

Risk Assessment on quarantining pet animals belonging to Ukraine evacuees

Key points

1. The UK has a long history of risk management with respect to rabies. Our acceptable level of risk is very low, which has been assessed quantitatively based on the number of pets entering the UK on an annual basis (Goddard et al,2012).
2. Movements of pets from Ukraine must continue to comply with the requirements for entering Great Britain (GB). For owners who have travelled with their pet dogs or cats (or ferrets) and where these animals are non-compliant with the health requirements for entry, an emergency licence must be applied for (from APHA) and the animal must be quarantined until compliant.
3. This only applies to non-commercial movements. Commercial imports and rescue animals are excluded from any derogation or easing of the requirements for entry to the UK. We are expecting (current predictions) ~110,000 to apply to enter the UK and according to data from the RoI, between 1 and 2% of these groups have pets with them.
4. To make the process as efficient as possible, the usual process for importing pet dogs, cats and ferrets from Ukraine which is an unlisted third country, will be varied according to risk associated with how well the pet has been prepared for travel.
5. The risk assessment therefore considers the likelihood of an animal incubating rabies arriving to the UK and the onward risk to the owners, to other animals, to the veterinary profession and to the public.
6. Under normal circumstances, pets originating in Ukraine must undergo rabies vaccination, successful blood test after 30 days and three month wait before moving for the first time to the UK. *If owners can provide evidence that animals are already vaccinated and blood tested and then revaccinated within the year, the blood test and wait no longer apply and the pet can move.*
7. Some EU Member States are adopting alternative measures, such as home quarantine, or (informal) quarantine in boarding establishments and at rescue centres and reducing the waiting time between vaccination and movement down to 21 days, effectively treating Ukraine as a listed third country. Others are blood testing all pets which are moving to another country immediately. The EU has confirmed this all done under emergency legislation and there is no harmonised measure; each country can make its own assessment.
8. The outcome of the Defra /SG /WG assessment is that where the provenance of the pet cat or dog cannot be confirmed (through lack of paperwork, lack of microchip or suspicion of fraud) the requirement for full quarantine should not be waived. Where there is clear evidence of previous, effective vaccination and the animals arrive with correct paperwork, no quarantine is required. Other diseases should also be managed while the animals are in quarantine.
9. The impact of any case of rabies in an imported dog outside quarantine is very high. Rabies infection in unvaccinated people is 100% fatal. Each year an estimated 59,000 people die of rabies globally and many of those are children.
10. Anyone who is bitten, scratched or licked by an infected animal, or a suspect case, must be followed up and offered post exposure prophylaxis, even those who may already be vaccinated. Our animal and human population are not routinely vaccinated against rabies. Tracing and treating biting incidents in animals outside quarantine can be complex and very concerning for all involved.

Risks

11. Annually there are about 1,800 rabies cases in animals in Ukraine, of which more than half are observed in pet dogs and cats and livestock and the others in wildlife. Sporadic fatal cases in humans have been registered despite preventive measures (based on annual numbers reported to the WHO Rabies Bulletin database for 2016-2021 – see Annex for details). We do not have data on how many people are treated with post exposure prophylaxis every year in Ukraine.
12. Mandatory vaccination of pet dogs is required in Ukraine, and of cats in infected areas. However, this is not completely effective, as evidenced by the number of pet cases per year. Ukraine has been highlighted by the EU as a country with a poor compliance rate with pet movements, prior to the conflict. [EU Coordinated Control Plan Illegal movement of pets \(europa.eu\)](https://europea.eu)

13. Under an EU funded programme, oral vaccination of wildlife is carried out along the border with Poland, Hungary and Slovakia and part of Romania to protect the EU region. [cfr animal vet-progs guidance progs erad 2018-2020 wd-funding.pdf \(europa.eu\)](#) Wildlife vaccination is usually recommended to be carried out every year and is via aerial drops of oral baited vaccine. During the past five years, the numbers of cases in wildlife and domestic animals have been relatively stable, despite this vaccination programme, but this will be rapidly undermined by the current crisis.
14. From 2020, the EU proposal for reducing fox rabies cases is to carry out a vaccination strip of 70 km wide alongside the EU border (inside the EU) with the Russian Federation, Belarus, Ukraine Moldova and Western Balkans; and a buffer vaccination zone inside several areas of Russian Federation, Belarus, Ukraine and Moldova of 50 to 100 km wide.
15. Whilst the disease risk in legitimately owned pets is expected to be lower in comparison to rescue animals and those of unknown origin, without further detail on the number of animals infected, the number wishing to enter, and their vaccination history, it is difficult to quantify this risk.
16. A qualitative risk assessment therefore considers the possible pathways for rabies incursion through the movement of cats and dogs to the UK and subsequent exposure to humans, to support recommendations of the risk management measures.

Pathways

17. There are two types of risk for rabies incursion associated with the movement of pets from regions where rabies is commonly present in wildlife or domestic animals:
 - **Type A** where the animal is already incubating rabies and is then vaccinated, a wait of 30 days, successful blood tests, a further wait of 3 months and moves. The risk is proportionate to the level of rabies in the pet population in the country of origin and the wait period between vaccination, exposure to infected animals and the movement. This is not reduced by vaccination alone. The OIE recommendation is that the blood test is taken 30 days after completion of the primo-vaccination and then a three month wait would cover the majority of the Type A risk as the incubation period is almost always shorter than three months. The OIE is currently considering reducing this period to 1 month, but the EU is still assessing this, as the EU pathway to eradication means there is an extremely low acceptable level of risk for unlisted third countries. It would be expected that the longer time elapsed since infection to vaccination, the lower the survival rate, as death occurs rapidly once virus infects the nervous system, but would be blocked by an effective immune response.
 - **Type B** where the animal is not protected by vaccination and becomes infected during the wait period. There are various reasons for the animal not producing enough detectable protective antibodies – poor vaccination procedure, poor immune response, poor vaccine or long time since previous vaccination. There are very few data on the course of infection of animals post vaccination. In one paper, 34 dogs were vaccinated 6 hours after infection and observed for 180 days (Cho & Lawson, 1989). Of all the cohort, 16 animals died within 15 days and the rest survived because they were administered rabies immunoglobulin into the infection site.

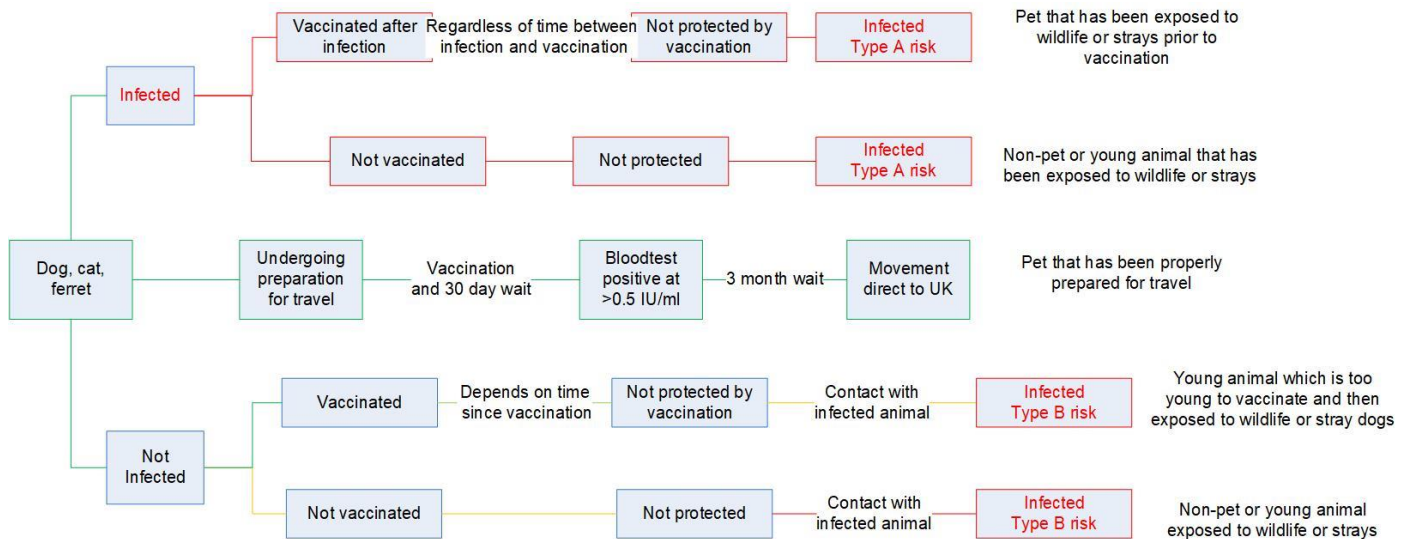


Figure 1: pathways for rabies introduction during the movement of dogs, cats and ferrets prepared correctly or not under the pet travel scheme from an unlisted third country such as Ukraine.

18. Generally speaking, inactivated rabies vaccines are highly specific and protective when applied according to the manufacturers' instructions. Several are available for vaccinating pets, approved by the EU Medicines Agency and the Veterinary Medicines Directorate. However, each vaccine can have different protocols and none should be used for animals <12 weeks old. Ukraine has compulsory vaccination of pets but clearly from the annual infection data, it is not universally applied.
19. Vaccination has no impact on the outcome or clinical progression of infection with rabies in either Type A or Type B risk. Very little data are available for cats, which should still be considered susceptible and capable of transmitting rabies to people.
20. There are no data on the number of dogs, cats or ferrets which are a Type A or Type B risk and die before the end of the waiting period in the country of origin. They would only be reported as another pet which has become infected with the rabies virus.

Exposure to the UK population

21. Rabies is a very high impact zoonotic disease. Infection leads to death in 100% of case, where there is no intervention. Post Exposure Prophylaxis will only be effective if it is given before the onset of symptoms, therefore the tracing of contacts as quickly as possible must be done. In other EU member states, where a rabies infected animal has been illegally imported, the tracing exercise can involve several hundred people. In Spain in 2013 over 110 people were given post exposure prophylaxis. The index case involved a dog which had been incompletely vaccinated and was then exposed to an infected animal while travelling in Morocco (Perez de Diego, 2015).
22. As the UK has been free of terrestrial rabies since 1922, we do not have a programme of compulsory rabies vaccination in animals and therefore the majority of animals in the UK would be susceptible. There is also a large susceptible wildlife population, including a high population of urban foxes.
23. A case in a domestic animal outside quarantine results in the loss of our disease-free status for 6 months and for a case in a wild animal, a two year loss of free status. Extensive vaccination of pets and wild animals will be required, coupled with surveillance and monitoring.
24. The current UKHSA guidance is that anyone who has been bitten, scratched or licked by an animal originating from Ukraine (a high risk country) should be followed up and risk assessed for post exposure prophylaxis. Some people who come into regular contact with imported animals may be regularly vaccinated against rabies, and this will be taken into consideration by the UKHSA team.

Risk management options for pets above 15 weeks of age†

Option	Vaccinate on arrival	Blood testΩ (failure = revaccinate)	30 day wait	3 month wait	2 months @ home isolation*	RISK LEVEL for an infected animal being released‡
A	√	√	√	√		Very low
B	(√)	(√)		√		Very low
C	√	√	√		√	Low
D		√	√			Negligible
E	√					Medium
F						High
G		√			√	Medium

- A. For any dog, cat or ferret, regardless of vaccination status, four month quarantine to include the vaccination wait and blood test. This is the most risk averse and is BAU applied to any **non-compliant** cat, dog or ferret from an unlisted third country for England and Wales.
- B. For any dog, cat or ferret, regardless of vaccination status, three month wait which is in line with Scotland's quarantine period for non-vaccinated rabies susceptible species. Same risk level as option 1. This is BAU applied to any **non-compliant** cat, dog or ferret from an unlisted third country for Scotland.
- C. Vaccination on arrival and 30 day wait and blood test then move to emergency home isolation (with APHA or local authority supervision). This is a higher risk level than A, B or D, but the majority of the Type A and Type B risk will be covered by the 30 days in quarantine. Where there is a longer incubation period, the risk is to the kennel staff and / or owners.
- D. For animals with previous vaccination history and **fully compliant** with veterinary certification prior to movement (ie has already waited three months in Ukraine following vaccination and blood test), a retest and if below 0.5 IU/ml, revaccinate and wait for 30 days could be applied **if any non-compliance is suspected**. No quarantine or home isolation. This is business as usual.
- E. Vaccinate on arrival into EU or UK and allow straight to destination after short period in quarantine. This could also include the animals which have been moved via EU and subjected to vaccination and 21 day at the EU border. May be difficult to identify these animals as they will have EU pet passports. Does not mitigate the Type A and Type B risk completely but will depend on length of time since the primo-vaccination or if re-vaccination was a booster. Where there is a longer incubation period, the risk is to the owners and general public and local animal population.
- F. **No restrictions, no requirements**. HIGH is based on the risk level which is assigned to Ukraine whereby post exposure prophylaxis is offered to travellers in close contact with suspect animals. All the risk is for the public and local animal population.
- G. Animals are blood tested on arrival and, if positive, are moved to home isolation or boarding kennels. **No 30 day wait and no information about when vaccination was done**. Cannot prevent the Type A or Type B risk. All the risk is to the kennel staff and / or owners. Some EU countries (eg Romania) are carrying out blood tests on all pets before they move to other countries.

†Where the provenance of the pet cannot be ascertained, there is a Type A and Type B risk and therefore these can only be covered by option A or B.

For pets below 15 weeks of age at time of entry, vaccination given prior to this age will not be fully effective. This is a Type A and Type B risk and can only be mitigated by option A or B.

*This option has not been agreed by the Animal Disease Policy Group

‡ From a public health perspective, according to UKHSA, HPS and PHW, options A, B & D are acceptable. The precautionary principle will be applied to any bite from a stray animal if options C, E or F are implemented. The risk is still present for people under A, B or D in contact with the animals in the quarantine centres and vaccination should be offered according to the Green Book. ([Rabies: the green book, chapter 27 - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/publications/rabies-the-green-book-chapter-27))

ΩThe blood test usually involves a virus neutralisation test which takes four days and is conducted in high containment facilities at Weybridge. However, an ELISA test will be used to pre-screen the samples which is sensitive enough to be used in the decision-making process of whether the animal has ever been vaccinated. If negative, the animal can be vaccinated immediately without the need to wait for the VNT. The ELISA is OIE approved but not for travel purposes.

Additional disease risks

25. Identifying a stray animal or one recently adopted will be difficult particularly if an animal has received a new microchip and EU pet passport at the EU border. Other diseases are more likely to be present in these dogs and these could present a risk to the owner or to other people or pets in the destination household. Vets and animal health technicians or local authority staff may also be exposed to the animals and should be taken into account for the public health risk.
26. We have previously estimated the risks of other diseases associated with the movement of cats and dogs from an unlisted third country. Several diseases are of concern, *Echinococcus multilocularis* is the greatest risk and **treatment should be factored in for each dog which arrives. *Brucella canis* tests and tick treatment should also be applied** – these are easy procedures and the test turnaround time can be done quickly. While these are both lower risks in pet animals than for rescue animals, it is sensible to target those which are being placed into quarantine, where the provenance is unknown.

Summary

27. Where the provenance of the animal is unknown, it is not possible to quantify the Type A or Type B risk of that animal being infected with rabies. Nevertheless, the risk is proportionate to the level of infection in the domestic animal and pet population and the degree of compliance with the pet travel rules.
28. Vaccination where a Type A or Type B risk is possible will not change the outcome of infection or progression of clinical signs. The evidence for the timing of antibody levels and protection against infection is poor, particularly for cats. Quarantine is only effective if it allows time for the animal to develop clinical signs and provides assurance that spread to the community will not occur.
29. Ukraine has rabies infection in pet and domestic animals as well as wildlife and the EU supports an oral vaccination programme in wildlife along the border with Poland, Slovakia, Hungary and part of Romania. However, the number of cases in wildlife and domestic animals has stayed relatively constant in the last five years, rather than reducing as expected if there was an effective control programme.
30. Therefore, the risk level is associated with the likelihood of the animal having contact with infected wildlife or stray animals in the previous few weeks prior to entry to the UK, and the failure of the vaccination regime. This will have been exacerbated by the conflict. Blood testing can be used to demonstrate that an animal has been vaccinated but cannot entirely rule out an animal already infected with rabies virus; this is done through placing the animal in quarantine until the end of the incubation period.
31. The average incubation period in unvaccinated dogs is 19 days according to a recent paper (Smith et al. 2021). However, this is a misleading value and in experimentally infected dogs the incubation period ranged from 4 to 92 days. The (95th percentile) maximum incubation period is a better comparison when there are concerns about a lack of compliance with the pet travel rules, as this would increase the Type A risk. Smith et al suggest 33 days is closer to the 95th percentile, however previous assessments have used 38 days as an average incubation period and it is not clear which is the better value and whether this is species and vaccination status dependent. **Either way, thirty days alone will not provide a sufficient length of time to confidently give a negligible or very low risk level for an infected animal being introduced to the UK.**

Annex

Rabies cases in Ukraine by year and species, from the WHO Rabies Bulletin database

Year	Fox	Dog	Cat	Livestock	Wildlife	Total	Human
2016	425	319	439	115	50	1353	3
2017	514	341	503	204	85	1649	2
2018	755	429	483	169	78	1916	2
2019	812	209	279	83	43	1427	1
2020	570	293	308	82	24	1277	0
2021*	121	109	130	26	11	397	0

*Incomplete data for 2021

Expert advice on rabies testing (Disease Consultant, APHA)

If a primary vaccination was given more than 4 months earlier, then it is very likely that any circulating virus neutralising antibodies (VNAs) would have waned to below the official cut-off of 0.5 IU/ml (required by OIE/pet travel schemes). VNA levels can start to wane as early as 6 weeks after a primary vaccination. However, if the animal has received boosters (e.g. older pets maintaining compliance) they are more likely to reach the cut-off if you bleed on arrival (but this is not guaranteed - some animals receiving multiple boosters over their lifetime still have rapidly waning VNA levels).

These low levels in animals which have been repeatedly vaccinated may still provide effective protection. The value of 0.5 IU/ml is a high cut off for neutralising antibodies.

If sera from a previously vaccinated animal failed to reach cut-off, then the booster on arrival would likely result in detectable VNA after 2 weeks (retest). The two week sampling provides a little confidence (not a guarantee) that the vaccination on arrival is indeed a booster (quick VNA response) to support exempting the 4 month interval. It would also avoid additional time in quarantine.

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Dr [Redacted S.40(2)]

Exotic Disease Control team

Defra

Chair of Human Animal Infections & Risk Surveillance group

EFSA AHAW Panel