

Pathogen prioritisation

Comment on Confidence Score: The confidence score has to be given by who compiles the questionnaire. We propose a very simple scoring system, based on 3 classes:

1. based on experience or best guess
2. partially based on documented (or published) evidence
3. fully based on documented (or published) evidence.

Depending on the questions the Confidence Score may be given by ticking the relevant square or by writing the numerical score in the appropriate space.

General data on the pathogen

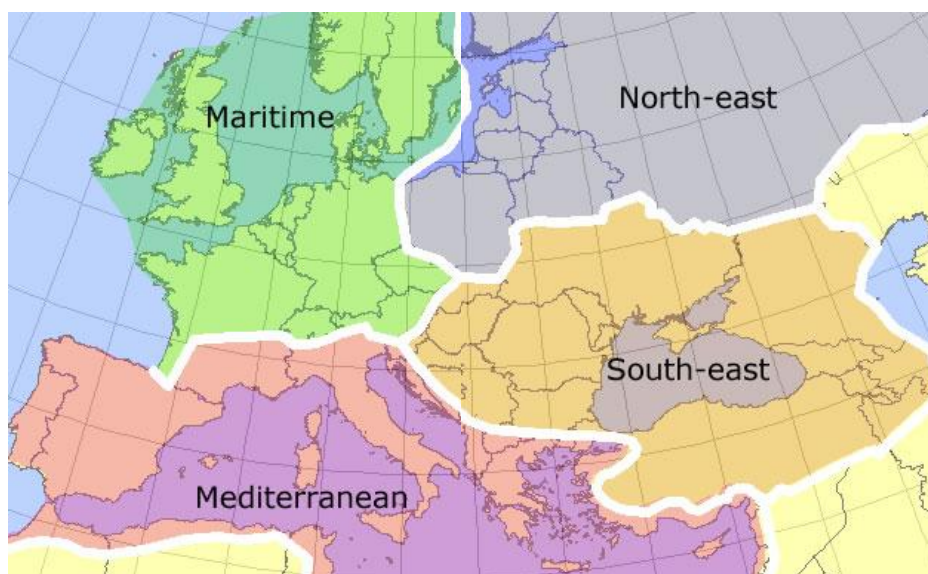
Comment: This General section will be used for filtering pathogens by factors like geographical distribution, endemic vs. exotic or emerging, zoonotic vs. non zoonotic, etc. Therefore, some redundancy exists with the subsequent sections, but in the subsequent sections eventually a score will be attributed to the various replies to questions and filtering on scored fields may be difficult or impossible.

The numbering of the questions is intended to facilitate the compilation of an Excel spreadsheet to be used for the subsequent analysis of the collected data.

Geographic presence/absence

1. Is the pathogen present anywhere in the EU? Yes No
Confidence score 1 2 3

2. Put the situation in the regions of Europe, i.e. endemic or emerging or absent by region, according to the following map:



- 2.1 Maritime Europe Endemic Emerging Absent C.S.[]
- 2.2 Mediterranean Europe: Endemic Emerging Absent C.S.[]
- 2.3 North-east Europe Endemic Emerging Absent C.S.[]
- 2.4 South-east Europe Endemic Emerging Absent C.S.[]

Comment: No official map of subregions of Europe exists and all maps available are the result of a subjective judgement. The map presented above is that available on the European Plant Protection Organisation (EPPO) website and takes into account climate and vegetation of Europe.

The regions of France belonging to the Mediterranean Europe are: Midi-Pyrénées, Languedoc-Roussillon and Provence-Alpes-Côte d'Azur.



The regions of Croatia belonging to the Mediterranean Europe are: Istria, Primorje-Gorski Kotar, Karlovac, Lika-Senj, Zadar, Šibenik-Knin, Split-Dalmatia and Dubrovnik-Neretva.



Susceptible species

3. Companion animals that can be infected:

- 3.1 Domestic dogs Yes No C.S.[]
- 3.2 Domestic cats Yes No C.S.[]
- 3.3 Domestic equids Yes No C.S.[]
- 3.4 Ferret and other mustelids Yes No C.S.[]
- 3.5 Hamsters and other rodents Yes No C.S.[]
- 3.6 Rabbits and other lagomorphs Yes No C.S.[]
- 3.7 Birds Yes No C.S.[]
- 3.8 Hobby ruminants (sheep, goats, etc.) Yes No C.S.[]
- 3.9 Hobby camelids (lamas, alpacas, etc.) Yes No C.S.[]
- 3.10 Hobby pigs Yes No C.S.[]
- 3.11 Reptiles Yes No C.S.[]
- 3.12 Pet/ornamental fish Yes No C.S.[]
- 3.13 Other species (please specify) Yes No C.S.[]
-

4. Livestock that can be infected:

- 4.1 Bovines Yes No C.S.[]
- 4.2 Sheep and/or goats Yes No C.S.[]
- 4.3 Pigs Yes No C.S.[]
- 4.4 Poultry (as per EU definition) Yes No C.S.[]
- 4.5 Camelids (lamas, alpacas, etc.) Yes No C.S.[]
- 4.6 Domestic equids Yes No C.S.[]
- 4.7 Farmed rabbits and/or hares Yes No C.S.[]
- 4.8 Farmed/commercially important fish Yes No C.S.[]
- 4.9 Farmed wildlife (specify) Yes No C.S.[]
-

Humans:

5. Is the pathogen a zoonosis? Yes No
- Confidence score 1 2 3

Pathogen profile

Epidemiological profile

6. Affected target groups

6.1 Can the pathogen infect human beings? Yes No C.S.[]

6.2 Can the pathogen infect livestock? Yes No C.S.[]

6.3 Can the pathogen infect wildlife? Yes No C.S.[]

Comment: Target groups are the groups of species to which companion animals can transmit the pathogen and which could experience a negative impact from the infection. This question is redundant with respect to the list of susceptible species in the previous section, but the repetition is useful for a very quick classification of each pathogen as pathogen of zoonotic importance / pathogen causing direct or indirect losses in livestock.

The presence of wildlife is in relation to a possible role of wild animals as reservoirs of infection, which complicates the epidemiology of the disease and makes control more difficult.

7. Transmission within and between target groups and companion animals

7.1 Can the pathogen be transmitted between companion animals? Yes No C.S.[]

7.2 Can the pathogen be transmitted between humans? Yes No C.S.[]

7.3 Can the pathogen be transmitted between livestock? Yes No C.S.[]

7.4 Can the pathogen be transmitted from companion animal to humans? Yes No C.S.[]

7.5 Can the pathogen be transmitted from humans to companion animals? Yes No C.S.[]

7.6 Can the pathogen be transmitted from companion animals to livestock? Yes No C.S.[]

7.7 Can the pathogen be transmitted from livestock to companion animals? Yes No C.S.[]

Comment: The goal here is to get an idea of the likely complexity of the control strategies that would be necessary, because the disease will be addressed differently in each one of these compartments. The possibility of cycling of the disease from companion animals to humans and back to companion animals also makes control more difficult.

8. Vector borne transmission

8.1 Does the pathogen use vectors? Yes No C.S.[]

8.2 Does the pathogen use flying vectors (e.g. mosquitoes, midges, etc.)? Yes No C.S.[]

8.3 Does the pathogen use non-flying vectors (e.g. ticks, fleas, etc.)? Yes No C.S.[]

9. Persistence

9.1 Can the pathogen persist in companion animals (transmission/carriers)? Yes No C.S.[]

9.2 Can the pathogen persist in livestock? Yes No C.S.[]

9.3 Can the pathogen persist in wildlife? Yes No C.S.[]

9.4 Can the pathogen persist in humans? Yes No C.S.[]

9.5 Can the pathogen persist (remain infective for months or years) in the environment and/or in carcasses? Yes No C.S.[]

9.6 Can the pathogen persist in vectors? (please specify vector species) Yes No C.S.[]

Comment: Persistence refers to chronic or persistent infection in individual hosts or population of vectors (e.g. trans-ovarian transmission or overwintering in hibernating vectors).

The persistence in the environment becomes relevant when its duration is longer than the average infectious period in living animals.

10. Transmission

10.1 Can there be long-distance dispersal (e.g. wind-borne, flying vectors)? Yes No C.S.[]

10.2 Can the pathogen be transmitted by direct close contact? Yes No C.S.[]

10.3 Can the pathogen be transmitted by proximity or indirect contact (fomites, etc.)? Yes No C.S.[]

10.4 Can the pathogen be viable in soil? Yes No C.S.[]

10.5 Can the pathogen be water-borne or food-borne? Yes No C.S.[]

10.6 Can the pathogen be vector-borne? Yes No C.S.[]

10.7 Can the pathogen be wind-borne? Yes No C.S.[]

Comment: In case of different ways of transmission in different species tick multiple options considering all affected species.

Economic profile (livestock)

11. Direct Losses (in production species)

- 11.1 Are Bovines affected? Yes No C.S.[]
- 11.2 Are Sheep and/or Goats affected? Yes No C.S.[]
- 11.3 Are Pigs affected? Yes No C.S.[]
- 11.4 Are Poultry affected? Yes No C.S.[]
- 11.5 Are Camelids affected? Yes No C.S.[]
- 11.6 Are domestic Equids affected? Yes No C.S.[]
- 11.7 Are farmed Rabbits and/or Hares affected? Yes No C.S.[]
- 11.8 Are farmed/commercially important fish affected? Yes No C.S.[]
- 11.9 Is farmed wildlife (specify) affected? Yes No C.S.[]
-

12. Direct Losses (production impact)

- 12.1 No clinical expression Yes No C.S.[]
- 12.2 Sporadic cases only Yes No C.S.[]
- 12.3 Herd-level morbidity with production losses Yes No C.S.[]
- 12.4 Herd-level mortality Yes No C.S.[]
- 12.5 Reference species (see comment) _____

Comment: In different species the production impact may differ significantly. For the sake of simplicity, please refer to the impact in the economically most important involved livestock species only.

13. Indirect Losses (trade)

- 13.1 Is the pathogen subject to official OIE disease status? Yes No C.S.[]
- 13.2 Are there OIE or EU control measures that affect trade? Yes No C.S.[]

Comment: Currently, only four diseases are subject to official OIE disease status: BSE, Contagious Bovine Pleuropneumonia, Foot and Mouth disease, African horse sickness.

Indirect Losses (effect on consumption)

14. Is the pathogen a potential food-borne zoonosis in livestock? Yes No

Confidence score

1 2 3

Comment: The role as a food-borne pathogen is important in two ways: (1) the detection of the pathogen might determine a market effect on the possibly contaminated foods and (2) it could be an indirect way of transmission of the pathogen from companion animals to humans (e.g. indirect transmission of *Toxoplasma* from cats to humans via livestock).

Zoonotic Profile (only fill in the profile if the pathogen is a zoonosis)

15. Human Cases (severity)

- 15.1 Asymptomatic/mild disease in humans
- 15.2 Symptomatic disease without mortality
- 15.3 Low case fatality rate (<1%)
- 15.4 High case fatality rate (≥1%)

[check the most relevant option only]

Confidence score 1 2 3

16. Transmissibility (companion animal to human)

- 16.1 High likelihood of transmission
- 16.2 Moderate likelihood of transmission
- 16.3 Transmission likely only within specific groups (e.g. occupational)
- 16.4 Incidental or rare occurrence of transmission

[check the most relevant option only]

Confidence score 1 2 3

17. Transmissibility (human to companion animal)

- 17.1 High likelihood of transmission
- 17.2 Moderate likelihood of transmission
- 17.3 Transmission likely only within specific groups (e.g. occupational)
- 17.4 Incidental or rare occurrence of transmission

[check the most relevant option only]

Confidence score 1 2 3

18. Transmissibility (human to human)

- 18.1 High likelihood of transmission
- 18.2 Moderate likelihood of transmission
- 18.3 Transmission likely only within specific groups (e.g. immunocompromised people)
- 18.4 Incidental or rare occurrence of transmission

[check the most relevant option only]

Confidence score

1 2 3

19. Biological cycles

19.1 Does the pathogen have complex biological cycles (definitive vs. intermediate host)?

Yes No C.S.[]

19.2 Are companion animals definitive hosts?

Yes No C.S.[]

19.3 Are Human beings definitive hosts?

Yes No C.S.[]

19.4 Are livestock definitive hosts?

Yes No C.S.[]

19.5 Is the direct companion animal to human route the most important transmission route of the infection to humans?

Yes No C.S.[]

19.6 Is there an intermediate host involved?

Yes No C.S.[]

Diagnostics (inc. surveillance), treatment & vaccination, movement control & biosecurity - for livestock and repeated for companion animals?

20. Human Cases (diagnostics)

20.1 Is the disease easily detected clinically? Yes No C.S.[]

20.2 Do reliable and readily available diagnostic tests exist? Yes No C.S.[]

21. Human Cases (prevention)

21.1 No vaccine available

21.2 Vaccine with intermediate efficacy and/or poor availability

21.3 Effective and readily available vaccine

[check the most relevant option only]

Confidence score 1 2 3

22. Human Cases (treatment or emergency curative vaccination – not including supportive treatment)

22.1 No effective treatment

22.2 Treatment with intermediate efficacy and/or poor availability

22.3 Highly efficacious treatment, readily available, with no disease relapse

[check the most relevant option only]

Confidence score 1 2 3

23. Companion animal cases (diagnostics)

23.1 Is the disease easily detected clinically? Yes No C.S.[]

23.2 Do reliable and readily available diagnostic tests exist? Yes No C.S.[]

24. Companion animal cases (prevention)

24.1 No vaccine available

24.2 Vaccine with intermediate efficacy and/or poor availability

24.3 Effective and readily available vaccine

[check the most relevant option only]

Confidence score 1 2 3

25. Companion Animal Cases (treatment or emergency curative vaccination - not including supportive treatment)

25.1 No effective treatment

25.2 Treatment with intermediate efficacy and/or poor availability

25.3 Highly efficacious treatment, readily available, with no disease relapse

[check the most relevant option only]

Confidence score 1 2 3

26. Livestock animal cases (diagnostics)

26.1 Is the disease easily detected clinically? Yes No C.S.[]

26.2 Do reliable and readily available diagnostic tests exist? Yes No C.S.[]

27. Livestock cases (prevention)

27.1 No vaccine available or vaccination forbidden (e.g. TB)

27.2 Vaccine with intermediate efficacy and/or poor availability

27.3 Effective and readily available vaccine

[check the most relevant option only]

Confidence score 1 2 3

28. Livestock Cases (treatment or emergency curative vaccination - not including supportive treatment)

28.1 No effective treatment or treatment forbidden

28.2 Treatment with intermediate efficacy and/or poor availability

28.3 Highly efficacious treatment, readily available, with no disease relapse

[check the most relevant option only]

Confidence score 1 2 3

29. Biosecurity

29.1 Can biosecurity measures (e.g. disinfection, quarantine, etc.) when applied to companion animals contribute to the prevention or control of the infection by this pathogen? Yes No C.S.[]

29.2 Can biosecurity measures (e.g. disinfection, quarantine, etc.) when applied to livestock contribute to the prevention or control of the infection by this pathogen? Yes No C.S.[]