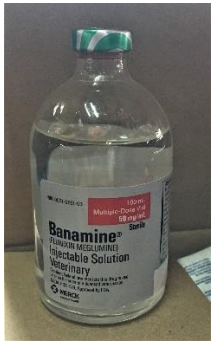
Drug	Conc.	Dose	Calculations	Route of admin.	Withdrawal time	Contraindications
2% Xylazine 	20 mg/ml	0.025mg/kg	$Volume = \frac{0.05 * 150}{20} = 0.38ml$	IM	14 days meat 48 hrs milk	-Do not use in animals receiving epinephrine or having active ventricular arrhythmias -Do not use in the last trimester of cattle pregnancy -Do not give to ruminants that are debilitated, dehydrated or have a urinary obstruction
10% Ketamine 	100mg/ml	0.05mg/kg	$Volume = \frac{0.1 * 150}{100} = 0.16ml$	IM	3 days meat and milk	-Not for use in animals with prior hypersensitivity reactions, hypertension, severe cardiac, hepatic or regional impairment, head trauma, seizure disorders, glaucoma or head injuries

Drug	Conc.	Dose	Calculations	Route Of Admin.	Withdrawal time	Contraindications
2% Lidocaine (local anesthetic) 	20 mg/ml	4ml per site, toxic dose= 10mg/kg	$\frac{1}{2}$ toxic dose $= \frac{5*150}{20} = 37.5ml$	SC & through spermatic cord	1 day meat and milk	Not for use in animals with prior hypersensitivity reactions
Flunixin meglumine (post-op analgesic) 	50 mg/ml	1.1mg/kg	$Volume = \frac{1.1 * 150}{50} = 3.3\ ml$	IV	4 days meat, 36 hours milk	Do not use in cattle who have shown prior hypersensitivity reactions

Drug	Conc.	Dose	Calculations	Route Of Admin.	Withdrawal time	Contraindications
Penicillin-streptomycin (antibiotics) 	200,000 IU/ml	20,000 IU/kg	$Volume = \frac{20{,}000 * 150}{200{,}000} = 15ml$ *15ml is the maximum volume that should be injected in younger cattle	IM	30 days meat, 10 days milk	-Do not use in animals hypersensitive to it, nor those with renal insufficiency
Epinephrine (for anaphylactic reactions)	1mg/ml	0.02mg/kg	$Volume = \frac{0.02 * 150}{1} = 3ml$	IV	-	Not for use in animals with narrow angle glaucoma, hypersensitivity to epinephrine, shock due to non-anaphylactoid causes, general anesthesia with halogenated hydrocarbons, during labour, dilated cardiomyopathy or coronary insufficiency
Tolazoline (Xylazine reversal)	100 mg/ml	4 times xylazine dose =0.1mg/kg	$Volume = \frac{0.2 * 150}{100} = 0.30\ ml$	IV	-	-Do not use in animals hypersensitive to it
Atropine (for bradycardia < 30 bpm)	0.54 mg/ml	0.04 mg/kg	$Volume = \frac{0.04 * 150}{0.54} = 11.1ml$	IV	14 days meat, 3 days milk	-Do not use in animals with narrow angle glaucoma, tachycardia, ileus, urinary obstruction

Drug	Conc.	Dose	Calculations	Route Of Admin.	Withdrawal time	Contraindications
Oxytetracycline hydrochloride;gentian violet (Tetravet® aerosol) 	40mg/g OH, 4mg/g GV	Apply to affected area once or twice daily as required	-	topical	-	Do not use in patients who previously displayed hypersensitivity reactions
Dimethyl Dichlorovinyl phosphate, gentian violet (Larvicid® aerosol) 	0.10% DDP, 0.02% GV	-	-	topical	-	Do not use in patients who previously displayed hypersensitivity reactions

*Ketamine and Xylazine were used in conjunction to produce a modified ketamine stun. This enabled the calf to remain standing during the procedure, thereby reducing any injuries due to casting, or recumbency (such as regurgitation and aspiration of rumen contents).

*Lidocaine was used as a local anesthetic, in order to reduce the sensation of the inevitable pain the dehorning would have caused.

*Banamine and Combikel were administered for post-op purposes. Combikel would help reduce bacterial contamination, and Banamine has an analgesic effect that would act up to 24 hours, long after the lidocaine effects have worn off.

*All drugs in red indicate emergency drugs, and they should all be administered IV.

*All drugs in purple indicate those used post-operatively. Larvacid® may result in paralysis, muscle weakness or incoordination. Antidote: atropine sulphate and pralidoximes.