

RAG

Risk Assessment Group

# PRIMARY RISK ASSESSMENT

First rabies positive bat in Belgium

Date of the signal	Date of the RA	Signal provider	Experts consultation	Method
29/09/2016	05/10/2016	NRC for Rabies	<b>Permanent experts:</b> Dr S. Quoilin, Dr D. Reynders, Dr. V. Laisnez, Dr C. Schirvel, M. J-M Trémérie, Dr P. Demol, Dr L. Nick, Dr. C. Theugels, Mme M. Thomas, P. Guilmin, Olivier Becq  <b>Experts :</b> Steven Van Gucht, Bernard Brochier, Jean Vanderpas, Patrick Soentjens, Thierry Kervyn, Terry Sanne, Vervaeke Muriel.	Email consultation
Date of update	Closing date			

**RAG persons of contact:** Javiera Rebolledo ([javiera.rebolledo@wiv-isp.be](mailto:javiera.rebolledo@wiv-isp.be)), Dr Tinne Lernout ([tinne.lernout@wiv-isp.be](mailto:tinne.lernout@wiv-isp.be)), Dr Sophie Quoilin ([Sophie.quoilin@wiv-isp.be](mailto:Sophie.quoilin@wiv-isp.be), 02/642.54.04)

## PRIMARY RISK ASSESSMENT OF POTENTIAL PUBLIC HEALTH EVENT

<b>Signal</b>		<p>On September 29<sup>th</sup> the NRC for rabies at WIV-ISP had diagnosed rabies in a bat (common Serotine, <i>Eptesicus serotinus</i>) found by a hiker in the commune of Bertrix.</p> <p>The bat showed neurological symptoms (unable to fly) and had bitten the thumb of the hiker. Post-exposure treatment (4 doses vaccines' scheme and immunoglobulins) was initiated by a GP in Bertrix.</p> <p>The diagnosis was carried out using a direct immunofluorescence test resulting with high viral load in the brain specimen. A PCR was also carried out to identify the viral species by sequencing. The PCR was also positive and the virus sequencing allowed to identify a European Bat Lyssavirus 1b (EBL1b).</p> <p>Although the circulation of the virus in bats in Belgium was suspected, it was never confirmed.</p> <p><b>This is the first indigenous case of rabid bat detected in Belgium.</b></p>	
Description		Score	Description / arguments
1	Cause known?	Yes	Rabies is a well-known disease caused by rabies virus (a Lyssavirus). Classic (sylvatic) rabies is a zoonosis for which main reservoirs are wild and domestic canids worldwide, and bats in North America. Several other Lyssaviruses are now recognised and for which bats are the reservoir. Of these, four are present in Europe: European bat lyssavirus 1 and 2 (EBLV 1 and EBLV 2), Bokeloh bat lyssavirus (BBLV) in Germany and France and Lleida bat lyssavirus (LLBV) in Spain. The EBLV 1 virus is most often associated with the serotine bat.
2	Unexpected/unusual	Unusual	<p>Belgium is free from sylvatic rabies since 2001 thanks to an elimination program carried out through oral vaccination of foxes.</p> <p>Although in Belgium these lyssaviruses had never been found in bats (up to this event), the circulation of the virus could not be excluded. This event is therefore not an unexpected finding.</p> <p>A similar case occurred in Luxembourg in 2013.</p> <p>In Europe in 2015 and 2016, 62 rabie's positive bats were reported to the WHO Rabies Information System by the Czech Republic (n=1), France (n=6), Germany (n=33), Poland (n=8), Spain (n=5), the Netherlands (n=8) and the UK (n=1).</p>
3	Severity	High	<p>Without post-exposure prophylaxis the infection lead to death within 2 weeks after onset of clinical symptoms.</p> <p>After an incubation period of 2-3 months (range from 7 days to 1 year), non-specific symptoms (headache, fever and numbness of the skin around the site of the bite) appear. A phase of seizures and eventually coma follows</p>

			leading to the patient's death.
4	Dissemination (Low/Medium/High)	Low	<p>The risk of transmission of rabies exists only if bitten, scratchy or when the saliva of an infected animal comes into contact with a person's wound.</p> <p>Bats do not represent a risk for the population as long as they are not handled with bare hands.</p> <p>Human to human transmission by bite has never been reported and is therefore extremely unlikely. In very exceptional cases human transmission associated with tissue, cornea and organs transplants have been reported, but this is very rare.</p> <p>The most common bat species in Belgium, the pipistrelle bat <i>Pipistrellus pipistrellus</i>, has almost never been diagnosed positive for any lyssaviruses throughout Europe.</p>
5	Risk of (inter)national spread	Low	<p>The serotine bat is sedentary but occasionally performs dispersal flights: the distances documented from banded animals are usually below 100 km.</p> <p>It is known that in Europe, lyssaviruses are circulating in bats. Although not necessarily linked to this particular event, it is therefore not unexpected that similar events could happen in other European countries.</p>
<b>Preparedness and response</b>			
6	Preparedness	Yes	<p>Diagnostic capacity does exist (NRC at WIV-ISP).</p> <ul style="list-style-type: none"> <li>- <b>Rapid Fluorescent Focus Inhibition Test</b>: Titration des anticorps dirigés contre le virus de la rage par séroneutralisation – diagnostic chez l'homme.</li> <li>- <b>Fluorescent Antibody Test</b>: Détection de l'antigène nucléocapside du virus de la rage par un test d'immunofluorescence directe – diagnostic de la rage chez l'homme.</li> <li>- <b>Real-time PCR</b>: Détection de l'ARN du virus de la rage et identification de l'espèce de Lyssavirus par séquençage.</li> </ul>
7	Specific control measures (surveillance, control, communication)	Yes	<p>Surveillance of the circulating rabies virus is carried out by the WIV-ISP since decades.</p> <p>Notification is mandatory in Flanders, Brussels and Wallonia when suspicion of rabies infection in a patient after exposure to potentially infected animal.</p> <p>Cases of domestic animal rabies have to be notified to AFSCA/FAVV, which is the competent body for domestic animals. Positive wild animal have to be notified to the Regions. However, in case of a rabies positive wild animal, both are always informed.</p> <p>Vaccine does exist and there is no vaccine shortage in Belgium for the moment. Vaccines are available in the market but can also be ordered at WIV-ISP.</p>

			<p>The immunoglobulins are not registered in Belgium and require an ‘authorized licence’ which the WIV-ISP holds. The GP/hospital has to order them to the WIV-ISP, who will send them by express mail.</p> <p>A procedure for post-exposure prophylaxis against rabies in humans does exist and consists in 5 doses of vaccines (Day 0, 3, 7, 14, 28) and injection of immunoglobulins (Day 0). The detailed procedure is available <a href="#">here</a>.</p>
<b>Public health impact</b>			
A	Public health impact in Belgium (Low/Medium/high)	Low and expected	<b>The identification of the positive bat does not modify the risk which remains low or the public health impact neither as it is limited to people coming in contact with bats.</b>
B	Recommendations (surveillance, control, communication)		<p><u>Communication:</u> Considering that it is expected that isolated events similar to this might happen in future, communication should be done, through letter and/or press release, to :</p> <ul style="list-style-type: none"> <li>- Association for bat protection, eg: Plecotus, vleermuizenwerkgroep, animal rescue centers</li> <li>- Naturalists, eg: Natagora, Natuurpunt,</li> <li>- Wildlife officers : Agentschap voor Natuur en Bos, Département de la Nature et des forêts, etc.</li> <li>- Association for speleology,</li> <li>- Health professionals.</li> </ul> <p>in order to provide appropriate information on this event and increase awareness on rabies transmission, risk of infection due to contacts with bats and prevention (see proposition main messages below).</p> <p><u>Surveillance:</u> Passive surveillance of rabies among bats could be improved by sending unhealthy or dead bats to the NRL Rabies at the WIV-ISP.</p>
C	Actions		<ul style="list-style-type: none"> <li>- Send a letter to: Naturalist, wildlife officers, association of bat protection, animal rescue centers, and speleology and health professionals.</li> <li>- Information for general public by press release.</li> <li>- Add information about the risk of infection in Belgium in the web pages of health authorities and WIV-ISP.</li> <li>- Provide information on this event in the next (monthly) Newsflash, WIV-ISP.</li> <li>- Plan to organise the passive surveillance of bats, Regional level.</li> </ul>

**Main messages to be transmitted:**

The risk of transmission of rabies exists **only** if bitten, scratched or when the saliva of an infected animal comes into contact with a wound.

There is no risk of transmission if you **do not** handle bats. However, there is a risk of transmission if you touch/handle bats with bare hands.

If bitten by a bat or suspicion of bat's bite in Belgium or abroad, go as soon as possible (ideally within 48 hours post-bite) to a physician or an emergency department to assess the risk of infection and initiate post-exposure prophylaxis against rabies.

Pre-exposure prophylaxis does exist, and people who are in contacts or handle bats on a regular basis should receive preventive vaccination against rabies. If bitten or scratched, they should receive two booster vaccinations after the exposure as indicated by the standard WHO protocol.

It is recommended that people who are regularly bitten or scratched by bats perform a regular (every 6 months) antibody check to assure that their antibody titer remains sufficiently high. This test is performed at the NRC Rabies of the WIV-ISP. The rabies vaccine (based on the classic rabies virus) is supposed to offer sufficient cross-protection against European bat lyssavirus-1, but there are some antigenic differences between both virus types. The NRC Rabies therefore recommends maintaining an antibody titer that is 10 times higher than the protective titer against the classic rabies virus (0.5 IU/ml). If the titer drops below a threshold (5 IU/ml), a booster vaccination is recommended.

People who handle bats should wear thick gloves that protect against the bat's teeth and nails.

If a person is bitten by a bat, it is recommended to capture the bat and have the bat examined at the NRL for Rabies to better assess the risk of infection. Extreme care should be taken not to be bitten while capturing the bat. The use of thick gloves and a box to capture the bat in order to avoid direct contact with the animal is strongly recommended.

If a dog or a cat is bitten or comes into contact with a bat, if possible, the bat should be captured and sent to the NRL for Rabies to better assess the risk of infection. In Belgium there is no obligation to vaccinate dogs and cats against rabies, except for international travel. Extreme care should be taken not to be bitten while capturing the bat. The use of thick gloves and a box to capture the bat in order to avoid direct contact with the animal is strongly recommended.

## REFERENCES

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1. Brochier B., Dechamps P., Costy F., Hallet L., Leuris J., Villers M., Peharpre D., Mosselmans F., Beier R., Lecomte L., Mullier P., Roland H., Bauduin B., Kervyn T., Renders C., Escutenaire S. & Pastoret P.-P. (2001) – Elimination de la rage en Belgique par la vaccination du renard roux (*Vulpes vulpes*). – Ann. Méd. vét., 145 : 293-305.
2. Hutterer, R. (2005). Bat migrations in Europe: a review of banding data and literature (Vol. 28). Federal Agency for Nature Conservation.
3. Servat, A., Herr, J., Picard-Meyer, E., Schley, L., Harbusch, C., Michaux, C., Pir, J., Robardet, E., Engel, E. & Cliquet, F. (2015). First Isolation of a Rabid Bat Infected with European Bat Lyssavirus in Luxembourg. Zoonoses and public health, 62(1), 7-10.
4. WHO RABIES BULLETIN: Rabies Information System of the WHO Collaboration Centre for Rabies Surveillance and Research: [http://www.who-rabies-bulletin.org/Queries/Surveillance.aspx?Issue=2012\\_3](http://www.who-rabies-bulletin.org/Queries/Surveillance.aspx?Issue=2012_3)
5. WHO: <http://www.who.int/rabies/en/>
6. ECDC: <http://ecdc.europa.eu/en/healthtopics/rabies/Pages/index.aspx>
7. Reference center (NRC) :
  - a. [https://www.wiv-isp.be/odobz-domti/fr/indexf079.html?page=virus\\_de\\_la\\_rageNational](https://www.wiv-isp.be/odobz-domti/fr/indexf079.html?page=virus_de_la_rageNational)
  - b. [https://nrchm.wiv-isp.be/fr/centres\\_ref\\_lab/rabies\\_virus/default.aspx](https://nrchm.wiv-isp.be/fr/centres_ref_lab/rabies_virus/default.aspx)
8. Fiches MATRA: <https://www.wiv-isp.be/matra/Fiches/Rage.pdf>
9. Procédure : Prophylaxie post-exposition contre la rage humaine : <https://epidemiowiv-isp.be/ID/Documents/PEP-Rage%20201607.pdf>