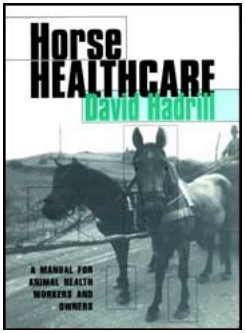

Horse Healthcare - A Manual for Animal Health Workers and Owners

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Contents:

Medicines

Top

Information about medicines

Medicines and the law

• In most places, according to the law, only qualified veterinarians should buy most of the drugs in the lists below, and, by law, people who are not vets should only use them on animals that are under a veterinarian's care. You should be aware that, if you buy and use these medicines and you are not a registered veterinarian, you may be breaking the law.

• If you use a medicine in a way that is not included in the manufacturer's instructions, even if that way is described in this book, it is your own responsibility.

• Such a use might be giving to a horse or donkey a medicine that has not been registered for use with horses or donkeys. If the animal health worker or owner decides to use that medicine on a horse or donkey, he or she must accept the risk.

• Although every effort has been made to ensure that the advice in the lists of medicines is safe and accurate, no responsibility can be accepted for any problem arising.

Storing medicines

• Store medicines in a place where children cannot reach them.

• Do not keep half-used medicines in food or drink bottles, unless they are labelled and kept locked up.

• Most medicines should be stored in a cool place, but not frozen.

• Whenever possible, use medicines before the expiry date.

• If medicines have been stored cool, most are effective and can be safely used for some time after the expiry date stated on the label.

• A few medicines must be stored in a refrigerator. Follow the manufacturer's instructions.

Names of medicines

• The 'Examples of manufacturer's product names' given in the lists below are mainly taken from products available in the UK. Drug companies marketing in other countries may use different names for the same products. Check the 'Drug name' column to see whether products with other product names contain the same things.

• New products with new names are being released all the time.

How to give medicines

• Always follow the manufacturer's warnings and instructions.

• Carefully read the data sheet, which should always be included with a new package of medicine.

• See the chapter *How to give medicines* for the method for giving injections and other ways to give medicines.

• In that chapter, see the section *How to work out the amount of medicine to give* for an explanation of working out how much to give.

Local remedies, medicinal plants, 'ethnoveterinary medicine' and local healers

• In all societies, there is knowledge of traditional medicine. Often this involves using medicinal plants that grow locally. Many of these treatments are effective and their use has clear advantages. For example, they are always available and they are cheap or free.

• Local healers have useful knowledge. It is wise to consult them and ask for their advice.

• Local remedies are not discussed in detail in this book, partly because many of them are used only in the places where particular medicinal plants grow, and so are not relevant all over the world. However, that does not mean that this book does not recommend their use.

• In this book, 'firing' or burning the skin with hot irons is discouraged. There is no scientific evidence that branding is an effective treatment. It causes unnecessary suffering to the animal.

Lists of medicines mentioned in the book

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1 Medicines for treating infections

Top

Drugs in this group are mainly antibiotics. Antibiotics are effective against infections caused by bacteria.

Drug type	*Drug name*	*Examples of manufacturer's product name*	*Examples of what it is used for*	*How much to give*	*How to*

Antibiotic	penicillin long-acting injection (mix containing 150 mg procaine penicillin and 112.5 mg benzathine penicillin in each ml)	Depopen-P, Duphapen LA, Duplocillin LA, Lentrax 100, Norocillin LA, Penillin LA, Procillin LA, Propen, Vetipen	Infection in the foot with fever, infected wound with fever, tetanus, anthrax	8 ml per 200 kg body weight	IM injec
Antibiotic	penicillin (300 mg procaine penicillin per ml or 300 000 IU per ml)	Depocillin	Dermatophilosis, kidney and bladder infections, ulcerative lymphangitis. It can also be used for the conditions listed under long-acting penicillin injection.	12 mg per kg body weight (for 200 kg animal, give 8 ml)	IM injec

Broad-spectrum antibiotic	penicillin with streptomycin (each ml contains 200 mg procaine penicillin and 250 mg dihydrostreptomycin sulphate)	Depomycin Forte, Duphapen+Strep, Penicillin/Streptomycin Injection, Pen and Strep, Streptopen Injection	Infection in the foot with fever, swollen joint with fever, infected joints, cuts and injuries involving tendons or joints, infectious diseases affecting breathing, sinusitis, diarrhoea caused by an infection, retained placenta with fever, mastitis, blocked and swollen tear ducts	8 mg penicillin and 10mg streptomycin per kg body weight (8 ml per 200 kg body weight) - the strength of the mix varies between manufacturers, so check the instructions	IM injec
Antibiotic	penicillin with gentamicin	Pangram (gentamicin only)	Joint-ill of foals	Follow manufacturer's	IM injec

				instructions on dose of gentamicin	
Broad-spectrum antibiotic	ampicillin injection (each ml contains 150 mg ampicillin)	Amfipen, Duphacillin, Norobrittin, Penbritin	Diarrhoea caused by an infection	7.5 mg per kg body weight (for a product with 15% ampicillin, i.e. 150 mg per ml. give 10 ml to a 200 kg animal)	IM injec
Broad-spectrum antibiotic	ampicillin powder	Amfipen	Proud flesh	Break open eight 250 mg capsules and mix the powder with 50 ml boiled and cooled water	Wash th wound
Antibiotic	metronidazole injection (each ml contains 450 mg metronidazole)	Torgyl	Canker, thrush, infected hoof wounds	If using 45% solution (that is, 450 mg metronidazole per ml), give 10 ml to a 200 kg animal.	IM injec used on dressing replace 48 hour

Broad-spectrum antibiotic	oxytetracycline	Engemycin, Tetcin, Terramycin	Canker	Enough to soak a pad of cotton wool or cloth	Bandag pad on infected
Broad-spectrum antibiotic	potentiated sulphonamides (each ml contains 40 mg trimethoprim and 200 mg sulphadiazine or sulphadoxine, but see note about Tribrissen 48%)	Delvoprim Coject, Duphatrim IS, Norodine 24, Trimabac Injection 24%, Trivetrin Injection, Tribrissen Injection 48%	Diarrhoea caused by an infection, liver disease, kidney and bladder infections, mastitis, epizootic lymphangitis, glanders	15 mg of combined ingredients per kg body weight (15 ml injection for 240 kg body weight)	Slowly i into a v (but giv Tribriss by IM injectio Sulphor are also availabl give to by mou powder prefilled syringes

Antiserum	tetanus antitoxin	Tetanus Antitoxin (sometimes 1000 IU per ml, but sometimes other concentrations)	To prevent tetanus in animals not vaccinated against tetanus after wounds, such as nail in the foot. To treat tetanus	When treating wounds, give 3000 IU for a foal or small horse or donkey and 5000 IU for a larger animal. When treating tetanus, give 50 000-150 000 IU	When tr wounds SC injec When tr tetanus slowly i vein
Antiseptic	copper sulphate	Copper sulphate	Thrush	50 g crystals in 1 litre water	Wash in area
Antiseptic or disinfectant	formalin	Formalin	Thrush, canker	To make 1 litre solution, add 50 ml formalin to 950 ml water	Wash in area
Antiseptic	potassium	Potassium	Thrush	Dissolve	Wash in

	permanganate	permanganate		crystals to give a strong purple colour	area
Trypanosome killer	homidium bromide	Ethidium, Novidium	African trypanosomiasis	1-2 mg per kg body weight	IM injec
Trypanosome killer	quinapyramine sulphate	Antrycide, Trypacide, Noroquin	African trypanosomiasis	2.2-4.4 mg per kg body weight	SC injec There m a painfu reactior place w the inje given. T reduce reactior the dos betwee or three and inje differen places.
Trypanosome killer	quinapyramine sulphate	Antrycide, Trypacide, Noroquin, Quintrycide	Surra	3 mg per kg	SC injec

Trypanosome killer	diminazine aceturate	Berenil	Surra	7 mg per kg body weight	IM injec
Trypanosome killer	diminazine aceturate	Berenil	African trypanosomiasis	3.5 mg per kg body weight	IM injec
Trypanosome killer	isometamidium chloride	Trypamidium, Samorin	Surra	0.5 mg per kg body weight	IM injec

Babesia killer	imidocarb dipropionate 12%	Imidocarb	Babesiosis	2 ml per 100 kg body weight	IM injec

2 Medicines for treating pain, inflammation and allergy

Top

This group contains corticosteroids and NSAIDs (non-steroidal anti-inflammatory drugs). Do not use NSAIDs in an animal that may have kidney disease. Do not use corticosteroids in an animal that may have an infection or laminitis.

Drug type	*Drug name*	*Examples of*	*Examples of*	*How much to*	*How to give*	*How many*

Drug type	*Drug name*	*Examples of manufacturer's product name*	*Examples of what it is used for*	*How much to give*	*How to give it*	*How many times per day to give it*
NSAID	phenylbutazone	Equipalazone, Pro-Dynam	Old arthritis with new bone around the joint, ring bone, side bone, bony spavin, splints, sore shins, navicular disease, bog spavin, thoroughpin	2.2 mg phenylbutazone per kg body weight (half of one 1 g sachet of powder to an animal weighing 225 kg)	By mouth, mixed with some tasty food	Every second da
Corticosteroid	betamethasone injection (2 mg betamethasone per ml)	Betsolan Injection	Allergic reaction, purpura, blocked and swollen tear	5-20 ml depending on size of animal	IM injection	1

			ducts			
Corticosteroid	dexamethasone injection (2 mg dexamethasone per ml)	Colvasone, Dectan, Dexadreson, Dexazone, Duphacort Q, Soludex, Voren	Allergic reaction, purpura, blocked and swollen tear ducts	1 ml per 50 kg body weight	IM injection	1
Corticosteroid	dexamethasone (2 mg per ml) injection	As above	Viral encephalitis	0.05-0.1 mg per kg body weight (5-10 ml for a 200 kg animal)	IM injection	Give every 6-12 hour
NSAID	flunixin meglamine 50 mg per ml	Finadyne Solution	Colic, viral encephalitis, cut tendon	For colic or injury, 1 ml per 45 kg body weight (5 ml for 225 kg body weight animal) For encephalitis, 0 5 mg per kg	IV injection for colic IM injection if IV not possible in horse with encephalitis	Once for colic Every 12 hours for encephalit

				body weight (5 ml per 200 kg body weight)		
NSAID	ibuprofen	Brufen	Old arthritis	1 5-2 g for an adult horse, 1 g is four 250 mg tablets	Grind tablets and mix with treacle or tasty food	1
Corticosteroid	prednisolone	Prednisolone tablets	Purpura, allergic reaction, chronic pulmonary disease (CPD), old arthritis with new bone around the joint	For purpura, 5 mg prednisolone per 10 kg body weight For arthritis and other long-term conditions, give the minimum dose that keeps the animal comfortable	Grind tablets and mix with tasty food	2
Bee sting remedy	sodium bicarbonate	Baking soda	Bee stings	Mix a tablespoonful with 100 ml water	Soak a piece of cloth or cotton wool and apply to the	Treat as soon as possible after the animal is stung

stings

3 Medicines for killing worms and stomach bots

Top

Drug type	*Drug name*	*Examples of manufacturer's product name*	*Examples of what it is used for*	*How much to give*	*How to give it*	*How many times per day to give it*	*How long to give it*
Worm killer	mebendazole	Equivurm, Telmin	Gut roundworms	5-10 mg mebendazole per kg body weight	By mouth	1	Usually, a least 6 weeks between treatmen
Worm killer	oxibendazole	Equidin	Gut roundworms	10 mg oxibendazole	By mouth	1	Usually, a least 6

				per kg body weight (but 15 mg oxibendazole for young foals with diarrhoea)			weeks between treatmen
Worm killer	fenbendazole	Panacur	Gut roundworms	7.5 mg fenbendazole per kg body weight. Fenbendazole can be given as a single dose at higher dose rates: for migrating red-worm larvae, give 60 mg per kg body weight;	Mix liquid suspension or granules with tasty food. Squirt paste directly into the mouth	1	Daily for days (but one dose on one day only at higher dose rates)

				for treating diarrhoea of young foals, give 50 mg per kg body weight			
Parasiticide	ivermectin	Eqvalan paste, Furexel paste, Panomec paste	Stomach bots, gut roundworms	0.2 mg per kg body weight	By mouth	1	
Worm killer	pyrantel	Strongid-P, Pyratape P	Tapeworms, gut roundworms	For tapeworms give double dose of 38	If powder, mix with food. If paste, give	1	If treatmen for tapeworm

				mg per kg. For roundworms give 19 mg per kg	directly into mouth		is necessary dose can be repeated every 6 weeks
Parasiticide	ivermectin	Eqvalan paste, Furexel paste, Panomec paste	Lung worms	0.2 mg per kg body weight	By mouth	1	One treatmen only
Worm killer	mebendazole	Equivurm, Telmin	Lung worms	For donkeys, give 15-20 mg per kg (for a 200 kg donkey, give up to 10 g of granules containing 100 mg per gram)	If granules, mix with food. If paste, give directly into mouth	1	5 days

Worm killer	fenbendazole	Panacur	Lung worms	15 mg per kg body weight	If liquid suspension or granules, mix with tasty food. If paste squirt directly into mouth		One treatmen
Worm killer	thiabendazole	Thibenzole	Lung worms	440 mg per kg body weight and repeat after 2 days		1	Repeat after 2 days
Fluke killer	triclabendazole	Fasinex	Liver fluke	It is suggested to use maker's recommended dose rate for cattle	By mouth		

4 Medicines for treating colic

Top

Drug type	*Drug name*	*Examples of manufacturer's product name*	*Examples of what it is used for*	*How much to give*	*How to give it*	*How many times*	*How long to give it*	*Notes ar warnings*

						per day to give it		
Spasm reducer and pain reliever	4 mg hyoscine with 500 mg dipyrone per ml	Buscopan Compositum	Spasmodic colic, choke (food stuck in neck)	20-30 ml (less if a very small horse or donkey)	IV injection	1	One injection is usually enough	The colic pain should disappea quickly after injection the colic caused b gut mus spasm.
NSAID	flunixin meglamine 50 mg per ml	Finadyne Solution	Spasmodic colic	1 ml per 45 kg body weight (5 ml for 225 kg body weight animal)	IV injection	1	One injection may be enough for colic	Can be repeatec after 24 hours.
NSAID	phenylbutazone 200 mg per ml	Equipalazone Injection	Gas colic	Up to 4.4 mg per	IV injection	1	One injection	

				kg body weight. Maximum 5 ml for animal of 225 kg body weight	given slowly		should be enough	
NSAID	flunixin meglamine 50 mg per ml	Finadyne	Gas colic	1.1 mg per kg body weight (or 5 ml for 225 kg body weight animal)	IV injection	1	One injection may be enough for colic	Can be repeatec after 24 hours.
Laxative	liquid paraffin	Liquid paraffin	Impaction colic	2-4 litres	By mouth, preferably by stomach tube	2	3 days	Liquid paraffin *not* the same as paraffin (kerosen fuel.

5 Medicines for treating wounds

Top

Drug type	*Drug name*	*Examples of manufacturer's product name*	*Examples of what it is used for*	*How much to give*	*How to give it*	*How many times per day to give it*	*How lon to give i*
Local anaesthetic	lignocaine 2% (sometimes with adrenaline)	Locaine, Lignocaine, Lignavet	Stitching cuts	0.5 ml at each place	Subcutaneous injection about 10 minutes before stitching		It lasts f 30 minu (or can l longer if adrenali is includ in the m
Mild antiseptic	povidoneiodine	Betadine, Pevidine, Pyodine	Cleaning fresh wounds	Make a very dilute solution using plenty	See the section *How to care for a fresh wound*	*2*	Until healing advance

				of water			
Antibacterial spray	'purple spray' (usually contains a tetracycline with gentian violet or marker dye)	Alamycin Aerosol, Duphacydine Aerosol, Occyretin Aerosol, Tetcin Aerosol	Wounds on the hoof	Enough to cover infected place	Spray on to affected area	1	Daily as necessa
Healing ointment	zinc oxide ointment	To make 1 kg of this ointment, add 150 g zinc oxide powder to 850 g petroleum jelly	Cracked heels	Enough to thinly cover the wound	Apply to wound	1	Repeat every fe days un healed

		(Vaseline) and mix well					
Ointment	petroleum jelly	Boroline, Vaseline	Pressure sores, burns, cracked heels, on gauze for wound dressing, to lubricate a thermometer or stomach tube	Enough to make a thin layer	Apply to affected area	1 or 2	Daily or necessa
Ointment containing corticosteroid	May contain betamethasone, prednisolone, triamcinolone	Betsolan Cream, Dermobion Ointment (registered for use in horses), Vetalog Plus Cream	Proud flesh only	Just enough to cover the proud flesh	Apply to the proud flesh, but *not* to the edges of healthy skin around it	2	Continu until pro flesh is smaller
Antiseptic	iodine	Tincture of iodine	Infected wounds,	Add to clean	See the section *How*		

			epizootic lymphangitis	water to make a light brown solution (the colour of weak black tea)	*to care for afresh wound*		
Antiseptic	mercurochrome		Infected wounds	Add a pinch of crystals to water to make a red solution	See the section *How to care for a fresh wound*		
Antibiotic ointment	(various)		Infected wounds	Cover wound with a thin layer	Apply to infected wound	1 or 2	Daily as necessa

Soothing lotion	calamine		Burns	Pour lotion on to cotton wool or clean cloth	Apply gently to the burnt skin	2	Until healing progress well
Antiserum	tetanus antitoxin	Tetanus Antitoxin (sometimes 1000 IU per ml, but sometimes other concentrations)	Any deep or dirty wound, snake bite	3000 IU for a foal or small horse or donkey and 5000 IU for a larger animal	IM or SC injection	1	One dos

6 Medicines for maggots in wounds (fly-blown wounds)

6 Medicines for maggots in wounds (fly-blown wounds)

Top

Most of the medicines for killing parasites on the skin (like ticks, lice and flies) are effective against maggots.

Drug type	*Drug name*	*Examples of manufacturers product name*	*Examples of what it is used for*	*How much to give*	*How to give it*	*How many times per day to give it*	*How long to give it*
Maggot killer	coumaphos with propoxur (and sulphanilimide)	Negasunt	Maggots in wounds	Enough to cover wound	Clean the wound. Sprinkle the powder on the wound and the surrounding skin	1	Repeat after 24 hours if there are live maggots in the wounds
Maggot killer	boric acid powder with turpentine oil (or with kerosene)	Mix the powder with the oil (or kerosene) to make a thick	Maggots in wounds	Enough to cover wound	Apply direct to wound	1	One application should be sufficient

		paste					
Maggot killer	chloroform		Maggots in wounds	Soak cotton wool or clean cloth	Hold on the wound	2	Until there are no more live maggots
Parasiticide	ivermectin	Ivomec 1% injection (for cattle), Eqvalan paste, Furexel paste, Panomec paste	Maggots in wounds	If it is given by mouth the dose is 0.2 mg per kg body weight (40 mg for 200 kg body weight of horse, that is, 4 ml of 1% solution for injection). If using paste syringe, follow manufacturer's dose instructions	By mouth. 2 or 3 drops of solution for injection can be placed directly on to the wound	1	One dose only

Pour-on pyrethroid acaricide	deltamethrin or flumethrin	Spot-On or Bayticol	Maggots in wounds	A few ml	Pour on to maggoty area	1	One treatment should be sufficient

7 Medicines for treating skin diseases and for killing parasites on the skin

Top

Medicines containing pyrethroids or ivermectin are poisonous for fish. Take care not to dispose of unused medicine or even the empty containers in rivers or ponds.

Drug type	*Drug name*	*Examples of manufacturer's product name*	*Examples of what it is used for*	*How much to give*	*How to give it*	*How many times per day to give it*
Insect repellent	pyrethrum and piperonyl butoxide, or permethrin and citronellol	Sweet Itch Lotion, Lincoln Sweet Itch Control, Coopers Fly Repellent Plus for Horses	Sweet itch	Give enough to reach the skin at the base of the hair of the mane and tail. Follow manufacturer's instructions	Part the hair and apply to skin of the mane, back and tail with a brush or cloth	1
Insect repellent, insecticide	4% permethrin	Switch, Beatitch	Sweet itch	10 ml per 100 kg body weight up to a maximum dose of 40 ml	Pour on to mane and rump. Avoid saddle area	1

Insect repellent, insecticide	5% cypermethrin concentrate	Deosan Deosect	Control of flies (including *Culicoides, Stomoxys, Haematobia,* tabanids, tsetse, mosquitoes), sweet itch, lice	125 ml of diluted solution per animal (more if a large horse)	Dilute with water (20 ml concentrate in 1 litre of water). Spray on to skin	1
Organophosphorus acaricide (tick and mite killer)	coumaphos	Asuntol	Ticks, mange, harvest mites	Dilute with water according to manufacturer's instructions	As a spray	1
Pour-on pyrethroid acaricide	deltamethrin or flumethrin	Spot-On or Bayticol Pour-on	Ticks, mange mites, harvest mites	10 ml per 100 kg body weight, but	Pour on to the back	1

				check manufacturer's instructions		
Parasiticide (worm, tick and mite killer)	ivermectin paste	Eqvalan paste, Furexel paste, Panomec paste	Mange mites, summer sores/bursatti, some lice	0.2 mg per kg body weight	By mouth	1
Insecticide powder	permethrin, for example	Louse Powder (Arnolds)	Lice, rubbing post against flies	For lice treatment, about 50 g	Shake powder from shoulders along the back to the rump	1
Insecticide	piperonyl butoxide and pyrethrum	Dermoline shampoo	Lice	Mix 100 ml of shampoo in 1 litre of water. Use at least 1 litre per horse	Pour the diluted shampoo on to the back of the animal.	1

					Add more shampoo and use a brush to get a good lather	
Antifungal agent	griseofulvin	Equifulvin, Fulcin, Grisol-V, Grisovin, Norofulvin	Ringworm	10 mg per kg body weight	If granules or powder, mix with tasty food. If paste, give by mouth	1
Disinfectant	chlorhexidine 4%	Hibiscrub, Savlon (also contains cetrimide)	Ringworm	Mix 25 ml (or 10 ml of Savlon) in 1 litre of water	With a sponge or cloth, apply to ringworm	1 or 2
Disinfectant	sodium hypochlorite solution	Clorox	Ringworm	Mix 100 ml of Clorox in 1 litre of water	With a sponge or cloth, apply to ringworm	1 or 2

Antibiotic ointment	Various, for example containing penicillin or tetracyclines		Dermatophilosis	Enough to cover the affected skin	Apply after carefully removing scabs	1
Antibiotic	penicillin	See the list *Medicines for treating infections*	Dermatophilosis	As for other infections, see the list *Medicines for treating infections*	IM injection	1
Antiseptic	iodine	Tincture of iodine	Ulcerative lymphangitis, epizootic lymphangitis	Dilute with water to give the colour of weak, black tea	Use it to wash the lesions and to flush them by squirting it into burst abscesses	1

8 Medicines for preventing diseases

Top

Drug type	*Drug name*	*Examples of manufacturer's product name*	*Examples of what it is used for*	*How much to give*	*How to give it*	*How many times per day*	*How long to give it*	*Notes and warnings*

						to give it		
Vaccine	tetanus toxoid	Duvaxyn T, Tetanus Toxoid Concentrated	Prevent tetanus	1 ml	SC or IM injection	Give once and repeat 1 month later	Booster injections every few years maintain good immunity	Give foal its first injection when more than 3 months old. Manufacturer may recommend more frequent boosting. If tetanus antiserum has been given, wait 4 weeks before vaccinating. Tetanus and flu vaccines are available together in a combined vaccine.
Vaccine	killed or inactivated strains of flu virus	Duvaxyn IE, Prevac	Prevent flu	1 ml	IM injection	Give once and repeat after 1	Give a booster injection every 2	Give first injection to foal when at least 2

						month. Inject again after 6 months	years	months old. If the first injection is given when less than 6 months old, repeat when 6 months old.
Vaccine	inactivated strain of rabies	Nobivac Rabies	Prevent rabies	1 ml	IM injection	Give once and repeat 1 month later	Give a booster injection each year	Not recommended for pregnant mares.
Vaccine	For North America, contains strains of EEE and WEE. For South America, may contain VEE as well		Prevent viral encephalitis		IM injection	Give once and repeat 1 month later. It is usually given in spring, 1 month before the mosquito season	Give a booster injection each year. In high risk areas, boosters may be given every 3 months	Give first injection to foal when it is more than 3 months old. Boost vaccination before the season when mosquitoes that carry the virus are common.

9 Medicines for eye diseases

Top

Drug type	*Drug name*	*Examples of manufacturer's product name*	*Examples of what it is used for*	*How much to give*	*How to give it*	*How many times per day to give it*	*How long to give it*	*I*
Antibiotic eye ointment	tetracycline eye ointment	Aureomycin Ophthalmic Ointment	Conjunctivitis	About 5 cm squirted directly from the tube	Apply ointment across the inside of the lower eyelid and gently massage	3	Until eye appears normal, up to 5 days	
Antibiotic eye ointment	chloramphenicol eye ointment	Chloromycetin Ophthalmic Ointment	Conjunctivitis	About 5 cm squirted directly	Apply ointment across the	3	Until eye appears normal, up to 5	

				from the tube	inside of the lower eyelid and gently massage		days
Antibiotic eye ointment	neomycin eye ointment	Neobiotic Eye Ointment	Conjunctivitis	About 5 cm squirted directly from the tube	Apply ointment across the inside of the lower eyelid and gently massage	3	Until eye appears normal, up to 5 days
Antibiotic eye ointment	cloxacillin eye ointment	Orbenin Ophthalmic Ointment, Kloxerate	Conjunctivitis	About 5 cm squirted directly from the tube	Apply ointment across the inside of the lower eyelid and	1	Repeat once per day

					gently massage			
Corticosteroid eye drops	betamethasone (may also contain neomycin antibiotic)	Betsolan Eye Drops, Neobiotic HC Drops	Periodic ophthalmia	2 drops per eye	Hold the upper eyelid up and drop medicine on to surface of eye	4	Repeat daily as necessary	
Antibiotic plus corticosteroid eye ointment	chloramphenicol with hydrocortisone	Choloromycetin Hydrocortisone Ointment	Blocked and swollen tear ducts	A few cm squirted directly from the tube	Apply ointment across the inside of the lower eyelid and gently massage	4	Repeat daily as necessary	

10 Medicines for treating poisoning

Top

Drug type	*Drug name*	*Examples of manufacturer's*	*Examples of what it is used for*	*How much to give*	*How to give it*	*How many*

		product name				*times per day to give it*
Adsorbant	activated charcoal		General treatment for poisoning	1-3 kg depending on the animal's body weight	Mix with water to make a slurry and give by mouth	1
Adsorbant	kaolin suspension		General treatment for poisoning	About 100 ml for a donkey, and 200 ml for an adult horse	By mouth	1
Laxative	liquid paraffin		General treatment for poisoning	2-4 litres	By mouth, preferably by stomach tube	1
Laxative	castor oil		General treatment for poisoning	1-2 litres	By mouth, preferably by stomach	1

					tube	
Purgative	magnesium sulphate	Epsom salts	General treatment for poisoning	200-300g dissolved in 4 litres of warm water	By mouth, preferably by stomach tube	1
Antidote	calcium disodium ethylenediamine tetra-acetate or calcium versanate	EDTA	Lead poisoning	75 mg per kg body weight	Add 20 mg calcium versanate per litre of saline drip and give IV as a drip	Once
Antidote	atropine sulphate 0.6 mg per ml	Atrocare Injection, Atropine Sulphate Injection	Organophosphorus poisoning	Depends on how much poison is in the body. Dose approximately 0.1-0.2 mg per kg body weight (33-66 ml for a 200 kg animal)	Slow IV injection of one quarter of the dose. SC injection of the remainder of the dose	Once, if the signs of poisoning are relieved. Injection may be repeated after 4 hours if

								signs of poisoning come back

11 Medicines for sedating animals

Top

Drug type	*Drug name*	*Examples of manufacturer's product name*	*Examples of what it is used for*	*How much to give*	*How to give it*	*How many times per day to give it*	*How long to give it*	*Notes and warnings*
Sedative	acetyl promazine 10 mg per ml	ACP Injection	Tetanus	Up to 0.1 mg per kg body weight (2 ml for a 200 kg animal). Response varies, so if half this dose is sufficient to sedate	IM injection or slow IV injection	1	Repeat every 36-48 hours to control signs of tetanus	Can cause problems in stallions, causing the penis to come out of its sheath and not go back. If this happens, it may be necessary to quickly anaesthetize

				the horse, give reduced dose				or cast the animal and reduce the penis swelling by squeezing it or by bandaging it.
Sedative	diazepam	Diazemuls, Diazepam, Valium	Viral encephalitis	For a foal weighing 50 kg, 5-20 mg. For an adult animal weighing 200 kg, give 10-40 mg	Slow IV injection	Repeat if fits start again	1 day	This drug is licensed for use in people. Smaller doses may be effective. Give as much as needed to stop fits.
Sedative	xylazine 100 mg per ml	Chanazine 10%, Rompun, Virbaxyl 10%	Viral encephalitis	For a foal weighing 50 kg, inject 25-50	Slow IV injection	Repeat if fits start again	1 day	Do not disturb the animal in the first 5 minutes while the

				mg, that is 0.25-0.5 ml. For an adult animal weighing 200 kg, give 1.0-2.0 ml. If fits are severe a higher dose may be needed				medicine takes effect. Effects are seen after about 5 minutes and last for about 20 minutes, but animals stay drowsy for several hours. Do not use in the last month of pregnancy.

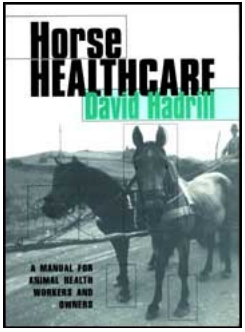
12 Other medicines

Top

Drug type	*Drug name*	*Examples of manufacturer's product name*	*Examples of what it is used for*	*How much to give*	*How to give it*	*How many times per day to give it*	*How lor to give*

Multivitamin	Vitamin injection including B vitamins	Anivit, Combivit, Duphafral Extravite, Multivet 4BC, Multivitamin Injection (Arnolds)	Liver disease, plant poisoning with bracken or *Equisetum*	Depends on concentration in the product. Follow manufacturer's instructions	IM injection or slowly by IV injection	1	It depend on the disease The injectio can be repeate as necessa
Hormone	oxytodn injection (10 IU per ml)	Hyposton, Oxytocin Leo, Oxytocin-S, Pituitary Extract (Synthetic)	Retained placentas, difficult birth (but only on the advice of a vet)	1-4 ml	Slowly by IV injection. Can be given IM	1	One do is normall enough
Water soluble gel	lubricant gel, obstetric lubricant	KY Jelly, Vet-lube	To make the hands and arms slippery when helping with a difficult birth	Smear it on your hands and arms and then rub a little water with it to make it more slippery			
Mineral	calcium borogluconate	Calcibor, Calciject, CBG-	Hypocalcaemia	Dose varies. About 500 ml	Slowly by IV		Normal once is

	solution 20%	20, Calc no. 1, Rycal no. 1		is required for an adult horse	injection		enough for recover



Horse Healthcare - A Manual for Animal Health Workers and Owners

Author(s)*: *David Hadrill
Publication date*: *2002
Number of pages*: *256
Publisher*: *ITDG Publishing
ISBN*: *1 85339 486 6

Contents:

Back cover Top

Horse Healthcare **provides clear, practical guidance on what to do when a horse or donkey is sick, including how to decide if professional advice is required. It is designed for those caring for working horses and donkeys who may have little or no access to professional veterinary help. The manual is easy to use, comprehensive and clearly explains difficult conditions and procedures, such as lameness and how to give injections. The book includes sections on restraining horses and donkeys, shoeing, wound care, colic, infectious diseases and the birth of foals.**

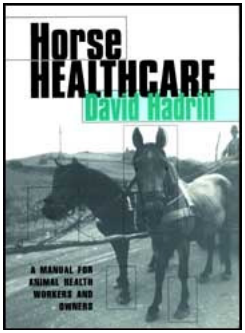
- **Clear English used throughout**
- **Describes all major equine diseases that occur worldwide**
- **Pictures and text help the reader decide what the problem is**
- **Information on prevention and treatment for each disease**
- **Numerous line drawings show how to perform practical techniques**
- **Comprehensive list of medicines giving names, uses, dosages and warnings**

With this guide, no owner or animal health worker need feel powerless, hopeless or panicked when their horse is sick. This is an essential tool for horse owners and animal health workers everywhere.

DAVID HADRILL is a veterinarian with over twenty years professional experience. He has lived and worked in India, the Caribbean, Somalia and Mongolia and has worked in many other developing countries. David now works as a consultant, specializing in community

animal healthcare, training, project monitoring and evaluation.

This book has been funded by the Brooke Hospital for Animals.



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Contents:

1. How to tie, restrain and transport horses and donkeys

Top

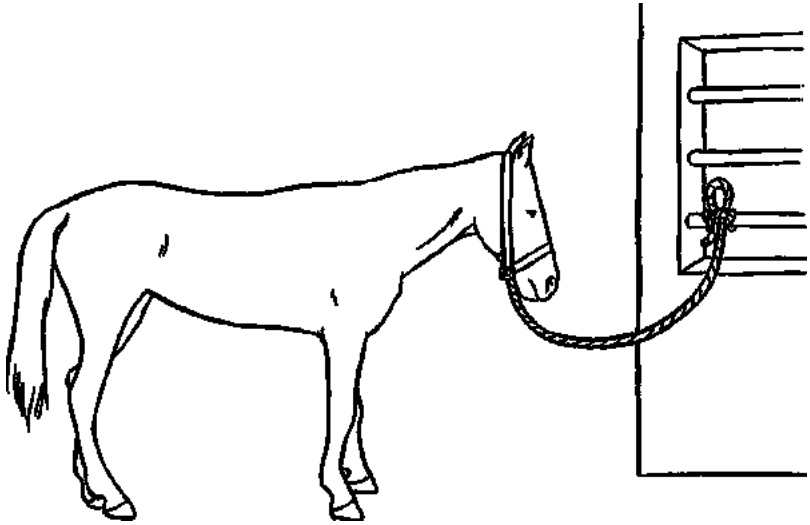
1.1 How to tie useful knots

Top

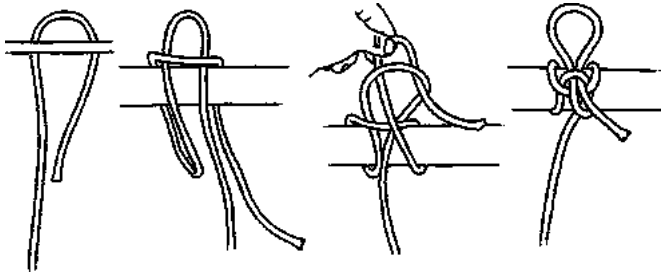
Quick-release knots

Horses should be tied using a quick-release knot. Then, if the animal goes down, the knot can be undone quickly, reducing the risk of strangling or injury.

QUICK-RELEASE KNOT (I)

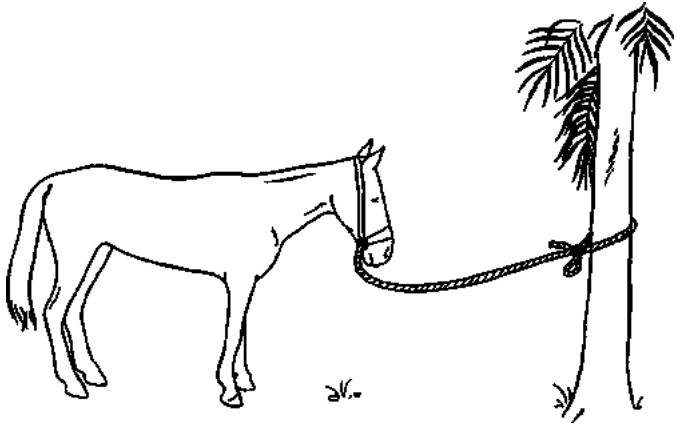


To tie this knot, put a loop through a loop through a loop, and pull tight.

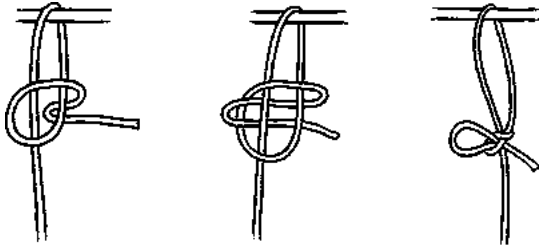


Pull the short end to untie quickly.

QUICK-RELEASE KNOT (2)



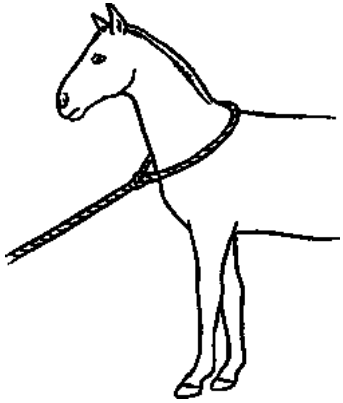
This is a simple knot with a loop.



This knot can also be used for tying a load to a horse, see the section *Knot for tying loads.*

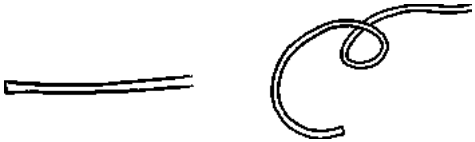
Bowline

The bowline knot is a fixed loop. It cannot pull tight. It can be used around an animal's neck.

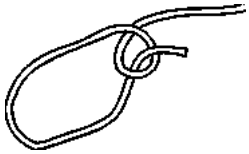


HOW TO *MAKE A BOWLINE KNOT*

1 Take a length of rope and make a loop in it by laying the shorter end over the long end.



2 Take the short end in your left hand and push it <u>up</u> through the loop.

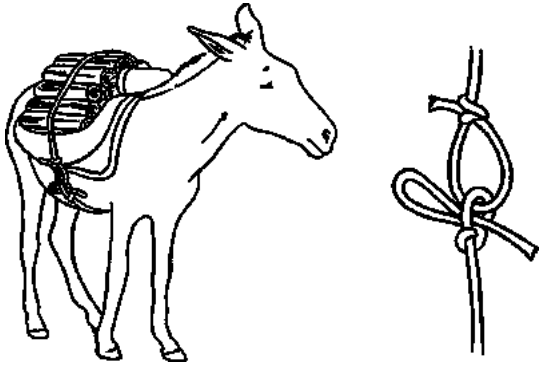


3 Now take the end round the long end, and then push it <u>down</u> through the same small loop.

4 Pull the knot tight and check that you have tied a loop big enough to go over the horse's head without being tight around its neck.

Knot for tying loads

Use a quick-release knot, in case you need to take the load off the animal quickly, for example, if it falls. Quick-release knot (2) described above can be used to tie the rope to a loop.



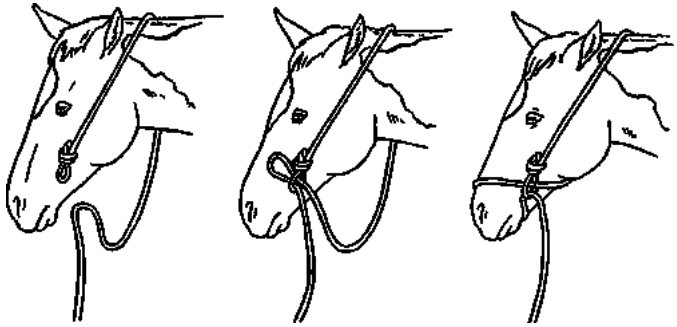
1.2 How to restrain horses and donkeys

Top

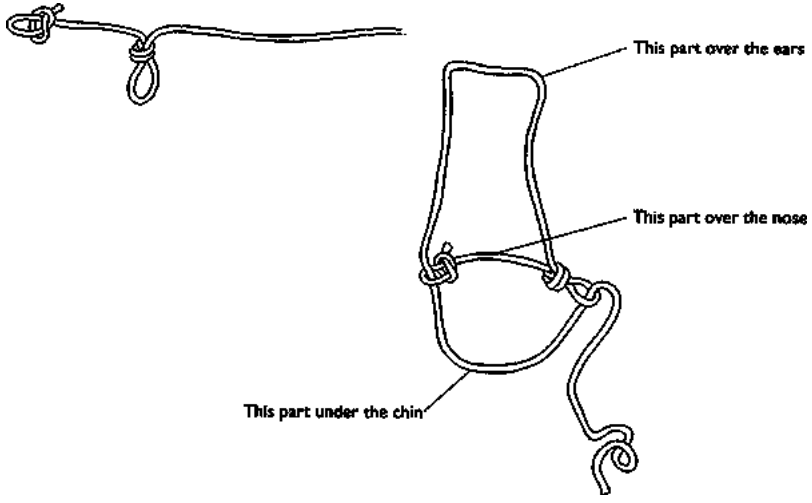
Halter

If a horse or donkey's head is restrained, it can be led or held for procedures such as injections. A halter can be made from a piece of sisal or cotton rope. Avoid using nylon rope against the skin.

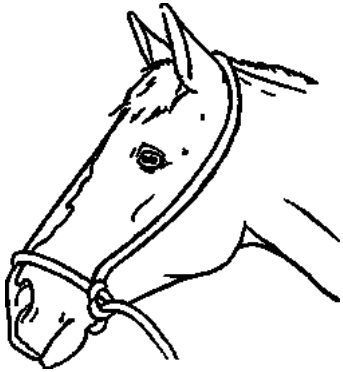
A simple slip halter can be made with loops.



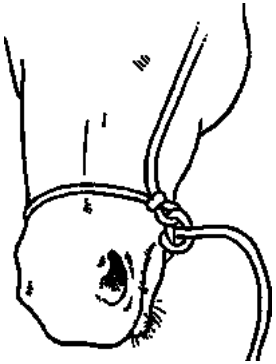
A better halter can be made from about 5 metres of rope. The rope should be about 15 mm wide. Make a small loop at one end of the rope and another loop about 30 cm along. Then thread the end through the loops as shown in the next pictures.



The halter on the animal

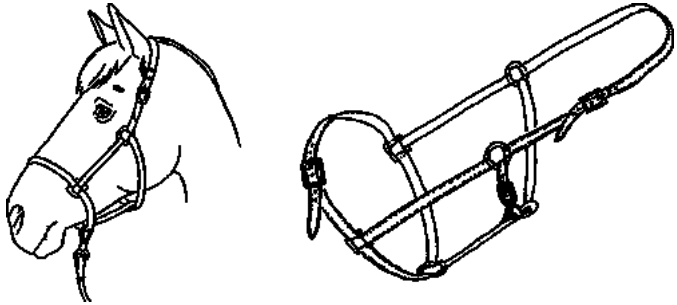


Make sure that the fixed piece of rope between the two loops is above the nose. A small knot made with the free end of the rope stops the halter becoming too tight across the head.



Head collar

Some horses learn to slip halters off over the ears. A head collar is better.



Head collars are suitable for donkeys too, but should have buckles to adjust the size of the straps around the nose. This way the head collar can be made big enough to go around a donkey's nose.

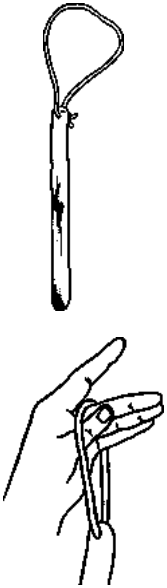
Twitch

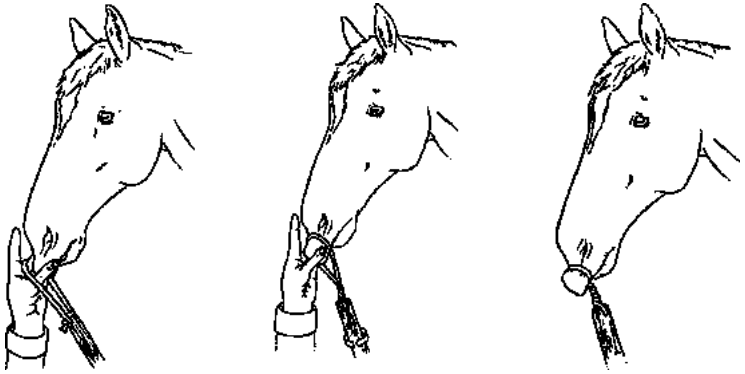
The twitch is useful to restrain a horse before a painful procedure, to examine it or give it treatment. A horse will normally stand still when the twitch has been put on.

It is known that a twitch placed correctly on the nose causes the release of natural pain-killing substances in the horse's body. Twitches are not as useful for donkeys, which seem to be frightened by them.

A twitch can be made from a wooden pole or long axe handle with a hole in the end. A rope loop about 50 cm long is tied through the hole.

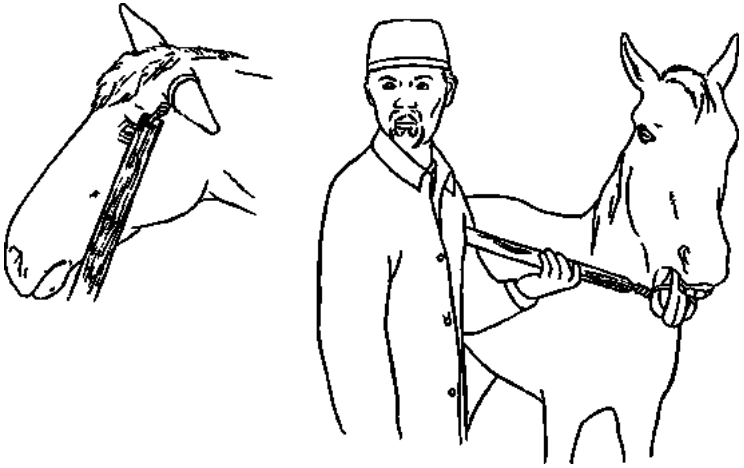
To put the twitch on the upper lip, first put three fingers and thumb through the loop. If you hold the lip with three fingers like this, the loop does not get caught over your hand when you start to tighten it.





Hold the lip, slip on the loop and twist the pole.

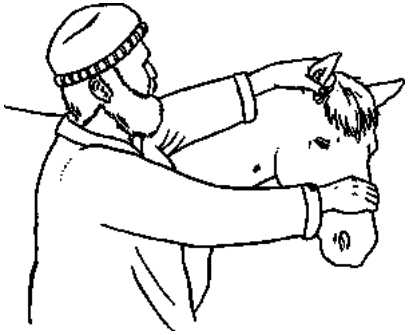
- **Do not tighten the twitch more than necessary to restrain the horse.**
- **Do not keep a twitch tight for more than 10 minutes.**
- **Never put a twitch on the ear. It is cruel and can damage the ear.**
- **Do not put a twitch on the lower jaw either.**



Do NOT put a twitch on the ear or on the jaw.

Mild restraint without a twitch

Although you must never put a twitch on to an ear, you can steady the head by holding an ear.



While giving an injection, if you pinch a fold of neck skin and talk to the animal, it is possible to distract a nervous horse that is afraid of needles.

If the animal is shy of injections, ask the person holding the head to keep a hand behind the horse's eye on that side, so the horse cannot see the syringe coming.

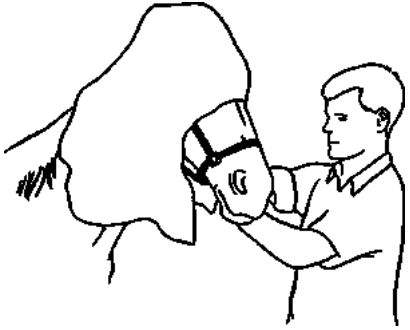
CHIN HOLD FOR DONKEYS

To hold a donkey's chin in this way, put the flat of your hand under the animal's chin, then put your thumb across its mouth and grip with your fingers.

For most donkeys, this is sufficient, but if more restraint is needed, hold by the chin and the base of an ear.

BLINDFOLDING

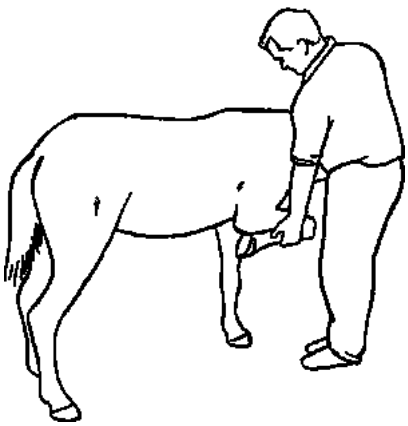
Covering a horse's eyes with a towel or similar cloth will often make it stand quietly. In a confined space the horse may back away at first and become frightened if it collides with things. Blindfolding is more useful in a field.



How to prevent kicking

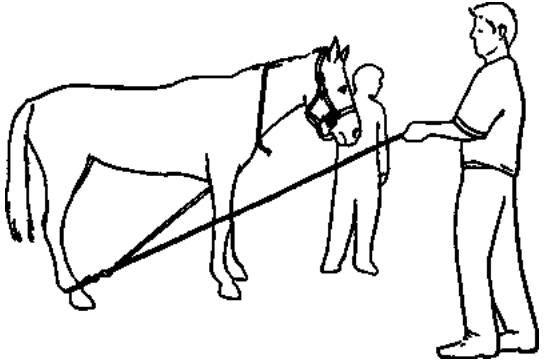
LIFT UP A FRONT LEG

This technique helps to prevent kicking from a back leg. It can help to keep the hind legs still so work can be done on them. Pick up the front leg on the same side as the back leg on which you are working.



It is easier if two people restrain the horse. One person keeps the head still, while the other holds up the front leg.

This method is not suitable for a very nervous horse. If possible, get a vet to sedate a very difficult animal with an injection. Do not sedate if the animal has to go back to work immediately afterwards.



SIDELINE

A sideline can also be used to prevent kicking or to lift up a hind leg to work on the foot. If possible use cotton rope, not nylon rope. Cotton rope is softer and less likely to burn the skin.

How to put on a sideline

- **Wrap a strip of old cloth or bandage around the leg below the fetlock, if it can be done safely without danger of being kicked. This will prevent the sideline rope from injuring the skin. Have a front leg lifted up while you do it.**

- **For the loop that goes round the neck, pass the end of the rope around the neck and tie a bowline knot (see the section *How to tie useful knots).***

- **Lay the long end of the rope on the ground and walk the animal forward so the rope is between its hind legs.**

- **Pick up the rope, pass the long end around the hind leg at the fetlock (see the drawing on page 51 for position of the fetlock), then twist it twice around the rope from the neck.**

- **Pull the end of the rope gently to stop the animal kicking, or to lift the foot.**

How to cast a horse

It is sometimes necessary to cast an animal, that is, make it lie on its side. For example, this might be done to avoid being kicked when helping a mare that is having a difficult birth.

Instead of casting, veterinarians usually give a sedative injection. Casting should only be done if a vet is not available to sedate the animal. Someone who is experienced in casting should lead the team of helpers.

What you need

- **At least five people: one to hold the head and two to pull each rope.**

- **A strong halter or head collar on the horse.**

- **A long piece of rope, 15 metres long and 1.0-1.5 cm thick, to cast the animal. Cotton rope is best, as it does not rub the skin as much as rope made of other materials.**

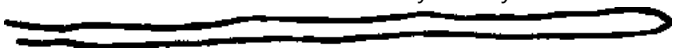
- **A shorter piece of rope about 3 metres long, to go around the chest.**
- **Bandages for the legs.**

Before you start

- **Find a place with soft ground without rocks or stones, which could injure the animal when it goes down.**
- **If possible, do not let the animal eat for 12 hours before so its guts are not full when it is cast.**
- **Bandage the lower parts of all four legs to prevent ropes from injuring the skin.**
- **Decide who is in charge. This person will give the instruction to pull the ropes when everything is ready.**
- **To reduce confusion, tell the other people that they should all keep quiet.**
- **Check that everyone knows what they have to do.**

How to do it

- **Make sure that the person who will hold the head is experienced and knows what he/she has to do. The person at the head must be told not to let go of the head. This person must also be told not to let the horse bend its neck as it goes down (or the horse's neck or back may be injured).**
- **Lay the rope on the ground, double.**



• Make a loop with a figure-of-eight knot. This kind of knot is flat against the animal's breast.

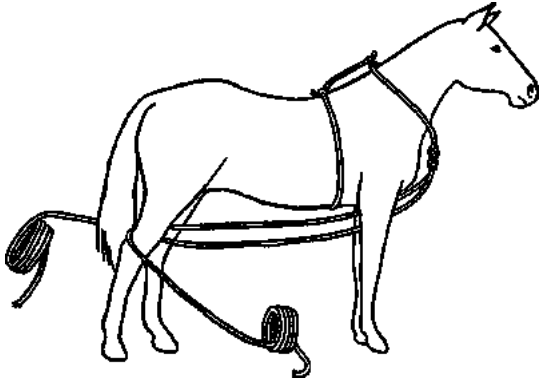
• Coil up each end of rope.

• Place the loop over the head.

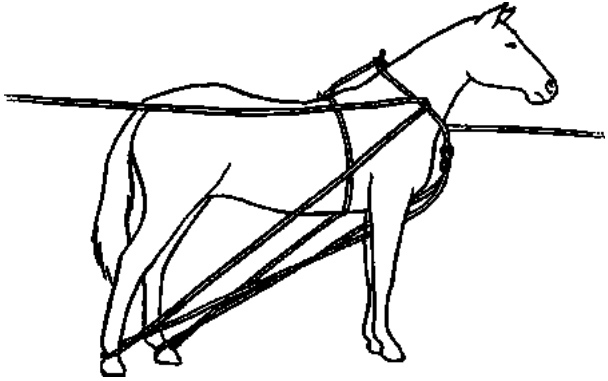
• Tie the shorter length of rope around the chest and attach it to the loop around the neck (this is to stop the neck loop slipping forward if the animal struggles).

• If the horse is nervous, get someone to hold up a front leg. See above, *How to prevent kicking.*

• Pass the coiled ends of rope between the front legs, backwards and round over the hocks of the back legs. If these ropes are over the hocks at this stage, even if the horse kicks, the ropes will stay around the legs.



- **Bring the coiled ends of rope forwards under the first part of rope.**
- **Pass these ends through the neck loop.**
- **Two people hold the end of one rope well in front of the animal.**
- **Two other people hold the end of the other rope well behind the animal.**
- **Let the loops of rope around the back legs slip down so they are just above the hooves.**



- **The person in charge gives the order 'Pull!'**
- **The person on the head makes the horse move backwards.**
- **The pairs of people pull their ropes and the animal goes into a sitting position.**
- **The person on the head must stop the animal from bending its neck, or it may injure its neck or back.**
- **As soon as the animal is sitting, it can be turned over on to its side.**
- **The upper back leg is now pulled up to the shoulder and tied with two or three loops (half hitches) just above the hoof with the end of the rope on that side.**
- **Now the front foot is tied in the same way beside the back foot.**
- **The animal is turned over and the other back and front legs are tied in the same way.**

• The person in charge of the head keeps control of it all the time that the horse is cast.

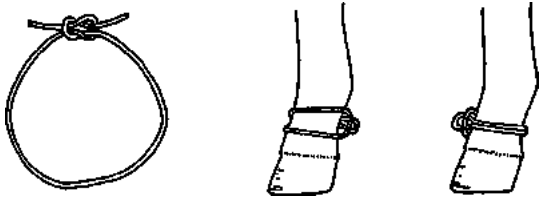
How to cast a donkey

As for casting a horse:

• Make sure the donkey is wearing a head collar or halter.

• Have a reliable person control the head.

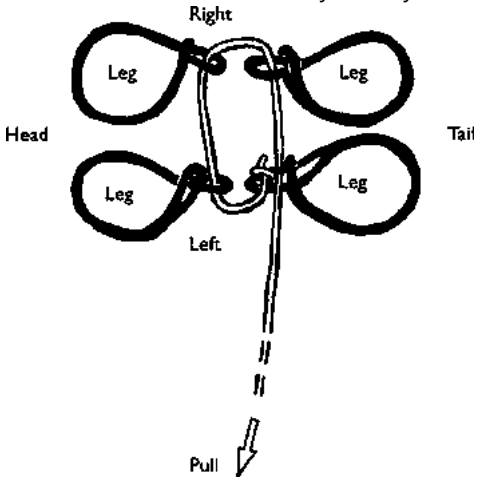
• Find a suitable area of soft ground.



• Make four rope loops to make four hobbles.

• Put the hobbles around the legs.

• Thread a piece of rope through all the hobbles and tie it to one as shown in the picture.



- **When the rope is pulled, the donkey will go down on to its right side.**
- **Tie the feet together.**
- **Keep control of the head until the feet are untied and the animal is allowed to stand.**

1.3 How to transport animals

Top

Loading into a truck

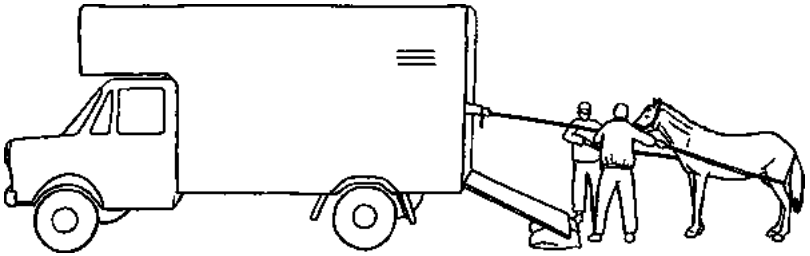
It can be difficult to persuade an animal to walk into a truck if it is not trained for this. This advice can make it easier:

• Bring the vehicle to the animal. Do not make an injured animal walk more than absolutely necessary.

• Park the truck with one side along a wall so the animal cannot escape round that side.

• One person should lead the horse, holding the halter rope.

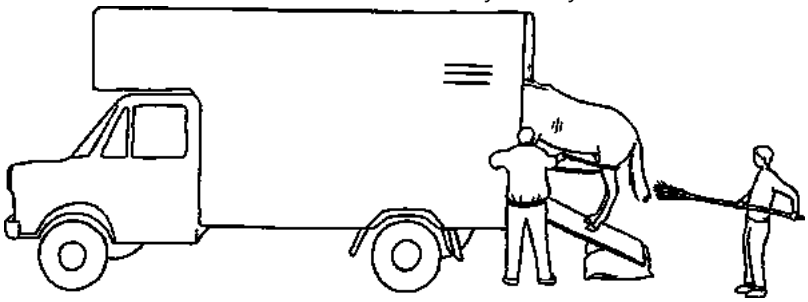
• Two other people pass a rope around the back end of the horse. One stands each side of the animal and takes the end of the rope on their own side. They pull steadily forward. (With only one person at the side of the horse, a rope can be tied to something at the side of the truck, looped around the back end of the horse and pulled.)



• If the horse does not want to move, use a broom behind the horse to encourage it to walk in.

• Once the horse is in the truck, reward it with some tasty food. This will help make it more willing to walk in next time.

• Secure the head by tying the animal's head collar using a quick-release knot.



Transporting

• Always drive at a sensible speed, even if it seems to be an emergency.

• If a hind leg is injured, have the animal face the direction of travel. Then when the vehicle slows it can take the weight on its front legs during braking.

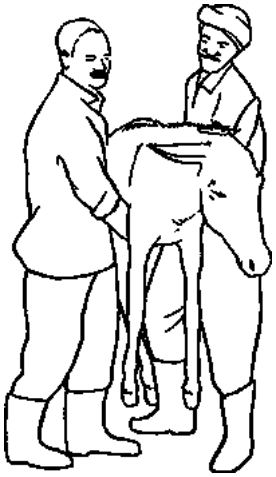
• If a front leg is injured, turn the animal so it looks back if possible. Then it can take the forces on its back legs when the vehicle is braking.

• Partitions allow the animal to lean sideways. Use partitions to allow the animal only a little sideways movement.

Lifting and moving an injured or sick animal

A very, very weak horse on the ground might need help to stand up. As a horse gets up front end first, help it stand up with a pole under its chest just behind the front legs. One person lifts each end of the pole.

Two men can carry a donkey. They reach under the donkey's belly and grasp each other's arms.



A horse that is too weak to stand can be rolled on to strong sacking and dragged along.

If a horse or donkey is too weak to stand and is suffering, consider euthanasia. After some time, the muscles become damaged and the animal is unlikely ever to stand. A horse is unlikely to stand again if it has been down for more than three days, a donkey if it has been down for more than five days.

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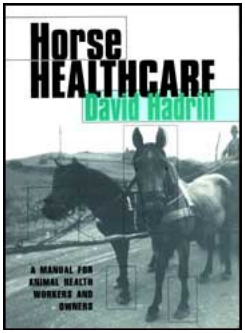


Contents:

2. How to check signs of a horse or donkey's health

Top

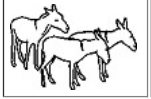
2.1 Temperature, heart rate and breathing

Top

The tables below show, for different animals, the normal temperatures, pulse (heart rate) and number of breaths taken per minute for an animal at rest. The number of heart beats and breaths per minute increases after exercise. Count these when the animal is rested.

The mean or average values are in bold type, for example, 37.7. The ranges found in normal animals are in brackets, for example, (37.5-38.0).

Normal temperature, heart rate and breathing for donkeys

	*Body temperature of healthy animals(°C)*	*Normal pulse rate (heart beats per minute)*	*Normal number of breaths per minute*
Young	37.6(37.1-38.1)	60 (50-70)	28 (20-40)

donkey			
Adult donkey	37.0 (36.5-37.5)	45 (35-55)	20(15-35)

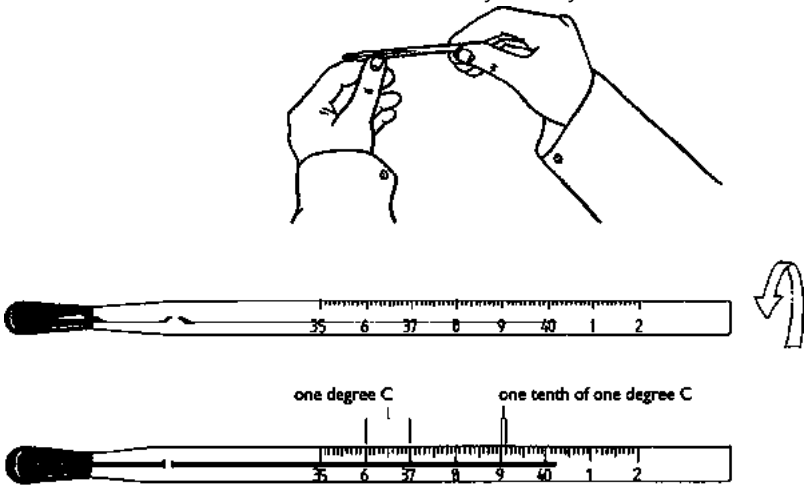
Normal temperature, heart rate and breathing for horses

	*Body temperature of healthy animals(°C)*	*Normal pulse rate (heart beats per minute)*	*Normal number of breaths per minute*
Foal, 1 week old	38.5 (38.0-39.0)	100 (80-120)	15(14-16)
Pony	37.7 (37.5-38.0)	40 (35-45)	14(12-15)
Horse	37.7 (37.5-38.0)	36 (30-40)	13(12-15)

In cool climates, it is not normal for a horse or pony to take more than 20 breaths per minute, but in hot countries there may be 30 breaths per minute.

How to read a thermometer

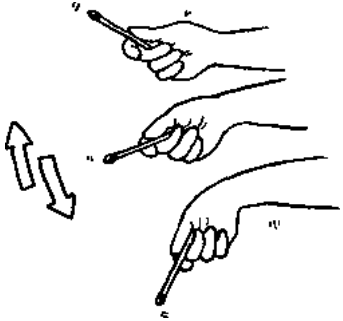
Take the thermometer out of its case and hold it between the thumb and forefinger. Roll it until you can see a broad silver band of mercury.



Look at the scale on the thermometer. Can you recognize the marks for a whole degree and those for 0.1 (one tenth) of a degree?

How to take the temperature

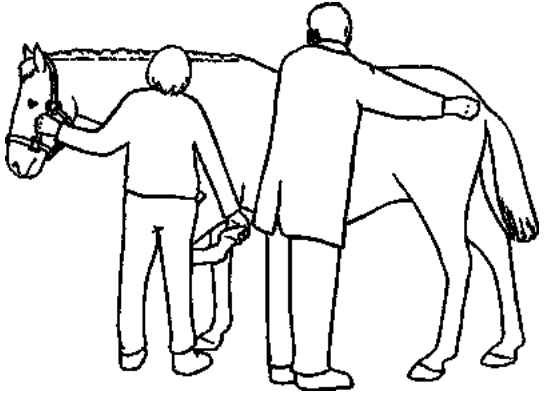
- **If the reading is not below 36°C, shake the mercury down to the bulb. Use flicking motions, taking care not to hit the thermometer on anything.**



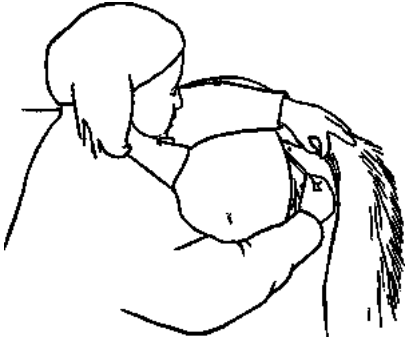
• Put a halter or head collar on the horse or donkey and have an assistant hold the head.

• Wet the thermometer with cold water or put some petroleum jelly (Vaseline) on the end to make it more slippery.

• Stand beside the horse or donkey, just in front of its back leg, with your body against the animal's body. Horses do not usually kick forward, so this is safer than standing behind the animal. If the horse does not stand quietly, an assistant should hold up a front leg (see the section *How to restrain horses and donkeys).*



• Hold the tail away from the anus, and put the bulb of the thermometer gently into the centre of the anus.



• If the animal tightly closes its anal ring so the thermometer will not go in easily, remove the thermometer until the muscles of the ring relax and then put it in again.

• Move the thermometer so the bulb is against the side of the rectum (the temperature at the centre of a ball of dung may be less than the body temperature). Keep hold of the end of the thermometer.

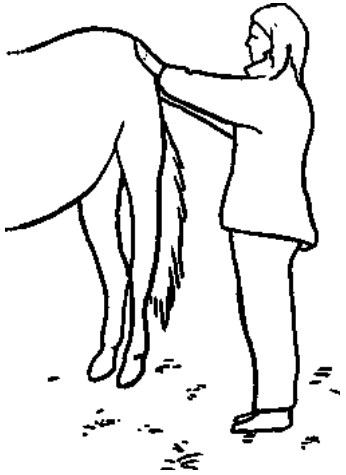
• Wait 60 seconds (or longer if the instructions on your thermometer tell you that longer is required).

• Remove the thermometer and clean it. Wipe it on the animal's hair, or on some tissue paper, or on cotton wool.

• Read the temperature.

• Wash the thermometer with *cold* running water. Hot water could make the mercury inside expand so much that it breaks the glass.

• Put it back in its case and keep it in a cool place. Do not leave it inside a car where it can get so hot that it might break the thermometer.

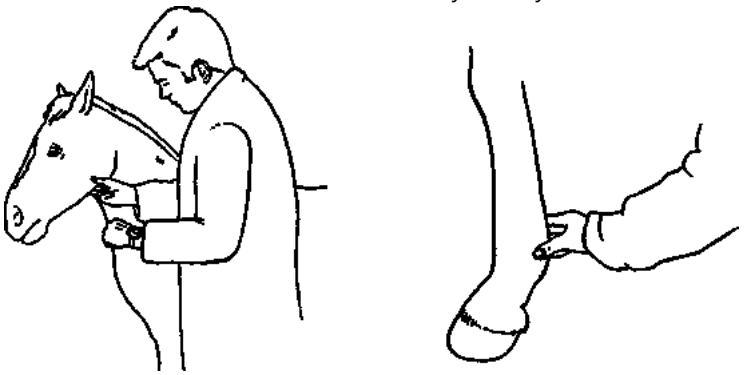


How to find the pulse (heart) rate

It is useful to be able to find out how fast the heart is beating. For example, it can help you decide whether colic is serious. An adult horse's heart beats more slowly than ours, especially when the horse is fit.

It takes practice to find the pulse. There are several places where it can be felt. Using a watch with a second hand, count how many beats can be felt in a minute.

Feel for it under the bone (mandible) at the side of the face.



Or feel for it behind the fetlock joint.

Or feel for it just above the hoof on the inside of the leg. It is useful to practise finding the pulse here because, if the horse has laminitis, this pulse will feel stronger. If you know what the pulse normally feels like here, it will help you recognize when it is different.

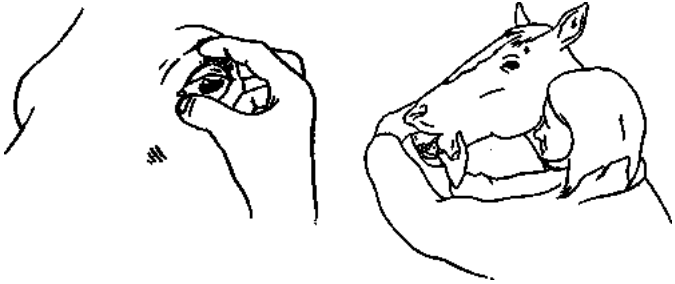
Or listen to the heart beat with your ear pressed on the animal's chest, just behind its

elbow.

2.2 How to check mucous membranes

Top

The mucous membranes include the inside of the eyelids, the gums and the inside of the lips of the mare's vulva. The colour of the normally pink skin inside the eyelids can change and can be a sign indicating some diseases.



2.3 How to collect samples for laboratory tests

Top

Dung sample

Dung samples are needed to check for worm eggs. Fresh samples are needed.

Watch an animal until it passes dung. Turn a clean polythene bag inside out and put it on your hand like a glove, pick up a pellet of dung (about 50 g), turn the bag out over the sample and tie it. If the sample will not be examined promptly, keep it in a refrigerator.

Blood sample

Use a new disposable syringe and needle or a sterilized, re-usable syringe and needle. Follow the method in *Injection into the jugular vein (intravenous or 'IV' injection)* in the section *How to give injections.* Take the needle off the syringe, and squirt the blood into the collection bottle.

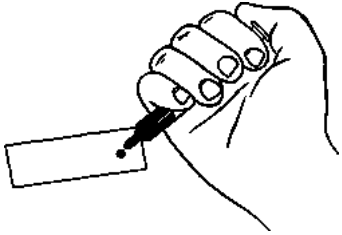
The laboratory which is going to do tests on the sample should be able to provide a suitable small bottle for the blood.

- **If the laboratory needs serum (the clear, yellowish fluid left after blood has clotted) for tests, it will provide a bottle without any chemical to stop clotting. In this case, allow the bottle to stand in a warm place for an hour so the blood clots.**

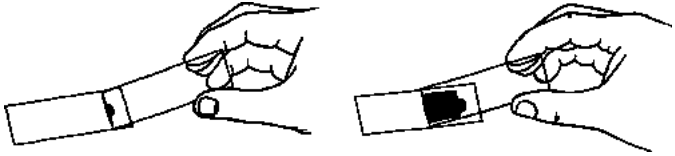
- **If the laboratory needs unclotted blood, fill the special bottle to the right line. Then, roll the bottle in your hands a few times so that the blood mixes with the chemical that stops it clotting.**

Blood smear

To make a blood smear you need perfectly clean glass microscope slides. Place a drop of blood near the end of one of the slides on which the blood smear will be made.



Bring the edge of another slide back to it so the blood drop spreads sideways. Keeping the slides in contact spread the blood along.



If the drop of blood was neither too big nor too small, there should be a thin film of blood smeared along the slide. The smear should become thinner and run out of blood before the end of the slide.

Skin scraping

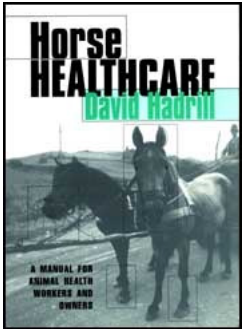
Skin scrapings can be used to detect small parasites of the skin (see the chapter *Diseases and parasites of the skin). A* scraping is usually taken from thickened, diseased skin.

To make a skin scraping, you need a sharp blade, such as a disposable scalpel blade or a razor blade. Some liquid paraffin (not the kerosene type of paraffin used for fuel) is useful to soften the skin. A laboratory may be able to provide 10% potassium hydroxide solution as an alternative liquid for softening the skin.

• With a piece of cotton wool wetted with either liquid paraffin or potassium hydroxide solution, moisten an area of skin about 3 cm wide.

• Scrape the area with the edge of the blade so that surface skin collects on it.

• Put the blade and sample in a bottle or wrap it in tinfoil to take for examining with a microscope.



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Contents:

3. How to give medicines

Top

3.1 How to estimate body weight

Top

It is important to know an animal's approximate body weight in order to work out how much medicine to give it. (The dose is usually worked out as the amount per kilogram of body weight. Thus, a 200 kg animal would need twice as much medicine as a 100 kg animal.)

Approximate body weights of horses, mules and donkeys

	Type of animal	*Body weight*
	Adult horse	400-500 kg

	Adult pony	300-400 kg
	Yearling horse	200-300 kg
	Newborn foal (of 450 kg mare)	40-50 kg
	Adult mule	350-450 kg
	Adult male donkey	300 kg
	Adult female donkey	200-250 kg
	Young donkey	100-150 kg
	Newborn donkey foal	30 kg

When estimating the body weight of a particular animal, think whether it is a larger or smaller breed, or if the animal is fat or thin, and adjust your estimate up or down. For example, in Pakistan some experts consider that the typical body weight of their native animals is 250-350 kg for an adult horse, 250-350 kg for an adult mule, and 150-250 kg for an adult donkey.

3.2 How to work out the amount of medicine to give

Top

- **Check the dose of the medicine, usually written on the container or on a piece of paper supplied with the bottle.**

- **Estimate the weight of the animal (see the section above, *How to estimate body weight).***

- **Work out the amount to give (see examples opposite).**

Example 1

A medicine has 5 ml/100 kg *written on the packaging. This means 5 ml of medicine for each 100 kg body weight of animal.*

If the animal weighs less than 100 kg, you need to inject less. If it weighs more, you need to inject more.

In this example, here are the amounts to give of a medicine with the dose of 5 ml/100 kg:

If the animal weighs 50 kg, inject 2.5 ml. If the animal weighs 200 kg, inject 10 ml. If the animal weighs 400 kg, inject 20 ml. (If the animal weighs x kg, give x/100 × 5 ml).

Example 2

Another medicine is to be given at a dose of 5 mg/kg. *This means 5 mg of medicine for each kg of body weight of animal. The medicine package says that each ml contains 100 mg of the drug.*

In this example:

If the animal weighs 200 kg it needs 200 X 5 = 1000 mg of drug. As 1 ml contains 100 mg, 10 ml contains 1000 mg. Therefore, give 10 ml.

If the animal weighs 400 kg it needs 400 × 5 = 2000 mg of drug. As 1 ml contains 100 mg, 20 ml

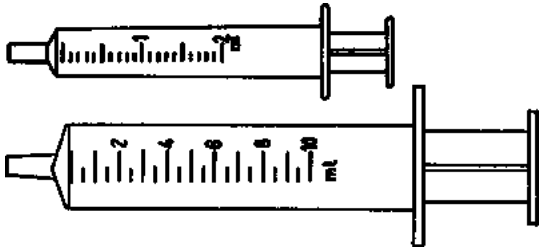
contains 2000 mg. Therefore, give 20 ml.

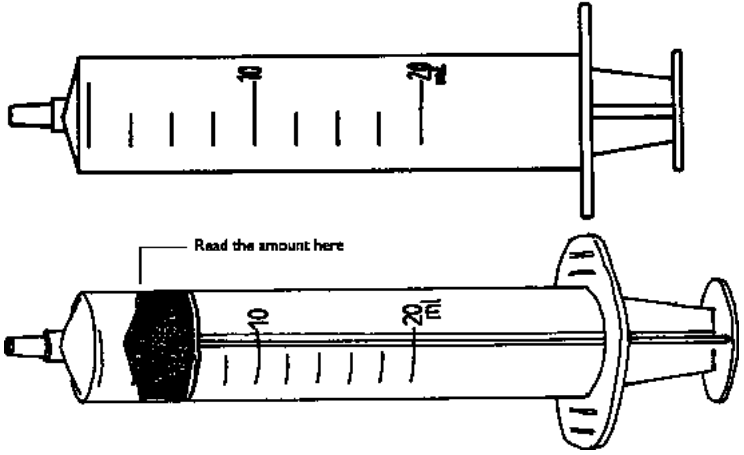
3.3 How to give injections

Top

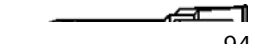
Syringes and needles

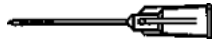
Some syringes are marked cc and some with ml. Cubic centimetres (cc) and millilitres (ml) are the same.





Recommended needle sizes for horses and donkeys

Type of injection	*Length of needle*	*Width of needle*	*Needle actual size*
Injection into muscle			
Adult horse or donkey	1.5 inches or 40 mm	20 gauge (0.9 mm)	
	or 1.5 inches or 40 mm	19 gauge (1.1 mm)	
	or 1 inch or 25 mm	19 gauge (1.1 mm)	
Thin, adult donkey	1 inch or 25	20 gauge (0.9	

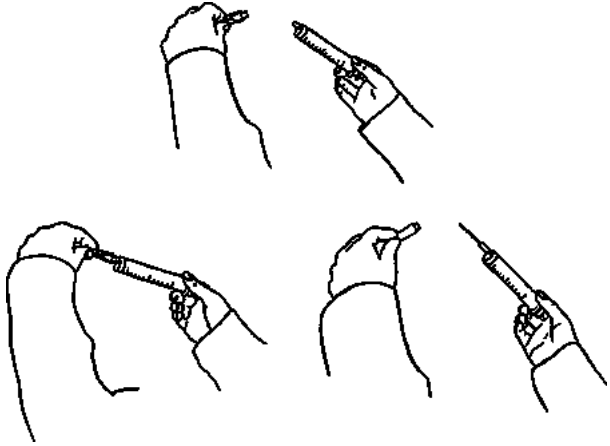
11mm, adult donkey	1 inch or 25 mm	20 gauge (0.9 mm)	
Foal	1 inch or 25 mm	21 gauge (0.8 mm)	
Large horse and thick substance to be injected (e.g. long-acting penicillin)	1.25 inches or 32 mm	18 gauge (1.2 mm)	
	or 1.5 inches or 40 mm	18 gauge (1.2 mm)	
Injection under skin	1 inch or 25 mm	21 gauge (0.8 mm) or 23 gauge (0.6 mm)	
Injection into vein	1 inch or 25 mm	21 gauge (0.8 mm)	

How to handle a syringe and needle

Needles and the medicine inside a syringe go into the body. They have to be perfectly clean or the injection site can get infected. Therefore, the syringe and needle must be either disposable equipment taken from new wrapping, or sterilized by boiling for 10 minutes.

How to attach a needle to a syringe

Attach a disposable needle to a syringe by holding the needle cover, like this.

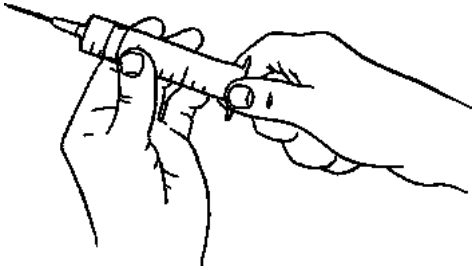


Keep syringe and needle clean

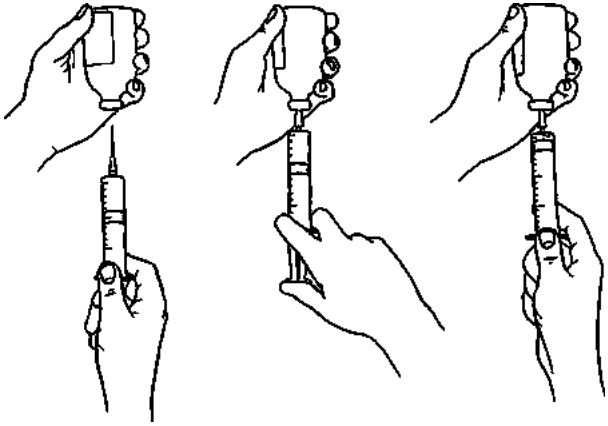
Never **touch the metal, thin part of the needle (or dirt from your fingers may go into the animal). If you drop the needle, do not use it. Use a new one (or a re-usable one that has been sterilized).**

How to load a syringe

- **Be sure the needle is firmly attached.**
- **Draw some air into the syringe by pulling back the plunger.**



- **Turn the bottle of medicine upside-down, insert the needle through the centre of the rubber stopper and slowly inject air into the bottle.**



- **Now draw the medicine into the syringe.**
- **Keep the bottle above the syringe so any air bubbles in the syringe go to the top.**

- **Push the plunger carefully so the air comes out.**

- **Now see if the right amount is in the syringe (the top of the plunger should be on the line for the proper dose).**

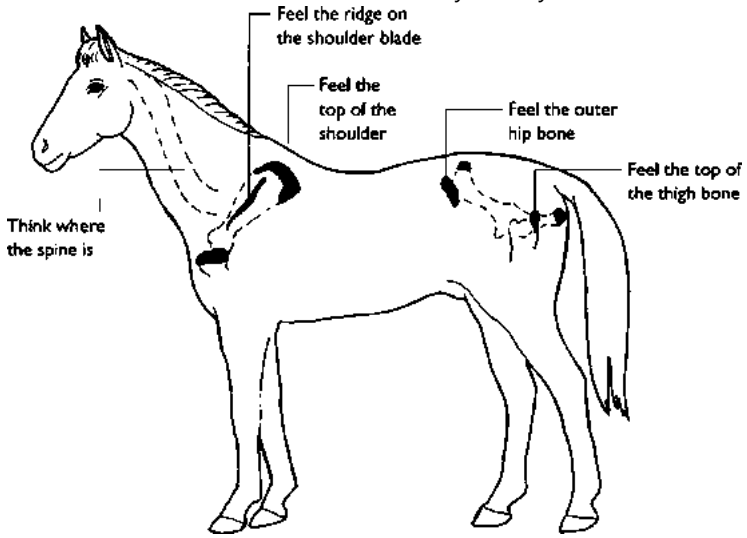
- **Withdraw more medicine or squirt some back into the bottle until the right amount is in the syringe.**

How to give an intramuscular or 'IM' injection

Most medicines are injected into muscle, by intramuscular or IM injection. In an IM injection the medicine goes into the muscle or meat of the animal, in the rump or in the neck. Vaccinations are usually given into the neck muscle. Very thin animals should always be injected into the rump.

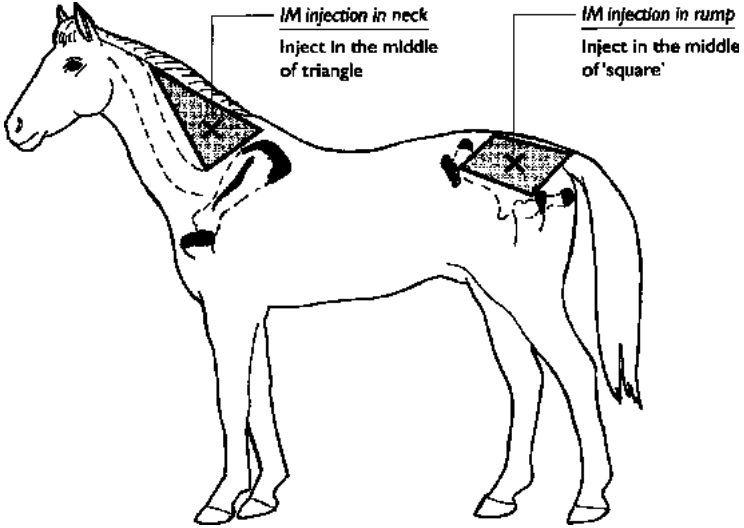
WHERE TO INJECT

First, be able to feel the bony points labelled in the picture. Also, think where in the neck the spine is, also shown in the picture. The parts of bones that can be felt are shaded black in the picture.



For a neck IM injection, put the needle into the middle of an imaginary triangle bounded by the spine, the shoulder blade and the top of the neck.

For a rump IM injection, aim for the middle of an imaginary square bounded by the point of the hip, the top of the thigh bone, the base of the tail and the back bone.



HOW TO INJECT INTO THE NECK MUSCLE

- **Pinch the skin with the left hand and introduce the needle slowly with the right hand.**

- **Try to suck back to make sure the needle is not in a blood vessel and, if you see blood come into the syringe, take the needle out and start again.**
- **Firmly squeeze the plunger to inject the medicine into the muscle.**

- **Pull out the needle, rub the site.**

- **Reward the animal with kind words and a pat if it behaved.**

HOW TO INJECT INTO THE RUMP ('GLUTEAL MUSCLES')

- **Choose a clean area of skin (if you have surgical spirit and cotton wool, wipe the injection site with it).**
- **Remove the needle from the syringe (do not touch the needle itself).**
- **Hold the needle by the base between finger and thumb with the point away from the palm of your hand.**
- **Lightly slap the back of your hand against the animal's skin twice.**

- **On the third slap, turn your hand and slap the point of the needle in right to the base of the needle.**
- **Attach the syringe to the needle.**

- **Continue with the other steps as for injecting into the neck.**

Subcutaneous or 'SC' injection

In a subcutaneous injection, medicine is injected just under the skin of the animal. Some medicines, tetanus antitoxin and some vaccines are given as SC injections.

The place for a subcutaneous injection is the skin on the side of the neck.

HOW TO INJECT UNDER THE SKIN

- **Choose a clean area of skin (if you have surgical spirit and cotton wool, wipe the injection site with it).**
- **Pinch a fold of skin.**
- **Keep the needle attached to the syringe.**
- **Push the needle into the tent of pinched skin.**
- **Keep the syringe flat against the animal's body so the needle does not go into the muscle.**

- **Take care that the needle does not come out of the other side of the skin fold.**

- **Release the fold of skin and give the injection.**

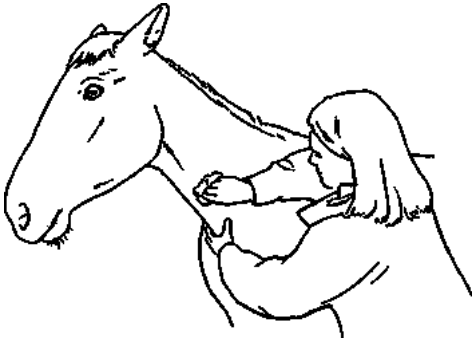
Injection into the jugular vein (intravenous or 'IV' injection)

The big vein in the neck, called the jugular vein, is used for IV injection. Blood flows down this vein from the head to the heart, so pressing on the vein lower down partly dams the flow of blood and makes the vein bigger.

Some medicines and many anaesthetics are given by IV injection. The method is also used for taking blood samples. In an IV injection the needle goes into the animal's blood in the big neck vein. Be sure that the equipment, the animal's skin and your hands are very clean.

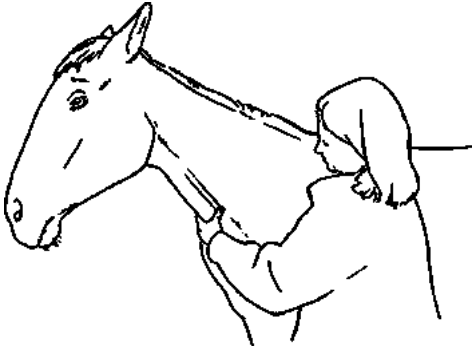
HOW TO INJECT INTO THE JUGULAR VEIN

- **Choose a clean area of skin in the jugular groove and wipe the injection site with surgical spirit on cotton wool.**



• Have the animal's head held so the neck is straight or turned slightly away from the side on which the injection will be made (to help remove slack folds in the skin).

• Put your thumb in the groove to make the vein stand out.



• By tapping the vein it is possible to see or feel a fluid wave that helps locate the

vein.

● Direct the needle up the vein, and push it through the skin.

● If you have put the needle in at right angles to the skin, it may pass straight through the vein, so pull it back slightly.

● Pull back the plunger and dark blood will flow into the syringe when the needle is in the vein.

● Stop pressing the vein with your thumb.

● Inject medication slowly.

● Periodically, check that the needle is still in the vein by pulling back on the plunger and looking for blood coming into the syringe.

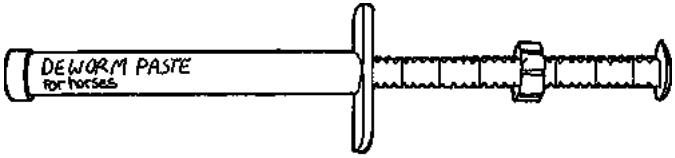
If taking a blood sample, do not stop pressing with your thumb until you have collected the amount of blood needed.

3.4 Medicines by mouth

Top

Medicines that are powder can be given by mixing with tasty, moist food, which the horse will eat greedily. It is difficult to give a pill or tablet to a horse or donkey. The mouth is long and there is a risk of being bitten.

Some medicines are packaged as a paste in a plastic 'dial-a-dose' syringe. The measured dose is squirted into the back of the mouth.



To make a paste syringe cut the end off a normal plastic syringe. Mix the medicine to make a sticky paste.

Be very careful about giving horses and donkeys medicines from a bottle. There is danger of biting the bottle and breaking the glass. Put a piece of plastic or rubber pipe on the neck of the bottle. Also, be careful to allow the horse time to swallow properly.

3.5 How to use a stomach tube

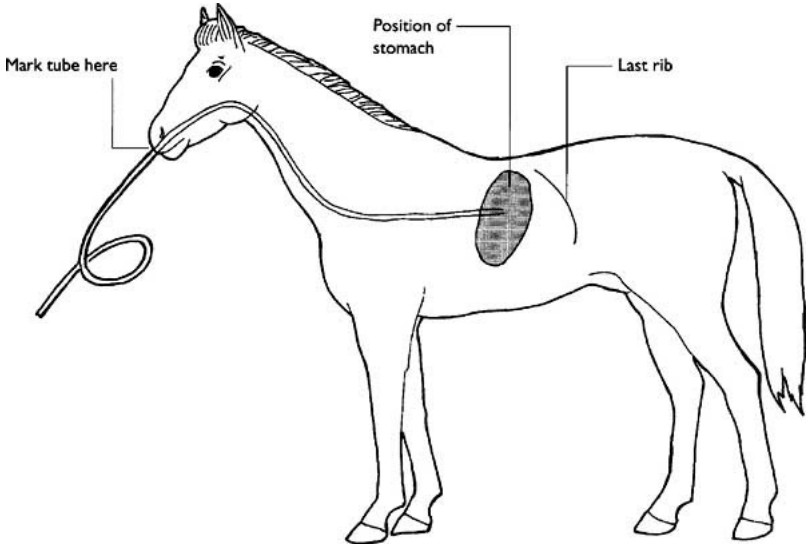
Top

A stomach tube is used to get liquids into the animal's stomach. The tube is pushed up the animal's nose. Before using a stomach tube for the first time, get training from an experienced person.

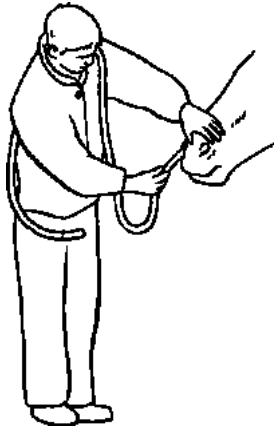
Use a smooth tube with the correct bore (diameter <2 cm). A funnel can be attached to the end.

HOW TO PASS A STOMACH TUBE

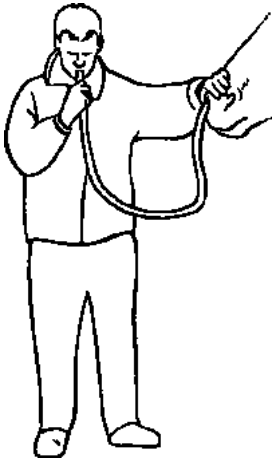
- **Hold the tube beside the horse. Make a mark on the tube with a pen to show roughly how much of the tube needs to go in to reach the stomach.**



- **If the tube is stiff, soak it in hot water to soften it.**
- **Put petroleum jelly on the tube to lubricate it.**
- **Place tube in the bottom of the nose.**



- **Keep the horse's neck flexed, but not too much.**
- **Introduce the tube slowly until you feel the horse swallowing.**
- **Push on slowly.**
- **Blow down the tube every 10 cm of tube that goes in to open the path for the tube. Then suck: you should feel resistance provided the tube is going the right way to the stomach. If the stomach tube is going the wrong way, to the lungs, you will suck air back and the animal may cough.**



• Watch for the tube in the groove on the left side of the neck, as it passes down towards the stomach. Feel the end of the tube go past your fingers held in the groove on the side of the neck.

• Feel the tube go more easily and smell gas when the tube enters the stomach.

• If you have passed the mark put on the tube before the start, do not push too much more of the tube inside.

• With the tube in place, liquid can be poured into the stomach down a funnel attached to the tube. Hold the funnel high so the liquid runs into the stomach.

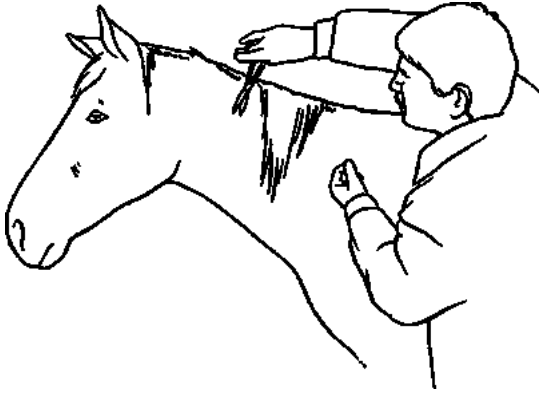
- **After giving the medicine, gently pull out the tube.**

- **If you fold the end of the tube in half as you pull it out, this will stop any liquid left in the tube from running out as the end of the tube comes out past the animal's throat.**

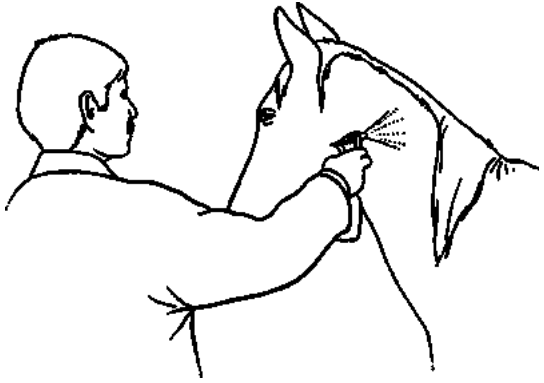
3.6 How to spray medicine on to skin

Top

For treating skin parasites and some other diseases of skin, a small sprayer is useful. The medicine is mixed with water according to the manufacturer's instructions. Take care not to spill the chemical on your own skin. Wear plastic gloves or put your hands in polythene bags before starting.



First, clip the hair so that the medicine can reach the affected areas.



Then spray the liquid.

3.7 How to sterilize equipment

Top

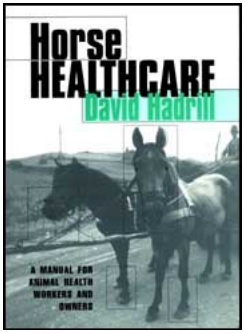
Any instrument that pierces the skin must be very clean before use. Equipment must be boiled in water for 10 minutes to be sure there is no chance of it carrying infection to an animal. Cleaning syringes and needles:

- **Flush through with clean water immediately after using (never let blood dry inside a needle).**
- **Take the syringe apart.**
- **Wash the parts in warm, soapy water.**
- **Rinse in clean, hot water.**
- **Boil for 10 minutes.**

Dry the instruments and pack them in clean paper or in a clean polythene bag ready for next use.

Horse Healthcare - A Manual for Animal Health Workers and Owners

Author(s)*:** ***David Hadrill
Publication date*:** ***2002
Number of pages*:** ***256
Publisher*:** ***ITDG Publishing



ISBN*: *1 85339 486 6

Contents:

4. Normal feet and legs and shoeing

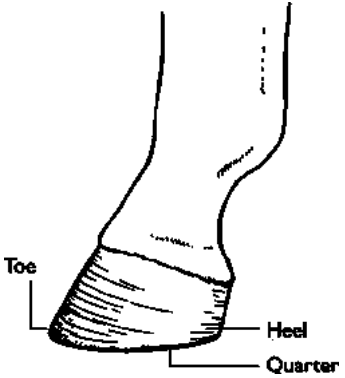
Top

4.1 Normal feet and legs

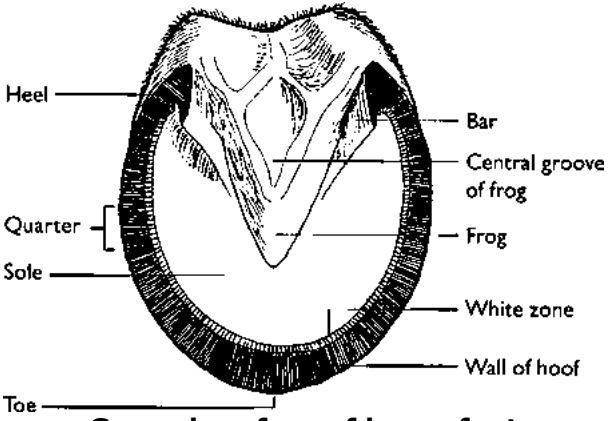
Top

Normal feet

The hoof is the horny covering of the foot. The foot means the hoof and everything inside the hoof. The hoof wall is insensitive and nails can be driven through this part without causing pain. Names of parts of the foot, which are used in this book, are labelled on the pictures of the horse's foot.



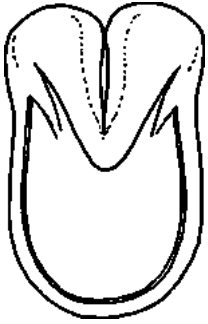
Side view of horse foot



Ground surface of horse foot

A donkey's foot is more upright than a horse's foot and has a different shape. Because of this the sole has a different shape.

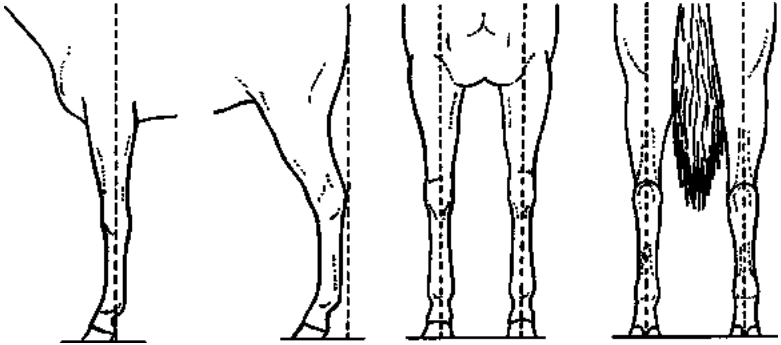
Side view of donkey foot



Ground surface of donkey foot

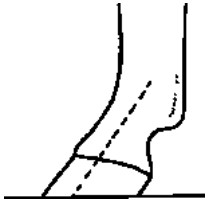
Normal legs

The shape of normal legs is shown in these pictures.



Differences from these 'ideal' leg shapes may be due to wrong bone growth, wrong posture, or injury. Defects of leg shape due to bone growth can sometimes be corrected by trimming the hooves to restore balance in the leg.

It is important to know that the hoof and pastern should be in line, as shown in the picture.(The pastern is the joint just above the hoof, between the foot and the fetlock.)



The straight line is lost if the hoof is trimmed too much at the front or back, as shown in these pictures.

Too much toe trimmed and/or not enough heel trimmed

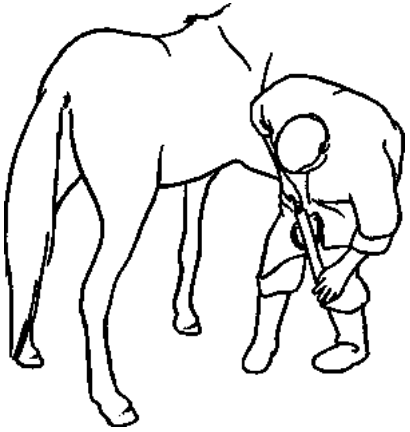
Too much heel trimmed and/or not enough toe trimmed

Routine hoof care

Animals working without shoes should have their feet checked every four weeks or sooner.

The hoof tends to split at the edges and spread at the ground, especially at the quarters. Rasping the edge of the hoof can reduce this.

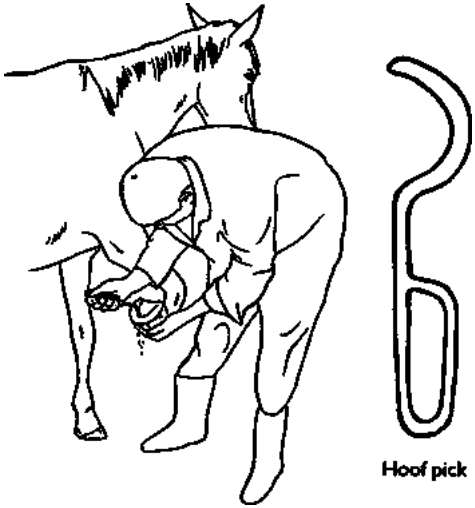
Hoof with splaying edge



Rasping the hoof

Be sure that an animal without shoes is not becoming foot-sore because the wall is wearing too fast on the road. If so, shoes should be put on.

Feet should have dirt picked out of the sole and frog with a hoof pick every morning and evening.



In hot, dry seasons, a hoof may become too dry and then get hard and crack. Moisture can be put back into a hoof by washing daily with water. Use a very soft brush in order that the outer layer of the hoof is not damaged. Alternatively stand the animal in a shallow pool or stream for a few minutes each day until the hooves become softer and less brittle.

Sometimes oils are painted on hooves. Oils can be useful. Hoof oil forms a barrier that keeps moisture in, but in the same way the oil keeps water out. Therefore, do not use hoof oil on dry, brittle hooves.

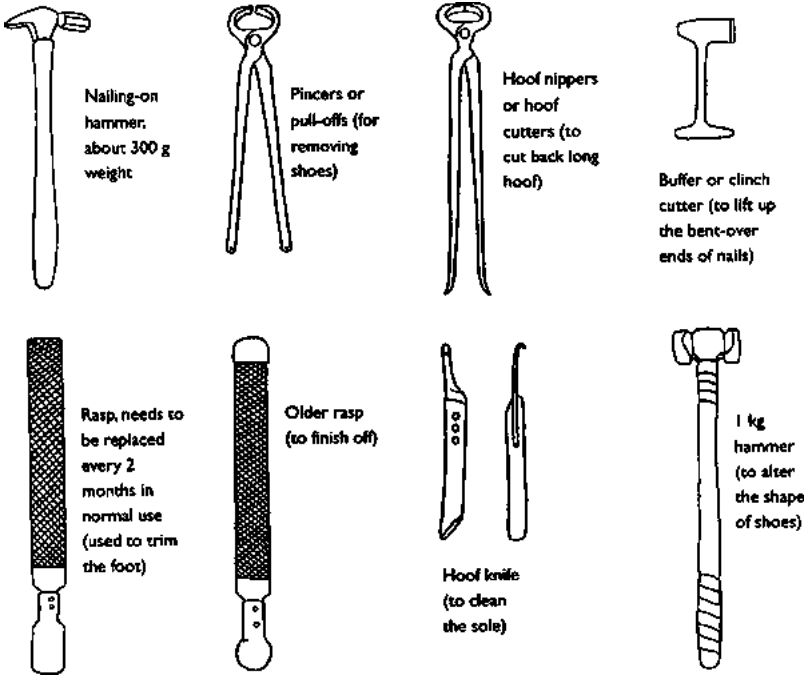
4.2 How to replace a horse shoe

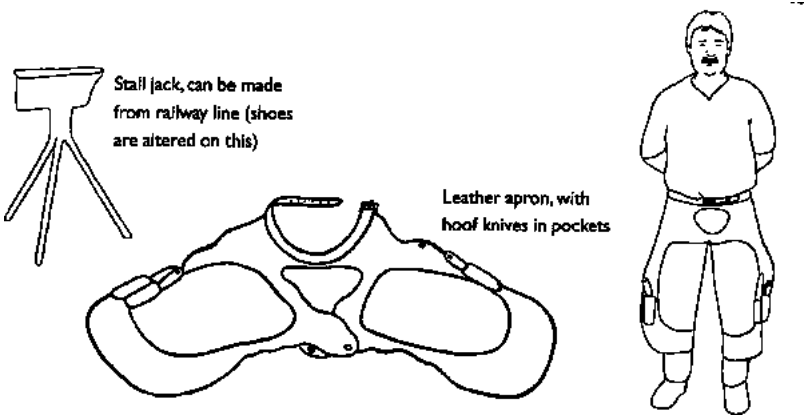
Top

This section shows the key steps in replacing a horse's shoe. It is necessary to learn from an experienced person and to practise with their supervision when learning.

Equipment used for shoeing

The list of tools given here is typical of the basic tools used by farriers in Europe. In other parts of the world, farriers may use alternative tools to some of the tools listed. However, the principles of basic shoeing are valid whatever tools are used.


Nailing-on hammer, about 300 g weight
Pincers or pull-offs (for removing shoes)
Hoof nippers or hoof cutters (to cut back long hoof)
Buffer or clinch cutter (to lift up the bent-over ends of nails)
Rasp, needs to be replaced every 2 months in normal use (used to trim the foot)
Older rasp (to finish off)
Hoof knife (to clean the sole)
1 kg hammer (to alter the shape of shoes)

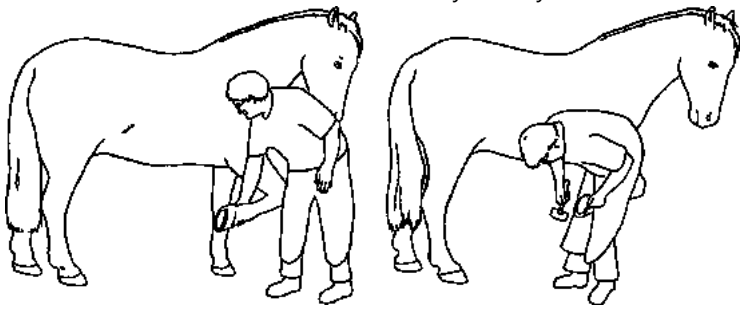


For making horseshoes, extra tools and equipment are needed. These are described in specialist books about horseshoeing.

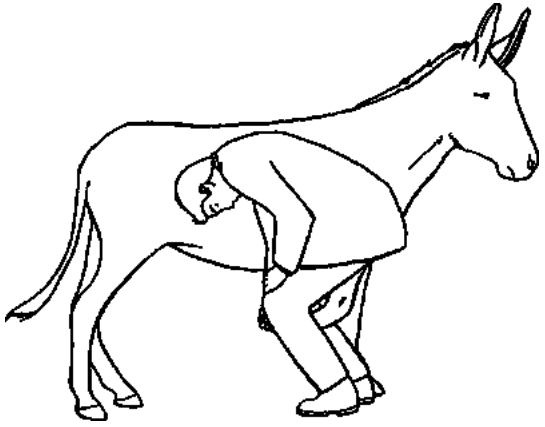
How to hold the foot

Pick up the horse's foot.

Step over the foot, and grip the leg between your thighs.



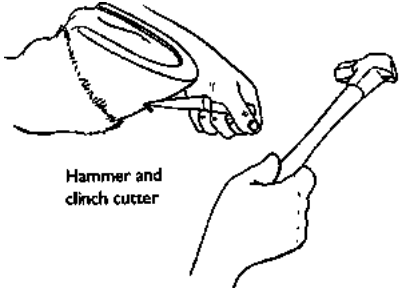
When shoeing a donkey, the donkey's leg is held lower than a horse's leg, because a donkey is smaller than a horse. If the donkey's leg were held between the thighs, as a horse's foot would be, the donkey's leg would be twisted.

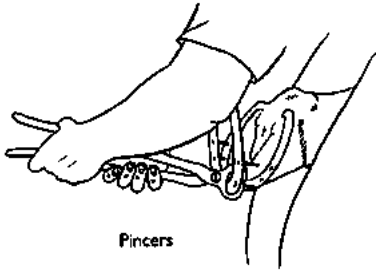


Farrier's stance for donkey

How to remove a shoe

- **Straighten or break the turned-over part of all the nails.**

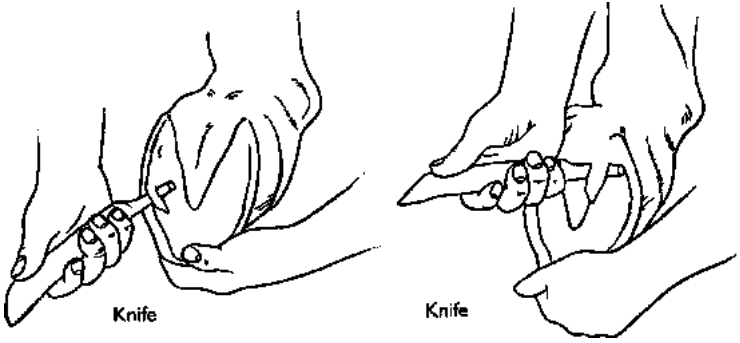




- **Use the pincers to lever off the shoe, starting at the inside heel. Push the handles of the pincers down and in towards the toe of the foot. Work first down one side, then down the other side. To help get leverage it is important to support the foot at the same time.**

How to trim the hoof

- **Remove loose flakes of sole with the knife.**

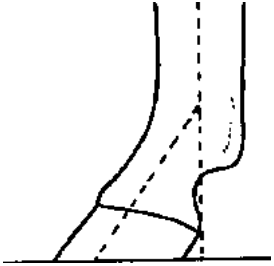


• Trim the edges of the frog with the knife.

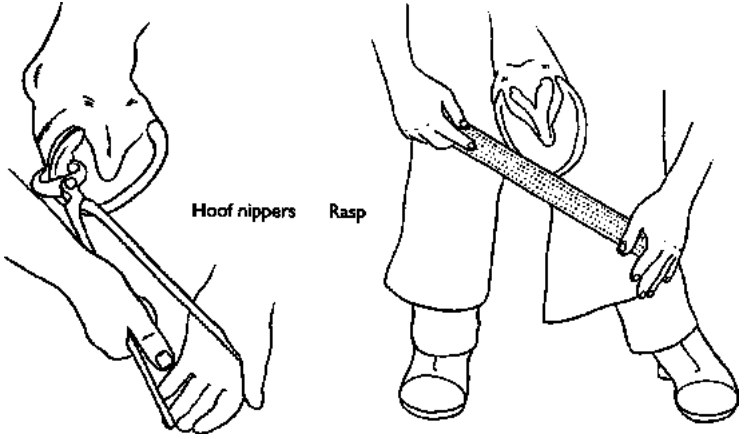
• When trimming the hoof, the aim is to make the shape like that of the normal foot, described above. After shoeing, the pastern and hoof should be at the same angle. If the heel is not trimmed enough, the hoof becomes too upright. This can result in lameness.

• Look at the hoof and decide how much to trim. After trimming, the hoof should be balanced on each side and the hoof walls should not be below the level of the wide part of the frog.

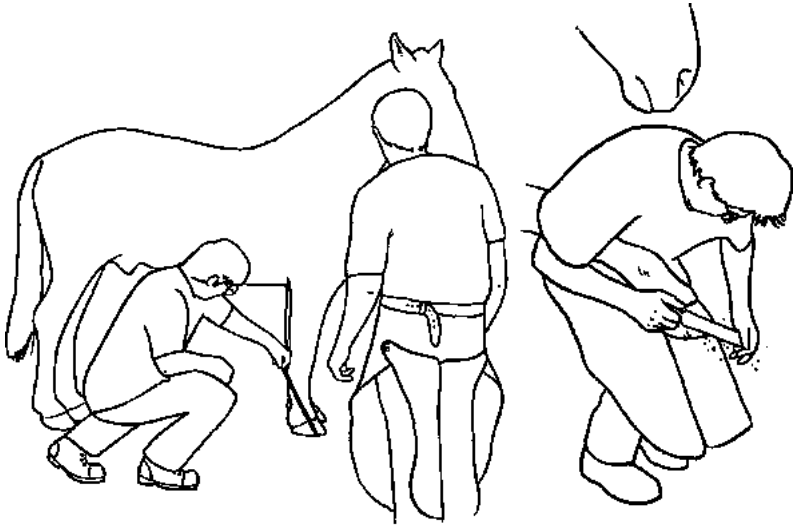
• With the knife, cut back the sole around the white line to the depth of the hoof wall that is to be removed.



- **Starting at one heel, cut round the hoof wall with hoof nippers to shorten the foot.**



- **Rasp the sole flat and even.**
- **Check that the hoof and the pastern are in a straight line.**



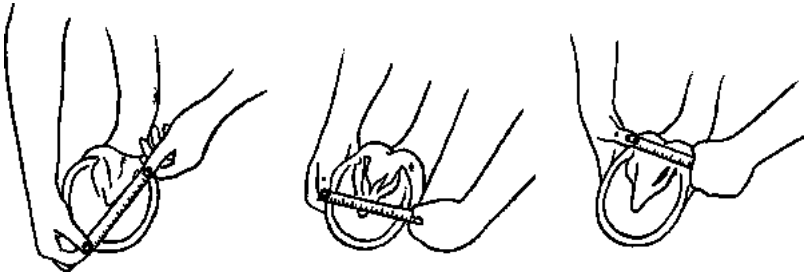
Rasp outside of hoof wall

- **Alter shape of foot if necessary.**

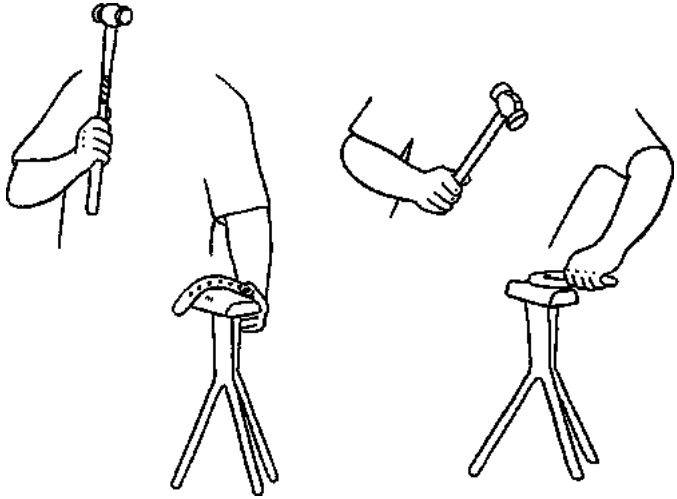
- **Rasp the outside edge so the wall has even thickness at the ground. Do not rasp the shiny outside of the wall high up the hoof.**

How to make the new shoe the correct size

- **Measure across the foot in three places and select the correct size of shoe.**



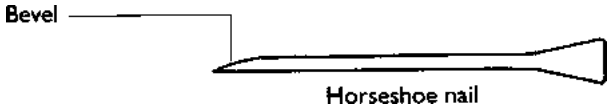
- **If necessary, make the shoe wider to fit the foot, using the hammer and stall jack.**



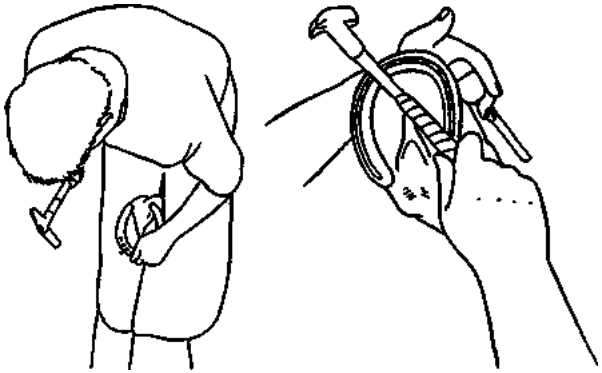
- **Flatten the shoe, again using the hammer and stall jack.**

How to nail on a shoe

- **When nailing on the shoe, imagine, or draw, a line one quarter to one third up the hoof. The nails should come out at this line.**
- **Position the point of the nail in the horn of the wall outside the white line.**
- **If using proper horseshoe nails, face the nail bevel to the frog.**

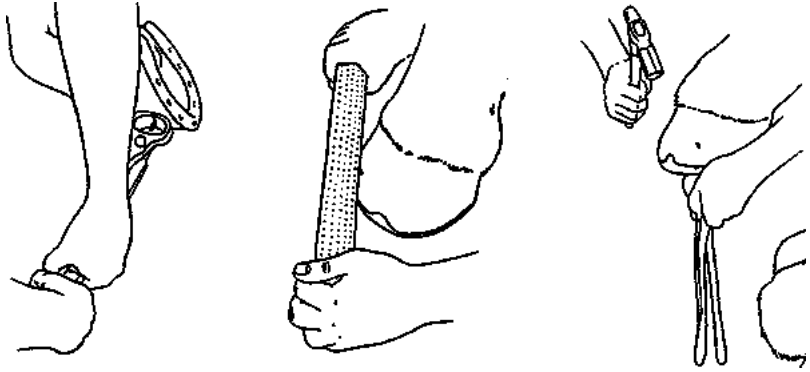


- **Hold the shoe hard and hammer the nail, aiming for the imaginary or drawn line.**



- **Hammer nails against pincers to tighten them.**
- **Clip the ends of the nails with the pincers so that 3 mm of nail sticks out from the**

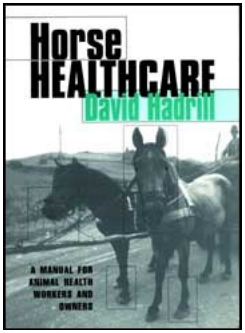
hoof wall.



- **Using the rasp, make a groove under the end of the nail that sticks out.**
- **Hammer the nail against the pincers to turn the nail end over into the groove.**

To remove a nail, for example because it has been driven in the wrong place.

- **Straighten the end of the nail if it is bent over.**
- **Hammer on the shoe either side of the head of the nail.**
- **Hold the closed pincers against the point of the nail and push the nail.**
- **When enough of the nail head is above the hoof, pull it out with the pincers.**



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Contents:

5. Lameness

Top

5.1 How to decide which leg is lame

Top

Professional advice

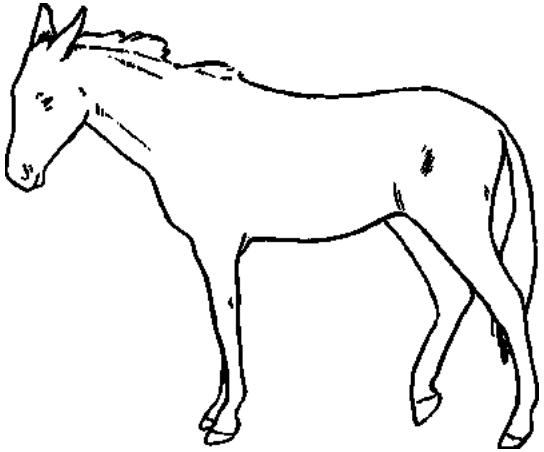
It is difficult to decide where the pain is which causes lameness. It is best to get an experienced vet to decide. There may be lameness in more than one leg. There may be an earlier, root cause that over time has resulted in other lameness. Always get professional

advice when possible.

First, look at the standing, resting animal

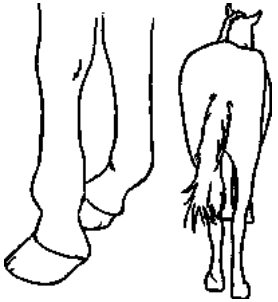
If it is not putting weight on one of its legs, that one is likely to be lame.

The foot of the lame leg may be held pointing to the ground. This is especially true of a front leg. Horses normally keep their weight on both front feet, although they often rest a hind foot.



Pointing a hind foot can just mean resting the leg, but standing with a front foot pointed may mean that particular leg is painful.

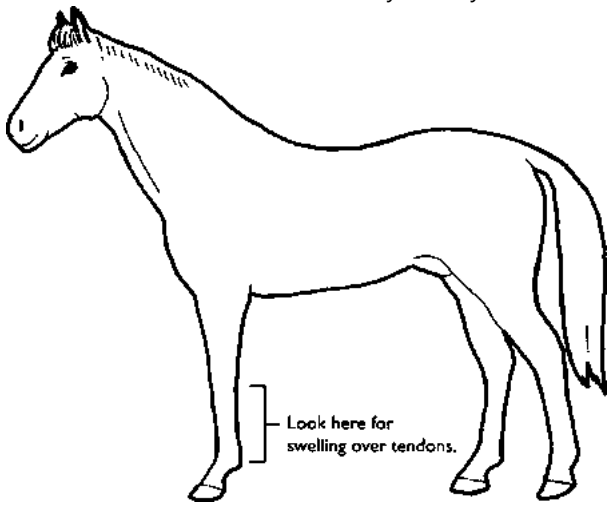
After a horse has been lame on one of its fore legs for a long time, the leg may straighten.



A horse that has been lame for a long time may have less muscle on the lame side. From behind the horse, look for differences in the amount of muscle on the quarters. Look for a difference in the amount of muscle over the shoulders on each side.

Look for new swellings, especially around joints.

Look for swellings over tendons, particularly at the back of the cannon of the front leg, as shown in the next picture.



Pick the feet up

Pick up all four feet in turn and clean the dirt out of the soles. Look for injury, discharges, stones, bruising and nails.

Look at the animal trotting away from you

Get someone to *trot* the animal away from you for 20 metres on level, hard ground. Watch each hip to see if it goes up or down when the hind foot hits the ground.

- **Both hips stay almost level in a horse when there is no hind leg lameness.**
- **The hip goes up and down more on the side where there is pain in that hind leg.**

Look at the animal trotting towards you

When it trots, look for the horse moving its head up as its front foot hits the ground. A normal horse does not lift the head much. If a horse moves its head up, it is usually because it feels pain in a front leg when it takes weight.

The animal will nod its head down when the front foot on the good side hits the ground. The animal tries to take more weight on the good side. Remember, *when the lame animal trots, it nods on the good leg.* Its head nods down when the front leg hits the ground on the side opposite to the lame leg.

Look at the trotting animal from the side too. An animal lame in both hind legs tends to take short steps, and may drag the toes of its feet along the ground (look for wear on the toes). Usually lifting the head is a sign of front leg lameness, but it can indicate severe pain in a hind leg.

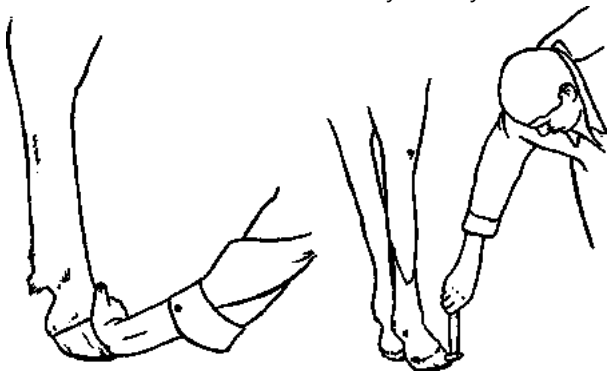
5.2 Checking more closely for the source of lameness

Top

Feet

Always check the feet very carefully. Most lameness is in the feet. A farrier (blacksmith) is often experienced at finding problem areas in a foot.

Feel for heat. Always compare the suspected problem side with the opposite one. If one foot feels much hotter, this suggests infection or broken foot bones. If there is heat in the feet on both sides, it suggests laminitis.



Pick up the foot and look underneath. Press as hard as you can with your thumbs and see if the animal shows pain by trying to pull its foot away. If you are not sure if there is pain, use a hammer or hoof tester tool. See the section *Nail through the sole and infection in the foot.*

The coronary band area

Feel the area just above the wall of the hoof for pain and swelling. Swelling at the front or back of this area may suggest tendon damage. Swelling at the back may be caused by infection coming up from the foot. Feel the cartilages (see the sections *Quittor* and *Ring bone).*

Shins

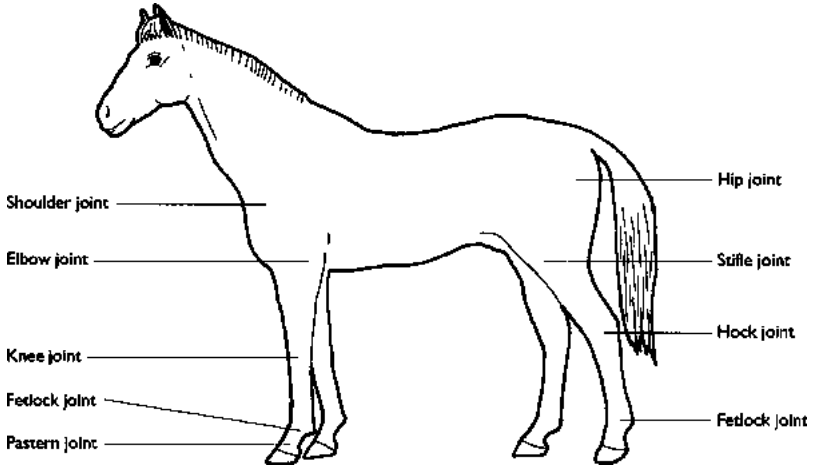
Feel for pain by rubbing the front of the shins firmly with a clenched fist. Pain suggests sore shins. You may notice 'splints' which are bony swellings on the shin bones. See the sections *Sore shins* and *Splints.*

Tendons

Injuries to the tendons cause heat and pain and swelling. Carefully feel the area behind the cannon (shin) bone. The place to check is shown in the drawing in the previous section.

Joints

Feel for heat in all the joints from the fetlock joint up to the shoulder or hip. The names of joints used in this book are shown in the picture.



Fetlocks

Swellings behind the fetlock joints without heat or pain are common. They are sometimes called 'windgalls' and are not normally serious in older animals. Pain and heat can

sometimes suggest a serious problem, such as damage to ligaments or to the pair of small bones behind the joint.

Knees

Heat and swelling in the knee follows injury to the (carpal) bones in the knee or the ligaments which connect them. Swelling can also occur around tendons (the cords which connect muscles to bones) where they cross the front or back of the knee. Hard swellings on the front suggest old arthritis.

Elbows

Swelling behind the elbow sometimes occurs (see the section *Capped elbow).*

Hocks

Look for soft swelling at the front and inside of the joint (see the section *Bog spavin).* Hard, bony enlargement may be felt at the inside of the joint (see the section *Bone spavin).*

Stifle

The connections between bones (called ligaments) of this joint are sometimes injured, causing pain in the joint and lameness. The leg may become stiff and straight if the joint gets 'locked'.

Neck and back

Check the neck and back as well. Stand in front and hold the head up. Look for swelling on one side of the neck.

Lameness is not always caused by a problem in the feet or legs. If the neck is injured, the pain from this stops the animal from moving its neck freely. Injury to the spine may result in the back not looking as straight as usual because of strong contraction of back muscles on one side.

Foot lameness

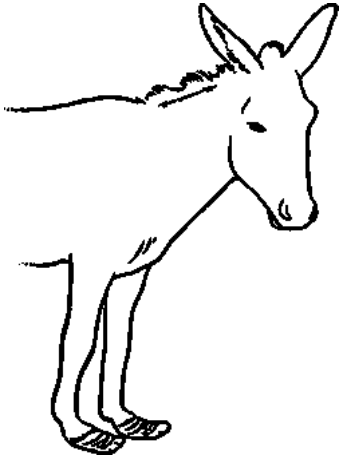
5.3 Severely overgrown hooves

Top

The hoof continues to grow throughout life and in the natural state wears down as it grows. Sometimes animals grow very long hooves when they are rested or injured, because they put less weight on a foot.

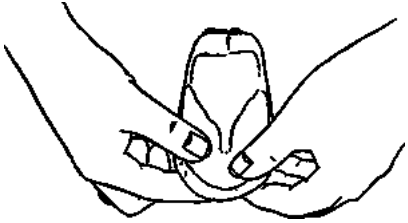
How to treat overgrown hooves

Overgrown hooves can be trimmed quite boldly because the bones and other structures inside the hoof do not grow down as the hoof wall grows, and because overgrown hoof wall is not sensitive to pain. If hooves are very overgrown, it is best to trim back the hoof to the normal shape in more than one session, allowing two weeks between each session.



The aim is to restore the hoof to its normal shape and angle to the ground. See the section *Normal feet and legs* for the normal angle of the hoof to the ground. The section *How to replace a horseshoe* also explains how to trim a hoof.

- **Using a sharp knife cut the sole back. Press with your thumbs to make sure that the sole is firm. Stop cutting the sole as soon as you feel a little tiny bit of movement of the sole under thumb pressure. Immediately stop cutting deeper if you see a pinkish colour or blood.**



Check thickness of sole by pressing with thumbs.

• After cutting the sole, use hoof cutters to remove the overgrown wall. Remember the hoof wall bears the weight, not the sole. Therefore, the hoof wall is trimmed so that it remains longer than the sole.

• When cutting the wall, it is necessary to keep comparing both sides to make sure that they are balanced and symmetric.

• Use a rasp to tidy up, but be very careful not to take off too much hoof wall with the rasp.

• Use a sharp knife to trim the frog. After trimming, it should have its normal shape and should just contact the ground.

• After trimming, make sure the animal stands in a place with deep, clean bedding such as straw for at least a week.

5.4 Nail through the sole and infection in the foot

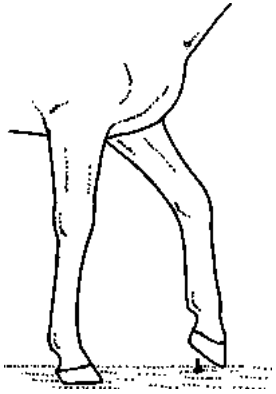
Top

Nails and other sharp objects sometimes get trodden on and penetrate the sole. A horseshoe nail in the wrong place can also cause infection. If infection develops, the horse

is in great pain. If infection becomes established in the joints inside the foot or the tendons, it may never be cured in some cases.

What infection in the foot looks like

- **The animal will not be willing to put the foot on the ground.**
- **It may stand with the affected foot pointed down to the ground, not resting weight on it.**
- **The foot feels hot.**
- **Pain usually increases after a few days when infection gets worse.**



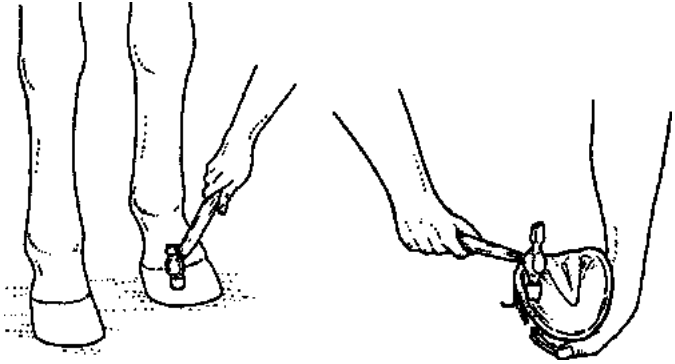
How to decide if there is something painful in the foot and find the painful place

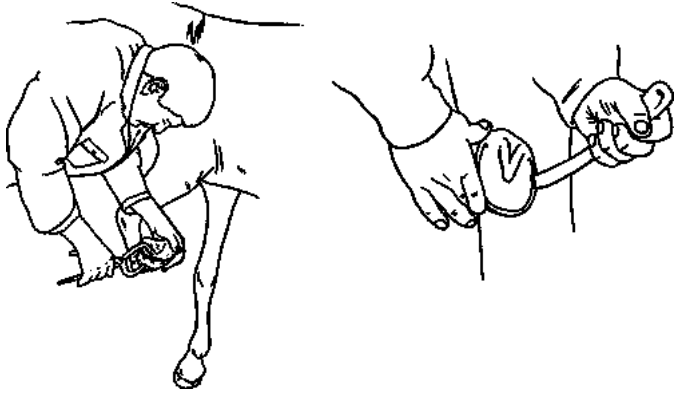
- **Pick up the foot and look for a 'foreign body'. It is often possible to see a nail or the end of a piece of metal. If you do not see anything, it may have gone deeper**

into the foot.

● Press hard over all parts of the sole, and see if the animal flinches.

● If you are not sure of a pain response, tap round the sole and wall with a hammer or the handle of a knife. If there is pain in the foot, the horse will immediately lift it when it is hit.





- **A hoof tester tool can also be used to confirm there is pain in the foot. Use the tool to press around the sole and frog. Start by pressing at one heel, and work around the sole beside the wall to the other heel. See how the animal reacts. When the painful place is pressed, the horse will flinch.**

- **Mark the most painful spot by scratching with a knife.**

How to treat infection in the foot

TETANUS INJECTION

Check if the animal is vaccinated against tetanus. If not, inject with tetanus antitoxin.

TREAT THE FOOT

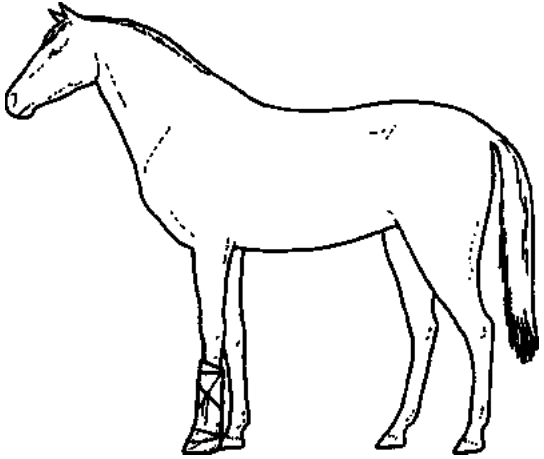
• Pull out the nail or other object if you can see it.

• With a sharp knife, open up the track where the object entered. Farriers or blacksmiths are usually the best people to get to do this. If you could not see the end of a nail, the track is likely to be in the place where there was greatest pain.

• It is important to cut out enough of the sole to let all the infection out, or else the infection will come back. If in doubt, make the hole a bit bigger.

• Use syringes full of boiled and cooled water to flush out the infection by squirting the fluid into the hole.

• Wrap the foot with a clean sack so that dirt cannot enter the hole when the foot is put to the ground. Keep the animal on dry ground.



• Remove the sack two or three times each day and soak the foot in a bucket of warm, salty water (as hot as you can comfortably bear your own hands in) for about 10 minutes. Dry the foot and replace the sack. Do this for a week.

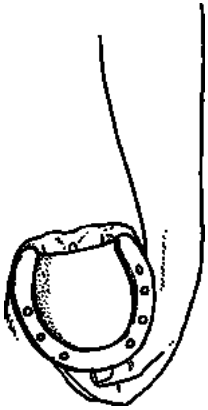
• If there is no more pus, no pain, and the horse walks on the foot without lameness, pack cotton wool (unspun cotton) with 'Stockholm tar' or with antiseptic ointment into the hole.

• Do not let the horse stand on dirty, wet ground.

• Leather across the sole helps protect it. The leather is put over the sole when nailing on a shoe.

• After another ten days, cut the piece of leather around the inside of the shoe.

• Keep the horse on dry ground for the next few days and then gradually bring it back to normal work.



ANTIBIOTIC INJECTIONS

• When the infection is drained fully, antibiotics are not necessary or helpful.

• Only if the horse has a fever the day after the infection is cut out of the foot, give antibiotic injections for three days.

• Infections deep in the foot may temporarily improve with antibiotics but, if the joints or tendons in the foot are affected, these infections may never improve. Some animals remain extremely lame and have to be euthanased because they cannot be cured.

5.5 Laminitis

Top

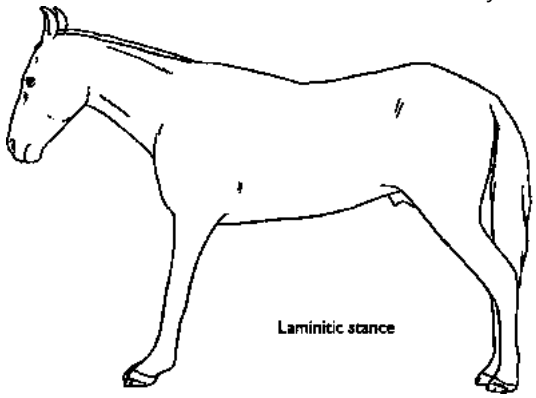
Laminitis is inflammation under the horny wall of the hoof. An animal with acute laminitis is extremely lame and uncomfortable.

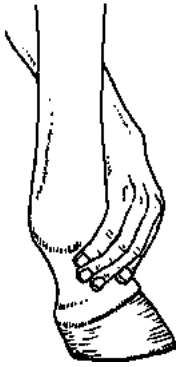
What causes laminitis

- **Some allergies or digestive problems,**
- **eating a lot of lush grass - especially small, fat ponies taking too little exercise,**
- **eating a lot of grain such as wheat,**
- **retained afterbirth (see the section *Retained placenta* in the chapter *Birth and care of foals),**
- **a lot of work on hard ground.**

What acute (i.e. sudden onset) laminitis looks like

- **The affected feet feel hotter around the coronary band.**
- **The animal is very lame, and reluctant to put weight on affected feet. This may make it stand in an unusual way, appearing to lean back on its heels.**
- **The sole may bulge due to pressure in the foot.**





- **The pulse can be felt more strongly than normal in blood vessels above the foot. See the section on *Temperature, heart rate and breathing.***

How to treat sudden onset laminitis

STOP ANY DIETARY CAUSE

If diet is the cause, stop the animal eating grain or similar. Give a laxative, for example, 500 ml of liquid paraffin, so that the bad food passes through the horse faster. See the section *About poisons and general treatment* for medicines to make food pass through more quickly.

MAKE THE FEET MORE COMFORTABLE

- **Provide a deep, soft bed.**

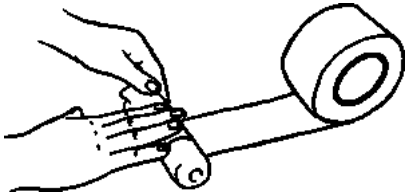
• Put sand on the stable floor.

• Let the horse stand in cool water or mud, for example, in a stream, three or four times a day.

• Do not remove horse shoes because the sole may be painful. (Only remove shoes if nails placed too deeply appear to be causing the problem.)

GIVE SUPPORT TO THE FROG

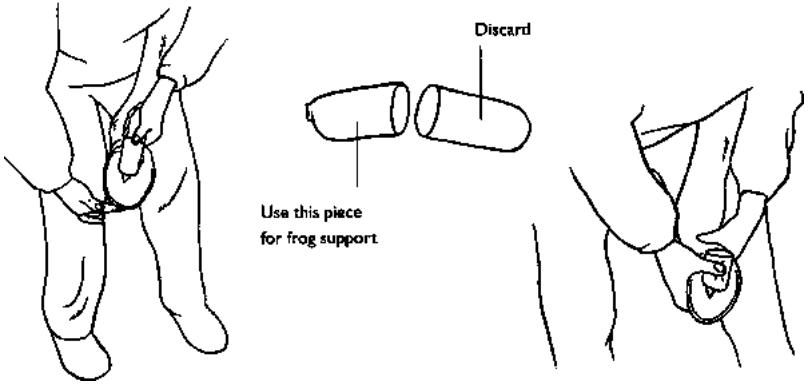
The aim of a frog support is to transfer more weight from the hoof walls to the frog. To make it you need a roll of strong, sticky tape and a rolled bandage 8 or 10 cm wide.



• Roll sticky tape around the bandage.

• Put tape over each end of the bandage.

• Hold the taped bandage roll against the frog to measure how big the support should be.



• Cut the support to the required length with a very sharp knife, for example, a scalpel blade.

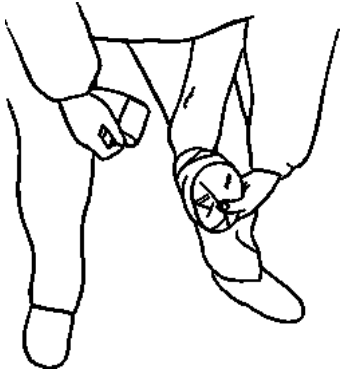
• Put strips of tape over the cut end and again wind tape around it.

• Hold it on the frog.

• Use strips of tape to fix it to the sole and walls of the hoof.

• Finish off with sticky tape around the walls of the hoof. Do not stick tape on to hair, only on to the hoof wall.

• Keep the frog support in place for two weeks.



DRUGS TO REDUCE PAIN AND INFLAMMATION

- **Phenylbutazone or other NSAID type drugs.**
- **Do not give corticosteroid drugs.**

If the tip of the bone that is normally inside the hoof can be seen poking through the sole of the foot, the foot will not recover. Euthanasia is recommended.

How to treat laminitis later, after the foot has changed shape

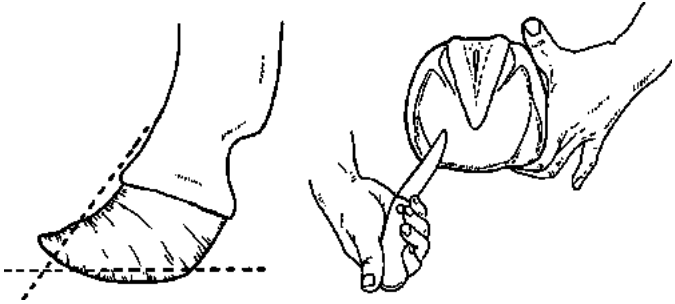
FOOT TRIMMING

After some time, laminitis changes the shape of the foot. The wall becomes longer at the heel. Trimming is needed to correct this.

- **Check the sole for infection. Abscesses are often found near the tip of the frog. Find the infected place and treat by cutting the sole as described in the section, *Nail through the sole and infection in the foot.***

- **Trim the toe back to the white zone. The white line (see the section *Normal feet and legs)* becomes wider because of laminitis. At the toe the white line may be 2 cm wide. The lower part of the wall at the toe is rasped off down to the white line.**

- **Trim the heel to make it near the length it would be on a normal foot.**



After the toe has been rasped away, a blacksmith may fit a special shoe, for example, a shoe made with a clip at each quarter instead of one clip at the toe.

DIET

If eating lush grass caused laminitis, the animal should be kept away from the grass, housed, and given a little hay each day. When it seems better, allow a maximum of one

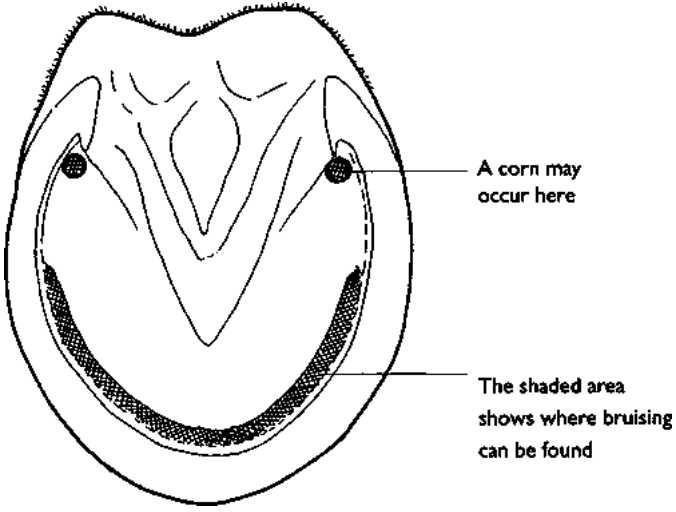
hour to graze each day for at least a month.

5.6 Bruised sole and 'corns'

Top

When the sole is bruised there is bleeding beneath the surface. Soreness and pressure in the foot causes pain and lameness.

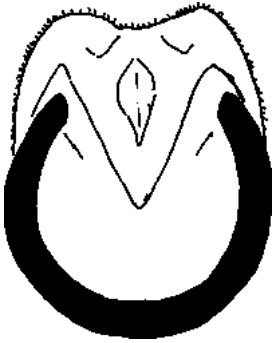
A corn is a bruise on the sole between wall and bars in the position shown in the picture. Horses usually get corns on the front feet when wearing shoes.



Causes of bruises on the sole

• Leaving shoes on too long. The wall of the hoof may grow long so that the sole of the foot presses on the back parts of the shoe,

(a) A well fitted shoe.



(b) This shoe has been left on too long. The hoof wall has grown. Now part of the sole presses on the heels of the shoe and corns can result.

• bad shoeing,
• stone under the shoe,

- **work on hard roads,**
- **jumping on to stones or hard objects.**

What bruised sole looks like

- **Lameness.**
- **Bruising which at first shows as bleeding under the sole.**
- **Later the bruised area looks yellow and the sole is flaky.**
- **The affected area is just inside the walls (nails are more often beside the frog).**

How to prevent bruised soles

- **Proper, regular shoeing. Do not leave shoes on too long.**
- **Check feet daily and pick out debris and stones.**

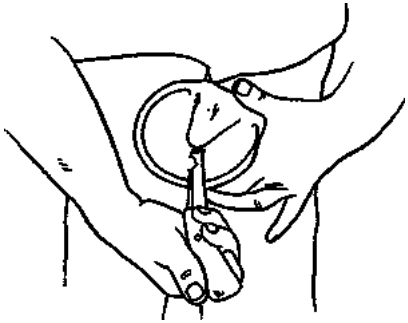
How to treat mild cases of bruised sole

- **Remove the shoe.**
- **Rest the horse and give soft bedding.**
- **If the animal has to keep working place a leather pad across the sole (see the section *Nail through the sole and infection in the foot).***

How to treat severe cases of bruised sole with infection

This is a job for the farrier or blacksmith.

- **With a knife, pare off the surface layers of the sole, and look for signs of bruising and infection.**

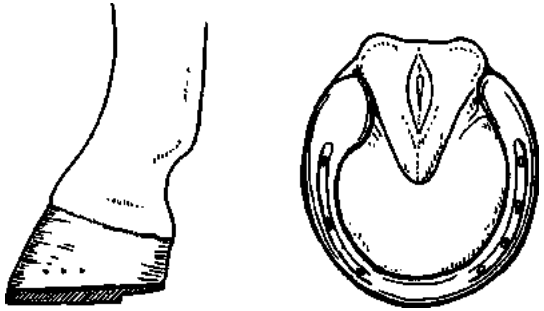


- **Cut out the bruised area.**

- **If there is infection, cut away to allow drainage, as for nail in the foot, and stand the foot in hot, salty water twice daily for three days. If the animal has a fever, give antibiotic injections for three days.**

- **Inject tetanus antitoxin.**

• A set-heeled shoe can be fitted to prevent weight being carried on the area with the corn.

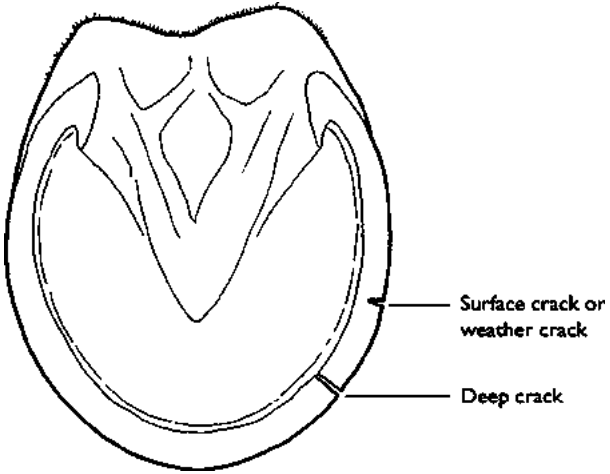


5.7 Hoof cracks

Top

Cracks are common when horses without shoes do not have their feet trimmed. The end of the hoof wall grows out and splits.

When you see a crack in a hoof, first look at the sole. If the crack does not cross the whole wall, it is not usually important. Such cracks are sometimes called weather cracks.



When you look at the sole and see a deep crack that goes across all of the hoof wall, it is a true crack. This kind of crack is known as a grass crack or a sand crack depending whether the crack starts at the bottom or the top of the hoof.

A. Grass cracks

Cracks often occur after horses are turned out to graze for some time, so they are called 'grass cracks'. A grass crack does not go all the way up to the top of the hoof.

What a grass crack looks like

- **Cracks rising up from the sole.**
- **Usually not lame, unless the crack is big and opens when the animal walks.**

How to prevent grass cracks

Keep feet properly trimmed.

How to treat grass cracks

When shoes are put on again, the crack usually grows out and disappears. If the grass crack is severe these treatments help.

• If the hoof is dry and brittle, use a cloth or brush to paint water on the outside of the hoof each day. Alternatively, stand the horse in water, for example, in a stream. Some of the water is absorbed into the hoof.

• A skilled blacksmith can make a shoe with clips each side of the crack.

• Severe grass cracks can be fixed with nails across the crack (see the section *How to treat a deep sand crack).*

• Make the top of the crack wide.

- with a heated metal rod, burn a hole into the hoof wall at the top of the crack. The hole should be about 1 cm diameter and 0.5 cm deep.

- or, use a rasp to make a groove at an angle on each side of the crack.

B. Sand cracks

***A* crack that starts at the top of the hoof is sometimes called a 'sand crack'. It is usually**

caused by an injury to the coronary band, from where the hoof grows.

The sides of a sand crack never grow back together. The crack disappears only if new horn starts to grow down from the top of the hoof without splitting.

What sand cracks look like

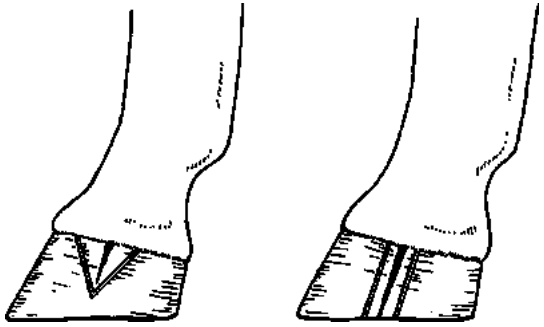
- **A crack starting from the top of the hoof.**
- **Pain and lameness if it is a deep crack extending right through the hoof wall.**
- **Blood or pus may exude from deep sand cracks.**

How to prevent sand cracks

Avoid injury to the top of the hoof.

How to treat a sand crack that does not go through all layers of the hoof

Cut grooves into the hoof each side of the crack (see pictures). These grooves help reduce the movement between the sides of the crack.

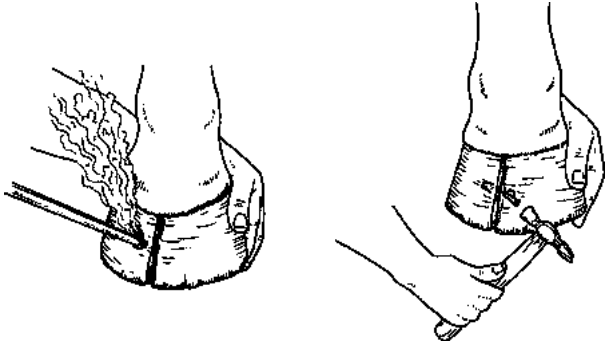


How to treat a deep sand crack

Put nails across the crack to stop the crack's sides from moving.

- **With a hot metal rod, burn dents in the hoof either side of the crack.**
- **Drive a small horseshoe nail across the crack, taking great care not to go too deep, and tap the head of the nail as far as it will go.**
- **Turn the end of the nail over and cut off excess length.**
- **Repeat so there are two or three nails across the crack.**

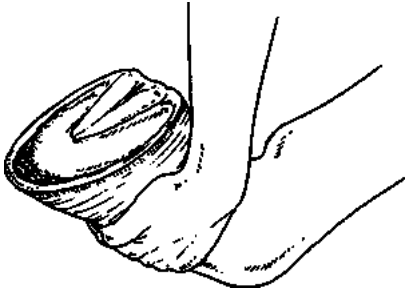
Do not remove these nails. Leave them in until they eventually grow out as the horn of the hoof grows down.



5.8 'Seedy toe'

Top

A seedy toe occurs when the wall separates from the sole at the toe. Small stones and dirt fill the space and in time are pushed up more deeply under the wall of the hoof. Seedy toe sometimes follows laminitis or bruising.



What seedy toe looks like

- **There is no lameness in mild cases, but lameness occurs if it is infected.**
- **Tapping with a hammer over the affected hoof gives a hollow sound.**
- **When the hoof is picked up, dirt and grit are found just inside the wall.**

How to prevent seedy toe

- **Trim the wall of overgrown hooves.**
- **Use a hoof pick regularly to pick stones and dirt out of feet.**

How to treat seedy toe

- **Remove all dirt with a hoof pick and trim the foot.**
- **Pack the cavity with cotton wool and Stockholm tar.**
- **Alternatively, pack with cotton wool and antiseptic ointment.**
- **Put a new shoe on, over the impregnated cotton.**

5.9 Thrush

Top

Thrush is a disease of the frog. This part of the sole decays and has a characteristic, bad smell. Thrush occurs when animals are not looked after properly. Keeping a horse in dirty, wet places causes thrush.

What thrush looks like

- **Moist, rotting frog,**
- **nasty smell,**
- **sometimes a black discharge from the frog,**
- **there is no lameness at first, but if no action is taken infection spreads and the horse becomes lame.**

How to prevent thrush

- **Keep the stable dry and clean.**
- **Do not make horses stand for long periods on wet ground.**
- **Pick the feet out regularly.**

How to treat thrush

- **Move the animal so it does not stand in a wet place. A lot of dry, clean straw on the floor of the stable will help keep the sole of the foot dry.**
- **Cut out the infected tissue with a sharp knife.**
- **Each day, scrub the sole with warm, salty water.**
- **Apply antiseptic daily until the infection has disappeared. Use a paintbrush or**

cloth to apply it to the affected feet.

- **Antiseptics that can be used include copper sulphate solution, a dilute solution of formalin, or potassium permanganate solution. See list at the back of the book for how to dilute and use these antiseptics.**

5.10 Canker

Top

Canker is caused in the same way as thrush: by keeping animals on dirty, wet ground. It tends to affect the sole as well as the frog, and the infection tends to track more deeply and can affect the whole of the foot. Treatment may take a long time and is not always successful.

What canker looks like

- **A thin, decayed scab-like layer over the sole.**
- **Under this is a soft, oily, cheesy layer that usually has a bad smell.**

How to prevent canker

Prevent canker in the same ways as thrush.

How to treat canker

Canker is difficult to treat. If possible, seek help from a veterinarian because an anaesthetic may be necessary.

- **Remove all the diseased tissue with a knife. Some tracks may extend deep into the foot. All diseased sole should be cut out. If the sole bleeds, it may be necessary to bandage the hoof.**

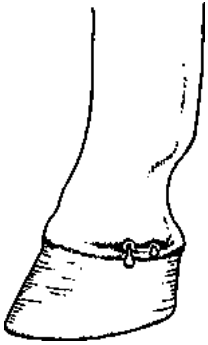
- **Keep the horse on soft, clean, dry bedding until healthy new horn has grown on the sole of the foot. This may take several months.**

- **Use antibiotic ointment on the infected sole, binding soaked cotton wool in place with elastic bandage. Change the dressing each day. Instead of ointment, metronidazole solution for injection (Torgyl), or oxytetracycline for injection (Terramycin) can be used to soak the cotton wool.**

- **A course of injections with metronidazole may help recovery. In horses, this drug is given slowly by intravenous injection, once a day for five days.**

5.11 Quittor

Top



Quittor is infection deep inside the foot. The infection is in the flexible cartilage plates that can be felt beneath the skin just above the coronary band on each side of the foot. Sometimes the infection discharges pus. See the section *Side bone* for where to feel the cartilage plates.

What quittor looks like

- **The horse is very lame.**
- **Pus discharges just above the coronary band.**

How to prevent quittor

It is difficult to prevent. Effective treatment of infection in the sole of the foot may prevent some cases of quittor.

How to treat quittor

Successful treatment usually requires surgery by a veterinarian, who will cut out infected cartilage under general anaesthetic, and use antibiotics against the infection.

5.12 Loss of whole hoof wall

Top

Sometimes an accident can result in the whole hoof wall coming off. The animal is in great pain, the sensitive parts of the hoof are unprotected, and it bleeds a lot.

It would take months for the whole hoof wall to grow again. Before that happens, there is great pain and a strong possibility of infection. The hoof is unlikely to grow properly. Euthanasia is the most appropriate action if the whole hoof wall comes off.

5.13 'Side bone' and 'ring bone'

Top

Side bone and ring bone are caused by the foot repeatedly hitting a hard surface like a road.

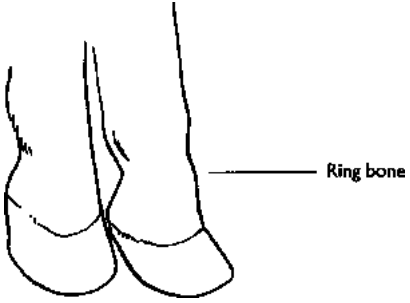
What side bone looks like

The area shown in black feels springy in a normal foot, but solid in an animal with side bone.

In side bone, the new bone in the cartilage can be felt just above the horny part of the hoof. In this place, normally the top of the cartilage plate feels a little bit springy. When bone has formed there, it feels solid. Lameness is not common, but does occur if a lot of bone has formed.

What ring bone looks like

In ring bone, new bone forms in the pastern area, sometimes higher (around 'pastern joint') and sometimes lower (around 'coffin joint'). It usually occurs in the front legs. The lower place where bone can develop more often affects the nearby joint and so more often causes lameness.



How to treat side bone and ring bone

There is no cure for either side bone or ring bone. To keep an animal with side bone or ring bone as sound as possible:

- **Keep the feet trimmed to a proper, balanced shape.**
- **If there is lameness, relieve pain with anti-inflammatory drugs, for example, phenylbutazone.**

How to prevent side bone and ring bone

If you have working animals that suffer from ring bone or side bone (or bony spavin, splints or sore shins), it may be a sign that they have done too much work on hard roads. By making your next animals work less on hard roads, they will remain sound and work longer for you.

Top

5.14 Navicular disease

Navicular disease is a name for changes to a small bone, called the navicular bone, inside the hoof. One or both front legs are affected. Treatment does not eliminate it but controls the lameness caused by it. Experts believe that navicular disease is often part of joint disease affecting other joints as well.

How to recognize navicular disease

- **Lameness develops slowly over weeks or months.**
- **There is a characteristic stiff, quick gait. The horse appears to potter rather than move normally. Lameness may be worse when the animal goes downhill.**
- **Affected feet may have a more boxy shape and small frog. There is normally pain in the back part of the frog.**
- **(An experienced veterinarian would take X-rays and do nerve blocks to confirm it is navicular disease.)**

How to treat navicular disease

- **Make sure that the feet are trimmed properly by the blacksmith, so, for example, the animal does not have long toes. Make sure that the feet and pastern joints are at a normal angle. See the section *Normal feet and legs* for the normal angle of the hoof to the ground.**
- **Give phenylbutazone, using the smallest dose that causes improvement.**

Joint lameness

5.15 Joints swollen for a long time, arthritis

Top

Fetlock joint swollen because of arthritis

Working horses and donkeys often get swollen joints. Work causes wear to joints. When a joint is worn, it becomes painful. Fluid develops around it causing swelling, which stays even when the animal is rested. This is arthritis. Arthritis cannot normally be cured. Prevention is, therefore, very important.

Following the early swelling, bone slowly builds up around the joint. This can develop slowly for years. Eventually, the joint becomes stuck together with new bone and then it cannot bend any more.

How to prevent joint disease

- **Think how arthritis in any of your animals may have been caused by the animal's work. Consider how to change or reduce the work done by other animals to prevent**

joint disease affecting them too. Then they should work longer without getting arthritis.

- **Do not make young horses or donkeys work. Wait until they are three years old.**
- **A wise owner takes action to prevent arthritis. The animal then works better and longer, thus the owner can save money.**

5.16 Treatment of swollen joints

Top

The treatment of swollen joints depends on how badly lame the animal is.

How to treat swollen joints if the animal is not lame

- **Rest if possible.**
- **Apply cold compresses. Put ice cubes in a polythene bag and hold it on the swelling, or hold a cloth soaked in cold water on the swollen joint.**
- **Do not treat with drugs.**
- **Do not burn the skin with hot irons and do not rub with burning chemicals.**

How to treat swollen joints if the animal is moderately lame

- **Rest the animal.**
- **Apply cold compresses.**

- **Treat with anti-inflammatory drugs, for example, phenylbutazone or ibuprofen.**

How to treat a swollen joint if the animal is extremely lame and will not put its foot to the ground

If extremely lame, the animal usually has infection in the joint or a broken bone. The joint feels hot.

- **Rest the animal.**

- **If the body temperature is higher than the normal temperature, give antibiotic injections for at least five days. Start treatment as quickly as you can because infection can damage the surfaces inside the joint in one or two days. Penicillin with streptomycin is recommended.**

- **Get veterinary help to flush the joint if it is infected. Washing infection from joints is a job for experienced practitioners. Joints suitable for flushing are the fetlock, knee, hock and stifle joints. The joints are washed out with sterile saline, using two large hypodermic needles, one to inject the saline and one to drain the joint. At the end, antibiotic, for example 250 mg gentamicin, is injected into the joint.**

See also *Joint-ill of foals* in the section *Infected joints.*

Never fire the skin

How to treat swollen joints when an animal has been lame for a long time and has old arthritis with new bone around the joint

- **Do not rest completely, but give reasonable exercise. Hard work will make the condition worse.**
- **Make sure the foot is properly shod and balanced.**
- **Give anti-inflammatory drugs, such as corticosteroids.**
- **In severe cases, euthanasia is appropriate.**
- **Never burn the skin over the joint. Firing causes great pain to the animal, and does *NOT* help reduce lameness.**

5.17 Swelling above fetlock, 'windgall'

Top

These swellings may occur on all four legs. Windgalls are more common in young horses working on hard ground. Windgalls are also seen in older animals, but are not normally important. In adult animals, when there is no lameness and the swelling is not hot, windgalls are a sign of wear of the joint.

Windgall

What windgalls look like

- **Swelling above the fetlocks, often on the inside and outside of the leg.**
- **Pain and lameness may occur if there is a new injury.**

How to treat windgalls

- **Stop younger horses from working and rest them.**
- **Windgalls of older animals do not require treatment when there is no heat or**

lameness.

● If there is heat, rest the animal.

● If the fetlock joint is very hot or painful, there may be more serious joint disease than windgall. Then treat according to how severe the lameness is, as in the section *Treatment of swollen joints.*

Prevention of more serious problems

Windgalls occur when young horses are made to work on hard ground. If these swellings occur, stop working the animal until there is no more heat in the joint, or else more serious damage to that part of the leg is likely.

5.18 Infected joints

Top

A. Infected joints of adult animals

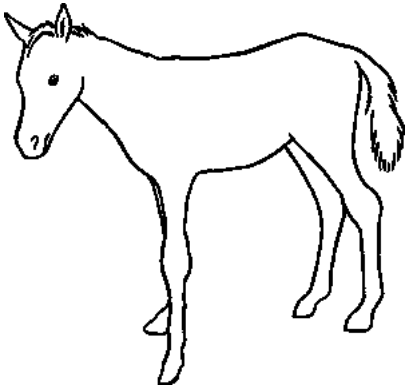
Infected joints are hot and painful and may discharge pus. Usually infection follows a penetrating wound, for example from a thorn or piece of wire.

How to treat infected joints of adults

Antibiotic injections may help, at least temporarily. The only permanent cure is usually by flushing the joints to wash out all the infection. See the section *Treatment of swollen joints.*

B. Joint-ill of foals

Sometimes all the joints on a foal's leg swell due to infection carried around the body in the blood. Infection can get into the blood through the umbilical cord soon after birth.



What joint-ill looks like

- **Pain and stiffness,**
- **an awkward walk,**
- **the foal may be weak and not interested in suckling the mare.**

How to prevent joint-ill

Make sure that the area where a mare will give birth is clean, not covered with dung or dirty bedding. Put iodine on the umbilical cord of the foal (see the section *Care of newborn foals).*

How to treat joint-ill

- **Give injections of broad-spectrum antibiotics (e.g. penicillin with gentamicin) daily and continue for two weeks after the swellings in the joints have gone down.**

- **Treatment is not always successful. If the foal does not respond, it is better to kill it humanely (see the chapter *How to shoot a horse)* rather than prolong its pain.**

5.19 Hock joint swellings

Top

The hock joint is complex. At the top it moves like a hinge, while at the bottom the joint acts as a 'shock absorber'. Hock joint swellings are more common in animals that pull carts or carriages on hard roads.

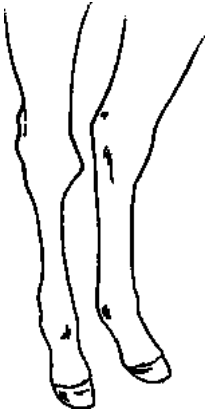
Hock joint swellings are called 'spavin'. These swellings may feel soft and fluid or may be bony.

Three other kinds of hock swellings (curb, thoroughpin and slipped flexor tendon) are caused by tendon and ligament injuries.

There is also a fluid swelling under the skin called capped hock.

A. Fluid swelling of the hock joint ('bog spavin')

Bog spavin refers to the fluid swellings that follow a sprain of the hock joint.



What bog spavin looks like

- **Soft, fluid swellings that are found:**
  - **at the inside front aspect of the joint, and**
  - **just in front of the point of the hock on either side of the joint.**
- **The animal is lame and there is heat and pain if the injury is new.**
- **Bog spavin sometimes develops slowly without heat or pain.**

How to prevent bog spavin

Avoid over-working the animal on hard roads.

How to treat bog spavin

- **Cool the joint with cold water from a hose or with a bag of ice.**
- **Rest the animal completely to give the joint a chance to heal.**
- **Sometimes pain is treated with an anti-inflammatory drug like phenylbutazone, but this may make the horse use the joint too much too soon and so delay healing.**

B. Bony swelling on inside of hock ('bone spavin')

This is an example of new bone formation after arthritis. Bone spavin can develop after work on hard roads. The majority of older working horses develop some new bone inside the hock.

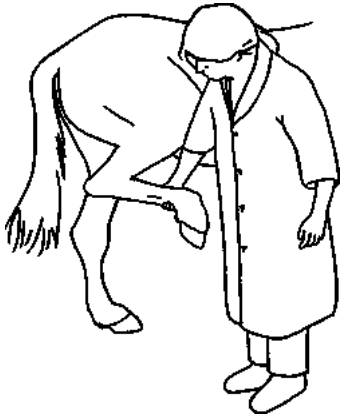
What bone spavin looks like

Lameness is worse when the animal first starts trotting. Later in the working day, the animal tends to be less lame.

THE SPAVIN TEST

Pick up the hind leg, hold it with the hock bent for at least 30 seconds, and then trot the animal as soon as the foot is released. The animal will become much lamer if it has spavin. However, this test can produce more lameness with causes other than spavin.

Severe bone spavin. It may be much smaller than this.



How to prevent bone spavin

- **Avoid excessive work on hard roads.**
- **Reduce the amount of work the animal is asked to do, for example, do not put as many passengers in the *tonga.***

How to treat bone spavin

- **Give a little regular exercise. Complete rest is not appropriate.**
- **Treat with an anti-inflammatory drug like phenylbutazone.**

When the horse goes back to work, it may become lame again. On the other hand, more new bone formation due to more work may fix the joint and then the animal can become more sound.

C. Hock ligament injury, 'curb'

'Curb' is an injury to a ligament that runs from the back of the point of the hock down to the top of the cannon bone. An old injury to this ligament can result in a bony lump just below the hock.

What curb looks like

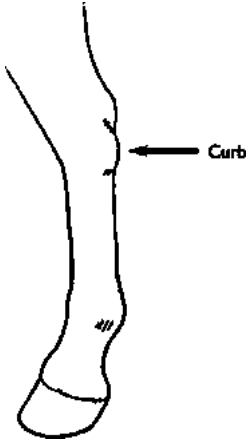
- **Some lameness occurs when the injury is new, but the animal is not usually very lame.**
- **The injury is seen from the side and can be felt.**

How to prevent curb

Curb is more common when horses are worked too young or worked too much. Avoid over-working horses, especially young ones.

How to treat curb

- **Apply cold water (use a hosepipe if possible) for five minutes every few hours for the first week.**
- **Give complete rest for two weeks, and then (if there is no sign of lameness) return the animal to light work.**

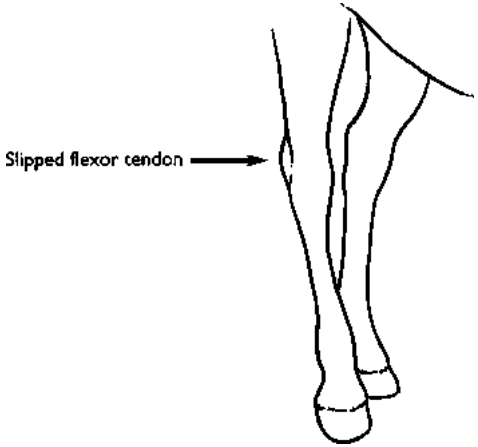


D. Slipped flexor tendon

The support around the tendon is injured in slipped flexor tendon. This support normally keeps the flexor tendon in the right place, over the point of the hock at the back of the leg. (This flexor tendon is not the Achilles tendon which attaches to the hock, it is a tendon that runs over the point of the hock and joins on to bone lower down the leg.) When the support is damaged, the tendon slips round to the side of the hock, usually to the outside.

What slipped flexor tendon looks like

- **Pain, swelling and lameness.**
- **At first you may be able to feel the tendon slipped round to the side.**
- **Later, the tendon cannot be felt under the fluid in the swelling.**



How to prevent slipped flexor tendon

The injury usually occurs when a horse is galloping or is in a jumping race. Avoid violent exercise.

How to treat slipped flexor tendon

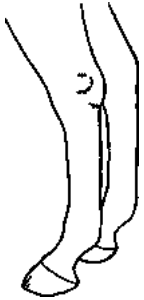
Complete rest for at least a month. Gradually build up to normal work. Recovery usually takes place, but the injury may occur again.

E. Thoroughpin

In thoroughpin, there is damage to the sheath around a tendon, which is near the point of the hock. A soft, fluid swelling develops.

What *thoroughpin looks like*

- **A swelling higher than bog spavin is seen in front of the point of the hock.**
- **The swelling may be on the inside or the outside of the leg.**
- **If swelling on the outside of the leg is pressed, it bulges on the inside (but not in front of the hock, because the fluid is not within the joint).**



How to prevent thoroughpin

Avoid excessive work, because thoroughpin is caused by strain to the sheath of the tendon.

How to treat thoroughpin

- **Rest the animal. Only bring it back to work when there is no heat in the area.**
- **No special treatment is needed unless the tendon has been injured. If so, there may be great pain and a NSAID drug, for example phenylbutazone, should be given.**

5.20 Capped elbow and capped hock

Top

These conditions are not really diseases of the joints. The swelling is due to fluid between the skin and the joint.

Capped elbow and capped hock are caused when the elbow or the hock repeatedly knocks a hard surface. Some horses hit their elbow with the heel of the front shoe when they get up or down. This banging from the shoe can eventually lead to capped elbow. Capped hock can occur when the animal often strikes its hock against a wall or partition of a lorry. It can also occur if the animal's hock hits against the front of the cart or vehicle it is pulling.

What capped elbow or hock looks like

- **Soft swelling over the point of the hock or elbow.**

• The swellings may be painful when they first appear, but do not cause lameness when they are established.

Capped elbow

***How to prevent capped elbow* or hock**

• Make sure the animal has soft bedding. Do not keep a horse or donkey on a hard floor without providing bedding such as straw, wood shavings, torn-up paper strips, or sand.

• Prevent capped elbow by replacing shoes regularly and not letting the heels of the front feet get too long.

• Prevent capped hock by avoiding the possibility of the horse banging its hocks against hard walls or against the cart it is pulling.

How to treat capped elbow or hock

These conditions do not cause lameness, and do not need treatment. Provided that the

cause is removed, it is unlikely to get worse. If the cause is not removed, the swelling may become infected. This is painful and needs treatment with antibiotics. Sometimes antibiotics are not successful in getting rid of the infection.

5.21 Kneecap problems and locked stifle

Top

The horse's kneecap (patella) can get fixed in a position above the joint. When the patella gets stuck in the wrong place, the horse has a 'locked stifle'. This condition is more common in young horses that have not been fed properly and have poor muscle development.

Rarely the kneecap can get into a wrong position on either side of the stifle joint. In this case some of the ligaments that support it must have been damaged.

What locked stifle looks like

- **The horse's hind leg is fixed in a straight position.**
- **This may last for a few seconds or for some hours.**

How to prevent locked stifle

Feed young horses well and exercise them regularly. Regular light work helps build muscle around the stifle joint.

How to treat locked stifle

If the kneecap is in the wrong position, it usually clicks back into the correct position when the horse puts weight on that leg.

If the stifle joint remains locked, make the horse walk backwards to force it to put weight on the affected leg.

If the stifle is still locked:

- **use a sideline to stretch the leg forwards with a rope from the neck to the fetlock (see *Sideline* in the section *How to restrain horses and donkeys),**

- **get another person to push the kneecap up and to the side to attempt to free it.**

In cases where the ligaments of the stifle joint have been damaged, a long period of complete rest is needed, perhaps for a year. The horse may never be fully sound.

Tendon injury and other lameness

5.22 Tendon and ligament injuries

Top

This section describes injuries caused by over-stretching of tendons and ligaments. Tendons can also be damaged in deep cuts, especially to the front or back of the legs below the knee. See the section *Leg injuries affecting joints or tendons* in the chapter *How to treat wounds* for advice on tendons damaged in cuts.

About tendons and ligaments

A tendon is like a stretchy rope that connects a muscle to a bone. A ligament is similar, but connects a bone to a bone. There are ligaments that help support the joints in each leg.

Although tendons and ligaments stretch, if over-stretched, they begin to tear. Then the tendon becomes painful and swollen and the animal goes lame. This occurs commonly in animals pulling heavy loads, on both the front and back legs. If seriously over-stretched, a tendon or ligament may break completely.

Tendons heal only after a long period of rest. Healed tendon is less elastic, so the remaining healthy part of the tendon becomes more readily injured. Tendon injuries are

best avoided.

How to prevent tendon injury

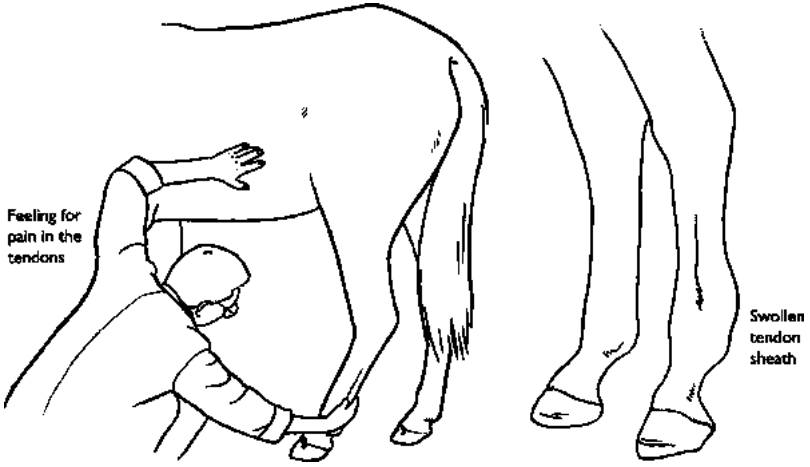
- **Do not subject your animal to extreme work.**
- **Make sure the foot is balanced by ensuring good trimming and shoeing.**
- **Regularly feel the animal's tendons and ligaments. If there is pain or heat, rest the animal because more work can make a mild injury severe.**
- **Take special care with animals pulling or carrying heavy loads to avoid stumbling.**

Commonest tendon injuries

The most common site of tendon injury is between the knee and fetlock at the back of the front leg (see the section *How to decide which leg is lame).* The most common ligament injury occurs at the back of the cannon bones, like the tendon injuries. The ligaments are deeper than the tendons.

What ligament* or *tendon damage looks like

- **Sudden lameness.**
- **Heat, pain and swelling where the structures are injured.**



• If a ligament behind the fetlock has broken (ruptured), the fetlock joint drops and is at a different angle, or the toe points up. These cases need a very long period of rest. See the section *Leg injuries affecting joints or tendons* in the chapter *How to treat wounds.*

Management of a tendon injury

FIRST STAGE, FOR THREE OR FOUR WEEKS AFTER THE INJURY

• Pour cold water on the area (use a hose pipe if possible) for five minutes several times a day for the first few days.

• Dry and bandage to support the joint and reduce swelling. Keep bandage over the affected area for three weeks:

- use cotton wool under the bandage,

- 'stretchy' support bandages are useful,

- be careful not to wrap the bandage too tightly around the leg (you should be able to push your finger easily between the skin and the bandage),

- it is good practice to use a similar bandage to support the opposite leg to the injured one, or it may become injured due to having to carry more weight.

• When the horse is in pain in the first days, give a NSAID drug such as phenylbutazone.

• Complete rest is important at this stage. Keep the animal in a shelter.

SECOND STAGE

• Keep the legs bandaged, and walk the animal around, leading it with a rope, for 30 minutes each day.

• Continue to house the animal when it is not being walked around.

THIRD STAGE, WHEN THERE IS NO LONGER ANY PAIN AND THE ANIMAL IS NOT LAME

• Now the animal should be turned out, no longer kept in the shelter.

• It is very important not to return the animal to hard work for six months.

- **During this long third stage, the exercise is gradually increased with more walking. Then after two months, start trotting. If all is going well, cantering can start three months after the injury.**

Too much work too soon may delay recovery or cause permanent lameness.

FIRING

Burning the skin over the injury (firing) is *not* helpful. It causes unnecessary suffering and does not help healing. Don't do it.

FUTURE MANAGEMENT OF A WORKING ANIMAL AFTER TENDON INJURY

Tendon injuries can occur repeatedly until the animal becomes more and more lame, and eventually unable to work. The fetlock joint may knuckle over and may develop large windgalls. To avoid this:

- **Reduce the load the animal is made to carry or pull.**
- **Keep the feet balanced and well shod.**

Ligament and tendon problems of the hock joint

These are described in the section *Hock joint swellings.*

5.23 Cannon bone problems

Top

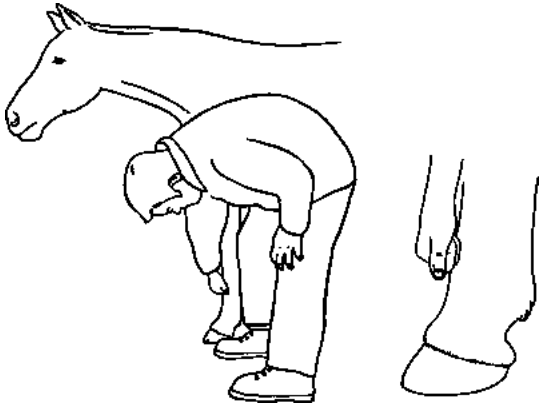
A. Sore shins

A. Sore shins

This condition affects younger working horses or donkeys that have done a lot of work on hard roads or in sticky mud. It also affects race horses.

What sore shins look like

- **A shorter step when trotting.**
- **The front of the cannon bone on the front leg is very tender when rubbed and may feel warm.**



How to prevent sore shins

Do not make young animals work excessively, especially on hard roads.

How to treat sore shins

- **Rest for several weeks is essential. Although the soreness may disappear after just a few days rest, it is important not to put the horse straight back into hard work. If you do, there may be permanent damage to the front of the cannon bones, and long-term problems.**

- **Do not treat by firing. It is cruel and does not help.**

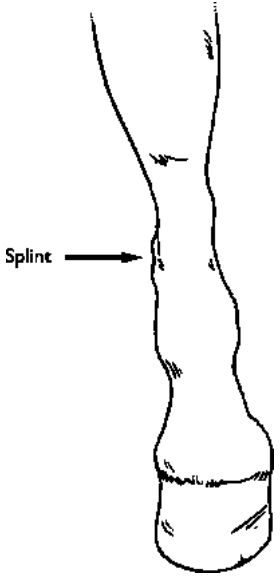
- **If there is long-term lameness, a NSAID such as phenylbutazone can be used.**

B. Splints

'Splint' bone is the common name of two small bones, one on each side of the 'cannon' bone on the front or back leg. The bones are normal, but pain and swelling around them are not.

After injury, eventually abnormal bone develops and this is called 'splints'. It is more common on the front leg, and may develop around the inside or outside splint bone.

Like sore shins, splints usually occur in young horses (less than four years) when they start hard work. They can also develop in older horses that do not have balanced, well-shod feet and in growing horses not fed on a balanced diet.



What splints looks like

- **Lameness, especially on rough ground and when trotting down hill.**
- **Pain when the splint bone area is pressed.**
- **A swelling develops which eventually becomes hard as new bone forms.**

How to prevent splints

- **Do not work young horses too hard.**

- **Feed enough good food to growing horses, especially when about a year old. Growing horses need enough vitamins and minerals in the diet.**
- **Make sure older horses are shod properly so that the feet are at the right angle.**

How to treat splints

Rest completely for three or four weeks until the pain has gone. The new, hard bone will remain. Despite this, usually the horse completely stops being lame. If not, treat with an anti-inflammatory drug such as phenylbutazone.

5.24 Shoulder nerve paralysis, 'sweeney'

Top

In sweeney the muscles over a shoulder become weak following damage to a nerve that runs round the front of the shoulder bone, less than 10 cm above the shoulder joint.

What causes sweeney

- **The shoulder hitting something like the side of a door.**
- **A badly fitting harness that presses on the middle of the shoulder.**

What sweeney looks like

- **Muscle wastage over the shoulder blade.**
- **The spine of the shoulder blade is easily felt.**

- **When the animal takes weight on its foot that side, the point of the shoulder moves away from the body.**

Prevention and treatment

Prevent sweeney by making sure that harnesses fit properly. There is no treatment, but rest for a month may lead to recovery. If there is no improvement after this time it is unlikely that the animal will recover. If there is improvement, full recovery may take a year.

Sweeney

5.25 Tying-up, exertional myopathy

The muscles sometimes become stiff when the animal has a lot of exercise after a period of rest.

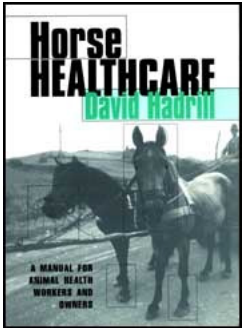
What tying-up looks like

- **Stiff legs,**

- **the animal does not want to move or walks with short steps,**
- **sweating,**
- **the urine may be dark-coloured.**

How to treat tying-up

- **Stop working the animal and rest it.**
- **Give NSAID drugs such as flunixin (Finadyne).**
- **Do not feed any grain for three days.**



Horse Healthcare - A Manual for Animal Health Workers and Owners

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Contents:

6. How to prevent wounds and injuries

Top

6.1 Harnesses

Top

To avoid damaging the skin, harnesses must:

- **be cleaned properly,**
- **be comfortable and made of the right materials (leather is best),**
- **fit properly,**
- **be padded,**
- **have a large enough contact area between the load and the skin to spread the load and prevent heavy rubbing or pressure on a small area of skin.**

How to look after leather saddles and tack

Leather needs to be well cared for. Damage by sweat and drying out makes leather hard. Hard leather can injure the skin.

Saddle soap

Saddle soap is useful for regular care of leather saddles and harnesses. To use saddle soap, first wipe down the leather with a damp cloth to remove dirt. Then, get another wet cloth soapy by rubbing it on the saddle soap. Wipe this all over the leather.

How to make saddle soap

1 Boil a pan of water.

2 When it is boiling, add 1 kg of small pieces of washing soap.

3 Stir the mixture.

4 Skim off and throw away the scum that collects on the surface.

5 When the solution becomes thick, add linseed oil. Continue adding and mix thoroughly until it becomes thick and pasty.

6 Take it off the heat and cool it. It will look like shoe polish.

CLEANING LEATHER

Every day, after use:

- **Clean leather with a damp cloth or sponge.**
- **If there is dirt on the leather, use warm water with soap, but do not use a lot of soap because that would remove the oil from the leather and make it hard.**
- **Scrub off stubborn pieces of dirt.**

- **Use some horsehair tied in a knot to scrape the leather, or a piece of wood; do not use a sharp tool.**

- **Do not use detergent and do not use hot water.**

OILING LEATHER

Cleaning removes natural oils from leather. Prevent hardening by waxing or oiling when the leather starts to become hard and dry. What to use to oil leather:

- **vegetable oil such as cooking oil,**
- **animal fat,**
- **expensive products that can be bought especially for oiling leather.**

New, clean, unused engine oil could be used, but is less good. Do not use shoe polish because it does not soften leather.

STORING LEATHER

Store leather harnesses in a dry, airy place. If leather is constantly damp, it may become mouldy. Never leave harnesses on the floor where they can be trodden on and get dirty. Never leave leather in hot sun where it will dry out rapidly.

Materials for making harnesses

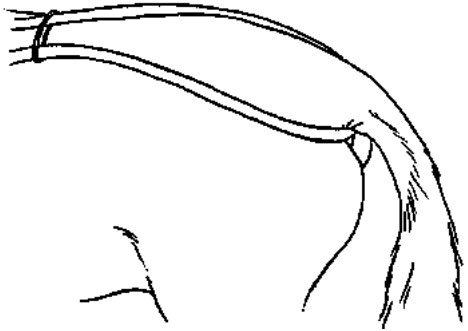
As a general principle, only put materials next to an animal's skin that you would have against yours.

GOOD MATERIALS FOR HARNESS PARTS THAT CONTACT

THE ANIMAL'S SKIN

- **Natural products, like leather and cotton.**

- **Canvas and synthetic webbing are useful alternatives to leather, but be sure these materials are not abrasive.**



Rubber hose as harness under tail is not good

POOR MATERIALS FOR HARNESS PARTS THAT CONTACT

THE ANIMAL'S SKIN

- **Artificial materials, like tyre rubber and nylon rope.**

- **Wire, thin rope, string and chains should never be against the skin as they are likely to cause injury. There must be enough padding between the skin and these materials if they are components of the harness.**

- **It is best not to use wire and string for harnesses as they usually soon wear**

through the padding and can then damage the skin.

Hobbles

Avoid tying a horse or donkey by the leg or foot. Ropes can injure the skin in the hollow of the heel. Tie its head, using a head collar and quick-release knot (see the section *How to tie useful knots*).

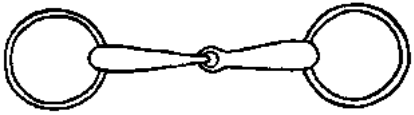
If an animal must be hobbled to stop it from running away, the rope around the leg should be tied below the fetlock. (See the section *Checking more closely for the source of lameness* to find out where the fetlock joint is.) Ropes above the fetlock can damage the tendons under the skin.

Do not use strips of nylon tape, the sort that is used to secure boxes. Although very strong, the edge of the tape can easily cut into the skin and cause injury.

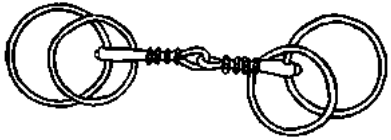
6.2 Bits

Top

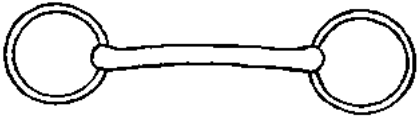
The best bits are made of stainless steel or aluminium and have a smooth surface.



A kind bit that does not injure the mouth



Bits with projections like this are not necessary and cause injury

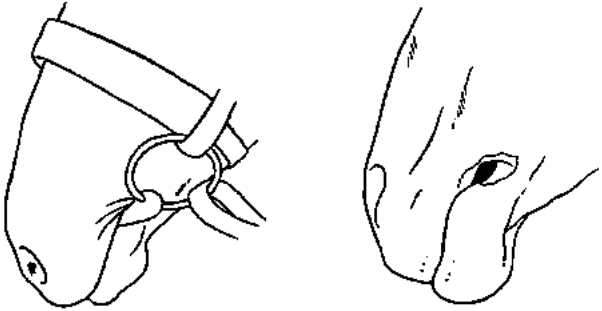


Another kind bit that does not injure if properly fitted

Bits not to use

- **Avoid bits with spurs or parts projecting out. These harsh bits are not necessary.**
- **Avoid sharp bits because they can injure the angle of the lips.**
- **Avoid iron bits, because they may rust and get sharp edges.**

Do not place the bit too tightly in the mouth.



A bit which is too tight can injure the angle of the lips.

6.3 Pack animals

Top

Padding for pack animals

When a working animal carries pack loads or panniers hung over its back, it is essential that there is padding between the load and the animal to protect the skin from rubbing injuries. Thin animals need thicker padding.

LOOKING AFTER COTTON OR WOOLLEN PADDING

Wash saddle cloths or *numnahs* in the same way that you wash your own clothing. Dry well in the sun before putting back on a horse or donkey.

LAYERS OF PADDING

Usually, there are three parts to the equipment put on the back of a pack animal: the padding layer, then a cushioning layer and then the saddle or container for the load.

The padding next to the skin

Several layers of cotton material next to the skin is ideal. This layer should be made of material that can be washed. Cotton is suitable because it is soft for protection and absorbs sweat. The padding layer next to the skin should be replaced or washed regularly.

The next layer, the cushioning layer

This layer is usually not easy to wash. Locally made padding (made from old blankets) is good. A folded blanket or a padded sack can be used instead. With the latter it is important to sew the bag into sections to prevent the straw or other filling from falling to one end.

The saddle or holder for whatever is to be carried sits on the padding.

HOW TO REDUCE WOUNDS TO THE SKIN UNDER THE LOAD

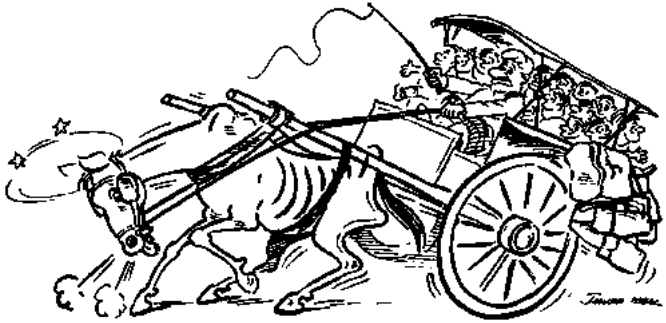
- **Make sure the padding is thick enough.**
- **Keep the padding clean.**
- **Dry it before putting it on.**
- **Hessian or jute sacking material is often used for making harnessing and padding. If the sacking has been soaked in sweat and allowed to dry, it can become very rough and scratchy. If so, wash it or replace it.**
- **If the animal has to carry a dirty load, put a cotton sheet over the skin before putting on the other parts of the padding to prevent dirt and grit getting between the padding and the skin.**

• Padding should protect the spine. Arrange it so the load presses each side of the back bone, and not on the ridge of the spine itself.

Loading

HOW MUCH LOAD TO PUT ON

Excessive workloads cause injury to the skin, joint problems and shorten an animal's working life. Overloading a cart or *tonga* may bring more income today, but will reduce it in future, because a new horse must be paid for.



A pack animal can safely carry a third to a half of its own weight for several hours if it is in reasonable condition, that is, about 40 kg of load per 100 kg of its body weight. This means that an appropriate load for a typical donkey to carry for a few hours is approximately 50-100 kg. Reduce this if the load will be carried all day.

See the section *How to estimate body weight,* then estimate suitable loads by working out what is one third of this amount.

HOW TO POSITION THE LOAD

Good positioning of the load reduces injuries to the animal's skin. It also makes best use of the animal's energy, as an unbalanced load requires more energy to transport than a balanced load.

For pack-saddles or panniers make sure that:

- **the load is put over the shoulders just behind the withers, and**
- **the load is distributed evenly on each side of the animal to ensure a balanced load and to stop the load from slipping over to one side.**

HOW TO SECURE THE LOAD

The load must be properly secured. For light loads, use rubber strips cut from the inner tubes of car or lorry tyres. These strips are stretchy, which helps fix the load.

For heavier loads, use ropes to fasten them to the saddle. Ropes should be tied with knots that are both secure and able to be undone quickly if the animal needs to be freed from the load, for example, if it falls. See the section *How to tie useful knots.*

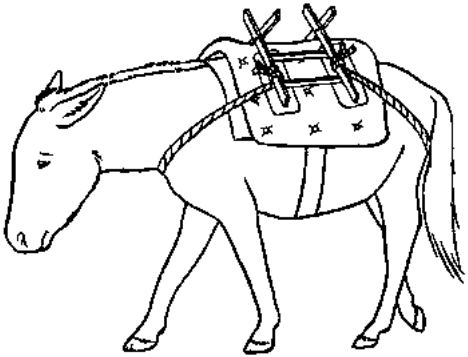
Breeching and breast straps

BREECHING STRAP FOR ANIMALS PULLING CARTS OR TONGAS

The breeching is the part of the harness that comes around the back end of the animal. Without one, the other parts of the harness slide forward when the animal stops or goes down hill. These parts of the harness can cause injuries to the skin, for example, above the shoulders or behind the front legs.

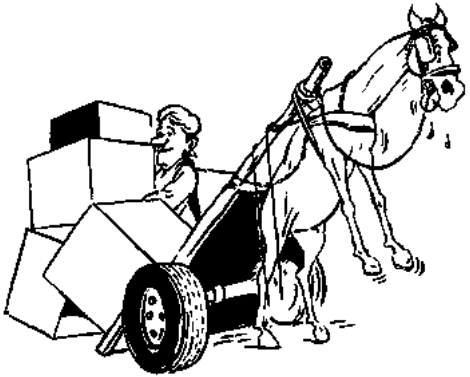
BREAST STRAP AND BREECHING STRAP FOR PACK ANIMALS

If hills are to be encountered on the journey the load must be secured at the front and back. To do this, a breast strap is used at the front. At the back, a breeching rope is passed around the upper legs of the animal.



BALANCING THE LOAD ON A TWO-WHEEL CART

Balance the load on a two-wheel cart. Make sure the load is balanced over the wheels so there is no upward lift by the shafts.



Design features of carts and wagons

NOT TOO HEAVY

Ideally, carts for a single donkey should be made of strong, light materials and weigh no more than 100 kg. The cart should have a load capacity of 250-350 kg.

BE SEEN AT NIGHT

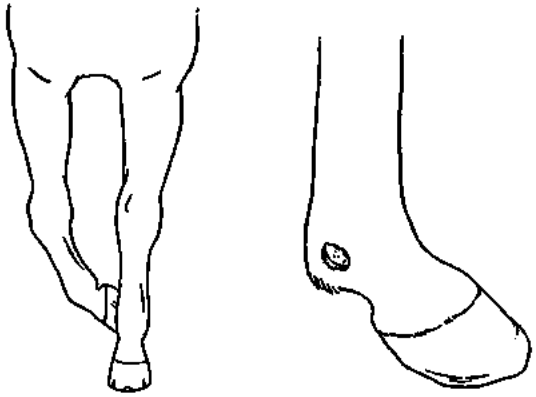
If carts or *tongas* are used on roads at night, make them easier to see by painting the back white and by fitting large reflectors.

6.4 Leg injuries from the animal kicking itself

Top

When some horses move they hit one leg with another leg. One example is 'over-reaching', when the toe of a back foot hits the heel of a front foot. Another is 'brushing',

when a foot hits the leg on the other side.

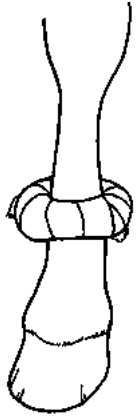


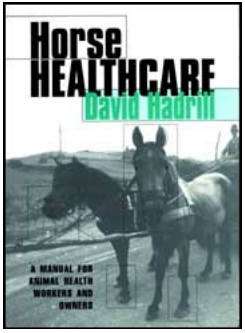
Brushing

How to prevent injuries from one leg interfering with another

Sometimes these injuries occur because the shoeing is not correct. Check that the shoes are properly fitted. It may be possible to fit a special shoe with the part of the shoe that hits the other leg set back, so that metal cannot hit against the other leg.

Injuries from brushing or over-reaching can be prevented with a piece of rubber inner tube stitched in place. For brushing, a roll of cloth can be effective.





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ISBN*: *1 85339 486 6

Contents:

7. How to treat wounds

Top

7.1 General care

Top

Just after the injury, always:

- **Clean the wound (see below for how to do this).**

- **Check leg wounds for possible joint or tendon injury (see the section *Tendon and ligament injuries*). If you think a joint or tendon is involved, immediately call for professional veterinary help if available.**

While a wound is healing, always:

- **Rest the animal until healing is complete, so that work does not make the wound worse.**
- **Remove the cause of the wound, for example, by repairing a badly fitting harness.**

7.2 How to care for a fresh wound

Top

It is important to wash a wound. If you do not, it is more likely that the wound will become infected and then healing may be delayed.

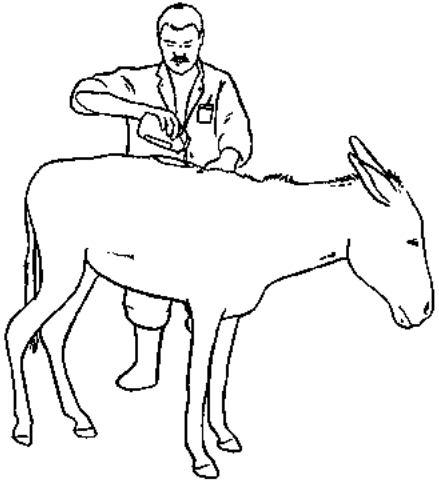
Caring for a fresh wound

- **Always wash your hands before touching a wound.**
- **Use scissors to clip hair from around the edge of the wound. Pick any hair or pieces of dirt or small stones out of the wound.**
- **All wounds should be washed. Use very clean water. The water should be clean enough to drink, or boil and cool it.**
- **You can add a little salt, one teaspoonful of salt to 500 ml water.**

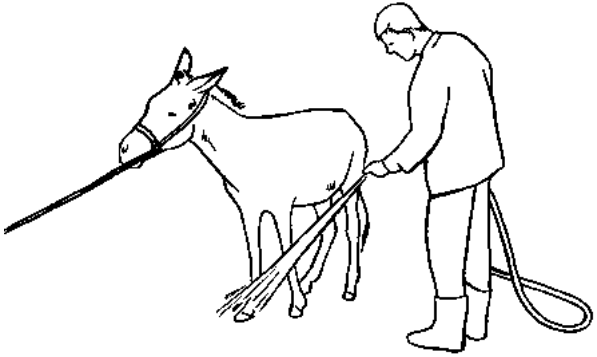
● Do not use strong disinfectants on the wound. Few chemicals reduce infection without damaging the wound.

● Dilute povidone-iodine made specially for washing wounds can be used.

● Wounds should be washed twice daily for at least five minutes. To wash the wound, you can:



● either pour slowly,



• or use a hose pipe,

• or use a syringe to squirt water to wash it (the ideal pressure comes from squirting water from a 30 ml syringe through an 18 g needle),

• or use a large wad of very wet cotton and soak the wound.

• Allow it to dry in air, while keeping flies away.

• Cover the wound with a dressing (see the next section, *How to put on a dressing and bandage*) unless the wound is small.

Fly repellent

Flies are attracted by the smell of a wound. Flies can bring infection, which slows down healing.

You can make fly repellent by mixing a large spoonful of kerosene (paraffin) in a bucket containing 3 litres of water. Mix it well so that small droplets of kerosene form in the water. Put this mixture around but not into the wound. Flies are kept away by the smell of the kerosene.

Fly repellents can be made from some plants, such as the neem tree. See the section *Flies* in the chapter *Diseases and parasites of the skin.*

Some things NOT to do to wounds

- **Do not put mud or dung on a wound. It is important to keep the wound clean.**
- **Do not use soap on the wound. Do not put anything in the wound that you would not like put into your own eye. Anything that hurts may do harm to the raw edges from which the wound will heal.**
- **Do not put powder on the wound. Do not spray with a 'purple spray' aerosol except when the wound is on or under the hoof. The spray can slow healing of skin wounds.**

Only when water is not available, for example when pack animals are at work, wound powder or aerosol can be used to give a temporary protection from flies and infection. The wound should be washed properly as soon as is practical.

7.3 How to put on a dressing and bandage

Top

Layers of a dressing

There are normally three layers to a dressing over a wound. The first is in contact with the raw surface of the wound. The second absorbs liquid and cushions the wound. The third layer is the bandage to hold the other two layers in place.

How tight to make the dressing

In the first few days after the injury, the bandage should not be tied too tightly. Make sure you can put a finger inside the bandage. Later, it is better to tie it more tightly to reduce the formation of excess granulation tissue or proud flesh.

How to put on a bandage

***A* bandage is wrapped around the leg over the contact and absorbing layers. The bandage has to be tight enough not to slip down, but not so tight that it stops blood flowing in the leg. The pictures on the page overleaf show how to wrap the bandage around the leg.**

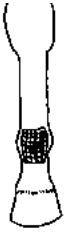
The hock and the knee can be bandaged in a similar way. Be sure to use plenty of padding over bony joints.

Layers of dressing and examples of materials

Layer of dressing	*Example materials*
The first layer, in contact with the injury This layer needs to be perfectly clean, non-sticky and able to let liquid from the wound pass through it to the next layer	**Cotton gauze or cotton wool** (clean, unspun cotton): this tends to stick to the wound; it is difficult to remove without causing damage to the healing surface and pain. **Gauze with petroleum jelly** (Vaseline) or **Tulle:** this sticks less than cotton; it can be bought from pharmacies, usually in flat tins.

	Specially made pads (e.g. Melolin) with a shiny, non-stick surface to put against the wound: these are best because they do not stick, do not leave any bits in the wound when removed, are perfectly clean and are good at keeping the wound dry.
The second layer, the padding layer This layer needs to be very clean, absorbent and soft.	**Cotton wool:** this is available in most countries and is reasonably cheap. **Disposable nappies** (diapers): these are expensive, but very good at absorbing liquid from big wounds in the first days after injury. **Towelling cloth:** this is absorbent, but tends to stick; use it if you do not have alternative materials.
The third layer, the bandage layer This layer holds the first two in place. The material needs to be clean, strong and in a long strip to wind around the leg or tail.	**Crepe bandage:** this is available from pharmacies and clinics. **Strips of cotton cloth** cut from old bed-sheets or clothes: as good as bandages bought from shops, but make sure the cloth is clean. **Sticky and/or stretchy rolls,** for example, Elastoplast: these materials are very useful, but expensive and difficult to buy in many countries; the main advantage is that these types are best at stopping the first two layers slipping down the leg.

Place contact layer over the wound.



Place padding over area to be bandaged.

Start by making a turn around the bottom.

Take it up the front and around the back.

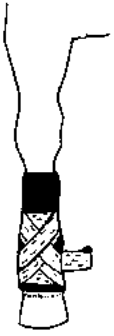
Make a turn around the top.

Down the front then around the back.

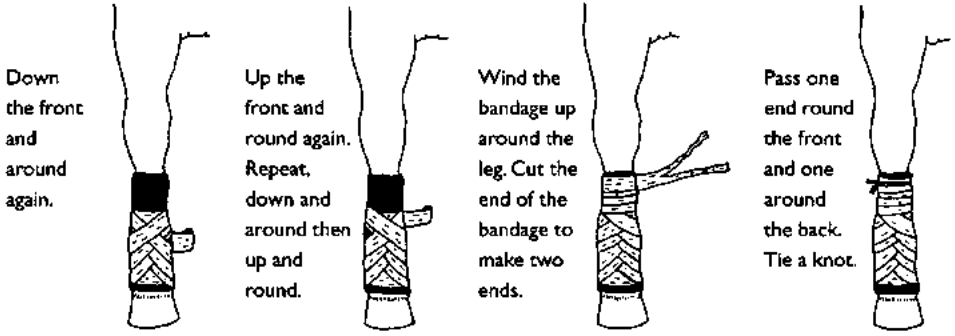
Up the front then around the back.

Down the front.

Around the back.



Up the front then around the back.



7.4 How to treat cuts and grazes and skin tears

Top

Grazes and small wounds

Clean the wound as described above. For most wounds, no more treatment is needed. Most small wounds do not need to be bandaged and heal faster without being covered.

Simple cuts

If not suitable for stitching, treat by cleaning and dressing (bandaging) the wound as described above. Some new cuts are suitable for stitching. See the section *How to stitch a cut.*

Skin tears

- **Clean the wound carefully.**

- **Make sure there is no dirt trapped under the flap of skin.**

- **The edges of tears with small flaps can sometimes be stitched back together, especially if the wound is on the animal's head or body and the wound is fresh.**

- **If a flap of skin has become dry and dead, it is usually best to cut it off using perfectly clean scissors or a sharp knife, like a razor blade.**

- **Keep the wound clean, by washing it as for other wounds.**

- **Cover the wound with a dressing if you can. Transparent tape (e.g. Sellotape) can be used to hold a clean dressing over a wound on the body or head where it cannot be bandaged.**

7.5 How to stitch a cut

Top

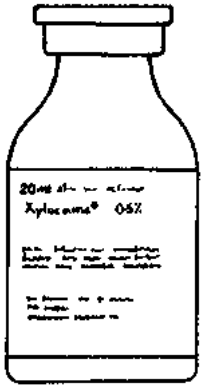
Cuts suitable for stitching

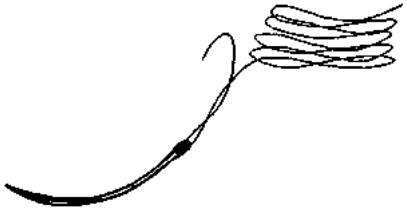
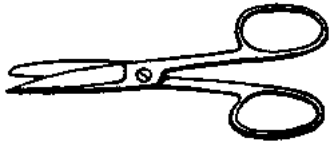
- **Wounds on the head or body,**
- **fresh cuts, less than four hours old,**
- **deep, clean cuts where the skin edges are not grazed or torn,**
- **wounds which gape open.**

Cuts that should not be stitched

- **Wounds on the lower legs,**
- **old wounds, more than eight hours old,**
- **dirty wounds,**
- **dog bite wounds,**
- **puncture wounds.**

Old wounds and bite wounds can sometimes be stitched after they have been properly cleaned, and if the skin edges are freshened, that is, cut back to make fresh, new edges.

Equipment used for stitching	
• Local anaesthetic	*See list of medicines at the back of the book*
	
• Syringe and hypodermic needle	*The needle should be of a size suitable for subcutaneous injection, for example, 21 or 23 gauge (see the section How to give injections)*

• Needle	*A sewing needle will do, but it is easier with a vet's needle or strong cobbler's needle*
	
• Thread	*Preferably nylon (thin, mono-filament nylon fishing line is ideal) or silk. Cotton is not ideal as it acts like a wick and then attracts dirt when it is wet*
• Scissors	*To cut hair around the wound. A razor blade or scalpel blade could be used instead*
	
• Scissors	*A clean pair to snip the thread*
• Soap and boiled water	*To wash hands*
• Cotton wool	*Or very clean cloth, preferably boiled and then dried*
• Antiseptic solution in a bowl to clean the wound	*See the section* How to care for a fresh wound *for suitable antiseptics*

Preparation

• If the needle, thread and scissors are not sterilized and packed (see the section *How to sterilize equipment*), boil them in a pan of water for 10 minutes, then pour off the water and allow time for them to cool.

• Wash your hands.

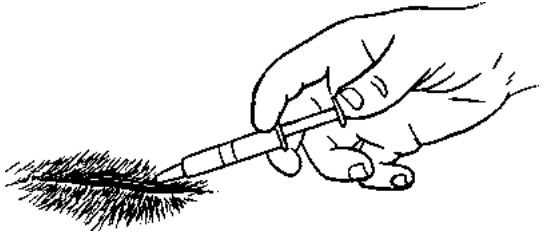
• Clip or shave hair around the skin edges if the cut is in a hairy place.

• Wash the wound as described in the section *How to care for a fresh wound.*

Anaesthetic

If you have local anaesthetic solution for injection, inject it around the wound.

• Inject 0.5 ml in each place. It seems less painful for the animal to inject from inside the wound.



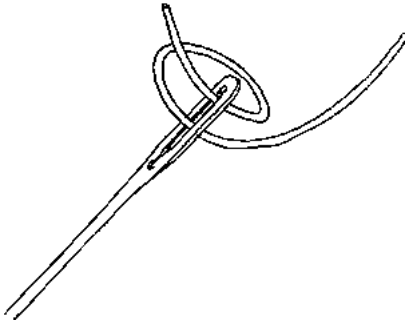
• Wait a few minutes.

• Before starting to stitch, test that the anaesthetic has worked by pricking around the wound with a needle. The horse should not feel the pricking.

Threading the needle

- **Wash your hands again using new, clean water and soap or antiseptic.**

- **If you are using nylon thread, which is slippery, thread the needle twice. This helps to stop the thread coming out of the needle as the needle is pulled through.**



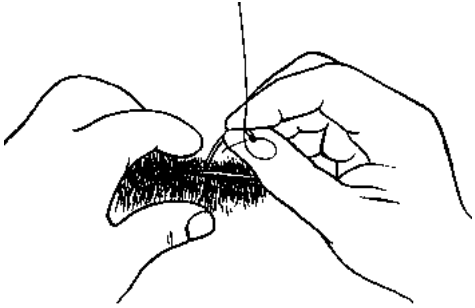
Putting in stitches

- **Turn the edges of the skin out rather than in when pushing the needle through so that when the stitch is tightened the raw undersides of the skin touch.**

- **If the wound bleeds and this obscures your view, press and hold very clean cotton or very clean cloth on it between stitches.**

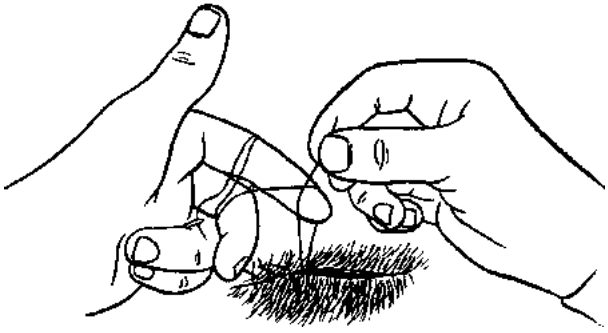
- **Stitch from left to right, if it is a straight cut and you are right-handed.**

- **With an odd-shaped wound, start by putting a stitch in the middle of the wound.**

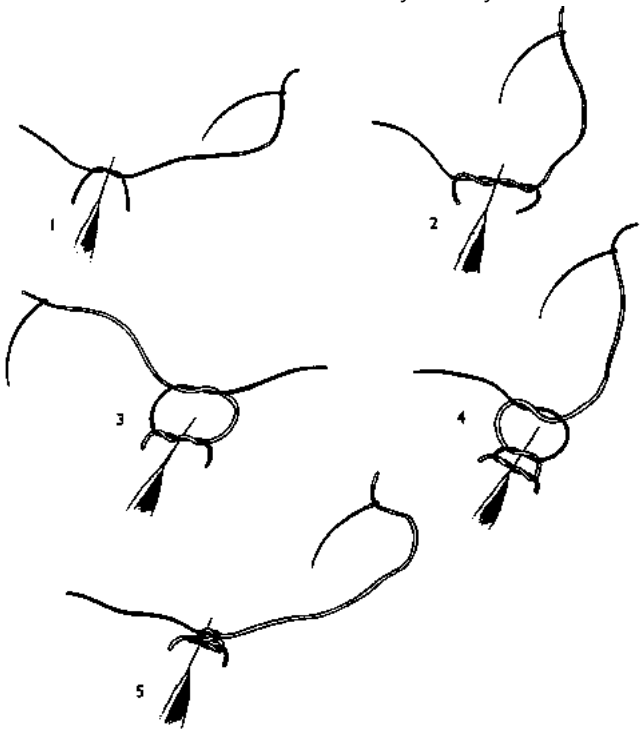


Tying the knot

- **Do *not* pull the thread tight; it should just bring the edges of the skin together.**



- **Tie the knot with a double turn first and then two or more single turns.**
- **Nylon thread is slippery and needs extra tying.**



• Cut the thread so that the ends are quite long, at least 1 cm. This gives you more to hold when taking stitches out.

Healing

There may be a few drops of bloody discharge from the wound for the first two days. If the wound swells and looks infected (e.g. discharging pus, or smelling or attracting many flies) take the lower stitches out immediately. Wash the wound and leave it open to heal. Treat it as an infected wound (see the section *Infected wounds*).

Taking out stitches

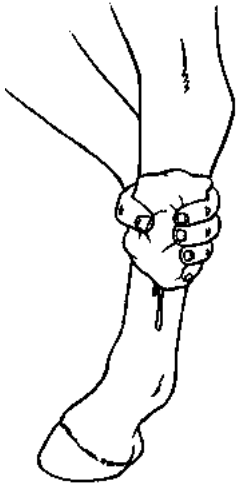
Stitches normally need to be removed after 10 days.

- **Cut the thread on one side of the knot on each stitch.**
- **Then pull the knot to pull out the stitch.**

Cutting the thread does not hurt, but pulling a stitch out can cause some pain which could make the animal react aggressively. So cut all the stitches first and then pull the knots quickly one by one.

7.6 Severe bleeding

▲ Top

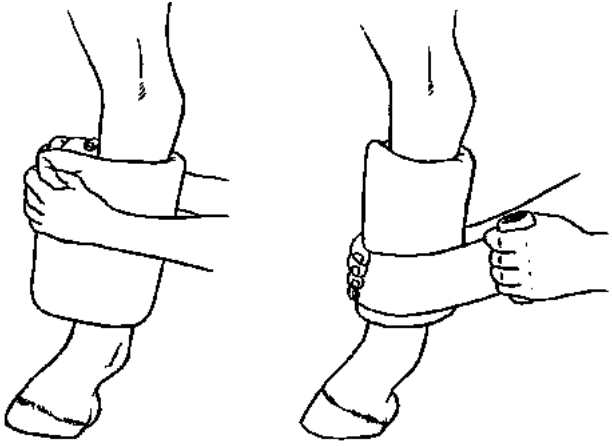


First, *very* firmly hold a thick layer of cotton wool or clean cloth on the wound for five minutes.

Then, if the severely bleeding wound is on a leg where it can be bandaged, apply a pressure bandage.

How to apply a pressure bandage

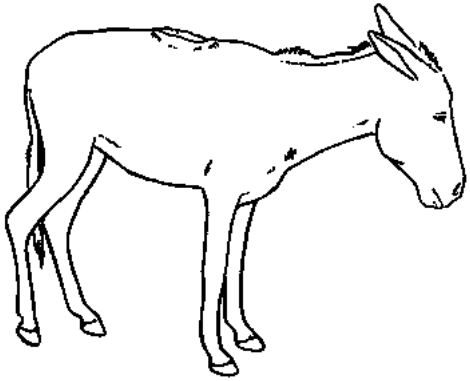
- **Put a thick layer of cotton wool or cloth on the wound and right around the leg. It must be thick, at least 4 cm of cotton.**
- **Bind strips of cloth tightly over it.**



• Leave the pressure bandage on for at least two hours and for up to 12 hours. If the bleeding starts again when the bandage is removed, apply another pressure bandage. If the bleeding has stopped, treat as an ordinary fresh wound.

7.7 Pressure sores

Top



These wounds take a long time to heal, typically two to three months.

How to treat pressure sores

• For the first three or four days, clean the sore twice daily until it looks pink and healthy. See the section *How to care for a fresh wound.*

• Then apply cream like zinc oxide ointment or petroleum jelly each day. The cream helps to keep the wound moist so it does not dry and crack. It also acts as a barrier to infection.

• If possible, do not make the animal carry a load until the sore has healed.

• It is essential to think about what caused the injury and how to remove the cause. For example:

  • if the animal is too thin and bony, try to buy more food for it or allow it more time to eat, or

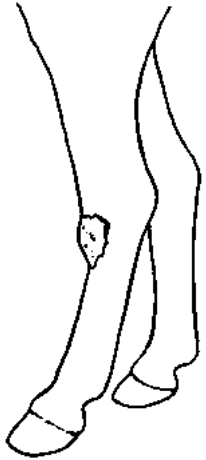
- **if the padding under the pack is old and sweaty, wash it, or**
- **if the padding is not thick enough, make more padding.**

See the section *Pack animals* for advice on how to prevent pressure sores.

7.8 Proud flesh, excess granulation tissue

Top

This is a complication of wound healing that occurs on the lower parts of horses' and donkeys' legs. It is more common in horses. Proud flesh occurs when the pink or red healing tissue in the middle of a wound grows faster than the skin edges around the wound. This lump of tissue will get bigger and bigger unless the skin can grow over it.



What causes proud flesh

- **Infection of the wound,**
- **movement of the edges of the wound, for example, because the wound is over a joint.**

How to treat proud flesh

MAKE SURE THAT THE WOUND IS VERY CLEAN

- **Wash the wound as described in the section *How to care for a fresh wound.***

- **It may be useful to wash the wound with a solution of antibiotic powder, for example, ampicillin. In some countries, only veterinarians and medical workers can buy ampicillin, but in many countries, pharmacies sell ampicillin capsules to anybody. The capsules are broken open so the powder can be mixed with very clean water (boiled and then allowed to cool).**

USE A CORTICOSTEROID CREAM

- **Apply the cream to the proud flesh twice daily.**
- **Do not put cream on the skin edges, but only on the lump of red tissue.**

Examples of corticosteroid creams are listed at the back of the book.

CUT IT OFF AND APPLY PRESSURE BANDAGE

• For safety, if operating on a back leg, put on sidelines (see the section *How to restrain horses and donkeys*).

• Use a sharp knife like a razor blade. Cut the proud tissue back to skin level. This tissue does not have any nerves, so it will not hurt the horse to cut it. If you cut the skin, it hurts.

• It will always bleed a lot, but there is rarely any infection. If you start cutting at the bottom of the wound and work up, it is easier to see what you are doing. If you start at the top of the wound, blood tends to run down into the place where you are cutting.

• After cutting, bandage as described in the sections *Severe bleeding* and *How to put on a dressing and bandage.* Change the dressing every two or three days.

• The skin edges should start to grow in from the sides of the wound. If the proud tissue grows back faster, carefully cut it back again, this time to about 0.5 cm below the skin level, and bandage again.

OLDER TREATMENTS WITH CAUSTIC CHEMICALS

• It is possible to use copper sulphate or magnesium sulphate (Epsom salts) to kill the proud flesh. The problem is that the same chemicals can kill the skin edges and

so slow down normal healing.

• Copper sulphate crystals or a paste of Epsom salts can be placed on the centre of the proud flesh, bandaged in place and left for a few days. Epsom salts will produce an unpleasant smell like rotten eggs.

• Then remove the dressing and look at the wound. If the proud flesh is reduced, treat as a fresh wound. If there is still a lump of proud flesh, repeat the chemical treatment, but change the dressing after one day.

Proud flesh can take a long time to cure. A combination of cutting, using a chemical and using cream may work best. Every case is different.

7.9 Infected wounds

Top

Infected wounds may smell, discharge pus and attract a lot of flies. The animal may be unwell and may have stopped eating.

How to treat old, infected wounds

• Wash the wound with a hosepipe or use several buckets full of water. Use plenty of water.

• Apply some antiseptic to the wound by squirting with a syringe or with cotton wool, as described in the section *How to care for a fresh wound.*

Suitable antiseptics

Suitable antiseptics

Add iodine to the water to turn it the colour of very weak tea.

If you do not have iodine, less good, but still useful alternatives are:

- *add 2 teaspoonfuls of salt to 1 litre of water, or*
- *a pinch of crystals of potassium permanganate (to make a purple solution), or*
- *a pinch of crystals of mercurochrome (to make a red solution).*

- **Let the wound dry and apply antibiotic ointment (not powder).**

Treatment if the horse is sick

- **If the infection is severe, the animal's behaviour may become dull or depressed and it may stop eating. It may be ill because infection or toxins (poisons caused by the infection) have spread from the wound. A sick animal should be injected with antibiotic, such as long-acting penicillin.**

- **If there is no improvement in the animal after two days, or sooner, consult a veterinarian if possible.**

7.10 Fly-blown wounds, screw worm Top

***Calliphora* fly**

Screw worm

Maggots often infest animal wounds, especially when the wound is infected, because the smell of the infection attracts flies. Flies lay eggs that hatch into maggots and burrow into the wound. The maggots may go deep into the flesh and cause the skin to lift off.

Screw worm disease is the infestation of a wound with a particularly damaging type of maggot. Screw worms are most common in tropical, humid climates. In many countries, suspected infections should be reported to the veterinary authorities.

What screw worm disease looks like

- **Screw worms burrow more deeply than the maggots of other flies.**
- **A foul-smelling brown fluid pours from the wound and this attracts more flies.**
- **Maggots can soon eat large areas of tissue.**

How to prevent maggots from infesting wounds

- **Keep wounds clean.**

- **Use a fly repellent (see the section *How to care for a fresh wound* above) around the wound.**

- **Burn or bury dead bodies where flies breed.**

How to treat wounds with maggots

- **Clip the hair away from the wound and any tracks where the maggots are burrowing.**

- **Soak cotton wool in a chemical that kills the maggots. Hold it on the wound for a few minutes.**

Chemicals and mixtures to kill maggots

- *Most chemicals used to control ticks (see the section* Ticks*) are effective against maggots. Usually these chemicals must be mixed with water before use. Carefully follow instructions on the label*

- *Mix kerosene or turpentine with boric acid powder and spread it on the fly-blown wound.*

- *Chloroform, but be careful not to breathe in the fumes of this chemical.*

- **A few drops of ivermectin for injection (sold for cattle) can be squirted directly on to the wound. This kills the maggots rapidly.**

- **Pick the maggots out of the wound.**

- **Wash the wound.**

- **Dry the wound with clean cloth or cotton wool.**
- **Apply antiseptic ointment, such as zinc oxide.**
- **Repeat these steps every day until the wound is free of maggots and infection.**
- **If the wound was a puncture wound, and maggots have made tracks under the skin, it may be necessary to cut off the skin over these maggot tracks.**

7.11 Leg injuries affecting joints or tendons

Top

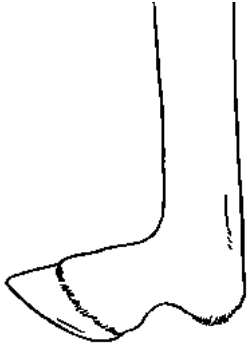
Injuries to tendons caused by over-stretching them in work are described in the *Lameness* chapter in the section *Tendon and ligament injuries.* Tendons can also be damaged by deep cuts. They take months to heal. If you suspect that joints or tendons are involved in a wound, get advice from a veterinarian if possible.

How to recognize tendon involvement

Look closely at the angle of the joints of the foot. The normal angle is shown in the section *Normal feet and legs.* Be suspicious of damage to the tendons at the back of the leg if the angle of the pastern joint has dropped. When tendons above the back of the foot are damaged, the fetlock joint may have a different angle.

Normal leg

Flexor tendon near the surface cut



Severed deep flexor tendon

The tendons on the front of the leg (extensor tendons) can be injured when there is a wound to the front of the cannon. Damage is not always seen immediately. It can occur a week or two later, if the blood supply to the tendons had been damaged by the original injury.

HOW TO TREAT INJURY TO THE TENDONS

- **Complete rest until the swelling goes down.**
- **Hose the painful, swollen part of the leg with cold water, or put cloths soaked in cold water on the leg. Do this several times a day for three days.**
- **Dry the leg, and bandage to reduce the swelling.**
- **Give pain relief with a NSAID drug. See list at the back of the book.**
- **Animals with cut tendons should be given antibiotic injections for at least seven days. If the skin is not cut, do not give antibiotics.**

Tendons take *at least six weeks* to repair properly, depending on how severe the injury was. It is necessary to stop work and completely rest the animal for a month and then give light exercise for two weeks. Six weeks after the injury, the animal may do light work for several months. If you start to work the animal hard too soon, it will probably be lame for much longer.

Injuries affecting a joint

It is important to recognize the possibility of joint injury, because if infection starts in a joint it can result in permanent lameness. Deep wounds near a joint sometimes puncture the joint itself.

WHAT JOINT INJURY LOOKS LIKE

Although there is always some fluid (serum) which drips out of any wound as it begins to heal, be suspicious that a joint is damaged if you see leakage of clear liquid. More fluid may leak when the joint is bent.

HOW TO TREAT INJURY TO JOINTS

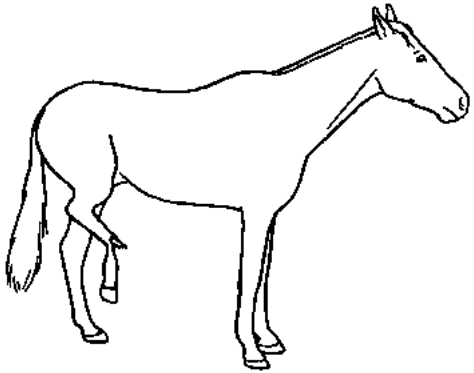
- **Clean the wound. See the section *How to care for a fresh wound.***
- **Give antibiotic injections for five days. See the section *Infected joints* in the *Lameness* chapter.**

7.12 Broken bones

Top

Bones can break in road accidents or from a kick by another horse or during strenuous

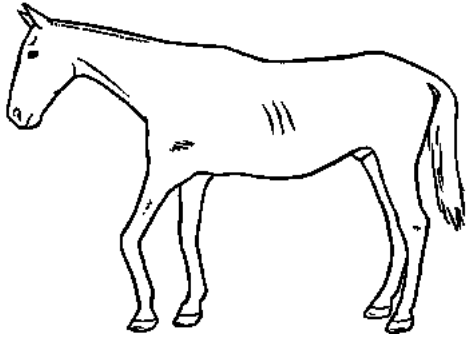
exercise such as jumping. Sometimes a mare treads on her foal and breaks its leg.



What broken bones look like

- **A horse with a fracture is usually in great pain and will not put any weight at all on the affected leg.**
- **The leg may have a different shape, with a bend in it where there is not a joint.**
- **There may be a large swelling due to bleeding inside the leg.**
- **The end of a broken bone may stick out of a wound in the skin.**
- **A broken bone high up in the leg, for example on the hind leg between the hip and stifle joint, can be difficult to see, because there is a lot of muscle over these bones. If you press your ear to the leg, you might hear the grating sound of the broken end of bone.**

• If a bone is broken high up on the front leg, the horse may stand with its elbow dropped, as shown in the picture below.



Whether or not to treat broken bones

When a working horse or donkey breaks a bone in its leg, the appropriate action is normally euthanasia. See *How to shoot a horse.*

Euthanasia is also normally recommended for fractures in the legs of foals. However, a young foal or donkey with a fracture low down the leg may have a chance of normal healing, if:

• the fracture is below the knee or hock,

• there is no bone sticking out through the skin, and

• the animal can be rested in a quiet place for several weeks at least while the bone has a chance to heal.

If possible, get these cases seen at a veterinary clinic. If treated properly with a cast, this kind of fracture in a donkey or foal may heal. If no professional advice is available, consult a local bone-setter for advice on how to support the injury with splints.

7.13 Burns

Top

How to treat burns

- **Put cold water on the burnt areas immediately. Continue to pour cold water on the burnt areas for ten minutes. This reduces the damage that the heat will cause.**
- **Later, if the burn has caused blistering of the skin, apply petroleum jelly (Vaseline) or calamine lotion.**
- **Apply fly repellent (see the sections *How to care for a fresh wound* and *Flies*)**

Euthanasia is recommended if the burning is serious. Euthanasia should be considered if:

- **there are severe burns that cause charring of the flesh,**
- **burns affect more than 20% of the body surface, or**
- **the animal is unconscious or unable to walk.**

7.14 Injury to the head or spine

Top

When the brain or the spinal cord is damaged, the animal may behave in an abnormal way. In some cases the damage is severe and recovery is impossible.

If any of the following signs are seen, there is little possibility of improvement, and therefore euthanasia is recommended:

1 Coma (the animal appears to be asleep, and cannot be made to wake up).

2 All legs are stretched out straight and rigid.

3 The pupils (the black centre part) of both eyes are big, black circles.

4 There are strange patterns of breathing.

5 The horse does not give any response to pain, for example pinching the skin hard in the lower legs.

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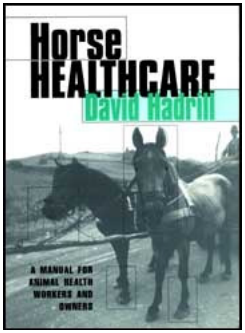

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