ZOONOTIC AND VECTOR-BORNE DISEASES

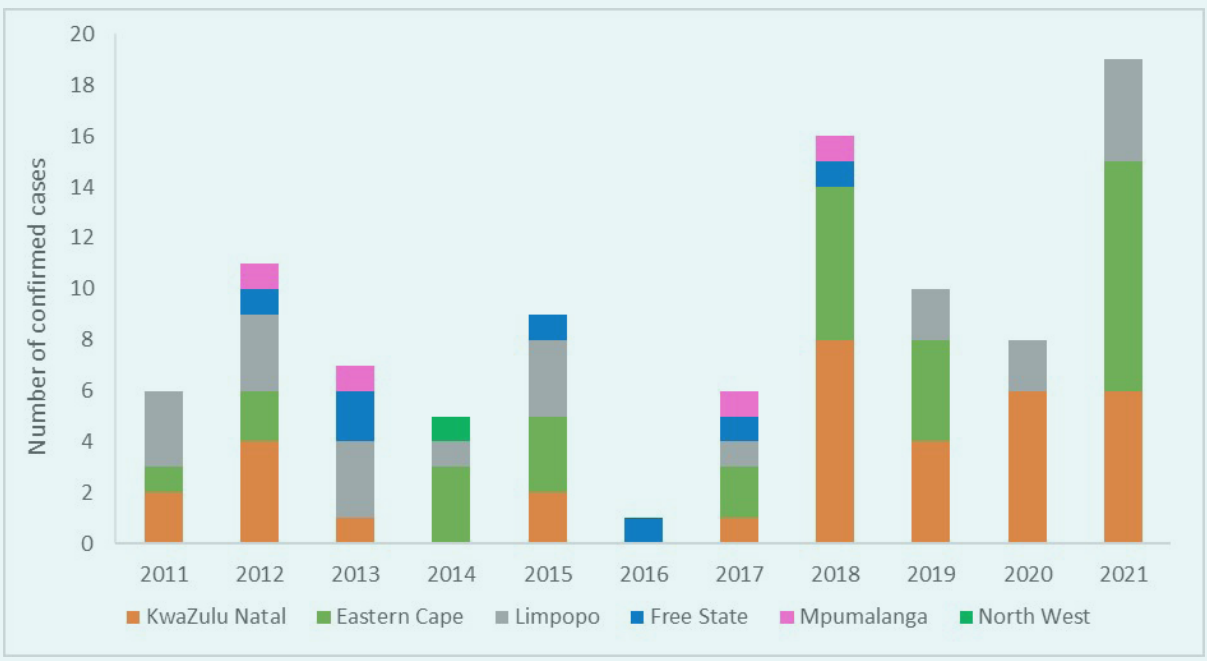

Figure 2. The number of confirmed human rabies cases in South Africa from 2011 to 2021 by province and year (Graph created from NICD data).

Arboviral infections in South Africa

The increased rainfall experienced in many parts of South Africa in recent months (and as forecast for the coming months) may result in the increased risk for exposure to mosquitoes and other arthropod vectors, and therefore the risk of endemic arboviral disease. Also, as COVID-19 restrictions are now less impeding international travel, consequently the risk of travellers who have contracted arboviral infections in arbovirus-endemic areas and return to South Africa, also increases.

More than a hundred arboviruses are known to cause human disease and are transmitted to humans by mosquitoes, midges, sandflies and ticks. Endemic arboviral infections are most common in the late summer months when the temperatures are warmer and especially following periods of rainfall. Typically, mosquitoes, ticks and other vectors are more active during such times. Rift Valley fever (RVFV); West Nile (WNV); Sindbis (SINV); chikungunya (CHIKV) and Crimean-Congo haemorrhagic fever (CCHF) viruses are important arboviruses in South Africa, although other arboviruses are also found here. A large outbreak of RVF was reported in South Africa 2010-2011 (NICD Communiqué July 2011, 10(7):4) and sporadic cases were reported from the Free State Province in 2018 (NICD Communiqué May 2018, 17(5):3). The other endemic arboviral diseases are typically reported intermittently with few focal outbreaks detected (for example the outbreak of Sindbis fever in Johannesburg in 2017. NICD Communiqué 2017, 16(1):5). Arboviral disease may be underdiagnosed and underreported in South Africa. Many arboviruses are not endemic to South Africa, but in the South African context are associated with travellers returning to South Africa from endemic areas. This includes, but is not limited to, dengue; Zika and yellow fever viruses. Although CHIKV is endemic to South Africa, human cases in South Africa are usually travellers from other areas.

The majority of arboviral infections are subclinical and self-resolving infections, but the disease spectrum is wide and disease may be debilitating and even fatal. Arboviral disease is broadly grouped according to four broad syndromes including fever, polyarthralgia, encephalitis and haemorrhagic fever, and a virus may be involved with more than one syndrome (Figure 3). Symptom onset can range from three to 14 days after the exposure.

Specialised laboratory diagnostic investigation for arboviral diseases is required to confirm or exclude diagnosis. Typically, the viraemic phase of arbovirus infections is short (may be prolonged in more severe cases) and negative RT-PCR results do not exclude the diagnosis of an arbovirus infection. Antibodies to arboviruses may be detected from day 3 – 7 after symptom onset. If initial antibody tests are negative, it is recommended to test a convalescent blood sample (collected two weeks after the acute phase of infection) to demonstrate seroconversion or the lack thereof. Laboratory findings should be considered in the light of the patient's clinical findings and the possible exposure history.

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Rift Valley fever, CCHF and yellow fever are Category 1 notifiable medical conditions in South Africa. Other endemic or non-endemic arboviral infections are listed as Category 3 notifiable medical conditions in the country. For more information on notifiable medical conditions, https://www.nicd.ac.za/wp-content/uploads/2018/10/Notifiable-Medical-Condition_Z-foldBleed20-July2018.pdf. For more information about arboviral disease in South Africa, www.nicd.ac.za; see A-Z disease webpages.

Fever Sudden onset mostly mild, self-limiting fever; headache; arthralgia; myalgia; nausea/vomiting; retro-orbital pain; with or without a rash (mostly maculopapular); with or without thrombocytopenia; with or without leukopenia *Sindbis fever, West Nile fever*	**Polyarthralgia** With or without fever; rash; self-limiting arthritis (typically affecting the small joints of the hands and feet, wrists, knees and elbows) but may last for months/years *Chikungunya fever*
Encephalitis Encephalitis or meningoencephalitis; neurological presentation like flaccid paralysis; residual motor/mental damage and higher case-fatality ratio *Rift Valley fever, West Nile*	**Hemorrhagic fever** Bleeding tendencies; endothelial cell damage, increased vascular permeability; liver dysfunction and higher case-fatality ratio *Rift Valley fever, dengue fever*

Figure 3. Summary of the four clinical syndromes associated with arboviral disease and examples of each.

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