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 (Text with EEA relevance)

[[F1]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**]**

(Text with EEA relevance)

THE COMMISSION OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Community,

Having regard to Directive 2001/82/EC of the European Parliament and of the Council of 6 November 2001 on the Community code relating to veterinary medicinal products[(1)], and in particular Article 10(3) thereof,

Whereas:

(1) No veterinary medicinal product may be placed on the market of a Member State unless a marketing authorisation has been issued by the competent authorities of that Member State in accordance with Directive 2001/82/EC or in accordance with Regulation (EC) No 726/2004 of the European Parliament and of the Council of 31 March 2004 laying down Community procedures for the authorisation and supervision of medicinal products for human and veterinary use and establishing a European Medicines Agency[(2)].

(2) Veterinary medicinal products for food-producing animals including equidae may be authorised only on conditions that guarantee that the foodstuffs produced will be harmless to consumers as regards any residues of such medicinal products, in accordance with Council Regulation (EEC) No 2377/90 of 26 June 1990 laying down a Community procedure for the establishment of maximum residue limits of veterinary medicinal products in foodstuffs of animal origin[(3)].

(3) For the reasons set out in the Communication from the Commission to the Council and the European Parliament on 'Availability of veterinary medicinal products'[(4)], the available range of authorised veterinary medicinal products, particularly for food-producing animals, is gradually decreasing.

(4) Consequently, measures aimed at a sustainable broadening of therapies are required in order to meet the health-care and welfare needs of food-producing animals, such

as animals of the equidae family, without compromising the high level of consumer protection.

(5) By means of the derogation provided for in Directive 2001/82/EC, equidae intended for slaughter for human consumption may be administered substances essential for their treatment, hereinafter 'essential substances', subject to a withdrawal period of at least six months.

(6) For the purpose of that derogation, the list of essential substances should therefore be established. A substance should only be included in that list in exceptional circumstances where no satisfactory alternative treatment for a therapeutic indication is authorised and where the condition would, if untreated, create unnecessary suffering for the animal.

(7) Specific disease conditions or zootechnical purposes might require a choice of substances to be available in order to cater for different requirements related to the age and utilisation of equidae.

(8) Since, pursuant to Directive 2001/82/EC, substances listed in Annexes I, II or III to Regulation (EEC) No 2377/90 which are not authorised in products intended for equidae may, in certain circumstances, be used for the treatment of equidae, those substances should not appear on the list of essential substances. Furthermore, no substances listed in Annex IV to Regulation (EEC) No 2377/90 should be included in the list. Consequently, the inclusion of a substance in Annexes I to IV to Regulation (EEC) No 2377/90 should preclude its use as an essential substance for the purposes of this Regulation.

(9) It is necessary to ensure an appropriate surveillance of equidae which have been treated with essential substances. Therefore, the control mechanisms laid down in Commission Decision 93/623/EEC of 20 October 1993 establishing the identification document (passport) accompanying registered equidae[(5)] and Decision 2000/68/EC of 22 December 1999 amending Commission Decision 93/623/EEC and establishing the identification of equidae for breeding and production[(6)] to safeguard consumer health should apply.

(10) It is necessary to ensure that any amendment of the list of essential substances is subject to a harmonised scientific evaluation carried out by the European Medicines Agency established by Regulation (EC) No 726/2004. In addition, the Member States and veterinary professional associations which have requested an amendment of that list should duly substantiate their request and provide relevant scientific data.

(11) The measures provided for in this Regulation are in accordance with the opinion of the Standing Committee on Veterinary Medicinal Products,

HAS ADOPTED THIS REGULATION:

Textual Amendments

F1 Substituted by 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 (Text with EEA relevance).

[F1 Article 1 U.K.

The list of substances essential for the treatment of equidae, hereinafter 'essential substances', as well as of substances which bring added clinical benefit compared to other treatment options available for equidae, hereinafter 'substances bringing added clinical benefit', applicable by way of derogation from Article 11 of Directive 2001/82/EC, is set out in the Annex to this Regulation.**]**

Textual Amendments

F1 Substituted by 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 (Text with EEA relevance).

Article 2 U.K.

Essential substances may be used, for the specific disease conditions, treatment needs or zootechnical purposes specified in the Annex, where no medicinal product authorised for equidae or referred to in Article 11 of Directive 2001/82/EC would yield equally satisfactory results in terms of successfully treating the animal, avoiding unnecessary suffering for the animal, or ensuring the safety of those treating the animal.

[F1Substances bringing added clinical benefit may be used, for the specific disease conditions, treatment needs or zootechnical purposes specified in the Annex, where they provide a clinically relevant advantage based on improved efficacy or safety or a major contribution to treatment compared to medicinal products authorised for equidae or referred to in Article 11 of Directive 2001/82/EC.

For the purposes of the first and second subparagraphs, the alternatives listed in the Annex shall be considered.**]**

Textual Amendments

F1 Substituted by 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 (Text with EEA relevance).

[F1 Article 3 U.K.

1 Essential substances and substances bringing added clinical benefit shall be used only in accordance with Article 10(1) of Directive 2001/82/EC.

2 The details of a treatment with essential substances shall be recorded in accordance with the instructions laid down in Section IX of the identification document for equidae set out in Commission Regulation (EC) No 504/2008[7].

Textual Amendments

F1 Substituted by 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 (Text with EEA relevance).

Article 4 U.K.

Any substance that is entered in one of the lists in the Annex to Commission Regulation (EU) No 37/2010[8], or the use of which for equidae is prohibited by Union legislation, shall no longer be used for the purposes of this Regulation.**]**

Textual Amendments

F1 Substituted by 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 (Text with EEA relevance).

Article 5 U.K.

1 The European Medicines Agency shall, at the request of the Commission, ensure that the Committee for Medicinal Products for Veterinary Use carries out a scientific evaluation of any draft amendment to the list set out in the Annex.

Within 210 days of receiving such a request, the European Medicines Agency shall deliver an opinion to the Commission on the scientific suitability of the amendment.

Where appropriate, the European Food Safety Authority shall also be consulted.

[F1 2 Where Member States or veterinary professional associations request the Commission to amend the list set out in the Annex, they shall duly substantiate their request and include any relevant scientific data available.**]**

Textual Amendments

F1 Substituted by 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 (Text with EEA relevance).

Article 6 U.K.

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

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

[F1ANNEX U.K.

List of substances essential for the treatment of equidae and substances bringing added clinical benefit compared to other treatment options available for equidae

The withdrawal period for each of the substances on the following list shall be six months.

Indication	Active substance	Justification and explanation of use
Anaesthetics, analgesics and substances used in association with anaesthesia		
Sedation and premedication (and antagonism)	Acepromazine	Purpose: premedication prior to general anaesthesia, mild sedation. Identification of alternatives: detomidine, romifidine, xylazine, diazepam, midazolam. Discussion of the specific advantages: acepromazine has consistently been shown to reduce risk of anaesthetic death. Mode of action (on limbic system) and unique quality of sedation cannot be produced by the alpha-2 agonist sedatives (detomidine, romifidine and xylazine) or the benzodiazepines (diazepam, midazolam).
	Atipamezole	Purpose: α-2 adrenoceptor antagonist used for reversal of α-2 agonists. Identification of alternatives: none identified. Discussion of the specific advantages: only treatment for hypersensitive individual and overdose. Emergency medicine. Specifically used in cases of respiratory depression.
	Diazepam	Purpose: premedication and induction of anaesthesia. Mild (benzodiazepine) tranquilisation with minimal cardiovascular and respiratory side effects. Anti-convulsant, essential for treatment of seizures.

	Identification of alternatives: acepromazine, detomidine, romifidine, xylazine, midazolam, primidone, phenytoin. Discussion of the specific advantages: in modern medicinal standards an essential component of anaesthetic induction protocols with very considerable equine experience. Used with ketamine for induction of anaesthesia, producing essential relaxation that allows smooth induction and intubation. Mode of action (acts at GABA receptor) and unique tranquilisation without cardiorespiratory depression cannot be produced by the α-2 agonist sedatives (detomidine, romifidine and xylazine) or acepromazine.
Flumazenil	Purpose: intravenous reversal agent for benzodiazepines. Reversal of benzodiazepine effect during recovery from Total Intravenous Anaesthesia (TIVA) techniques. Identification of alternatives: sarmazenil. Discussion of the specific advantages: different mode of action from sarmazenil providing additional means of benzodiazepine reversal at the end of TIVA techniques. Sarmazenil is partial inverse agonist of benzodiazepine receptors whereas flumazenil is an antagonist competitively inhibiting the benzodiazepine binding site at the GABA receptor.
Midazolam	Purpose: premedication and induction of anaesthesia. Mild (benzodiazepine) tranquilisation with

	minimal cardiovascular and respiratory side effects. Anti-convulsant, for treatment of seizures, particularly adult horses with tetanus. Identification of alternatives: acepromazine, detomidine, romifidine, xylazine, diazepam, primidone, phenytoin. Discussion of the specific advantages: similar to diazepam but water soluble, thus suitable for intravenous injection and essential for intravenous infusion in combination with anaesthetics. Shorter acting than diazepam. More suitable than diazepam for foals. Anti-convulsant, for treatment of seizures, particularly adult horses with tetanus – better than diazepam for use over several days due to water solubility. Used with ketamine for induction of anaesthesia, producing essential relaxation that allows smooth induction and intubation. Mode of action (acts at GABA receptor) and unique tranquilisation without cardiorespiratory depression cannot be produced by the α-2 agonist sedatives (detomidine, romifidine and xylazine) or acepromazine.
Naloxone	Purpose: opioid-antidote, emergency medicine. Identification of alternatives: none identified. Discussion of the specific advantages: no alternatives available.
Propofol	Purpose: intravenous anaesthetic. Induction of anaesthesia in foals. Identification of alternatives: sevoflurane or isoflurane.

	Discussion of the specific advantages: rapidly cleared injectable anaesthetic. Recent reports demonstrate vast improvement in cardiovascular stability and quality of recovery over inhalation anaesthesia.
Sarmazenil	Purpose: benzodiazepine antagonist. Identification of alternatives: flumazenil. Discussion of the specific advantages: clean reversal of benzodiazepine sedation required after infusion during total intravenous anaesthesia. Widest clinical experience with sarmazenil compared to other potential candidates for essential substances.
Tiletamine	Purpose: dissociative anaesthetic similar to ketamine, especially used for field anaesthesia. Used in combination with zolazepam. Identification of alternatives: ketamine. Discussion of the specific advantages: the use in combination with zolazepam is essential in cases when there is no access to inhalation anaesthesia such as for field anaesthesia. Combination is also essential where anaesthesia with ketamine combinations is too short. Typical applications are castrations, laryngotomies, periosteal stripping, cyst or lump excisions, repair of facial fractures, cast applications and umbilical hernia repairs.
Zolazepam	Purpose: benzodiazepine tranquilisation especially used for field anaesthesia in combination with tiletamine. Identification of alternatives: diazepam or midazolam.

		Discussion of the specific advantages: benzodiazepine tranquiliser, which is longer acting than either diazepam ormidazolam. The use with tiletamine is essential in cases when there is no access to inhalation anaesthesia such as for field anaesthesia. Combination is essential where anaesthesia with ketamine combinations is too short. Typical applications are castrations, laryngotomies, periosteal stripping, cyst or lump excisions, repair of facial fractures, cast applications and umbilical hernia repairs.
Hypotension or respiratory stimulation during anaesthesia	Dobutamine	Purpose: treatment of hypotension during anaesthesia. Identification of alternatives: dopamine. Discussion of the specific advantages: positive inotrope therapy, probably more used than dopamine but preferences vary. Horses usually develop hypotension during anaesthesia, and maintenance of normal blood pressure has been shown to reduce the incidence of serious post-operative rhabdomyolysis. Dobutamine is invaluable during volatile anaesthesia in horses.
	Dopamine	Purpose: treatment of hypotension during anaesthesia. Identification of alternatives: dobutamine. Discussion of the specific advantages: dopamine is required in horses that do not respond to dobutamine. In foals dopamine is used in preference to dobutamine. Additionally required for treatment of intraoperative

	bradydysrhythmias that are resistant to atropine.
Ephedrine	Purpose: treatment of hypotension during anaesthesia. Identification of alternatives: dopamine, dobutamine. Discussion of the specific advantages: required where dopamine and dobutamine are ineffective. A unique sympathomimetic agent, which is structurally similar to adrenaline. It is impossible to use the action of catecholamines on specific receptors in the body to the benefit of equine patients without recourse to the use of a number of catecholamines, each active at a different receptor profile. Hence ephedrine, which causes noradrenaline release at the nerve endings, thereby increasing cardiac contractility and obtunding hypotension, is used when dobutamine and dopamine are ineffective. Ephedrine lasts minutes to hours and is effective after a single intravenous injection, whereas dobutamine and dopamine last only a few seconds or minutes and must be given by infusion.
Glycopyrrolate	Purpose: prevention of bradycardia. Anticholinergic. Anticholinergics are fundamental treatment for prevention of parasympathetic effects such as bradycardia and are routine components of eye and airway surgery. Identification of alternatives: atropine. Discussion of the specific advantages: glycopyrrolate has a limited central effect and is more suitable in

		conscious horses (before and after anaesthesia) than atropine.
	Noradrenaline (norepinephrine)	Purpose: cardiovascular failure. Infusion for the treatment of cardiovascular failure in foals. Identification of alternatives: none identified. Discussion of the specific advantages: the animal's catecholamine receptor profile responds precisely to medicines acting at different sites. Hence a range of catecholamines acting more or less exclusively on different types of adrenergic receptors is used to produce a precise effect.Noradrenaline acts primarily on alpha-1 receptors to vasoconstrict arterioles, thereby increasing blood pressure and maintaining central circulation. In foals, noradrenaline is commonly the only catecholamine effective in treatment of hypotension.
Analgesia	Buprenorphine	Purpose: analgesia, used with sedatives for restraint. Identification of alternatives: butorphanol, fentanyl, morphine and pethidine. Discussion of the specific advantages: partial μ-agonist opioid analgesic. μ-receptor activity produces better analgesia than κ-agonist opioids such as butorphanol. Long-acting analgesic. Due to partial agonist characteristic, has limited addictive and respiratory depressant properties. Long and short-acting opioids have different indications, hence the need for more than one alternative substances as choice.

Fentanyl	Purpose: analgesia. Identification of alternatives: butorphanol, buprenorphine, morphine and pethidine. Discussion of the specific advantages: μ-agonist opioid, μ-receptor activity produces better analgesia than κ-agonist opioids such as butorphanol. Very short acting due to rapid metabolism and excretion. Fentanyl is the only opioid used in horses that is suitable for infusion and skin patch administration. Highly effective for pain management.
Morphine	Purpose: analgesia. Identification of alternatives: butorphanol, buprenorphine, pethidine and fentanyl. Discussion of the specific advantages: full μ-agonist opioid analgesic. μ-receptor activity produces the best analgesia. Used with sedatives for restraint, used for epidural anaesthesia. Mid duration analgesic. Morphine is the μ-opioid agonist with the best solubility characteristics for epidural administration. It provides long-acting analgesia with few systemic effects by this route. This technique is widely used in modern veterinary medicine for treating severe perioperative and chronic pain.
Pethidine	Purpose: analgesia. Identification of alternatives: butorphanol, buprenorphine, morphine and fentanyl. Discussion of the specific advantages: a μ-agonist opioid analgesic about 10 times less potent than morphine. Short-acting opioid that has been proven

		to be effective to treat spasmodic colic in horses. Only opioid with spasmolytic properties. More sedation and less potential for excitement than other opioids in horses.
Muscle relaxants and associated substances	Atracurium	Purpose: muscle relaxation during anaesthesia. Identification of alternatives: guaifenesin. Discussion of the specific advantages: non-depolarising neuromuscular blocking agent. Neuromuscular blocking agents are used in particular for eye and deep abdominal surgery. Edrophonium is required for reversal. Atracurium and edrophonium have the most extensive clinical support data.
	Edrophonium	Purpose: reversal of atracurium muscle relaxation. Identification of alternatives: none identified. Discussion of the specific advantages: cholinesterase inhibitor, essential for reversal of neuromuscular blockade. Edrophonium has least side effects of the cholinesterase inhibitors in horses.
	Guaifenesin	Purpose: muscle relaxation during anaesthesia. Identification of alternatives: atracurium. Discussion of the specific advantages: essential alternative to α-2/ketamine regimens in horses where α-2 agents and ketamine are contraindicated such as in horses not responding to these agents or horses having shown adverse effects during a previous administration. Invaluable in combination with ketamine and α-2 agents for remarkably safe

		field anaesthesia for which no effective alternative intravenous techniques have been developed.
Inhalation anaesthetics	Sevoflurane	Purpose: inhalation anaesthesia for horses with limb fractures and other orthopaedic injuries and mask induction of anaesthesia in foals. Identification of alternatives: isoflurane. Discussion of the specific advantages: sevoflurane is a volatile anaesthetic with minor metabolism and fast excretion. While there is an MRL for isoflurane in the EU, isoflurane is not suitable for all equine anaesthetic cases due to its recovery characteristics where excitement may lead to the horse breaking a leg. Sevoflurane is essential in certain equine surgeries where a smooth recovery is vital, as it has been shown to produce a smoother, more controlled recovery in horses. It is therefore selected in preference to isoflurane for horses with limb fractures and other orthopaedic injuries. Furthermore sevoflurane is essential for mask induction of anaesthesia in foals as it is completely non-irritant as opposed to isoflurane, which is irritant and therefore causes coughing and breath holding.
Local anaesthetics	Bupivacaine	Purpose: local anaesthesia. Identification of alternatives: lidocaine. Discussion of the specific advantages: long-acting local anaesthetic. Long duration of action required for perioperative analgesia and treatment of chronic

	severe pain such as laminitis. Bupivacaine is a longer-acting local anaesthetic than the commonly used lidocaine. Lidocaine alone gives approximately one hour of local anaesthesia. Addition of adrenaline may prolong the effect to two hours, but runs the risk of cutting the local blood supply, and this combination therefore is unsuitable in a number of conditions. Bupivacaine provides four to six hours of local anaesthesia and is therefore much better suited to post-operative analgesia and for management of laminitis because a single injection is often sufficient; this is essential on welfare grounds than repeated hourly lidocaine injections. Shorter acting local anaesthetics are therefore not suitable for the above as they require frequent repeat injections with the attendant increased risk of adverse reactions and unacceptability for animal welfare reasons.
Oxybuprocaine	Purpose: local anaesthesia for use in eyes. Identification of alternatives: none identified. Discussion of the specific advantages: widest clinical experience with oxybuprocaine compared to other potential candidates for essential substances.
Prilocaine	Purpose: local anaesthesia prior to intravenous catheterisation. Identification of alternatives: none identified. Discussion of the specific advantages: in specific preparations (eutectic mixture of local anaesthetics) for topical application to

		skin where it is absorbed intradermally in 40 min. Used to facilitate intravenous catheterisation, especially in foals.
Anti-inflammatory substances		
Corticosteroids	Triamcinolone acetonide	Purpose: intra-articular medication for degenerative joint disease and osteoarthritis. Identification of alternatives: methylprednisolone. Discussion of the specific advantages: different cellular and biosynthetic effects from the alternative corticosteroid intra-articular medication methylprednisolone; triamcinolone is chondroprotective and promotes cartilage repair. More effective than systemic treatments (NSAIDs and chondroitin sulphate), and other (non-corticosteroid) intra-articular treatments for control of joint inflammation, pain and lameness in acute and chronic joint disease, especially degenerative joint disease and osteoarthritis. Only effective non-surgical treatment for subchondral bone cysts.
	Flumethasone	Purpose: short-term systemic corticosteroid therapy including shock, anti-inflammatory and anti-allergy therapy. Identification of alternatives: dexamethasone, prednisolone. Discussion of the specific advantages: different clinical effects from alternatives with more rapid onset, longer duration and greater efficacy. Different mode of action from alternatives (no appreciable mineralocorticoid activity).

Anti-endotoxins	Pentoxifylline	Purpose: systemic and oral treatment for endotoxaemia. Laminitis. Identification of alternatives: flunixin, acepromazine. Discussion of the specific advantages: Endotoxaemia: different mode of action (methylated xanthine derivative phosphodiesterase inhibitor) and different clinical effects to alternative (flunixin). Decreases endotoxin-mediated release of pro-inflammatory cytokines and leukotrienes from macrophages and neutrophils, reduces systemic response to endotoxins. Laminitis: different mode of action of improving blood flow to the digit than alternative (acepromazine); reduces blood viscosity and improves blood flow to the digit.
	Polymyxin B	Purpose: systemic treatment for endotoxaemia associated with severe colic and other gastrointestinal diseases. Identification of alternatives: flunixin, bismuth subsalicylate. Discussion of the specific advantages: different mode of action (endotoxin binding agent) to systemic alternative (flunixin), acting earlier in the endotoxin-induced cascade. Different mechanism of binding, different route of administration and different site of action to oral alternative bismuth. Aids in prevention of initiation of inflammatory cascade induced by binding endotoxin and preventing binding to Toll-like receptors.
Cardiovascular medicines		

	Amiodarone	Purpose: anti-dysrhythmic. Systemic and oral treatment of atrial fibrillation, supraventricular and ventricular tachycardias. Identification of alternatives: quinidine sulphate, procainamide, propranolol. Discussion of the specific advantages: different mode of action to alternatives (class III anti-dysrhythmic). New evidence that amiodarone is effective and safe in atrial fibrillation and better than alternative quinidine sulphate; effective for different types of arrhythmias including ventricular arrhythmias.
	Allopurinol	Purpose: treatment of neonatal ischaemia-reperfusion injury. Identification of alternatives: vitamin E. Discussion of the specific advantages: different mode of action to alternative for reperfusion injury; allopurinol is a xanthine oxidase inhibitor inhibiting free radical production during reperfusion following ischaemia.
	Vasopressin	Purpose: treatment of circulatory collapse in foals and adults. Identification of alternatives: dopamine/dobutamine Epinephrine. Discussion of the specific advantages: specific agonist acting via V1 receptors. Has a different mode of action to the other authorized substances which regulate blood pressure: epinephrine (an adrenergic receptor agonist) and dopamine/ dobutamine (D1-5 receptors regulating cardiac output

	and blood vessel tone). Used in situations when dopamine/dobutamine and epinephrine have been unsuccessful and an alternative pharmacological approach is needed.
Digoxin	Purpose: treatment of heart failure. Identification of alternatives: none identified. Discussion of the specific advantages: additionally digoxin is the only treatment for the side effects of quinidine treatment.
Quinidine sulfate and quinidine gluconate	Purpose: treatment of cardiac arrhythmias. Identification of alternatives: procainamide, propranolol. Discussion of the specific advantages: anti-dysrhythmic agent. Use is rare but important therapeutic choice, different mode of action necessary for different types of arrhythmias. Treatment of choice for atrial fibrillation.
Procainamide	Purpose: treatment of cardiac arrhythmias. Identification of alternatives: quinidine sulfate and quinidine gluconate, propranolol. Discussion of the specific advantages: anti-dysrhythmic agent. Use is rare but important therapeutic choice, different mode of action necessary for different types of arrhythmias.
Propranolol	Purpose: treatment of cardiac arrhythmias. Identification of alternatives: quinidine sulfate and quinidine gluconate, procainamide. Discussion of the specific advantages: anti-hypertensive, which is used because it also exerts some

		anti-arrhythmicactivity. Use is rare but important therapeutic choice. Due to the different pathophysiology of arrhythymias it is essential to have a variety of different acting medicines in order to be able to treat the specific condition. Use of these medicines consists usually of a single treatment to convert back to normal rhythm, which may have to be repeated on only rare occasions.
Convulsions		
	Phenytoin	Purpose: anti-convulsant therapy in foals. Treatment of rhabdomyolysis. Treatment of stringhalt. Identification of alternatives: diazepam, primidone, dantrolene sodium (for rhabdomyolysis). Discussion of the specific advantages: essential anti-convulsant in foals. Phenytoin is generally added to the treatment of seizure control if primidone/ phenobarbital does not control the seizures. Phenytoin is a calcium channel-blocking agent and useful for the treatment of recurrent forms of rhabdomyolysis.
	Primidone	Purpose: anti-convulsant therapy in foals. Identification of alternatives: diazepam, phenytoin. Discussion of the specific advantages: primidone is indicated as follow-on from diazepam therapy or as an alternative.
Gastrointestinal agents		
	Bethanechol	Purpose: treatment of ileus, treatment of gastroduodenal stricture in foals, treatment

	of recurrent small colon impactions in adults. Identification of alternatives: metoclopramide, erythromycin. Discussion of the specific advantages: betanechol is a muscarinic cholinergic agonist that stimulates acetylcholine receptors on gastrointestinal smooth muscles, causing them to contract. It has been shown to increase the rate of gastric and caecal emptying. Both betanechol and metoclopramide have been shown to be beneficial in the treatment of post-operative ileus.
Codeine	Purpose: diarrhoea treatment. Identification of alternatives: bismuth subsalicylate. Discussion of the specific advantages: different mode of action to bismuth subsalicylate. Opioid motility modulator acting on mu receptors in the gut that provides effective symptomatic management of non-infectious diarrhoea, especially in foals. Frequently used in combination with loperamide. Similarity in mode of action to loperamide brings synergistic action.
Loperamide	Purpose: diarrhoea treatment in foals. Identification of alternatives: bismuth subsalicylate. Discussion of the specific advantages: different mode of action to bismuth subsalicylcate. Opioid motility modulator acting on mu receptors in the gut that provides more effective symptomatic management of non-infectious diarrhoea in foals than other substances.

	Frequently used in combination with codeine. Similarity in mode of action to codeine brings synergistic action.
Metoclopramide	Purpose: treatment of post-operative ileus. Identification of alternatives: bethanechol, erythromycin. Discussion of the specific advantages: Metoclopramide is a substituted benzamide with several mechanisms of action: (1) it is a dopamine receptor antagonist; (2) it augments the release of acetylcholine from intrinsic cholinergic neurons; and (3) it has adrenergic blocking activity. It is effective in restoring gastrointestinal coordination post operatively and it decreases the total volume, rate and duration of gastric reflux. Metaclopramide is a prokinetic drug, which acts more in the proximal gastrointestinal tract. Both betanechol and metoclopramide have been shown to be beneficial in the treatment of post-operative ileus.
Phenoxy-benzamine	Purpose: diarrhoea treatment; colitis. Identification of alternatives: bismuth subsalicylate; flunixin. Discussion of the specific advantages: has different mode of action (alpha-1 antagonist and antisecretion agent) compared to other authorised treatments and codeine. Provides useful symptomatic management of diarrhoea and colitis.
Propantheline bromide	Purpose: anti-peristaltic. Identification of alternatives: atropine, lidocaine given

	diluted intrarectally as an enema. Discussion of the specific advantages: propantheline bromide is a synthetic quaternary ammonium anticholinergic which inhibits gastrointestinal motility and spasm and diminishes gastric acid secretion. It also inhibits the action of acetylcholine at the postganglionic nerve endings of the parasympathetic nervous system. Its effects are similar to those of atropine although they last longer (six hours). Propantheline bromide is an important choice for decreasing peristalsis to avoid rectal tearing during rectal palpation or to explore and treat a potential rectal tear where it can be difficult to get a lidocaine enema to work effectively.
Ranitidine	Purpose: gastric ulcer prophylaxis in neonates. Identification of alternatives: omeprazole. Discussion of the specific advantages: different mode of action from omeprazole. Route of administration (intravenous) brings added benefit over all other anti-ulcer medications as these require oral administration. Intravenous ranitidine preparation essential in foals that have absent gastrointestinal motility, the group that are at high risk for ulcers.
Sucralfate	Purpose: gastric ulcer prophylaxis in neonates. Identification of alternatives: omeprazole. Discussion of the specific advantages: different mode of action from omeprazole and

		valuable adjunctive gastric ulcer prophylaxis. Unique mode of action (mucosal adherent) provides physical lesion stabilisation.
Rhabdomyolysis		
	Dantrolene sodium	Purpose: treatment of rhabdomyolysis. Treatment of malignant hyperthermia during anaesthesia. Identification of alternatives: phenytoin. Discussion of the specific advantages: dantrolene exhibits muscle relaxation activity by direct action on muscle as it inhibits the release of calcium from the sarcoplasmic reticulum and thus causes a dissociation of excitation-contraction coupling. Both phenytoin and dantrolene sodium have been found to be useful in the treatment of recurrent forms of rhabdomyolysis.
Antimicrobials		
Klebsiella spp. infections	Ticarcillin	Purpose: treatment of *Klebsiella* spp. infections. Identification of alternatives: none identified. Discussion of the specific advantages: specific antibiotic for *Klebsiella* spp. infections.
Rhodococcus equi infections	Azithromycin	Purpose: treatment of *Rhodococcus equi* infections. Identification of alternatives: erythromycin. Discussion of the specific advantages: standard treatment in combination with rifampicin, better tolerated in foals than erythromycin.
	Rifampicin	Purpose: treatment of *Rhodococcus equi* infections. Identification of alternatives: none identified.

		Discussion of the specific advantages: treatment of *Rhodococcus equi* in combination with erythromycin or azithromycin. Treatment of choice.
Septic arthritis	Amikacin	Purpose: treatment of septic arthritis. Identification of alternatives: gentamicin or other aminoglykosides. Discussion of the specific advantages: better tolerated in foals than gentamicin or other aminoglykosides.
Respiratory medicines		
	Ambroxol	Purpose: stimulation of surfactant in the premature foal. Identification of alternatives: none identified. Discussion of the specific advantages: no alternatives available.
	Budesonide	Purpose: inhalation corticosteroid for control of allergic pulmonary disease. Identification of alternatives: beclomethasone. Discussion of the specific advantages: inhalation corticosteroid therapy causes less adreno-cortical suppression, with more rapid return to normal function after therapy ends, and fewer systemic side effects than systemic corticosteroid therapy because of limited systemic absorption. Inhalation allows reduced doses and local delivery of high concentrations of active substance and hence greater efficacy. Especially useful for control of mild-moderate disease and long-term maintenance therapy. Additional substances with greater potency and

	different durations of effect than beclomethasone are required to titrate the dose based on clinical response and provide optimum disease control. Budesonide has intermediate potency between beclomethasone and fluticasone.
Fluticasone	Purpose: inhalation corticosteroid for control of allergic pulmonary disease. Identification of alternatives: beclomethasone. Discussion of the specific advantages: inhalation corticosteroid therapy causes less adreno-cortical suppression with quick rebound after therapy ends and fewer systemic side effects than systemic corticosteroid therapy because of limited systemic absorption. Inhalation allows local delivery of high concentrations of active substance and hence greater efficacy. Especially useful for control ofmild-moderate disease and long-term maintenance therapy. Additional substances with greater potency and different durations of effect than beclomethasone are required to titrate the dose based on clinical response and provide optimum disease control. Fluticasone is 50 % more potent than beclomethasone and has longer half life (6 hours versus 2,8 hours), providing added benefit for more severely affected or refractory cases.
Ipratropium bromide	Purpose: bronchodilation. Identification of alternatives: none identified. Discussion of the specific advantages: anticholinergic action. Necessary as

		therapeutic choice as in some cases more efficacious than β-agonists.
	Oxymetazolin	Purpose: treatment of nasal oedema. Identification of alternatives: phenylephrine. Discussion of the specific advantages: α-adrenoceptor agonist with strong vasoconstrictive properties which is used in preference to phenylephrine due to the fact that it is longer-acting.
Antiprotozoal agents		
	Isometamidium	Purpose: treatment of equine protozoal myeloencephalitis. Identification of alternatives: pyrimethamine. Discussion of the specific advantages: disease sometimes refractory to treatment with pyrimethamine, and therefore an alternative is required.
	Ponazuril	Purpose: equine protozoal myelitis (Sarcocystis neurona) treatment. Identification of alternatives: isometamidium, pyrimethamine. Discussion of the specific advantages: different mode of action compared to other authorised substances, useful as alternative therapy when disease refractory to other treatments. Reduced incidence of side effects (diarrhoea) compared to pyrimethamine/sulphonamide treatments; increased clinical efficacy compared to isometamidium and pyrimethamine.
	Pyrimethamine	Purpose: treatment of equine protozoal myeloencephalitis. Identification of alternatives: isometamidium. Discussion of the specific advantages: at least 75

		% success rate when used in conjunction with sulfadiazine-sulfonamide.
Ophthalmic medicines		
Ocular ulcers	Acyclovir	Purpose: treatment of ocular ulcers (antiviral medicine). Topical use. Identification of alternatives: idoxuridine. Discussion of the specific advantages: both acyclovir and idoxuridine have been shown to be equally effective in the treatment of ulcerative herpetic keratitis.
	Idoxuridine	Purpose: treatment of ocular ulcers (antiviral medicine). Topical use. Identification of alternatives: acyclovir. Discussion of the specific advantages: both acyclovir and idoxuridine have been shown to be equally effective in the treatment of ulcerative herpetic keratitis.
Glaucoma	Phenylephrine	Purpose: treatment of glaucoma, epiphora, nasal oedema and splenic entrapment. Identification of alternatives: tropicamide, (for glaucoma), otherwise none identified. Discussion of the specific advantages: both phenylephrine and tropicamide have been shown to be equally effective in the treatment of glaucoma.
	Tropicamide	Purpose: treatment of glaucoma. Topical use. Identification of alternatives: phenylephrine. Discussion of the specific advantages: both phenylephrine and tropicamide have been shown to be equally effective in the treatment of glaucoma.

Dorzolamide	Purpose: treatment of glaucoma. Topical use. Identification of alternatives: latanoprost, timolol maleate. Discussion of the specific advantages: its specific mode of action as a carbonic anhydrase inhibitor. Important therapeutic choice.
Latanoprost	Purpose: treatment of glaucoma. Topical use. Identification of alternatives: dorzolamide, timolol maleate. Discussion of the specific advantages: its specific mode of action as a prostaglandin F2α-analogue. Important therapeutic choice.
Timolol maleate	Purpose: treatment of glaucoma. Topical use. Identification of alternatives: dorzolamide, latanoprost. Discussion of the specific advantages: its specific mode of action as a non-selective beta-adrenergic receptor blocking agent, causes vasoconstriction, which in turns leads to decrease of the aqueous humour. Important therapeutic choice.
Cyclosporin A	Purpose: immunosuppressive used for the treatment of autoimmune diseases of the eye. Identification of alternatives: none identified. Discussion of the specific advantages: no alternatives available.
Ketorolac	Purpose: treatment of eye pain and inflammation, non-steroidal anti-inflammatory medicine, eye drops, topical use. Identification of alternatives: none identified. Discussion of the specific advantages: widest clinical experience with ketorolac

		compared to other potential candidates for essential substances.
	Ofloxacin	Purpose: treatment of eye infections resistant to commonly used ophthalmic antibiotic treatments. Identification of alternatives: none identified. Discussion of the specific advantages: widest clinical experience with ofloxacin compared to other potential candidates for essential substances. Compared to commonly employed ophthalmic antibiotic treatments ofloxacin should only be used as a reserve antibiotic in individual cases.
	Fluoresceine	Purpose: diagnostic tool for corneal ulceration, topical use. Identification of alternatives: Rose Bengal. Discussion of the specific advantages: Rose Bengal has some antiviral activity while fluoresceine has no significant effect on virus replication. Thus, the diagnostic use of Rose Bengal prior to viral culture may preclude a positive result. Therefore fluoresceine is the diagnostic tool of choice when a viral culture is planned.
	Rose Bengal	Purpose: diagnostic tool for early corneal damage, topical use. Identification of alternatives: fluoresceine. Discussion of the specific advantages: Rose of Bengal is the diagnostic tool of choice to ascertain very early corneal damage.
Hyperlipaemia		
	Insulin	Purpose: treatment of hyperlipaemia, used in

		combination with glucose therapy, diagnosis of metabolic disorders. Identification of alternatives: none identified. Discussion of the specific advantages: no alternatives available.
Fungal infections		
	Griseofulvin	Purpose: systemic antifungal use. Treatment of ringworm. Identification of alternatives: none identified. Discussion of the specific advantages: griseofulvin given orally has good activity against trichophyton, microsporum, and epidermophyton.
	Ketoconazole	Purpose: systemic antifungal use. Treatment of fungal pneumonia and guttural pouch mycosis. Identification of alternatives: none identified. Discussion of the specific advantages: widest clinical experience with ketoconazole compared to other potential candidates for essential substances.
	Miconazole	Purpose: treatment of fungal infections of the eye. Identification of alternatives: none identified. Discussion of the specific advantages: topical use on the affected eye, wider antifungal activity and/or lesser irritation than other antifungal agents.
	Nystatin	Purpose: treatment of yeast infections for eyes and genital tract. Identification of alternatives: none identified. Discussion of the specific advantages: specific activity against yeast infections.
Diagnostic imaging		

	Radiopharma-ceutical Tc99m	Purpose: scintigraphy. Identification of alternatives: none identified. Discussion of the specific advantages: most sensitive diagnostic imaging modality for identification of early bone pathology and fractures — more sensitive than radiography. Allows quantitation and enables imaging of regions not amenable to radiography. Essential imaging technique safeguarding welfare of performance horses through early injury detection and prevention of catastrophic fractures. Short half life (6,01 hours) of Tc99m results in rapid clearance of detectable radioactivity (< 72 hours) from the horse.
Miscellaneous		
	Carbamazepine	Purpose: headshaking syndrome. Identification of alternatives: none identified. Discussion of the specific advantages: carbamazepine is acting as anti-convulsant with sodium channel-blocking effects. Used mainly for treatment and diagnostic confirmation of trigeminal neuralgia (headshaking syndrome).
	Cyproheptadine	Purpose: headshaking syndrome. Identification of alternatives: none identified. Discussion of the specific advantages: horses exhibiting signs of photic headshaking respond favourably to treatment with the antihistaminic drug cyproheptadine. In addition to antihistaminic action, cyproheptadine has anticholinergic action and

	is a 5-hydroxytryptamine (serotonin) antagonist. Relief from the behaviour is usually seen within 24 hours of beginning cyproheptadine therapy and often resumes within 24 hours of discontinuing therapy. Other antihistamines are not effective at eliminating headshaking.
Domperidone	Purpose: agalactia in mares. Identification of alternatives: none identified. Discussion of the specific advantages: dopamine antagonist and up-regulates prolactin production. Oxytocin is not a suitable alternative because it produces milk letdown as opposed to increasing milk production, which is the aim of domperidone therapy. Additionally, oxytocin is likely to cause abdominal pain if used in large doses.
Gabapentin	Purpose: neuropathic pain. Identification of alternatives: buprenorphine, fentanyl, morphine, pethidine. Discussion of the specific advantages: different mode and different site of action to alternative authorized substances. GABA-like substance which blocks calcium channels and inhibits formation of new synapses. Novel treatment for neuropathic pain with evidence suggesting added clinical benefit in the management of pain related to neuropathy e.g. foot pain, laminitis and abdominal pain.
Hydroxyethyl-starch	Purpose: colloidal volume substitution. Identification of alternatives: none identified.

	Discussion of the specific advantages: practical and readily available alternative to blood or plasma.
Imipramine	Purpose: pharmacologically induced ejaculation in stallions with ejaculatory dysfunction. Identification of alternatives: none identified. Discussion of the specific advantages: no alternatives available.
Thyrotropin releasing hormone	Purpose: diagnostic used for the confirmation of thyroid and pituitary disorders. Identification of alternatives: none identified. Discussion of the specific advantages: no alternatives available.
Barium sulphate	Purpose: radiographic contrast agent used for oesophageal and gastrointestinal contrast examinations. Identification of alternatives: none identified. Discussion of the specific advantages: no alternatives available.
Iohexol	Purpose: radiographic contrast agent used for lower urinary tract studies, arthrography, myelography, sino- or fistulography and dacryocystography. Identification of alternatives: iopamidol. Discussion of the specific advantages: non-ionic low osmolar contrast agent. Both iohexol and iopamidol are equally acceptable.
Iopamidol	Purpose: radiographic contrast agent used for lower urinary tract studies, arthrography, myelography, sino- or fistulography and dacryocystography.

		Identification of alternatives: iohexol. Discussion of the specific advantages: non-ionic low osmolar contrast agent used for. Both iohexol and iopamidol are equally acceptable.**]**

(**1**) OJ L 311, 28.11.2001, p. 1. Directive as last amended by Directive 2004/28/EC (OJ L 136, 30.4.2004, p. 58).

(**2**) OJ L 136, 30.4.2004, p. 1.

(**3**) OJ L 224, 18.8.1990, p. 1. Regulation as last amended by Commission Regulation (EC) No 1451/2006 (OJ L 271, 30.9.2006, p. 37).

(**4**) COM(2000) 806 final, 5.12.2000.

(**5**) OJ L 298, 3.12.1993, p. 45.

(**6**) OJ L 23, 28.1.2000, p. 72.

(**7**) **[**[F1]OJ L 149, 7.6.2008, p. 3.**]**

(**8**) **[**[F1]OJ L 15, 20.1.2010, p. 1.**]**

Textual Amendments

F1 Substituted by 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 (Text with EEA relevance).

Changes to legislation:
There are currently no known outstanding effects for the Commission Regulation (EC) No 1950/2006.