

BACKGROUND

- Hantaviruses = only zoonotic viruses found worldwide
- Associated with two severe human diseases: haemorrhagic fever with renal syndrome (HFRS) and hantavirus pulmonary syndrome
- European variant = *Puumala orthohantavirus* (PUUV): carried by *Myodes glareolus* or bank vole – specific form of HFRS: nephropatia epidemica (over 3000 cases confirmed in Belgium)
- Hantavirus infections in humans: inhalation of aerosolized virus particles from excreta of infected rodents



Figure 1: Bank vole
(source: Razzauti 2012)

MATERIALS

- Diagnosis of hantavirus infections: demonstration of specific IgM antibodies (Abs) and a rising IgG titre, or by RT-PCR
- National reference centre for Hantaviruses:
 - IgM and IgG detection by ELISA = detection of Abs to various hantavirus species (PUUV, Dobrava-Belgrade and Hantaan virus)
 - Other species: only detected by Immunoblot assay
 - Urgent cases: rapid PUUV IgM assay

RESULTS

- Impact SARS-CoV-2 epidemic on the number of suspected cases that were referred to the NRC and were analysed in the context of hantavirus diagnosis:
 - Years 2018 and 2019: 600 and 713 suspected cases
 - Years 2020 and 2021: 536 and 502 suspected cases – decrease of 25-30% compared to 2019
- Epidemic years of hantaviruses alternate:
 - Year 2018: positivity rate (PR) of 7%
 - Year 2019: PR of 15.7% = epidemic hantavirus year
 - Year 2020: PR of 8.8% (n = 47 hantavirus cases)
 - Year 2021: PR of 16.1% (n = 81 cases) = epidemic year

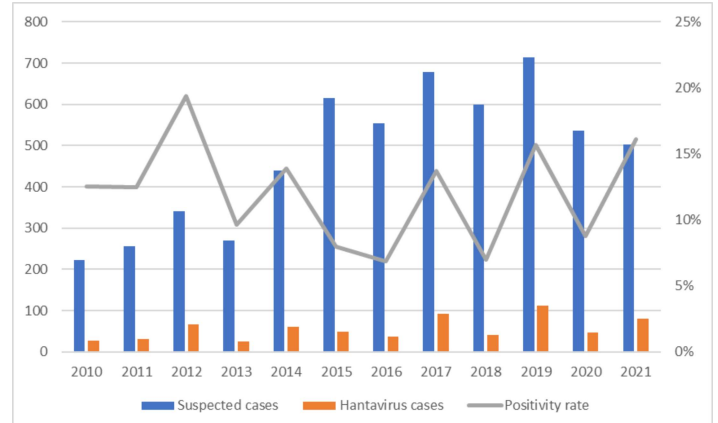


Figure 2: Number of suspected and confirmed Hantavirus cases over time (2010 – 2021), with the positivity rate plotted in grey to highlight the alternating of epidemic years of hantaviruses.

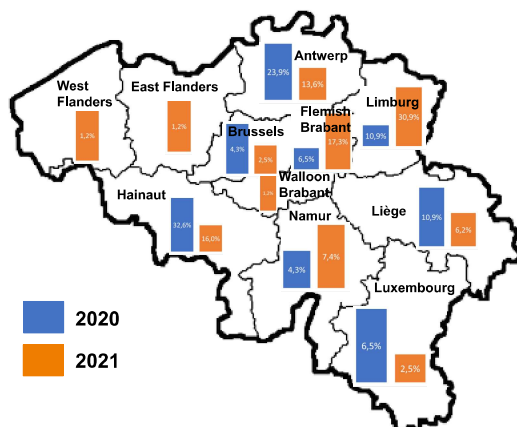


Figure 3: Geographic distribution of hantavirus cases for 2020 (n = 46 cases as for one case location is unknown) and 2021 (n = 81 cases).

- Geographic distribution of hantavirus cases:
 - Based on the province where the case is living ≠ province where the person was infected
 - Domicile of the case was used to evaluate the difference in number of cases between Belgian provinces
 - Year 2020: most infections province of Hainaut (31.9%), followed by Antwerp (23.4%) – overall 53.2% Wallonia
 - Year 2021: more cases associated to Flanders (64.2%) with the largest number of hantavirus cases detected in Limburg

CONCLUSION

While for 2020-2021 a lower number of hantavirus samples was sent to the NRC, the year 2021 was classified as a hantavirus epidemic year with a positivity rate of 16.1%. Despite 2020 being characterized with a lower number of hantavirus cases, a clear difference in geographical dispersion of the hantavirus infections is noted between the years 2020 and 2021 (based on the province where cases are living).