



2025/901

20.5.2025

**COMMISSION IMPLEMENTING REGULATION (EU) 2025/901**

**of 19 May 2025**

**establishing a list of substances which are essential for the treatment of equine species, or which bring added clinical benefit compared to other treatment options available for equine species and for which the withdrawal period for equine species shall be six months and repealing Regulation (EC) No 1950/2006**

**(Text with EEA relevance)**

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to Regulation (EU) 2019/6 of the European Parliament and of the Council of 11 December 2018 on veterinary medicinal products and repealing Directive 2001/82/EC <sup>(1)</sup>, and in particular Article 115(5) thereof,

Whereas:

- (1) Regulation (EU) 2019/6 lays down rules for use of veterinary medicinal products, including the requirement to use them in accordance with the terms of their marketing authorisations. Where there is no veterinary medicinal product authorised or available in a Member State for food-producing animals of the equine species or for an indication, veterinarians may, in particular to avoid causing unacceptable suffering and under their direct responsibility, use medicinal products outside the terms of their marketing authorisations, in accordance with the rules laid down in Articles 113 and 115 of that Regulation.
- (2) In order to increase the availability of medicinal products to food-producing animals of the equine species while ensuring a high level of consumer protection, and by way of derogation from Article 113(1) and (4) of Regulation (EU) 2019/6, Article 115(5) of Regulation (EU) 2019/6 provides for the establishment, by means of implementing acts, of a list of substances which are essential for the treatment of equine species, or which bring added clinical benefit compared to other treatment options available for equine species and for which the withdrawal period for equine species shall be six months.
- (3) Commission Regulation (EC) No 1950/2006 <sup>(2)</sup>, as amended by Regulation (EU) No 122/2013 <sup>(3)</sup>, had established a list of substances essential for the treatment of equidae and of substances bringing added clinical benefit.
- (4) The Annex to Regulation (EC) No 1950/2006 was last updated in 2013 by means of Regulation (EU) No 122/2013. Therefore, the experience gained from using the substances listed in that Annex should serve as basis for establishing the list referred to in Article 115(5) of Regulation (EU) 2019/6, including the need to update the information on use of those substances, their advantages and alternatives. Furthermore, the need to add other substances as a result of newly available evidence should also be considered.
- (5) To ensure a high level of consumer protection, substances should only be included in the list set out in this Regulation where they do not pose an unacceptable risk to consumers when used in food-producing animals of the equine species and a six-month withdrawal period is respected.

<sup>(1)</sup> OJ L 4, 7.1.2019, p. 43, ELI: <http://data.europa.eu/eli/reg/2019/6/oj>.

<sup>(2)</sup> Commission Regulation (EC) No 1950/2006 of 13 December 2006 establishing, in accordance with Directive 2001/82/EC of the European Parliament and of the Council on the Community code relating to veterinary medicinal products, a list of substances essential for the treatment of equidae and of substances bringing added clinical benefit (OJ L 367, 22.12.2006, p. 33, ELI: <http://data.europa.eu/eli/reg/2006/1950/oj>).

<sup>(3)</sup> Commission Regulation (EU) No 122/2013 of 12 February 2013 amending Regulation (EC) No 1950/2006 establishing, in accordance with Directive 2001/82/EC of the European Parliament and of the Council on the Community code relating to veterinary medicinal products, a list of substances essential for the treatment of equidae (OJ L 42, 13.2.2013, p. 1, ELI: <http://data.europa.eu/eli/reg/2013/122/oj>).

- (6) A substance only qualifies as an 'essential substance' where no satisfactory alternative for the treatment or diagnosis of an indication is available and where the condition would, if untreated, create unnecessary suffering for the animal. A substance only qualifies as 'bringing added clinical benefit' where it provides a clinically relevant advantage based on improved efficacy or safety or a major contribution to treatment or diagnosis. This may be the result, inter alia, of different modes of action, different pharmacokinetic or pharmacodynamic profiles, different lengths of treatment or different routes of administration.
- (7) At the request of the Commission, the European Medicines Agency ('the Agency') carried out a scientific evaluation of the substances listed in the Annex to Regulation (EC) No 1950/2006, as well as of the substances that were identified in a survey among the competent authorities and relevant stakeholders. In its scientific advice <sup>(4)</sup>, the Agency identifies some of those substances as 'essential' or as 'bringing added clinical benefit' and for which a withdrawal period of six months would not pose an unacceptable risk for consumers.
- (8) In line with the Agency's advice, the substances recommended as essential or as bringing added clinical benefit should be used for the specific diseases or conditions, treatment or diagnostic needs specified in the Annex to this Regulation. In addition, the Agency advised that consideration should also be given to the alternatives listed in that Annex.
- (9) The substances listed in Tables 1 or 2 in the Annex to Commission Regulation (EU) No 37/2010 <sup>(5)</sup>, or substances prohibited for use in stockfarming by Council Directive 96/22/EC <sup>(6)</sup>, do not qualify as essential or bringing added clinical benefit. Therefore, in the event that substances listed in the Annex to this Regulation are also included in Tables 1 or 2 in the Annex to Regulation (EU) No 37/2010, or their use in food-producing animals of the equine species is prohibited by Union legislation, these substances should no longer be used for the purposes of this Regulation.
- (10) The list of substances set out in the Annex to this Regulation should replace the list provided for under Regulation (EC) No 1950/2006. Regulation (EC) No 1950/2006 should be repealed. In order to allow the competent authorities, veterinarians, and animal keepers concerned to adapt to the changes resulting from the non-inclusion in the Annex to this Regulation of some substances or indications listed in the Annex to Regulation (EC) No 1950/2006, a sufficient transitional period should be allowed.
- (11) In order to increase the availability of medicinal products to food-producing animals of the equine species and avoid unacceptable suffering, this Regulation should enter into force on the day following that of its publication in the *Official Journal of the European Union*. This Regulation should also apply as from the date of its entry into force.
- (12) The measures provided for in this Regulation are in accordance with the opinion of the Standing Committee on Veterinary Medicinal Products,

<sup>(4)</sup> Scientific advice under Article 115(5) of Regulation (EU) 2019/6 for the establishment of a list of substances which are essential for the treatment of equine species, or which bring added clinical benefit compared to other treatment options available for equine species and for which the withdrawal period for equine species shall be six months (EMA/CVMP/159047/2023, 18 July 2024).

<sup>(5)</sup> Commission Regulation (EU) No 37/2010 of 22 December 2009 on pharmacologically active substances and their classification regarding maximum residue limits in foodstuffs of animal origin (OJ L 15, 20.1.2010, p. 1, ELI: [http://data.europa.eu/eli/reg/2010/37\(1\)/oj](http://data.europa.eu/eli/reg/2010/37(1)/oj)).

<sup>(6)</sup> Council Directive 96/22/EC of 29 April 1996 concerning the prohibition on the use in stockfarming of certain substances having a hormonal or thyrostatic action and of  $\beta$ -agonists, and repealing Directives 81/602/EEC, 88/146/EEC and 88/299/EEC (OJ L 125, 23.5.1996, p. 3, ELI: <http://data.europa.eu/eli/dir/1996/22/oj>).

HAS ADOPTED THIS REGULATION:

*Article 1*

**Scope**

The list of substances referred to in Article 115(5) of Regulation (EU) 2019/6 is set out in the Annex to this Regulation.

*Article 2*

**Rules on use of substances listed in the Annex**

1. Substances which are essential for the treatment of equine species may be used for the indications specified in the Annex to this Regulation, where no veterinary medicinal product authorised for food-producing animals of the equine species or no medicinal product referred to in Article 113 of Regulation (EU) 2019/6 would yield equally satisfactory results in terms of successfully treating the animal or avoiding unnecessary suffering for the animal.
2. Substances which bring added clinical benefit compared to other treatment options may be used for the indications specified in the Annex to this Regulation and taking into account the alternatives listed in that Annex, where they provide a clinically relevant advantage based on improved efficacy or safety or a major contribution to treatment compared to veterinary medicinal products authorised for food-producing animals of the equine species or to medicinal products referred to in Article 113 of Regulation (EU) 2019/6.
3. Where any of the substances listed in the Annex to this Regulation are entered in Tables 1 or 2 of the Annex to Regulation (EU) No 37/2010, or their use in food-producing animals of the equine species is prohibited by Union legislation, such substances shall no longer be used for the purposes of this Regulation.

*Article 3*

**Repeal**

1. Regulation (EC) No 1950/2006 is repealed with effect from 21 May 2027.
2. References to the repealed Regulation (EC) No 1950/2006 shall be construed as references to this Regulation.

*Article 4*

**Entry into force and application**

This Regulation shall enter into force on the day following that of its publication in the *Official Journal of the European Union*.

It shall apply from 21 May 2025.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Brussels, 19 May 2025.

*For the Commission*  
*The President*  
Ursula VON DER LEYEN

## ANNEX

## Groups of substances

## I. Anaesthetics

| Active substance <sup>(1)</sup> | Indications                                                                 | Identification of alternatives | Explanation of use / specific advantages                                                                                                                               |
|---------------------------------|-----------------------------------------------------------------------------|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Oxybuprocaine <sup>a</sup>      | Local topical anaesthesia for use in eyes                                   | None identified                | Wide clinical experience                                                                                                                                               |
| Prilocaine <sup>b</sup>         | Local topical anaesthesia prior to intravenous injection or catheterisation | Lidocaine                      | In specific preparations (eutectic mixture of local anaesthetics), for topical application to skin; can be used to facilitate intravenous injection or catheterisation |

<sup>(1)</sup> Active substances identified with an 'a' are essential substances. Substances identified with a 'b' are substances which bring added clinical benefit.

## II. Analgesics

| Active substance <sup>(1)</sup>      | Indications                                                                                             | Identification of alternatives                                                                     | Explanation of use / specific advantages                                                                                                                                                 |
|--------------------------------------|---------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Bromfenac <sup>b</sup>               | Treatment of uveitis and ocular inflammation                                                            | Systemic nonsteroidal anti-inflammatory drugs (NSAIDs) (e.g. flunixin); topical (ocular) ketorolac | Topical NSAIDs may result in less patient discomfort, reduced postoperative inflammation, prevention of miosis, and improvements in visual acuity in the early postoperative period      |
| Fentanyl <sup>b</sup>                | Multimodal approach for moderate to severe acute painful conditions                                     | Butorphanol, morphine                                                                              | Produces better analgesia than certain other opioids and can be used for very painful conditions; recognized value for use in multimodal approaches                                      |
| Ketorolac <sup>b</sup>               | Treatment of eye pain and inflammation                                                                  | Systemic NSAID therapy (e.g. flunixin)                                                             | Formulated for local application                                                                                                                                                         |
| Methocarbamol <sup>b</sup>           | As part of treatment protocols in severe painful muscle spasms or severe muscle inflammation conditions | Systemic NSAIDs (e.g. flunixin)                                                                    | Potent skeletal muscle relaxation; specific action on the internuncial neurons of the spinal cord to reduce acute skeletal muscle spasms without a concomitant alteration in muscle tone |
| Morphine <sup>b</sup>                | Analgesia                                                                                               | Butorphanol, fentanyl                                                                              | More potent than other analgesics                                                                                                                                                        |
| Triamcinolone acetonide <sup>b</sup> | Treatment of joint inflammation                                                                         | Methylprednisolone                                                                                 | Less harmful effects on cartilage metabolism                                                                                                                                             |

<sup>(1)</sup> Active substances identified with an 'a' are essential substances. Substances identified with a 'b' are substances which bring added clinical benefit.

## III. Antimicrobials

| Active substance ( <sup>1</sup> ) | Indications                                                                                                                                                                                     | Identification of alternatives                                          | Explanation of use / specific advantages                                                                                                                                                                                                                        |
|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| I. Antibiotics                    |                                                                                                                                                                                                 |                                                                         |                                                                                                                                                                                                                                                                 |
| Amikacin <sup>b</sup>             | Treatment of septicemia in horses and foals                                                                                                                                                     | Gentamicin, ceftiofur                                                   | Better safety profile in the target animal                                                                                                                                                                                                                      |
| Azithromycin <sup>b</sup>         | Treatment of <i>Rhodococcus equi</i> infections susceptible to azithromycin                                                                                                                     | Clarithromycin, erythromycin, gamithromycin, tulathromycin, doxycycline | Added clinical benefit in cases of <i>Rhodococcus equi</i> infections in foals that can be resolved as monotherapy or in combination with doxycycline                                                                                                           |
| Clarithromycin <sup>b</sup>       | Treatment of <i>Rhodococcus equi</i> infections susceptible to clarithromycin                                                                                                                   | Azithromycin, erythromycin, gamithromycin, tulathromycin, doxycycline   | More active against <i>Rhodococcus equi</i> in vitro than erythromycin or azithromycin; achieves greater concentrations in pulmonary epithelial lining fluid and alveolar macrophages than either erythromycin or azithromycin, though the half-life is shorter |
| Fusidic acid <sup>b</sup>         | Topical treatment of eye infections caused by gram-positive bacteria susceptible to fusidic acid                                                                                                | Ofloxacin, moxifloxacin                                                 | Broad spectrum for treatment of gram-positive infections; primary choice in superficial, uncomplicated corneal ulcers and acute conjunctivitis in horses                                                                                                        |
| Moxifloxacin <sup>b</sup>         | Topical treatment of external eye infections caused by gram-positive cocci, gram-negative, atypical and anaerobic bacteria, such as <i>Pseudomonas aeruginosa</i> , susceptible to moxifloxacin | Ofloxacin                                                               | Advantageous pharmacokinetic profile; spectrum of activity includes gram-positive cocci and anaerobic bacteria that may be resistant to other quinolones                                                                                                        |
| Ofloxacin <sup>b</sup>            | Treatment of external eye infections caused by gram-positive and gram-negative micro-organisms susceptible to ofloxacin                                                                         | Moxifloxacin                                                            | Clinical experience; penetrates the entire cornea up to the anterior chamber of the eye                                                                                                                                                                         |
| Polymyxin B <sup>b</sup>          | Treatment of bacterial keratitis, topical use                                                                                                                                                   | Ofloxacin, moxifloxacin                                                 | Effective alternative to systemic treatments; different mechanism of action to other topical alternatives                                                                                                                                                       |
| II. Antifungals                   |                                                                                                                                                                                                 |                                                                         |                                                                                                                                                                                                                                                                 |
| Amphotericin B <sup>a</sup>       | Treatment of fungal pneumonia, systemic use                                                                                                                                                     | None identified                                                         | Treatment of choice                                                                                                                                                                                                                                             |
| Miconazole <sup>b</sup>           | Treatment of fungal infection of the eye                                                                                                                                                        | Natamycin, nystatin, voriconazole                                       | Broad spectrum of activity; less irritant compared to other topical antifungals                                                                                                                                                                                 |

| Active substance (1)      | Indications                                                           | Identification of alternatives | Explanation of use / specific advantages |
|---------------------------|-----------------------------------------------------------------------|--------------------------------|------------------------------------------|
| Nystatin <sup>b</sup>     | Treatment of fungal and yeast infections of the eye and genital tract | Miconazole                     | Treatment of choice for yeast infections |
| Voriconazole <sup>b</sup> | Treatment of fungal keratitis, topical use                            | Miconazole                     | Broad spectrum of activity               |

### III. Antivirals

|                           |                                                                                                     |                         |                                                                                             |
|---------------------------|-----------------------------------------------------------------------------------------------------|-------------------------|---------------------------------------------------------------------------------------------|
| Aciclovir <sup>b</sup>    | Treatment of cases of equine herpes virus infection associated with complications, topical use only | Ganciclovir             | Treatment of choice for ocular ulcers when the implication of a viral pathogen is suspected |
| Ganciclovir <sup>b</sup>  | Treatment of cases of equine herpes virus infection associated with complications, topical use      | Aciclovir, valaciclovir | Wealth of evidence for the treatment of different virus-types causing herpetic infections   |
| Valaciclovir <sup>b</sup> | Treatment of cases of equine herpes virus infections, oral use                                      | Aciclovir               | Better pharmacokinetic profile and a different route of administration                      |

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### IV. Substances for respiratory disorders

| Active substance (1)             | Indications                                                                                                         | Identification of alternatives                                           | Explanation of use / specific advantages                                                                                                                                                                                                                                                                                          |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ambroxol <sup>b</sup>            | Stimulation of surfactant in premature foals                                                                        | Steroids, bromhexine, dembrexine, surfactant transfer from healthy donor | Preferred clinical choice for premature foals                                                                                                                                                                                                                                                                                     |
| Fluticasone <sup>b</sup>         | Control of allergic pulmonary disease including mild to moderate cases of equine asthma and subtypes via inhalation | Beclomethasone                                                           | Inhalation leads to less adreno-cortical suppression, quicker rebound after therapy ends and fewer systemic side effects than systemic corticosteroid therapy because of its limited systemic absorption; especially indicated for control of mild-moderate and refractory severe asthma as well as long-term maintenance therapy |
| Ipratropium bromide <sup>b</sup> | As a bronchodilator in horses with mild-moderate asthma                                                             | Clenbuterol                                                              | Anticholinergic action, as an alternative to beta-agonists                                                                                                                                                                                                                                                                        |
| Oxymetazoline <sup>b</sup>       | Treatment of nasal oedema                                                                                           | Phenylephrine                                                            | Alpha-adrenoceptor agonist with strong vasoconstrictive properties and longer acting effect                                                                                                                                                                                                                                       |
| Phenylephrine <sup>b</sup>       | Treatment of nasal oedema                                                                                           | Oxymetazoline                                                            | Reduces the need for insertion of nasal tubes during recovery                                                                                                                                                                                                                                                                     |

(1) Active substances identified with an 'a' are essential substances. Substances identified with a 'b' are substances which bring added clinical benefit.

## V. Substances for cardiology

| Active substance <sup>(1)</sup>            | Indications                                                                                                                | Identification of alternatives                     | Explanation of use / specific advantages                                                                 |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| Amiodarone <sup>b</sup>                    | Systemic and oral treatment of atrial fibrillation, supraventricular and ventricular tachycardias                          | Quinidine sulphate/ gluconate, sotalol, verapamil  | Different mode of action: class III anti-dysrhythmic                                                     |
| Propafenone <sup>b</sup>                   | Treatment of ventricular tachycardia and ventricular tachyarrhythmia                                                       | Quinidine sulphate/ gluconate                      | Different mode of action: sodium channel antagonist that decreases heart excitability                    |
| Quinapril <sup>a</sup>                     | Treatment of heart failure; cardiovascular protection in horses with atrial fibrillation (AF) or mitral regurgitation (MR) | None identified                                    | Different mode of action: angiotensin-converting-enzyme (ACE) inhibitor                                  |
| Quinidine sulphate/ gluconate <sup>b</sup> | Treatment of cardiac arrhythmias                                                                                           | Amiodarone, sotalol, verapamil                     | Treatment of choice for atrial fibrillation                                                              |
| Sotalol <sup>b</sup>                       | Long-term treatment of cardiac arrhythmias                                                                                 | Amiodarone, quinidine sulphate/ gluconate          | More suitable in horses requiring long-term anti-arrhythmic therapy; less adverse events than amiodarone |
| Verapamil <sup>b</sup>                     | Treatment of supraventricular arrhythmias                                                                                  | Amiodarone, quinidine sulphate/ gluconate, sotalol | Different mode of action: calcium channel blocker                                                        |

(<sup>1</sup>) Active substances identified with an 'a' are essential substances. Substances identified with a 'b' are substances which bring added clinical benefit.

## VI. Substances for diagnostic procedures

| Active substance <sup>(1)</sup> | Indications                                                                    | Identification of alternatives | Explanation of use / specific advantages                                                                                 |
|---------------------------------|--------------------------------------------------------------------------------|--------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| Barium sulfate <sup>a</sup>     | Enhanced gastrointestinal tract visualization during radiographic examinations | None identified                | No satisfactory alternative treatment for enhanced gastrointestinal tract visualisation during radiographic examinations |
| Fluorescein <sup>b</sup>        | Diagnosing corneal keratitis or ulceration, topical use                        | Rose bengal                    | Diagnostic tool of choice when a viral culture is needed afterwards                                                      |

| Active substance (1)                       | Indications                                                                                                                 | Identification of alternatives | Explanation of use / specific advantages                                          |
|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|--------------------------------|-----------------------------------------------------------------------------------|
| Iohexol <sup>a</sup>                       | Contrast agent for lower urinary tract radiography, arthrography, myelography, sino- or fistulography and dacryocystography | None identified                | Non-ionic, water-soluble contrast agent                                           |
| Phenylephrine <sup>a</sup>                 | Diagnosing grass sickness                                                                                                   | None identified                | Ancillary diagnostic approach to equine grass sickness polyneuropathy             |
| Rose bengal <sup>b</sup>                   | Diagnosing corneal keratitis or ulceration, topical use                                                                     | Fluorescein                    | Diagnostic tool of choice for diagnosing eye keratitis/ulcers                     |
| Thyrotropin releasing hormone <sup>a</sup> | Diagnosing pituitary pars intermedia dysfunction                                                                            | None identified                | No satisfactory alternatives for diagnosing pituitary pars intermedia dysfunction |

(1) Active substances identified with an 'a' are essential substances. Substances identified with a 'b' are substances which bring added clinical benefit.

## VII. Substances for gastrointestinal disorders

| Active substance (1)        | Indications                                                             | Identification of alternatives                                         | Explanation of use / specific advantages                                                                    |
|-----------------------------|-------------------------------------------------------------------------|------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| Metoclopramide <sup>b</sup> | Treatment of post-operative ileus                                       | Intravenous fluid substitution, painkillers (e.g. flunixin), lidocaine | Prokinetic drug                                                                                             |
| Misoprostol <sup>b</sup>    | Treatment of gastric glandular disease and colitis                      | Omeprazole, sucralfate                                                 | Superior to omeprazole for the treatment of equine gastric glandular disease                                |
| Phenylephrine <sup>a</sup>  | Treatment of nephrosplenic entrapment                                   | None identified                                                        | Clinical value in the resolution of nephrosplenic entrapment; causes a dose-dependent splenic contraction   |
| Ranitidine <sup>b</sup>     | Treatment of gastric ulcers in critically ill neonates, intravenous use | Omeprazole                                                             | The intravenous route of administration brings added clinical benefit over other oral antiulcer medications |
| Sucralfate <sup>b</sup>     | Treatment and prevention of gastric ulcers in horses                    | Omeprazole                                                             | Different mode of action than omeprazole (mucosal adherent), which provides physical lesion stabilisation   |

(1) Active substances identified with an 'a' are essential substances. Substances identified with a 'b' are substances which bring added clinical benefit.

## VIII. Substances for metabolic disorders

| Active substance <sup>(1)</sup> | Indications                                                                                                                                                                                                                                                                                                  | Identification of alternatives                                        | Explanation of use / specific advantages |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|------------------------------------------|
| Insulin <sup>b</sup>            | As an aid in the treatment of hyperlipidaemia unresponsive to glucose therapy or severe hyperlipidaemia, used in combination with glucose and other therapies<br>Diagnosing metabolic disorders (e.g. insulin resistance associated with equine metabolic syndrome or pituitary pars intermedia dysfunction) | Low-molecular weight heparin can be used for cases of hyperlipidaemia | Insulin is the preferred clinical choice |

(<sup>1</sup>) Active substances identified with an 'a' are essential substances. Substances identified with a 'b' are substances which bring added clinical benefit.

## IX. Substances for musculoskeletal disorders

| Active substance <sup>(1)</sup> | Indications                                                                             | Identification of alternatives                  | Explanation of use / specific advantages                                                                                                                                                                                                    |
|---------------------------------|-----------------------------------------------------------------------------------------|-------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Atracurium <sup>b</sup>         | Inducing muscle paralysis under general anaesthesia                                     | Cisatracurium, guaifenesin                      | Brings added clinical benefit in horses under general anaesthesia in cases where increased muscle relaxation is necessary such as ophthalmic surgeries, certain orthopaedic repairs and when deep access to the abdominal cavity is needed. |
| Cisatracurium <sup>b</sup>      | Inducing muscle paralysis under general anaesthesia                                     | Atracurium, guaifenesin                         | Brings added clinical benefit in horses under general anaesthesia in cases where increased muscle relaxation is necessary such as ophthalmic surgeries, certain orthopaedic repairs and when deep access to the abdominal cavity is needed. |
| Dantrolene sodium <sup>b</sup>  | Prevention of rhabdomyolysis<br>Prevention of malignant hyperthermia during anaesthesia | NSAIDs, intravenous fluids, vitamin E/ selenium | Efficacious as preventative, inhibiting the release of calcium from the sarcoplasmic reticulum and thus causing dissociation of excitation-contraction coupling                                                                             |
| Edrophonium <sup>a</sup>        | Reversing the effects of atracurium muscle paralysis                                    | None identified                                 | Cholinesterase inhibitor, essential for reversal of neuromuscular blockade; least side effects of the cholinesterase inhibitors in horses                                                                                                   |

| Active substance (1)     | Indications                                                          | Identification of alternatives | Explanation of use / specific advantages                                                                                                                                                                                                 |
|--------------------------|----------------------------------------------------------------------|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Guaifenesin <sup>b</sup> | Induction and maintenance of general anaesthesia in field conditions | Atracurium, cisatracurium      | Particularly indicated in field (non-hospital) conditions where anaesthesia may be necessary; the reduced cardiopulmonary depressive effects facilitate safe anaesthesia without advanced monitoring equipment or mechanical ventilation |

(1) Active substances identified with an 'a' are essential substances. Substances identified with a 'b' are substances which bring added clinical benefit.

#### X. Substances for nervous system disorders

| Active substance (1)  | Indications                                          | Identification of alternatives | Explanation of use / specific advantages |
|-----------------------|------------------------------------------------------|--------------------------------|------------------------------------------|
| Diazepam <sup>a</sup> | Short-term anti-convulsant for treatment of seizures | None identified                | Second-generation antiseizure            |

(1) Active substances identified with an 'a' are essential substances. Substances identified with a 'b' are substances which bring added clinical benefit.

#### XI. Substances for ophthalmology

| Active substance (1)        | Indications                                                    | Identification of alternatives | Explanation of use / specific advantages                                                                                                                           |
|-----------------------------|----------------------------------------------------------------|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Acetazolamide <sup>b</sup>  | Treatment of glaucoma, oral use                                | Phenylephrine                  | Its mechanism of action as carbonic anhydrase inhibitor                                                                                                            |
| Cyclopentolate <sup>b</sup> | Mydriatic agent                                                | Atropine, phenylephrine        | Induces significant mydriasis without affecting tear production, intraocular pressure, digestive function (i.e. gut motility and faeces production), or heart rate |
| Cyclosporine A <sup>b</sup> | Treatment of autoimmune diseases of the eye                    | Topical steroids               | Immunosuppressive effect by inhibiting T-lymphocyte proliferation and reducing cytokine gene expression                                                            |
| Phenylephrine <sup>b</sup>  | Treatment of glaucoma and epiphora                             | Atropine and tropicamide       | It does not (or only slightly) increase intraocular pressure                                                                                                       |
| Synephrine <sup>b</sup>     | Treatment of the mucous membranes of the eye as a decongestant | Phenylephrine, tetryzoline     | Fast local effect; enhances penetration of local therapy, providing synergistic effects with e.g. local antimicrobial therapy                                      |
| Tetryzoline <sup>b</sup>    | Treatment of the mucous membranes of the eye as a decongestant | Phenylephrine, synephrine      | Fast local effect                                                                                                                                                  |

| Active substance (¹)                 | Indications                                                                     | Identification of alternatives                    | Explanation of use / specific advantages                                                                                                                          |
|--------------------------------------|---------------------------------------------------------------------------------|---------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Timolol maleate <sup>b</sup>         | Treatment of glaucoma, topical use                                              | Acetazolamide                                     | Its specific mode of action as a non-selective beta-adrenergic receptor blocking agent, provides for an important therapeutic choice in the treatment of glaucoma |
| Triamcinolone acetonide <sup>b</sup> | Treatment of recurrent uveitis in cases that are refractory to other treatments | Atropine, tropicamide                             | Effective, low-morbidity treatment in cases that are refractory to other treatments                                                                               |
| Tropicamide <sup>b</sup>             | Treatment of recurrent uveitis                                                  | Atropine, cyclopentolate, triamcinolone acetonide | Rapid onset of action                                                                                                                                             |

(¹) Active substances identified with an 'a' are essential substances. Substances identified with a 'b' are substances which bring added clinical benefit.

## XII. Substances for sedation and premedication (and antagonism)

| Active substance (¹)         | Indications                                                                                                               | Identification of alternatives                 | Explanation of use / specific advantages                                                                                                                                                                                                        |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Acepromazine <sup>b</sup>    | For a multimodal approach for tranquilisation and premedication in combination with other sedatives                       | Detomidine, romifidine, xylazine, diazepam     | The mode of action of acepromazine and its unique quality of sedation cannot be produced by alpha-2 agonist sedatives or benzodiazepines                                                                                                        |
| Atipamezole <sup>a</sup>     | Reversing the effects of alpha-2 agonists                                                                                 | None identified                                | Reverses sedative and analgesic effects and adverse cardiovascular reactions                                                                                                                                                                    |
| Dexmedetomidine <sup>b</sup> | Sedation or general anaesthesia as part of partial or total intravenous anaesthesia protocols                             | Detomidine, romifidine, xylazine, diazepam     | The most selective alpha-2 agonist; short half-life and rapid redistribution, which particularly favour its use as a continuous-rate infusion                                                                                                   |
| Diazepam <sup>b</sup>        | Premedication and induction of anaesthesia, mild tranquilisation with minimal cardiovascular and respiratory side effects | Acepromazine, detomidine, romifidine, xylazine | The mode of action (at gamma-aminobutyric acid (GABA) receptor) provides unique tranquilisation without cardiorespiratory depression that cannot be produced by alpha-2 agonist sedatives (detomidine, romifidine and xylazine) or acepromazine |
| Flumazenil <sup>a</sup>      | Intravenous reversal agent for benzodiazepine effect during recovery from Total Intravenous Anaesthesia (TIVA) techniques | None identified                                | Antagonist that competitively inhibits the benzodiazepine binding site at the GABA receptor                                                                                                                                                     |

| Active substance (¹)  | Indications                                                      | Identification of alternatives | Explanation of use / specific advantages                                                             |
|-----------------------|------------------------------------------------------------------|--------------------------------|------------------------------------------------------------------------------------------------------|
| Naloxone <sup>a</sup> | Reversal of opioid effects during emergencies                    | None identified                | No alternatives available                                                                            |
| Propofol <sup>b</sup> | Induction of anaesthesia in foals via intravenous administration | Isoflurane                     | Improvement in cardiovascular stability and quality of recovery over inhalation anaesthesia in foals |

(¹) Active substances identified with an 'a' are essential substances. Substances identified with a 'b' are substances which bring added clinical benefit.

### XIII. Substances for systemic disorders

| Active substance (¹)              | Indications                                                                       | Identification of alternatives | Explanation of use / specific advantages                                                                                                                                                        |
|-----------------------------------|-----------------------------------------------------------------------------------|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Allopurinol <sup>b</sup>          | Neonatal ischaemia reperfusion injury                                             | Vitamin E                      | Different mode of action in inhibiting the formation of reactive oxygen species (ROS) than vitamin E                                                                                            |
| Dalteparin <sup>b</sup>           | Anticoagulant                                                                     | Heparin                        | Reduction in molecular size is associated with a loss of thrombin inhibitory activity, but conversely an increase in factor Xa (FXa) inhibition compared to unfractionated heparin              |
| Dobutamine <sup>b</sup>           | Management of hypotension under general anaesthesia                               | Ephedrine                      | First-line medication for the treatment of hypotension in adult equines under general anaesthesia                                                                                               |
| Dopamine <sup>a</sup>             | As part of a treatment protocol for acute kidney injury /renal failure only       | None identified                | Low doses have been shown to cause renal vasodilation, increased renal blood flow, and increased urine production without systemic cardiovascular effects in conscious healthy horses           |
| Ephedrine <sup>b</sup>            | Treatment of hypotension under general anaesthesia                                | Dobutamine                     | Used to treat hypotension in adult equines under general anaesthesia where dobutamine is ineffective. Different mode of action to dobutamine with a more direct effect on cardiac contractility |
| Gelatinpolysuccinate <sup>b</sup> | Addressing long-term hypovolaemia resulting from conditions like e.g. low albumin | Crystalloids                   | Colloids are larger molecules compared to crystalloids, thus stay longer in the intravascular space, which is an advantage for correcting hypovolemia from e.g. hypoalbuminemia                 |
| Glycopyrrolate <sup>b</sup>       | Treatment and prevention of bradycardia                                           | Atropine                       | Minimal central effect; suitable in conscious horses, before and after anaesthesia                                                                                                              |

| Active substance <sup>(1)</sup>               | Indications                                                                                            | Identification of alternatives       | Explanation of use / specific advantages                                                                                                                                                                                      |
|-----------------------------------------------|--------------------------------------------------------------------------------------------------------|--------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Noradrenaline/<br>norepinephrine <sup>b</sup> | Treatment of early<br>septic shock<br>Supporting<br>cardiovascular function<br>in critically ill foals | Dobutamine, dopamine                 | In compromised (sick) foals it is<br>generally the only catecholamine<br>effective in treatment of<br>hypotension                                                                                                             |
| Vasopressin <sup>b</sup>                      | Treatment of<br>circulatory collapse in<br>foals and adult horses                                      | Epinephrine, dopamine,<br>dobutamine | Alternative in cases where standard<br>catecholamine therapies like<br>dopamine, dobutamine,<br>epinephrine are ineffective or<br>require potentiation to restore<br>vascular tone in refractory<br>vasodilatory shock states |

(<sup>1</sup>) Active substances identified with an 'a' are essential substances. Substances identified with a 'b' are substances which bring added clinical benefit.

#### XIV. Substances for tumours

| Active substance <sup>(1)</sup> | Indications           | Identification of alternatives | Explanation of use / specific advantages                                                                                                  |
|---------------------------------|-----------------------|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| Imiquimod <sup>a</sup>          | Treatment of sarcoids | None identified                | Current research suggests that<br>equine sarcoids likely result from a<br>complex interaction including host<br>immune system dysfunction |

(<sup>1</sup>) Active substances identified with an 'a' are essential substances. Substances identified with a 'b' are substances which bring added clinical benefit.

#### XV. Miscellaneous

| Active substance <sup>(1)</sup> | Indications                                                              | Identification of alternatives | Explanation of use / specific advantages                                                                                                                  |
|---------------------------------|--------------------------------------------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cetirizine <sup>b</sup>         | Treatment of conditions<br>where an antihistamine is<br>deemed necessary | Chlorphenamine                 | Second-generation histamine-1<br>(H1) receptor inverse agonists are<br>alternatives with fewer central<br>nervous system (CNS) (sedative)<br>side effects |
| Domperidone <sup>b</sup>        | Treatment of agalactia/<br>dysgalactia in mares                          | Sulpiride                      | Its ability to stimulate prolactin<br>secretion in situations of<br>dopaminergic inhibition                                                               |
| Sulpiride <sup>b</sup>          | Treatment of agalactia/<br>dysgalactia in mares                          | Domperidone                    | Its ability to stimulate prolactin<br>secretion in situations of<br>dopaminergic inhibition                                                               |

(<sup>1</sup>) Active substances identified with an 'a' are essential substances. Substances identified with a 'b' are substances which bring added clinical benefit.