WORLD ORGANISATION FOR ANIMAL HEALTH
Protecting animals, preserving our future

Original: English
June 2021

REPORT OF THE VIRTUAL MEETINGS OF THE OIE *AD HOC* GROUP ON SURRA AND DOURINE

30 April to 24 June 2021

_____

The OIE *ad hoc* Group on surra and dourine (hereafter the Group) met virtually on five occasions between 30 April and 24 June 2021.

1. Opening

On behalf of Dr Monique Eloit, Director General of the OIE, Dr Matthew Stone, OIE Deputy Director General for International Standards and Science, welcomed and thanked the Group for its commitment and the extensive support towards the OIE mandates.

Dr Stone acknowledged the complex epidemiology of the trypanosome pathogen family, and the difficulties surrounding the development of international standards that appropriately manage the various risks whilst also facilitating the safe international movements of susceptible animals and commodities. He noted that the related trypanosomes chapter (8.Y. 'Infection with animal trypanosomes of African origin'[1]) would be presented to the General Assembly for adoption at its 88th OIE General Session in May 2021.

Dr Stone explained that the objective of the meeting was to develop a draft chapter (8.X.) for infection with *Trypanosoma evansi* (surra), and to propose revisions to the existing Chapter 8.13 'Dourine'. He emphasized the importance of providing a sound rationale supported by scientific justification for the provisions proposed in the chapters. He noted the case definitions recently drafted by members of this Group and endorsed by the Scientific Commission for Animal Diseases (SCAD) at its February 2021 meeting would provide solid foundations for these chapters.

Dr Stone emphasised that the members of the Group were nominated by the Director General of the OIE according to their internationally recognised expertise and geographically balanced representation. He noted that all members of the Group were asked to declare any actual or potential conflict of interest and respect the confidentiality of the process.

2. Adoption of the agenda and appointment of chairperson and rapporteur

Prof. Marisa Gonzatti was appointed as chair and the OIE Secretariat acted as rapporteurs. The Group endorsed the proposed agenda.

The terms of reference, agenda and list of participants are provided as Appendix I, II and III, respectively.

[1] The chapter was adopted with the revised title 'Infection with *Trypanosoma brucei*, *T. congolense*, *T. simiae* and *T. vivax*'.

3. Define the outlines and contents of the two chapters

The Group agreed to develop the outlines of the two chapters ('Infection with *Trypanosoma evansi* (surra)', and 'Infection with *Trypanosoma equiperdum* (dourine)' concurrently. The Group noted that the two chapters should not duplicate recommendations already present in horizontal chapters of the *Terrestrial Animal Health Code* (*Terrestrial Code*) such as Chapter 1.1. on notification, and Chapters 1.4. and 1.5. on surveillance, but instead should reference the appropriate chapters. These two chapters should provide disease-specific guidance to assist Members in their effort to control the diseases, meet their notification obligations, and facilitate safe international movements of animals and animal products.

The Group agreed that both chapters should be constructed according to the following outline:

- general provisions
- safe commodities
- provisions on the animal health status of a country, zone, or compartment
- recommendations on safe trade (for commodities not considered as safe)
- surveillance.

4. Drafting the articles of Chapter 8.X. 'Infection with *Trypanosoma evansi* (surra)'

4.1. Article 8.X.1. 'General provisions'

The Group noted that *T. evansi* can infect a large range of domestic and wild mammals, but proposed that for the purposes of the *Terrestrial Code*, surra be defined as an infection of susceptible animals with *T. evansi*, and that 'susceptible animals' in this chapter means domestic and wild animals from the Equidae, Camelidae, Bovidae, Suidae, Canidae, Felidae families, the orders Rodentia and Lagomorpha, and non-human primates (1,2). This is a refinement of the draft case definition[2] endorsed by SCAD in February 2021, which proposed surra as an infection of mammalians.

The Group discussed modes of transmission of *T. evansi* (2,3,4,5,6), and noted the possibility of venereal transmission in addition to those more commonly reported (mechanical, vertical, iatrogenic, per-oral, or biological by bite of vampire bats).

The Group considered that the incubation period for infection with *T. evansi* would vary depending on factors including the vulnerability of the host species, previous exposure to *T. evansi*, and the virulence of the *T. evansi* involved. The Group noted that there have been instances of recrudescence of infection in horses even when antibodies are present, for up to 90 days. Considering this, the Group recommended that, for the purposes of the *Terrestrial Code*, the incubation period for *T. evansi* should be 90 days (7,8).

The Group referred to the *Terrestrial Code* Chapter 4.17. 'High health status horse subpopulation' and included a provision for the temporary importation of horses for competition or cultural events, but specified that these should exclude breeding or rearing activities.

---

[2] Scientific Commission for Animal Diseases (2021). Report of the meeting of the OIE Scientific Commission for Animal Diseases, 1–11 February 2021, Paris. OIE, Paris, France, Appendix 16. Available at: https://www.oie.int/app/uploads/2021/05/a-scad-feb2021.pdf (accessed on 23/07/2021).

4.2. Article 8.X.2. 'Safe commodities'

The Group considered that the possibility of venereal transmission precluded the inclusion of any of semen, embryos, or oocytes in the list of safe commodities. Further, they noted that as trypanosomes might survive for up to three days in fresh meat, and might also persist in lymphatic tissue after slaughter, neither fresh meat nor raw hides and skin should be included in the list of safe commodities (9,10).

4.3. Article 8.X.3. 'Country or zone free from infection with *T. evansi*'

The Group elected not to include any requirement for demonstration of the absence of competent vectors in this article, as it felt that such a requirement would be unrealistic. However, recognising the importance of vectors in the transmission of infection with *T. evansi*, the Group suggested inclusion of a provision that a country or zone that is free from infection with *T. evansi* but that is adjacent to an infected country or zone should include a zone in which surveillance is conducted as outlined in Articles 8.X.17. to 8.X.19. The Group considered that at least two years would be required to gather epidemiological information sufficient to substantiate absence of infection.

4.4. Article 8.X.4. 'Compartment free from infection with *T. evansi'*

The Group noted that the inclusion of surra[3] in the diseases covered by the horizontal *Terrestrial Code* Chapter 4.17. 'High health status horse subpopulation' suggests that compartmentalisation is feasible and thus a corresponding article should be provided in this draft chapter. Nevertheless, the Group noted the difficulties associated with implementing the recommended requirement for protecting susceptible animals in the compartment against vectors, and concluded that compartmentalisation may have limited application for this disease.

For consistency with other articles in this draft chapter recognising the possibility of venereal transmission of *T. evansi*, the Group recommended that susceptible animals in the compartment be protected against both iatrogenic and venereal transmission.

4.5. Article 8.X.5 'Recovery of free status'

The Group suggested a period of six consecutive months for intensive surveillance after the last case was slaughtered (or infected animals treated); this period was chosen as it is two incubation periods.

Given the importance of transmission of *T. evansi* by vectors, the Group included in this article a provision for recovery of freedom requiring that appropriate biosecurity be in place, including vector control or protection from vector contacts in the affected area in accordance with Articles 1.5.2 to 1.5.3. However, the Group noted the difficulty of implementing this provision, and acknowledged that recovery of free status would be challenging.

4.6. Article 8.X.6. 'Recommendations for importation of susceptible animals from countries, zones, or compartments free from infection with *T. evansi*'

Given that the animals originate from a free country, zone, or compartment, the Group did not feel that testing of the animals was indicated, but did recommend that either they did not transit through an infected zone, or were protected from vectors or any source of *T. evansi*, during transportation to the place of shipment.

[3] https://www.oie.int/en/document/a_hhp_handbook_oct_2018/

4.7. Article 8.X.7. 'Recommendations for importation of susceptible animals excluding dogs and cats from countries or zones infected with *T. evansi*'

The Group noted the importance of ensuring that the duration of isolation in a quarantine station was at least as long as the incubation period for *T. evansi*. It acknowledged that, as stated in Article 8.X.1, there is considerable variability in the incubation period for *T. evansi*, some of which is attributable to the species of the host. However, given the large number of host species included in this chapter's definition of susceptible species, specific exceptions to the 90-day incubation period would best be accommodated by developing specific articles for importation (similar to 8.X.8, for dogs and cats) as needed.

4.8. Article 8.X.8. 'Recommendations for importation of dogs and cats from countries or zones infected with *T. evansi*'

The draft article currently proposes that dogs and cats be isolated in a quarantine station for at least 30 days prior to shipment. The Group noted that the incubation period for infection of *T. evansi* in dogs and cats is considered to be less than 30 days (11). The Group mentioned that in some cases, home isolation might be a practical alternative to isolation in a quarantine station, and recommended a provision for this. The Group recommended testing the animals twice, just before entry to quarantine/isolation, and secondly, within 15 days of shipment. The Group proposed 15 days as they felt that 7 days might not provide sufficient time to receive the test results.

4.9. Article 8.X.9. 'Recommendations for importation of susceptible animals from countries or zones infected with *T. evansi* for immediate slaughter'

The Group discussed the risks associated with importing susceptible animals from infected countries or zones, and acknowledged the difficulties of protecting them from vector attack during transportation from origin directly to the slaughterhouse or approved abattoir, but insisted that this would be necessary to adequately mitigate the risk. In addition, the Group proposed testing on the day of shipment, and that the animals display no clinical signs on the day of shipment, and had been kept for six months (two incubation periods) in an establishment in which surveillance demonstrates that no case had occurred during that period.

4.10. Article 8.X.10. 'Recommendations for the temporary importation of equids for competition purposes'

The Group reiterated their concerns about the feasibility of protecting such equids from vector attack, so proposed using 'minimise' rather than 'avoid' in their suggested text for Article 8.X.10 2) a): 'measures are taken to minimise contact with vectors'. They also noted that disinsection should form part of the procedures carried out before stalls, vehicles, or vessels are reused.

4.11. Articles 8.X.11 to 8.X.14: Recommendations for importation of semen, embryos, and oocytes.

The Group proposed articles for importation from free countries, zones, or compartments for semen (Article 8.X.11) and embryos and oocytes (Article 8.X.13). For Article 8.X.11, the Group suggested a minimum residency period equivalent to two incubation periods (6 months) as a requirement for the donor males in the free country, zone, or compartment.

Similarly, the Group proposed articles for importation from countries or zones infected with *T. evansi* for semen (Article 8.X.12) and embryos and oocytes (Article 8.X.14). The Group suggested that the donor males (Article 8.X.12) and females (Article 8.X.14) be kept for six months (equivalent to two incubation periods) in an establishment in which surveillance in accordance with Articles 8.X.16., 8.X.17., and 8.X.18. demonstrated that no case of surra occurred during that period.

4.12. Article 8.X.15. 'Recommendations for importation of fresh meat from susceptible animals from countries or zones infected with *T. evansi*'

As noted above, the Group considered that, as trypanosomes might survive for up to three days in meat, and might also persist in lymphatic tissue after slaughter, provisions would be required for importation of fresh meat from susceptible animals from countries or zones infected with *T. evansi*. The Group proposed that fresh meat should be held for at least 72 hours after slaughter before shipment.

4.13. Articles 8.X.16. to Article 8.X.19 on surveillance

The Group proposed four surveillance articles to complement the horizontal *Terrestrial Code* chapters 1.4. and 1.5.

a) Article 8.X.16. 'Introduction to surveillance'

The Group used this article to provide additional information on the importance of vectors in the epidemiology of infection with *T. evansi*. They noted that, as the methods and tools for measuring some vector factors are still developing, surveillance for this infection should focus on detecting the transmission of *T. evansi* in susceptible animals. The Group recognised that the impact and epidemiology of infection with *T. evansi* varies widely around the world, and considered it would not be possible to provide specific recommendations for each situation. However, they included a recommendation that susceptible wild animals should be included in the surveillance system, as they are included in the case definition and can serve as reservoirs of infection and as indicators of risk to susceptible domestic animals.

b) Article 8.X.17. 'General conditions and methods of surveillance'

The Group proposed that a surveillance programme for infection with *T. evansi* should include serological or parasitological surveys, but emphasised that these should be appropriate to the status of the country or zone.

c) Article 8.X.18. 'Surveillance methods'

The Group provided specific guidance on appropriate surveillance methods, and included a reminder that cross reactions to other Kinetoplastid species occur, and that there should be an effective procedure for following up cross reactions to determine, with a high level of confidence, whether they are indicative of infection with *T. evansi* or not.

The Group noted that, in the context of this chapter and depending on geographical region, vector species may include vampire bats, and this needs to be taken into account when designing and reporting on vector surveillance activities and results.

The Group acknowledged the difficulties of conducting surveillance in wildlife, and noted the possibility of applying molecular techniques to vectors to provide information about wildlife status.

d) Article 8.X.19. 'Additional surveillance procedures for recovery of free status'

Given the importance of vectors in the epidemiology of this infection, the Group emphasised that a surveillance programme designed to demonstrate absence of infection with *T. evansi* should include surveillance of establishments in the proximity of, or epidemiologically linked to, the outbreak, and animals moved from, or used to repopulate affected establishments.

5. Drafting the articles of Chapter 8.13. 'Dourine'

The Group developed articles for the revised Chapter 8.13. 'Dourine', noting that the title of the revised chapter would be 'Infection with *Trypanosoma equiperdum* (dourine)'. However, the Group proposed that further

development on this draft chapter be postponed until feedback is received from the Scientific Commission for Animal Disease on their work on draft Chapter 8.X.

6. Finalisation and adoption of the draft report

The Group reviewed and amended the draft report. The Group agreed that the report reflected the discussions.

…/Appendices

Appendix I

VIRTUAL MEETING OF THE OIE *AD HOC* GROUP

ON SURRA AND DOURINE

30 April to 24 June 2021

_____

Terms of reference

Purpose

The purpose of the *ad hoc* Group on surra and dourine is to continue the work initiated in 2015 and draft a *Terrestrial Code* Chapter on surra and update current *Terrestrial Code* Chapter 12.3 'Dourine'.

This *ad hoc* group is convened under the authority of, and reports to, the OIE Director General.

Background

In 2015 and 2016, an *ad hoc* Group on equine trypanosomosis was convened by the OIE Director General to draft a chapter on surra and amend the *Terrestrial Code* Chapter 12.3 'Dourine'.

In September 2016, the Scientific Commission (SCAD) agreed with the *ad hoc* Group's proposal to draft/revise two separate chapters to cover equine trypanosomes:

- draft Chapter 8.X. 'Infection with *Trypanosoma evansi* (not including equine surra).
- extend the scope of the *Terrestrial Code* Chapter 12.3 'Dourine' to encompass all trypanosomosis in equids, which would include dourine and equine surra.

However, Members expressed their disagreement with the suggested scope and approach of the proposal to modify the trypanosomoses-related Chapters in the *Terrestrial Code*. At the same time, an urgent request was received to develop a new *Terrestrial Code* Chapter on animal African trypanosomes.

Consequently, the SCAD and the Code Commission (TAHSC) agreed to put on hold the revision of Chapter 8.X and Chapter 12.3, and to progress the development of Chapter 8.Y on animal trypanosomes of African origin. This was done via an *ad hoc* Group on animal African trypanosomes, which met in March 2018; Chapter 8.Y will be presented for adoption at the 88th General Session of the OIE in May 2021.

In 2018, SCAD and TAHSC took note of the Member comments previously received on Chapters 8.X and 12.3 as well as the recommendations of the *ad hoc* Group on animal African trypanosomes, and agreed that the best compromise would be to cover animal trypanosomes in three separate *Terrestrial Code* chapters as follows:

1. Infection with animal trypanosomoses of African origin [Chapter 8.Y – several host and pathogen species]
2. Infection with *T. evansi* (surra) [Chapter 8.X – several host species]
3. Infection with *T. equiperdum* (dourine) [Chapter 12.3 – equine]

At the SCAD meeting of February 2019, the Commission confirmed that both *T. evansi* and *T. equiperdum* matched the listing criteria described in Chapter 1.2. of the *Terrestrial Code*.

Finally, at the SCAD meeting of February 2021, the case definitions for surra and dourine drafted by expert groups were endorsed and recommended for consideration in the subsequent drafting of Chapter 8.X and the amendment of Chapter 12.3.

Specific issues to be addressed

To support Members in the control of animal trypanosomes, provide recommendations for surveillance, and promote safe international trade, the *ad hoc* Group should:

1. draft *Terrestrial Code* Chapter 8.X. 'Infection with *T. evansi* (surra)', noting that it should cover multiple host species for *T. evansi*

2. amend *Terrestrial Code* Chapter 12.3. 'Infection with *T. equiperdum* (dourine)'.

Considerations

The *ad hoc* Group members should consider:

- case definitions on infections with *T. evansi* and *T. equiperdum*, as endorsed by SCAD at its February 2021 meeting to inform on the scope and coverage of Chapters 8.X and 12.3
- advice from the TAHSC on Member comments received on draft *Terrestrial Code* Chapter 8.X and Chapter 12.3 circulated in its September 2017 meeting report
- *Terrestrial Code* Chapter 8.Y 'Infection with animal trypanosomes of African origin' adopted at the 88th General Session of the OIE in May 2021
- *Terrestrial Code* Chapter 12.3 'Dourine'
- *Terrestrial Manual* Chapters
    - 3.1.21. '*Trypanosoma evansi* infection (surra)'
    - 3.4.16. 'Animal trypanosomoses (including tsetse-transmitted, but excluding surra and dourine)'
    - 3.5.3 'Dourine'.

All proposed amendments should be consistent with the structure and scope of the *Terrestrial Code.*

Prerequisites

Ad hoc Group members should:

- sign the OIE Undertaking on Confidentiality of information (if not done already)
- complete the Declaration of Interest form
- be familiar with the structure of the *Terrestrial Code* and the *Terrestrial Manual*, and the use of Glossary definitions
- read the working documents provided by the OIE Secretariat prior to the meeting
- agree on the appointment of the chair and rapporteur of the meeting
- contribute to discussions
- contribute to drafting text or assessment
- understand that the membership of the group may be retained between *ad hoc* Group meetings to ensure continuity of the work.

Deliverables

A meeting report including drafts for Chapter 8.X and the revised Chapter 12.3, and the rationale for proposed amendments.

Reporting / timeline

The *ad hoc* Group will deliver its report within 3 week(s) after its final meeting, which is anticipated to be held 24 June 2021.

Appendix II

VIRTUAL MEETING OF THE OIE *AD HOC* GROUP
ON SURRA AND DOURINE
30 April to 24 June 2021

_____

Agenda

1. Opening
2. Adoption of the agenda and work plan, and appointment of chair and rapporteur.
3. Development of the outlines of the draft Chapter 8.X. 'Infection with *Trypanosoma evansi* (surra)' and the revised Chapter 12.3. 'Dourine'.
4. Drafting the articles for these two Chapters.
5. Finalisation and adoption of the report.

_____

Appendix III

VIRTUAL MEETING OF THE OIE *AD HOC* GROUP

ON SURRA AND DOURINE

30 April to 24 June 2021

_____

List of participants

MEMBERS

Prof Philippe Büscher
Institute of Tropical Medicine Antwerp
Belgium

Prof Marc Desquesnes
CIRAD - Bios
France

Dr Nick Van Reet
Institute of Tropical Medicine Antwerp
Belgium

Prof Noboru Inoue
Obihiro University of Agriculture and Veterinary Medicine
Japan

Dr Laurent Hebert
ANSES
France

Prof Marisa Gonzatti (Chair)
Universidad Simón Bolívar
Venezuela

Prof Keisuke Suganuma
Obihiro University of Agriculture and Veterinary Medicine
Japan

Prof Grace Adira Murilla
KAG EAST University
Kenya

REPRESENTATIVES OF OIE SPECIALIST COMMISSIONS

Dr Baptiste Dungu
Member of OIE Scientific Commission for Animal Diseases
CEO
Onderstepoort Biological Products
South Africa

Dr Bernardo Todeschini
Member of OIE Terrestrial Animal Health Code Commission
Agricultural Attaché
Ministry of Agriculture, Livestock and Food Supply
Brazil

OIE PARTICIPANTS

Gregorio Torres
Head of Science Department

Jenny Hutchison
Deputy Head of Science Department

Antonino Caminiti
Chargé de mission
Science Department

Rachel Tidman
Global Rabies Coordinator
Science Department

Serin Shin
Scientific Coordinator
Science Department

Charmaine Chng Wenya
Chargée de mission
Standards Department

_____

REFERENCES

1. Aregawi W.G., Agga G.E., Abdi R.D. & Büscher P. (2019). – Systematic review and meta-analysis on the global distribution, host range, and prevalence of *Trypanosoma evansi*. *Parasites & Vectors*, **12** (1), 67. doi:10.1186/s13071-019-3311-4.

2. Desquesnes M., Holzmuller P., Lai D.H., Dargantes A., Lun Z.R. & Jittaplapong S. (2013). – *Trypanosoma evansi* and Surra: A Review and Perspectives on Origin, History, Distribution, Taxonomy, Morphology, Hosts, and Pathogenic Effects. *BioMed Research International*, **2013**, 1–22. doi:10.1155/2013/194176.

3. Büscher P., Gonzatti M.I., Hébert L., Inoue N., Pascucci I., Schnaufer A., Suganuma K., Touratier L. & Van Reet N. (2019). – Equine trypanosomosis: enigmas and diagnostic challenges. *Parasites Vectors*, **12** (1), 234. doi:10.1186/s13071-019-3484-x.

4. Wang Z.L. (1988). – The similarities and differences of the characteristics between *T. equiperdum* and *T. evansi*. *Bul. Vet. Col*. (PLA)(Chinese), **8**, 300–3.

5. Uche U.E. & Jones T.W. (1992). – Pathology of experimental *Trypanosoma evansi* infection in rabbits. *Journal of Comparative Pathology*, **106** (3), 299–309. doi:10.1016/0021-9975(92)90057-2.

6. Katz J.B., Gidlewski T., Thomsen B., Winter A., Hicks J. & Claes F. – Comparison of three reference *Trypanosoma equiperdum* isolates in ponies: clinical, serologic, and pathologic results with possible implications for transmission. Unpublished.

7. Hoare C.A. (1972). – *The trypanosomes of mammals: a zoological monograph*. Blackwell Scientific Publications, Oxford.

8. Wernery U., Zachariah R., Mumford J.A. & Luckins T. (2001). – Preliminary Evaluation of Diagnostic Tests Using Horses Experimentally Infected with *Trypanosoma evansi*. *The Veterinary Journal*, **161** (3), 287–300. doi:10.1053/tvjl.2000.0560.

9. Mandal M., Laha R. & Sasmal N.K. (2014). – Experimental studies on survivality and degenerative changes of *Trypanosoma evansi* after death of host. *J Parasit Dis*, **38** (4), 361–366. doi:10.1007/s12639-013-0245-1.

10. Desquesnes M. (2021) – Up to 72 hours in serum sample in laboratory conditions (personal observation).

11. Aquino L.P.C.T. de, Machado R.Z., Alessi A.C., Marques L.C., Castro M.B. de & Malheiros E.B. (1999). – Clinical, Parasitological and Immunological Aspects of Experimental Infection with *Trypanosoma evansi* in Dogs. *Mem. Inst. Oswaldo Cruz*, **94** (2), 255–260. doi:10.1590/S0074-02761999000200025.