i> by NAT. Product from the implicated lot has been received by 36 patients. A similar outbreak in 2021 involved the same manufacturer but a different product. (Wortham JM, Haddad MB, Stewart RJ, et al. Second nationwide tuberculosis outbreak caused by bone allografts containing live cells - United States, 2023. <i>MMWR Morb Mortal Wkly Rep.</i> 2024 Jan; 72(5253): 1385-1389.)</p>	Added 2/11/2023
Non-tuberculous mycobacteria, eg. <i>Mycobacterium ulcerans</i> (Buruli ulcer)	Bacterial	Green	<p>Recent work by the Doherty Institute provides compelling evidence of a possum-mosquito-human transmission cycle for <i>Mycobacterium ulcerans</i>. (Vandelannoote K, Buultjens AH, Porter JL, et al. Statistical modeling based on structured surveys of Australian native possum excreta harboring <i>Mycobacterium ulcerans</i> predicts Buruli ulcer occurrence in humans. <i>eLife.</i> 2023 Apr; 12: e84983. Mee PT, Buultjens AH, Oliver J, et al. A transmission chain linking <i>Mycobacterium ulcerans</i> with <i>Aedes notoscriptus</i> mosquitoes, possums and human Buruli ulcer cases in southeastern Australia. <i>bioRxiv.</i> 2023; https://doi.org/10.1101/2023.05.07.539718 (Later published: Mee PT, Buultjens AH, Oliver J, et al. Mosquitoes provide a transmission route between possums and humans for Buruli ulcer in southeastern Australia. <i>Nat Microbiol.</i> 2024 Feb; 9(2): 377-389.)</p> <p>The incidence of non-tuberculous mycobacterial skin and soft tissue infections in Darwin increased over the period 1989-2021. There were 73 cases in total during that time, with localised skin trauma as the most common risk factor. The most common organism identified was <i>Mycobacterium fortuitum</i>, in 41% of cases. (Nohrenberg M, Wright A, Krause V. Non-tuberculous mycobacterial skin and soft tissue infections in the Northern Territory, Australia, 1989-2021. <i>Int J Infect Dis.</i> 2023 Oct; 135: 125-131.)</p> <p>Cases of Buruli ulcer continue to increase in Victoria. There were 293 cases notified in 2023 as of 25 October, which is higher than the same periods from</p>	25/05/2011

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			<p>the three previous years. It has also recently been detected in NSW for the first time.</p> <p>February 2024 update: A small cluster of <i>Mycobacterium abscessus</i> infections in Hong Kong was linked to receiving injections between June-August 2023 at a specific beauty salon.</p> <p>May 2024 update</p> <p>A multistate outbreak of <i>Mycobacterium abscessus</i> infections in the US was linked to receiving a cosmetic procedure to a particular clinic in south Florida during August-December 2022. A total of 15 patients from nine states were confirmed, with another four who experienced signs and symptoms of postsurgical infection but lacked confirmatory laboratory results. (Saunders KE, Reyes JM, Cyril L, et al. Notes from the Field: Nontuberculous mycobacteria infections after cosmetic surgery procedures in Florida - nine states, 2022-2023. MMWR Morb Mortal Wkly Rep. 2024 Jan; 73(3): 66-67.)</p> <p>An outbreak of mycobacterial infection following cosmetic procedures in a clinic in Belo Horizonte (Brazil) has been confirmed. As of mid-April 2024, there were 16 cases are under investigation, with one confirmed infection with <i>Mycobacterium abscessus</i> and another with <i>Mycobacterium</i> spp.</p> <p>The incidence of leprosy (<i>Mycobacterium leprae</i>) has doubled in the southeastern states of the US in the last decade and there is evidence that it has become endemic there. In 2020, 159 new cases were reported in the US overall, with central Florida accounting for almost one fifth of those. Approximately 34% of new case-patients during 2015–2020 appeared to have locally acquired the disease. (Bhukhan A, Dunn C, Nathoo R. Case report of leprosy in central Florida, USA, 2022. Emerg Infect Dis. 2023 Aug; 29(8): 1698.)</p> <p><u>August 2024 update: Three <i>Mycobacterium abscessus</i> infections were identified in Colorado USA between Nov 2022 and May 2023. They were linked to receiving donor embryonic stem cell injections in Mexico, although at different clinics in different geographical areas. Sequencing of patient isolates suggested a common infected source, but this was not found. (Nguyen MH, Hasan NA, De Moura VCN, et al. Notes from the Field: Potential outbreak of extrapulmonary <i>Mycobacterium abscessus</i> subspecies massiliense infections from stem cell treatment clinics in Mexico - Arizona and Colorado, 2022. MMWR Morb Mortal Wkly Rep. 2024 May; 73(18): 420-422.)</u></p>	
<i>Treponema pallidum</i> (syphilis)	Bacterial	Green	<p>February 2024 update</p> <p>A recent meta-analysis examined six studies where human blood was artificially infected with <i>Treponema pallidum</i> then transfused to animals. It</p>	(Added to traffic lights to track updates and

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			<p>showed that cold storage of the blood for more than 72 hours before inoculation resulted in a statistically significant decrease in the number of animals that developed syphilis, compared to storage for less than 72 hours. However, the possibility for transfusion-transmitted syphilis may remain for several days after; this is uncertain due to a lack of sufficiently powered studies and studies in humans. (D'aes T, Van de Sande D, De Buck E, et al. Does cold storage of blood before transfusion prevent the transmission of syphilis? A systematic review and meta-analysis. Vox Sang. 2024 Mar; 119(3): 219-231.)</p> <p>A European Network for Sexually Transmitted Infections meeting report reviews the efficacy of doxycycline as prophylaxis against syphilis: There is evidence from three open-label randomised trials (IPERGAY, DoxyPEP and DOXYVAC) conducted among MSM and transgender women with or without HIV infection and with a high incidence of bacterial STIs, that a single dose of doxycycline 200 mg taken within 24–72 hours after condomless sex can considerably (> 70%) reduce incident chlamydia and syphilis infections. (Mårdh O, Plachouras D. Using doxycycline for prophylaxis of bacterial sexually transmitted infections: considerations for the European Union and European Economic Area. Euro Surveill. 2023 Nov; 28(46): pii=2300621.)</p> <p>A Dutch study of nearly 10,000 sexual health centre visits by more than 3,000 participants in a PrEP program assessed the value of including a TMA (NAT) test in routine diagnostics for syphilis. An additional 14 (7%) infections were identified over a period of one year. (Zondag HCA, van Dam AP, Bosch J, et al. Timely diagnosis of incubating syphilis infections using Treponema pallidum transcription-mediated amplification assay. Clin Infect Dis. 2023 Dec; 77(12): 1717-1722.)</p> <p>May 2024 update</p> <p>In the US in 2022, rates of primary and secondary syphilis increased among both men and women, all age groups and all regions. The national rate of congenital syphilis was the highest since 1991.</p> <p>In Australia in 2022, there were a total of 6,036 infectious syphilis notifications, with the majority (82%) among males. The notification rate more than tripled between 2013 (7.6 per 100,000 population) and 2022 (24.3). Overall, the national infectious syphilis notification rate was more than four times as high among men than women, although the rate in women has increased almost six-fold since 2013. There were 15 congenital syphilis cases in 2022. (King J, McManus H, Kwon J et al. HIV, viral hepatitis and sexually transmissible infections in Australia: Annual surveillance report 2023. 2023. Kirby Institute, UNSW Sydney. https://doi.org/10.26190/f5ph-f972.)</p>	<p>surveillance in May 2017)</p>

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			<p>During 2023, there were 6,443 cases of infectious syphilis reported to the NNDSS. Notification rates per 100,000 population were 148 and 168 for Indigenous males and females, and 38 and 6 for non-Indigenous males and females. Non-Indigenous females had the greatest notification rate increases compared to both the previous 12 months (22%) and the 5-year mean (25%). Between 2016 and 31 December 2023, there were 89 reported cases of congenital syphilis, including 29 deaths. Rates have also increased in major cities and regional areas in the last 12 months. Sustained transmission in remote and very remote areas was observed, associated with the infectious syphilis outbreak. Since the commencement of this outbreak in 2011, a total of 5,792 cases have been reported from 4 jurisdictions (QLD, NT, WA, SA).</p> <p><u>August 2024 update: Lifeblood has used sequential immunoassays for syphilis screening since late 2018, which has improved the efficiency of screening. Two years' experience show that the false-positive rate for the Alinity s Syphilis CMIa was 0.08% and the common false-positive rate with the secondary assay, the cobas Elecsys Syphilis ECLIA, was 3.83%. (Cheng A, Das A, Styles CE, et al. Improved efficiency using sequential automated immunoassays for syphilis screening in blood donors. Journal of Clinical Microbiology. 2024; doi: 10.1128/jcm.00476-24.)</u></p>	
<i>Yersinia enterocolitica</i> (yersiniosis)	Bacterial	Green	<p><u>In Finland, a total of 168 cases of <i>Yersinia enterocolitica</i> were reported in January-April 2024, compared to only 64 cases from January-April 2023. There were two suspected outbreak alerts in April 2024.</u></p> <p><u>An outbreak of <i>Yersinia enterocolitica</i> biotype 2, serotype O:9 in France is associated with raw milk goat's cheese. The implicated product is widely distributed but most cases (133) have occurred in France; Belgium, Luxembourg and Norway have all reported one case each.</u></p>	
<i>Yersinia pestis</i> (plague)	Bacterial	Green	No significant developments to report.	
<i>Babesia</i> species (babesiosis)	Protozoan	Green	<p>In the two years after complete implementation of the FDA's recommendation for high-risk states to implement <i>Babesia</i> NAT testing, only three cases of transfusion transmitted babesiosis were reported to the FDA, compared with 44 in the three years prior to the release of the guidance. All three of the recent cases occurred in states that use babesiosis history screening only (ie. lower-risk states), and the implicated donations were not tested. (Eder AF, O'Callaghan S, Kumar S. Reduced risk of transfusion-transmitted babesiosis with blood donor testing. Clin Infect Dis. 2024 Jan; 78(1): 228-230.)</p> <p><u>Estonia reported its first human cases of babesiosis in June 2024.</u></p>	27/11/2012

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List of Infectious Agents and Associated Traffic Lights

Infectious Agent/Disease	Type of Agent	Threat Level	Action	Status Changed
Filariae	Nematode	Green	<p>The Lao People’s Democratic Republic has successfully eliminated lymphatic filariasis as a public health problem, as announced by WHO on 16 October 2023. Bangladesh also achieved elimination earlier in 2023.</p> <p>A prevalence study conducted along the Amazon River in Colombia has demonstrated that loop-mediated isothermal amplification (LAMP) assays are more sensitive than blood smear microscopy to detect infection with the filarial nematode <i>Mansonella ozzardi</i>. The overall prevalence of <i>M. ozzardi</i> using LAMP on whole blood samples was 40%. <i>Mansonella</i> infection has historically been considered relatively non-pathogenic, but case reports of more significant disease are emerging. (Dahmer KJ, Palma-Cuero M, Ciuoderis K, et al. Molecular surveillance detects high prevalence of the neglected parasite <i>Mansonella ozzardi</i> in the Colombian Amazon. J Infect Dis. 2023 Nov; 228(10): 1441-1451.)</p>	
<i>Leishmania</i> species (leishmaniasis)	Protozoan	Green	<p>Bangladesh became the first country in the world to be officially validated for having eliminated visceral leishmaniasis as a public health problem in October 2023. (Reported Feb 2024)</p> <p>Human leishmaniasis cases increased between 2004 and 2022 in Bologna, the capital of Italy’s Emilia-Romagna region, although the incidence of canine leishmaniasis did not. Incidence peaks higher than 2 human cases per 100,000 inhabitants were observed in 2013, 2018 and 2022. (Todeschini R, Musti MA, Pandolfi P, et al. Re-emergence of human leishmaniasis in northern Italy, 2004 to 2022: a retrospective analysis. Euro Surveill. 2024 Jan; 29(4): pii=2300190.)</p> <p>Increased incidence of cutaneous leishmaniasis has been reported recently in Yemen and Pakistan.</p>	
<i>Plasmodium</i> species (malaria) including relapsing vivax	Protozoan	Green	<p>November 2023 update</p> <p>Small numbers of cases of locally transmitted malaria continue to occur this year in the US. Maryland and Arkansas both recently reported cases representing the first local transmissions in 40 years (Maryland) or ever (Arkansas). They are unrelated to the outbreaks in Florida or Texas. (Duwell M, DeVita T, Torpey D, et al. Notes from the Field: Locally acquired mosquito-transmitted (autochthonous) <i>Plasmodium falciparum</i> malaria - National Capital Region, Maryland, August 2023. MMWR Morb Mortal Wkly Rep. 2023 Oct; 72(41): 1123-1125.)</p> <p>A strain of <i>Delftia tsuruhatensis</i> bacterium, named Tres Cantos 1 (TC1), has been discovered to drastically reduce <i>Plasmodium falciparum</i> malaria parasite burden in mosquitoes, potentially reducing transmission to humans significantly. TC1 was effective in both <i>Anopheles stephensi</i> and <i>An. gambiae</i> mosquitoes and inhibited <i>P. berghei</i> as well as <i>P. falciparum</i>, suggesting</p>	24/01/2012

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			<p>broader potential. Various other characteristics support the potential of the bacterium to be deployed as a component of malaria control. (Huang W, Rodrigues J, Bilgo E, et al. Delftia tsuruhatensis TC1 symbiont suppresses malaria transmission by anopheline mosquitoes. Science. 2023 Aug; 381(6657): 533-540.)</p> <p>A probable transfusion transmission of malaria occurred in Canada in 2022. The recipient was an infant with no other risk factors who received red cells from a donor subsequently found to be positive for malaria by serology and NAT. The donor was born and resided in an endemic West African country for 14 years but met the malaria eligibility criteria used by Canadian Blood Services. (Tordon B, Drews SJ, Flahr F, et al. Canadian Blood Services traceback investigation of a suspected case of transfusion-transmitted malaria. Transfusion. 2023 Oct; 63(10): 2001-2006.)</p> <p>Following advice from the Strategic Advisory Group of Experts on Immunization and the Malaria Policy Advisory Group, WHO recommended the R21/Matrix-M vaccine for the prevention of malaria in children in October 2023 and added it to the list of prequalified vaccines in December. It is safe and effective based on clinical trial data. R21 is the second malaria vaccine recommended/prequalified by WHO; there is no evidence to date that either R21 or RTS,S performs better than the other, although R21 is easier to manufacture. (Datoo MS, Dicko A, Tinto H, et al. Safety and efficacy of malaria vaccine candidate R21/Matrix-M in African children: a multicentre, double-blind, randomised, phase 3 trial. The Lancet. 2024 Feb; 403(10426): 533-544.)</p> <p>February 2024 update</p> <p>The 2023 World Malaria Report estimates that there were 249 million malaria cases globally in 2022, exceeding the 2019 pre-pandemic level by 16 million cases and the 2021 case count by 5 million. Progress towards critical 2025 milestones of the WHO global malaria strategy is off track by a wide margin. In addition to the disruptions caused by COVID-19, the global malaria response has faced a growing number of threats, such as drug and insecticide resistance, humanitarian crises, resource constraints, climate change impacts and delays in programme implementation, particularly in countries with a high burden of the disease. However, the roll-out of the malaria vaccine RTS,S/AS01 in three African countries has shown a substantial reduction in severe malaria and a 13% drop in early childhood deaths from all causes in the areas where the vaccine has been administered compared with areas where the vaccine was not introduced. (World malaria report 2023. Geneva: World Health Organization; 2023. Licence: CC BY-NC-SA 3.0 IGO.)</p>	

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			<p>A qualitative NAT test for malaria has been developed for use on the Procleix Panther system. It detects 18S ribosomal RNA from <i>Plasmodium falciparum</i>, <i>P. ovale</i>, <i>P. vivax</i>, <i>P. malariae</i>, and <i>P. knowlesi</i>. Assessment in a cohort of US blood donors found a lower limit of detection of 8.47–11.89 RNA copies/mL and 2.10–6.82 infected red cells/mL, and specificity of 99.99% when testing individually or 100% for minipools of 16. One asymptomatic donor who was a prior resident of an endemic area was confirmed positive. (Tonnetti L, Groves JA, Self D, et al. A novel mitigation strategy for the prevention of transfusion-transmitted malaria. <i>Transfusion</i>. 2024 Jan; 64(1): 94-103.)</p> <p>Cape Verde was certified as having eliminated malaria in January.</p> <p>A recent publication describes all imported malaria cases in Australia from 2012 to 2022. There were 3,204 imported malaria cases in the period, most cases being male and 20-39 years. Sub-Saharan Africa accounted for 45% of cases, but PNG was the most common country of acquisition (n=474). <i>P. falciparum</i> accounted for 58%, with <i>P. vivax</i> accounting for 32% of cases. (Sohail A, Barry A, Auburn S, et al. Imported malaria into Australia: surveillance insights and opportunities. <i>J Travel Med</i>. 2024 Apr; 31(3): taad164.)</p> <p>May 2024 update</p> <p>In Brazil, a multiplex NAT assay named NAT PLUS has been used by the blood centre HEMORIO in Rio de Janeiro since October 2022, testing in minipools of six. NAT PLUS detects HIV, HBV, HCV and <i>Plasmodium</i> spp. During the first five months of use, two donors with asymptomatic, subpatent (low-density) infections were detected: one <i>Plasmodium vivax</i> and one <i>Plasmodium malariae</i>. (Costa E, Rocha D, Lopes JIF, et al. Detection of Plasmodium spp. in asymptomatic blood donors by the new Brazilian NAT PLUS HIV/HBV/HCV/Malaria Bio-Manguinhos kit. <i>Transfusion</i>. 2024 Mar; 64(3): 501-509.)</p> <p>The FDA approved the cobas Malaria (NAT) test for use on the cobas 6800/8800 Systems (cobas Malaria) in March 2024. This is the first FDA-licensed test for screening blood donors for <i>Plasmodium</i> DNA and RNA in whole blood samples to reduce the risk of transfusion-transmitted malaria. It can detect <i>P. falciparum</i>, <i>P. malariae</i>, <i>P. vivax</i>, <i>P. ovale</i> and <i>P. knowlesi</i> DNA and RNA but there is not the data to demonstrate it is superior to antibody testing.</p> <p><u>August 2024 update</u></p> <p><u>A recipient of multiple red cell transfusions in the UK was diagnosed with malaria in 2023 and had no other risk factors. The associated donations were</u></p>	

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		Green	<p><u>all negative for malaria antibodies, but further testing of six donors based on their clinical history identified one with detectable <i>Plasmodium malariae</i> DNA. This donation was the likely source of transmission and the event was confirmed as transfusion transmitted malaria. (Annual SHOT Report 2023, https://www.shotuk.org/shot-reports/)</u></p> <p><u>Recent developments regarding malaria prevention include:</u></p> <ul style="list-style-type: none"> <u>A single injection of the monoclonal antibody L9LS, which targets sporozoites, was 77% effective against symptomatic malaria in a phase 2 clinical trial in children in Mali during malaria season. (Kayentao K, Ongoiba A, Preston AC, et al. Subcutaneous administration of a monoclonal antibody to prevent malaria. N Engl J Med. 2024 Apr; 390(17): 1549-1559.)</u> <u>Rollout of both approved malaria vaccines (RTS,S and R21/Matrix M) in various African countries.</u> <p><u>Lifeblood modelling studies recommend a change to the malaria testing/deferral strategy. All residents of and visitors to malaria-endemic areas would continue to be restricted to plasma for fractionation for 120 days, but only residents would require testing after this period. Compared to the current strategy, the recommended strategy had equivalent risk, improved cost-effectiveness and reduced operational complexity. (Schenberg K, Hoad VC, Harley R, et al. Managing the risk of transfusion-transmitted malaria from Australian blood donations: Recommendation of a new screening strategy. Vox Sanguinis. 2024; doi: 10.1111/vox.13706. Cheng Q, Hoad VC, Bentley P, et al. Optimal malarial screening strategy in Australian blood donors: A cost-effectiveness analysis. Vox Sanguinis. 2024; doi: 10.1111/vox.13705.)</u></p>	
<i>Sarcocystis</i> species (sarcocystosis)	Protozoan	Green	No significant developments to report.	6/2/2012
<i>Schistosoma</i> species (schistosomiasis)	Trematode	Green	No significant developments to report.	(Added to traffic lights to track updates and surveillance in May 2017)
<i>Strongyloides</i> (strongyloidiasis)	Nematode	Green	No significant developments to report.	
<i>Toxoplasma gondii</i> (toxoplasmosis)	Protozoan	Green	No significant developments to report.	

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<i>Trypanosoma brucei</i> (sleeping sickness)	Protozoan	Green	Chad was recognised by WHO in June 2024 for eliminating the gambiense form of human African trypanosomiasis as a public health problem. It is the seventh country to do so.	
<i>Trypanosoma cruzi</i> (Chagas' disease)	Protozoan	Green	<p>The identification of a compound that is stated to eradicate <i>T. cruzi</i> infection in mice and non-human primates was reported in August 2023. The compound, referred to as "an orally active benzoxaborole prodrug", was tested on 19 naturally infected macaques and successfully eliminated the infection with no significant side effects. The monkeys are still clinically healthy after more than five years. (Padilla AM, Wang W, Akama T, et al. Discovery of an orally active benzoxaborole prodrug effective in the treatment of Chagas disease in non-human primates. Nat Microbiol. 2022 Oct; 7(10): 1536-1546.)</p> <p>The board of the Organ Procurement and Transplantation Network voted to adopt a revised proposal regarding Chagas disease in June 2023. Screening for <i>T. cruzi</i> antibodies will be mandatory for donors who were born in at-risk countries (Central/South America, Mexico), but results will not have to be available prior to transplant.</p> <p>News media covering this development also reported on a transplantation transmission of Chagas disease that occurred in New Jersey in 2018. This case has not been published in the peer-reviewed literature or publicised previously.</p> <p>February 2024 update: An Argentinian study of 34 recipients of solid organs from donors infected with Chagas disease demonstrated that use of qPCR for monitoring detected primary infection earlier than detection of bloodstream parasites using the Strout method. Eight recipients developed primary infection with a median time to detection of 40 days post-transplant. (Barcan LA, Smud A, Besuschio SA, et al. Quantitative PCR-based diagnosis and follow-up of Chagas disease primary infection after solid organ transplant: a multicentre study. J Infect Dis. 2023 Nov; 228(9): 1304-1308.)</p> <p>August 2024 update: An international survey found that among 22 responding blood services from regions non-endemic for <i>Trypanosoma cruzi</i>, only 8 tested donors whose only risk factor for Chagas disease was travel to an endemic country (at-risk stay alone). At-risk stay alone was shown not to be a significant risk factor for infection by the fact that respondents reported only two confirmed <i>T. cruzi</i> infections among donors with at-risk stay alone, compared to 299 among donors with other risk factors. (Lewin A, Tonnetti L, Renaud C, Drews SJ, Bloch EM, O'Brien SF, et al. Deferral of blood donors who have ever stayed in a <i>Trypanosoma cruzi</i> endemic area: An international survey. Vox Sang. 2024; doi: https://doi.org/10.1111/vox.13692.)</p>	24/07/2012

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Red traffic light – Present threat to the blood supply. Commence formal risk assessment and develop plans for possible action.

Yellow traffic light – Evidence of a potential threat to the safety of the blood supply. Enhanced surveillance through literature search and local and international contacts. Perform additional literature searches as appropriate until the threat level is upgraded/downgraded.

Green traffic light – A potential but not current threat to the safety of the blood supply. Subject to routine surveillance primarily by DPU.

NOTE: The traffic light designation for any specified infectious agent is focused on the blood safety risk impact. Blood product sufficiency impacts are considered separately outside of the Emerging, Re-emerging and Emerged Infectious Diseases (EREEID) framework.