National Veterinary Drug Formulary

Department of Livestock
Ministry of Agriculture & Forests

Second Edition 2013

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PREFACE

Following the first edition of National Veterinary Drug Formulary (NVDF) during 2011, second edition of NVDF is produced for the Essential Veterinary Drugs lists (EVDL) 13. This formulary provides the readers useful information like, indications, dosage, contra-indications and pharmaceutical precautions etc. The drugs have been classified according to the pharmacological groups for easy reference. The book also contains the formulae for the extemporaneous preparation of mixtures, ointments and other medicine. This edition also contains the details on vaccines that are used in the country both imported and in house production. The details includes types, vaccination schedules etc.

From this edition, the aquatic drugs has also been included with pharmacological groups and their usages. The effort has been made to include almost all aspects of medicines, drugs, usages, doses calculations and also the monitoring aspect of Essential Veterinary Drug Programme (EVDP) in the country.

This formulary is intended to aid the professionals and para-professionals in the veterinary field for guiding on the usage of the essential drugs in their day to day routine of treatment of animals. It is also intended as information for academic purposes for the students in training institutes.

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Table of Contents

1. ANTIMICROBIAL 13

1.1 Amoxycillin Trihydrate 13
1.2 Ampicillin & Cloxacillin 13
1.3 Benzathine penicillin 14
1.4 Cephalexin 14
1.5 Ceftriazone and Tazobactum 15
1.6 Levofloxacin 16
1.7 Oxytetracycline LA 16
1.8 Strepto-Penicillin 17
1.9 Sulphadimidine 18
1.10 Trimethoprim & Sulphadiazine 19
1.11 Ampicillin 19
1.12 Enrofloxacin 20
1.13 Amikacin 21
1.14 Cefotaxime 21
1.15 Erythromycin 22
1.16 Gentamycin 23
1.17 Metronidazole 23
1.18 Oxytetracycline HCL 24
1.19 Sulphamethoxazole & Trimethoprim 25
1.20 Tetracycline Hydrochloride (Water soluble powder 5g/100g) 25

2. ANTHELMINTICS 27

2.1 Albendazole 27
2.2 Oxyclozanide 27
2.3 Rafoxanide + Levamisole combination 28
2.4 Triclabendazole 29
2.5 Fenbendazole 29
2.6 Levamisole HCl 30
2.7 Piperazine citrate 31
2.8 Niclosamide 31
2.9 Praziquantel 32
2.10 Tetramisole 32
2.11 Ivermectin 33
2.12 Praziquantel+Pyrantel pamoate+Febantel 34

3. EXTERNAL PARASITICIDES 35
3.1 Amitraz 35
3.2 Cypermethrin 36
3.3 Deltamethrin 36
3.4 Flumethrin 37

4. ANTIFUNGAL DRUGS 38
4.1 Clotrimazole 38
4.2 Griseofulvin 38
4.3 Ketoconazole 39

5. ANTIPROTOZOALS 40
5.1 Buparvaquone 40
5.2 Diminazene aceturate Phenazone 40
5.3 Quinapyramine sulfate and chloride 41
5.4 Diaveridine and sulfaquinoxaline 41
5.5 Metronidazole 42
5.6 Sulphachlorpyrazine sodium powder 42

6. RUMENOTORIC 44
6.1 Antimony potassium tartarate + FeSO4+ CoSO4 boli 44

7. ANTACID 45
7.1 Aluminum hydroxide & dimethyl Polysiloxane 45
7.2 Omeprazole 45
7.3 Pantoprazole 46
7.4 Ranitidine HCL 47
7.5 Silica in dimethicone 47

8. INTRAUTERINE 48
8.1 Nitrofurazone+Urea+Metronidazole+Povidone Iodine 48
8.2 Trimethoprin+Sulphamethaxazole+ Urea 48

9. MINERALS 49
9.1 Calcium Gluconate 49
9.2 Cobalt, Copper, Manganese, Ferrous, Zinc 49
9.3 Inorganic phosphorus 50

9.4 Iron dextran 50
9.5 Mineral mixture 51
9.6 Organic Phosphorous 51
9.7 Yeast extract + Ferrous Sulphate $FeSO_4$ + Copper Sulphate, $CuSo_4$ + Vitamin B 12 + Lactic acid base bolus 52

10. VITAMINS 53
10.1 B-Complex & Liver extract 53
10.2 Vitamin A 53
10.3 Vitamin B-Complex 54
10.4 Vitamin K 54
10.5 Vitamins AB2D3K 55
10.6 Vitamins with amino-acids 56

11. INFUSION FLUIDS 57
11.1 Calcium, Magnesium, Phosphorous & Dextrose 57
11.2 Dextrose saline 58
11.3 Normal saline 59
11.4 Ringers Lactate 59
11.5 Sodium bicarbonate 60

12. EXTERNAL OINTMENTS/SPRAY 61
12.1 Gamma Benzene Hexachloride proflavin 61
12.2 Gentamycin 61
12.3 Nitrofurazone 62
12.4 Maggoticidal 62
12.5 Indradaru+Surbhidaru+Somvalka+Tarun Antiseptic 63

13. EYE OINTMENTS/DROPS 64
13.1 Chloramphenicol 64
13.2 Gentamicin Sulphate Eye & Ear Drops 64

14. ANALGESICS/ANTIPYRETICS 65
14.1 Analgin Pitofenone hydrochloride, fenpiverinium bromide 65
14.2 Ibuprofen 65
14.3 Ketoprofen 66
14.4 Meloxicam 66

14.5 Paracetamol and Meloxicam 67
14.6 Phenylbutazone & Sodium salicylate 68

15. ANTIHISTAMINICS 69
15.1 Chlorophenaramine maleate 69

16. STEROIDS 70
16.1 Dexamethasone 70
16.2 Isoflupredone acetate 70
16.3 Prednisolone 71

17 HORMONES 72
17.1 Buserelin acetate 72
17.2 CIDIROL (Oestradiol Benzoate) 73
17.3 CIDR-B intravaginal Progesterone 74
17.4 Hydroxy Progesterone caproate 75
17.5 Medroxy Progesterone 76
17.6 Oxytocin 76
17.7 PG 600 injection – 400IU 77
17.8 Prostaglandin 78

18. LOCAL ANAESTHETICS 80
18.1 Lignocaine HCl 80

19. SEDATIVE/TRANQUILIZER 81
19.1 Ketamine 81
19.2 Triflupromazine 82
19.3 Xylazine 82

20. INTRAMAMMARY INFUSIONS 84
20.1 Cloxacillin & Ampicillin 84
20.2 Cefoperazone 84
20.3 Tetracycline, Neomycin, Bacitracin, Prednisolone 85
20.4 Strepto-penicillin-SH 85

21. ANTISEPTICS AND DISINFECTANTS 87
21.1 Cetrimide & Chlorhexidine 87

21.2 Glutaraldehyde Derivatives 87
21.3 Povidone iodine 88

22. AYURVEDICS 89
22.1 Antibloat 89
22.2 Anticough/Expectorent 89
22.3 Antidiarrhoeal 90
22.4 Heat inducer 90
22.5 Libido Inducer 91
22.6 Livertonic 91
22.7 Rumenotoric/Stomachic 91
22.8 Spermatogenic 92
22.9 Uterine tonic 92

23. CHEMICAL DRUGS POWDERS AND LIQUIDS 94
23.1 Alum pure 94
23.2 Benzoic acid 94
23.3 Boric acid 94
23.4 Charcoal activated 95
23.5 Chloral Hydrate 95
23.6 Cobalt sulphate 96
23.7 Copper sulphate 97
23.8 Dicalcium phosphate 97
23.9 Ferrous sulphate 98
23.10 Formaldehyde 99
23.11 Glycerine 99
23.12 Hexamine 100
23.13 Kaolin 100
23.14 Light magnesium oxide 101
23.15 Liquid paraffin 101
23.16 Magnesium Sulphate 102
23.17 Petroleum jelly 102
23.18 Potassium permanganate 103
23.19 Potassium iodide 103
23.20 Rectified Spirit 104
23.21 Salicylic Acid 104
23.22 Sodium acid phosphate 105

23.23 Sodium bicarbonate 105
23.24 Sodium carbonate 106
23.25 Sodium chloride 107
23.26 Sodium hypochloride (Bleaching powder) 107
23.27 Sodium Salicylate 108
23.28 Sulphanilamide powder 108
23.29 Sulphur sublimate 109
23.30 Tannic Acid 109
23.31 Tincture Benzoin 110
23.32 Tincture Iodine 110
23.33 Turpentine oil 111
23.34 Zinc oxide 111

24. DIURETICS 112
24.1 Acetozolamide 112
24.2 Frusemide 112

25. UTERINE TONICS 114
25.1 Ergometrine Maleate 114
25.2 Valethamate 114

26. ANTICONVULSIVE 116
26.1 Diazepam 116
26.2 Phenobarbitone sodium 116

27. ANTI-EMETICS 118
27.1 Ondansetron 118
27.2 Metoclopramide 118
27.3 Promethazine 118

28. CARDIAC STIMULANTS 120
28.1 Adrenaline 120
28.2 Digitoxin 120
28.3 Digoxin 121

29. RESPIRATORY STIMULANT.....123
29.1 Doxapram.....123

30. BRONCHIODIALATER.....124
30.1 Theophyline and Etophyline.....124
30.2 Salbutamol.....124

31. HAEMOSTATIC DRUGS.....125
31.1 Adenochrome monosemicarbazone.....125
31.2 Etamsylate.....125
31.3 N-butanol and citric acid.....126

32. EMETICS.....127
32.1 Apomorphine hydrochloride.....127

33. ANTIDOTE.....128
33.1 Atropine sulphate.....128

34. ANTIDIARRHOEAL.....129
34.1 Loperamide.....129
34.2 Metronidazole and Loperamide.....129

35. ANTI-NEOPLASTIC DRUGS.....130
35.1 Lithium Antimony Thiomalate.....130
35.2 Methotrexate sodium.....130
35.3 Vincrystine Sulphate.....131

36. PSYCOTROPIC SUBSTANCE.....132
36.1 Chloropromazine Hydrochloride.....132

37. TOXOIDS AND ANTITOXINS.....133
37.1 Tetanus toxoid.....133
37.2 Tetanus antitoxin.....133

38. MISCELLANEOUS.....135
38.1 Blood Transfusion kit.....135

38.2 Colostrum substitute for calves 135
38.3 Distilled water 135
38.4 Fortifyer for Calves 135
38.5 Gut conditioner for dogs and cats 135
38.6 Gut conditioner for calves 136
38.7 Neonatal Booster 136
38.8 Rehydration for piglets 137
38.9 Rehydration solution for calves 137

39. VACCINES 138
39.1 Anthrax Spore Live vaccine 138
39.2 Black Quarter (BQ) vaccine 138
39.3 Haemorrhagic Septicaemia (HS) vaccine 139
39.4 Hemorrhagic septicemia and Black quarter combined vaccine (HS+BQ) 140
39.5 Classical Swine Fever vaccine 141
39.6 Thermostable Newcastle (I-2) Disease vaccine 142
39.7 E. coli oral vaccine 142
39.8 Foot and Mouth Disease vaccine (FMD Oil) 143
39.9 Rabies vaccine 144
39.10 Raksharab vaccine 144
39.11 Fowl pox vaccine 145
39.12 Marek's disease vaccine 146
39.13 Infectious Bursal Disease (Gumboro) Disease vaccine 147
39.14 Newcastle Disease vaccine Lentogenic B1 148
39.15 Newcastle Disease vaccine Mesogenic (R2B / Mukteswar) 149

40 CHEMICAL DRUG FORMULATIONS 150
40.1 Antiseptics 150
40.2 Mouth Washes 150
40.3 Skin antiseptics (antipruritic) 150
40.4 Disinfectants 150
40.5 Antiseptic Ointments 150
40.6 Lotion 151
40.7 Urinary antiseptics 151
40.8 Universal Antidote 151
40.9 Haematinics 152
40.10 Stomachic 152

40.11 Carminative 153
40.12 Antizymotic 153
40.13 Purgative for Cattle 153
40.14 Alterative 153
40.15 Febrifuge 154
40.16 Antiseptic and Absorbent 154

41 AQUATIC DRUGS 155
41. 1 Breeding Inducing Agent 155
41.1.1 Salmon Gonadotropin Releasing Hormone and Domperidone 155
41.1.2 Synthetic Gonadotropin Releasing Hormone 155
41.1.3 Synthetic Salmon gonadotropin releasing hormone and Pimozide 156
41.2. Anaesthetics 157
41.2.1 Benzocaine 157
41.2.2 2- phenoxy ethanol 157
41.3 Chemicals for Bath and treatment 158
41.3.1 Acriflavin 158
41.3.2 Chloramine Trihydrate 158
41.3.3 Malachite Green Hydrochloride 159
41.3.4 Sodium Chloride 159
41.4 Antiseptics/Disinfectants 160
41.4.1 Copper sulphate 160
41.4.2 Potassium Permanganate 161

ANNEXURE 162

FOREWORD
(From the Chairman, NVDC)

As approved by the Government, the Essential Veterinary Drug Program (EVDP) is being co-ordinated by National Centre for Animal Health (NCAH) beginning from 2009-10. It is being managed through centralized budgeting, procurement and distribution of veterinary drugs, vaccines and instrument to the end users. The program is facilitated by creating a separate unit called Drugs vaccines and equipment unit (DVEU).

As provisioned in the Medicines Act of the Kingdom of Bhutan 2003, section 9.1 (b) the National Veterinary Drug Committee (NVDC) provides technical guidance to the unit to ensure the continuous availability of quality veterinary drugs and thereby provide effective veterinary services to the clients. One of the mandates of the committee is also to prepare and update the National Veterinary Drug Formulary (NVDF) based on the revised veterinary drug lists. The formulary contain all the details of the drugs such as composition, indication, dosage, management/ storage, contra-indications, etc which would serve as ready reference for the veterinarians and field staff.

This edition also contain formulary/details on the vaccines of livestock which will help the field staff during vaccination programs. In addition, this edition also contains the formularies for aquatic drugs to aid the fishery health professional in their day to day use of drugs for breeding or treatments. Hence, this makes the NVDF compact and handy covering the drugs and vaccines of almost all species of livestock.

The NVDF has been developed with valuable contribution from the professional and para professional of Department of Livestock, MoA and Drug Regulatory Authority, MoH.

We hope that this NVDF will be useful guide and source of information to both professionals and para-professionals in the field and also for students for academic purposes.

(Dr. Kinzang Dukpa)
Chairman
National Veterinary Drug Committee

1. ANTIMICROBIALS

1.1 Amoxycillin Trihydrate

Dosage Form
Tablet

Therapeutic group
Antibacterial agent

Composition
Each tablet contains equivalent to 1.5gm Amoxicillin trihydrate.

Indication/use
Respiratory tract infections, mastitis, urinary tract infections, wound infections, calf scours, otitis, hemorrhagic septicemia, metritis, necrotic enteritis, infectious coryza, coli septicaemia, fowl cholera, fowl typhoid, salmonellosis and CRD.

Dose/administration
Dog & cats: 10 - 20mg BID; Cattle, horse, goat and pig: 10mg/kg body weight BID.

Contra-indications
Penicillin-hyper sensitivity reactions may occur**.**

Pharmaceutical precaution
Store in a cool place not exceeding 25^{o}C

1.2 Ampicillin & Cloxacillin

Dosage Form
Injectable solution

Therapeutic group
Broad spectrum antibacterial

Composition
Each vial contains Ampicillin sodium equivalent to 1gm of Ampicillin and Cloxacillin sodium equivalent 1gm of Cloxacillin.

Indication/use
Broad spectrum amino-penicillin indicated in mastitis, metritis, septicemia, chronic wounds, systemic and local infections, abscesses, enteritis and pneumonia.

Dose/administration
4 - 10mg/kg body weight I/M, I/V injection repeated twice daily for a period of three days.

Contra-indications
History of allergic reactions to penicillin

Pharmaceutical precaution
Store in a cool place not exceeding 25°C

1.3 Benzathine penicillin

Dosage Form
Injectable solution

Therapeutic group
Long acting Bactericidal

Composition
Each vial contains 48 lac and/or 6 lac.

Indication/Use
Cattle,Buffalo,Sheep,Goat:Actinomycosis,anthrax,blackquarter,tetanus,arthritis,mastitis, metritis,haemorrhagic septicaemia,exudative epidermitis,pyelonephritis.

Horse: Strangles,Corynebacterial pneumonia of foals,Tetanus.

Pig: Swine Erisipelas,Tetanus,Foot rot, Malignant oedema.

Dog, Cat : Rickettsiosis ,Tetanus,Wound infection, Respiratory tract infections.

Dose/Administration
Cattle, Horse, Sheep, Goat, Swine: 12000 IU/kg B.W. Deep intramuscular.
Dog, Cat: 40000 IU/kg B.W. Deep intramuscular.

Precautions
Deep intramuscular administration only. Avoid usage in penicillin-hyper sensitive animals.

1.4 Cephalexin

Dosage Form
Tablet and suspension

Therapeutic group
Antibacterial.

Composition
Each tablet contains 1.5gm Cephalexin and the suspension contains 125mg of Cephalexin. 7.5% in 20g powder

Indication/use
Respiratory tract infections, urinary tract infections, localized infections in skin and soft tissues, fowl cholera, gangrenous dermatitis, salmonellosis, coryza and E coli.

Dose/administration

Cattle and buffalo: 5-10mg/kg B.W BID.
Poultry: 35 - 50 mg/kg B.W PO qid.
Horses: 22 - 33 mg/kg B.W PO q6h

Contra-indications
Avoid using in penicillin hypersensitive animals.

Counseling
Do not use simultaneously with penicillin antibiotics.

Pharmaceutical precaution
Store below 25^{o}C and protect from light.

1.5 Ceftriazone and Tazobactum

Dosage Form
Injectable solution

Therapeutic group
Third generation Cephalosporins with Semi-synthetic beta lactamase inhibitor

Composition
Each vial contains Ceftriazone 3g and Tazobactum 375 mg.

Indication / use
Mastitis,Haemorrhagic septicemia, Pneumonia, Peritonitis, Skin and soft tissue infections.

Dose/ administration.
Large animal: 5 – 10 mg/kg B.W I/V, I/M.

Small animal: 15-25 mg/kg B.W I/V, I/M.

Calf, Sheep, Goat: 10-15mg/kg B.W I/V, I/M.

Precautions
Penicillin hypersensitivity reaction may occur.

1.6 Levofloxacin

Dosage Form
Injectable solution

Therapeutic group
Quinolone group of antibacterial.

Composition
Each ml contains 100 mg of Levofloxacin.

Indication / use
Gastro intestinal infections, Respiratory tract infections, Genital tract infectons, Skin and soft tissue infections.

Dose/ administration
Cattle : 1.5 mg/kg B.W BID I/M .
5 mg/kg B.W OD I/V.

1.7 Oxytetracycline LA

Dosage Form
Injectable solution.

Therapeutic group
Broad spectrum antibacterial agent.

Composition
Each ml contains Oxytetracycline dehydrate equivalent to 200mg of anhydrous Oxytetracycline.

Indication/use
It is indicated in the treatment and control of a wide range of common systemic, respiratory and local infections caused by or associated with, organisms sensitive to oxytetracycline in cattle, sheep and pigs. Therapy of acute infections caused by wide range of organisms such as *Rickettsiae, Chlamydia, Actinomycetes, Mycoplasma,* protozoa and some larger viruses.

Dose/administration
By deep I/M injection, to cattle, sheep and pigs only; The recommended dosage rate is 20mg/kg body weight, eg. 1ml/10 kg body weight; Piglets at different age: Day 1- 0.2ml, Day 7-0.3ml, Day 14- 0.4ml, Day 21- 0.5ml and over day 21-1ml/10kg body weight; The maximum volume of injection at any one site is 20ml in cattle, 10ml in pigs and 5ml in sheep.

Contra-indications
Not to be used in dogs, cat and horses. Once a vial has been broached the contents should be used within 4 weeks. Do not dilute (see literature for other details).

Pharmaceutical precaution
Store below 25^{o}C and protect from light.

1.8 Strepto-Penicillin

Form
Injectable solution

Therapeutic group
Broad Spectrum antibiotic

Composition
Each vial contains 2,000,000 IU procaine penicillin and 2.5g streptomycin sulphate.

Indication/use
Against a wide variety of organisms including Pasteurella , Klebsiella, Corynebacterium, Erysepalothrix, Listeria, Salmonella, Streptococci and Staphylococci.

Dose/administration
Add 7.5ml of distill water into the vial to make it 10ml. The recommended daily dose is 8mg procaine penicillin and 10 mg streptomycin sulphate; Large animal: 2ml/50kg body weight, I/M route; Small animal: 1ml/5kg body weight, I/M route.

Contra-indications
Hypersensitive to penicillin prompt treatment with antihistamines is indicated if such reaction occurs.

Pharmaceutical precaution
Store below 25^{o}C and protect from light. Use contents within 4 weeks. Shake well before use.

1.9 Sulphadimidine

Dosage Form
Injectable solution & bolus

Therapeutic group
Broad Spectrum antibiotic

Composition
Each ml contains 333mg Sulphadimidine sodium and each bolus contains 5gm Sulphadimidine.

Indication/use
In the treatment of infectious diseases of calves and milking cows, sheep, pigs caused by or associated with organisms sensitive to Sulphadimidine and also effective in the treatment of coccidiosis and footrot.

Dose/administration
For intestinal and caecal coccidiosis mainly in calves and poultry.
Drug of choice for hemorrhagic septicemia in cattle.
S/C injection in calves and I/V in milking cows; Initial dose: 200mg/kg or 15 to 30ml/50kg Maintenance: 100mg/kg or 7.5 - 15ml/50kg daily by I/V or S/C route; In Dogs half the initial dose should be given twice daily by I/V or S/C route; Horse, cattle, sheep, goat & pigs: 200mg/kg body weight e.g. 2 boli per 50kg body weight followed by 1 tablet/50kg daily for two further days only. The tabs can be used as uterine pessaries prophylactically in cattle after parturition and in the treatment of metritis.

Contra-indications
Known sulphonamide sensitivity. Sever live damage and blood dyscariasis. Do not use by I/M route. I/V should be given slowly. To minimize local tissue reaction following S/C injections divide the dose into 2 or 3 parts and inject into several sites. Prolonged treatment may give rise to vitamin K deficiency, agranulocytosis and hemolytic anemia especially in young stock. Local anaesthetics of the procaine group are antagonistic and should not be used during treatment. Not for use in pre-ruminant calves.

Counseling
Bolus can be administered whole or crushed in the form of powder.

Pharmaceutical precaution
Store below 25^{o}C and protect from light.

1.10 Trimethoprim & Sulphadiazine

Dosage Form
Injectable solution, Bolus/pessary.

Therapeutic group
Antibacterial agent.

Composition
Each ml contains 400mg Sulphadiazine and 80mg Trimethoprim.
Each bolus contains 2g Sulphadiazine and 400mg Trimethoprim.

Indication/use
Oral: Bacterial scours in calves, sheep and foals; systemic infections, e.g. acute salmonellosis, *E. coli,* bacterial pneumonia, calf diphtheria, etc; Intrauterine: Post parturient bacterial infections and other female genital tract, alimentary infections (e.g. gastroenteritis, peritonitis); upper and lower respiratory tract and urogenital tract infections; skin infections, septicemia, eye, ear and mouth infections, etc.

Dose/administration
Give whole or disperse in water and dose as a suspension. Provide 30mg/kg/day.; Oral: Foals, calves and sheep: 1bolus/80kg body weight orally in 2 divided doses daily for 3 days; Intra-uterine: Mares, cows: 1 to 2 boli; Sows, ewe 0.5 to 1bolus; By I/M route: Standard dose for all animals 1ml/30kg body weight daily.

Contra-indications
Known sulphonamide sensitivity, liver parenchymal damage, blood dyscrasias.

Pharmaceutical precaution
Shake well before use. Store below 25^{o} C, protect from light

1.11 Ampicillin

Dosage Form
Injectable solution

Therapeutic group
Broad spectrum aminoglycoside antibiotic

Composition
Each vial contains 250 mg of Ampicilin sodium or 500 mg of Ampicilin sodium

Indication/use
Broad spectrum bactericidal antibiotic active against a wide range of Gram positive and Gram negative organism, as well as many spirochetes, including *Leptospira* sp. Particular indications include infections of the GI, respiratory, uro-genital tract, mastitis, infectious arthritis, local wounds or abscesses, septicaemia, etc.

Dose/administration
Give by I/M or I/V injection @ 2 - 7 mg/kg body weight repeated at every once or twice daily and continued as necessary at the clinician's discretion.

Contra-indications
Use in small herbivores (e.g. guinea pigs, rabbits, hamster). History of allergic reactions to penicillin.

Pharmaceutical precaution
Store below 25° C.

1.12 Enrofloxacin

Dosage Form
Tablet form.

Therapeutic group
Fluoroquinoline group of Antibacterial

Composition
Each tablet contains 150mg of Enrofloxacin.

Indication/use
Cattle, Buffalo,Sheep,Goat: Acute and chronic mastitis, respiratory tract infections , pneumonia, haemorrhagic septicaemia, black quarter, pyometra,metritis, joint ill, uro genital infections, otitis , brucellosis, salmonellosis.

Dog, Cat, Pig, Horse : Respiratory tract infections, gastro intestinal infections, coli-septicaemia,wound, urogenital infections, broncho pneumonia, and secondary bacterial infections associated with viral diseases.
Poultry : CRD , colibacillosis, infectious coryza , pasteurellosis, salmonellosis, fowl typhoid , fowl coryza, other mixed bacterial infections.

Dose/administration
Animals ; 2.5 – 5 mg /kg B.W.

Poultry 250 mg/L of drinking water

Contra-indications
Contraindicated in young ones below 1 yr and cats below 8 weeks of age as it causes arthropathic effects. Gastro intestinal and central nervous system distrubances and rashes may be seen.
Not recommended in horses.

Pharmaceutical precaution
Store in cool place. Protect from light. No more than 5 withdrawals should be made once the vial is opened and use the product within 28 days of first withdrawal.

1.13 Amikacin

Dosage Form
Injectable solution

Therapeutic group
Broad spectrum aminoglycoside antibiotic

Composition
Each ml contains equivalent to 250mg of Amikacin sulphate

Indication/use
Local and systemic infections caused by bacteria such as septicemia, trachea-bronchitis, osteoarthritis, UTI, GI infections, wounds and skin infections.

Dose/administration
5 - 7.5mg/kg body weight by I/M or S/C route every 12 hours
Contra-indications
Potentially toxic causing ototoxicity, neuromuscular blockade and nephrotoxicity.

Counseling
Do not use in food animals. Discard milk for 3days post treatment.

Pharmaceutical precaution
Protect from direct sunlight

1.14 Cefotaxime

Dosage Form
Injectable solution and Tablet

Therapeutic group
Third generation Cephalosporin.

Composition
Each vial contains 1g of cefotaxime and 500 mg per tablet

Indication / use
Intra abdominal infections, Urinary tract infections, Respiratory tract infections Localized infections of skin and soft tissues, Tuberculosis.

Dose/ administration.
Dogs,cats : 25 mg/kg I/V, I/M BID .

Precautions
Avoid usage in penicillin sensitive animals.

Pharmaceutical precaution.
Store below 25 ^{0}C and protect from light.

1.15 Erythromycin

Dosage Form
Tablets
Therapeutic group
Antibacterial agent

Composition
Each vial contains 100mg Erythromycin stearate.

Indication/use
It is indicated in bacterial pharyngitis, bronchitis, pneumonia, amoebic dysentery, sinusitis, abortion, brucellosis, feline pneumonitis, actinomyces, mastitis, UTI, pyometra and BQ. Pink eye and Galsser's disease in horses, swine erysipelas and enzootic pneumonia in pigs and CRD, ornithosis, infectious synovitis and infectious coryza in poultry.

Dose/administration
Oral
Cattle, sheep, goat and horse: 2.2 - 4.4 mg/kg body weight; Pigs: 2.2 - 6 mg/kg body weight
Dog: 10 - 40 mg/kg body weight; Cat: 10 - 15 mg /kg body weight;

Contra-indications
Large doses may lead to vomiting and diarrhoea occasionally.

Pharmaceutical precaution
Store below 25^{o}C and protect from light.

1.16 Gentamycin

Dosage Form
Injectable solution

Therapeutic group
Narrow spectrum antibacterial agent.

Composition
Each ml contains 40mg Gentamycin sulphate**.**

Indication/use
Bacterial infections due to susceptible organisms including UTI, cystitis and nephritis, respiratory tract infections, pneumonia and tracheobronchitis, pyodermatitis, wounds, and peritonitis in dogs and cats.

Dose/administration
By I/M or S/C. Also as intra-uterine infusion
Dog & cats: 3 - 5 mg/kg every 12 hours on first day and then once daily thereafter.
Cattle & horse: 1 - 2 mg/kg body weight as parentral injection, 2 to 4 times daily & 3 - 6ml in 30 - 60ml distilled water or normal saline for 3 - 5 days as intra-uterine infusion (40ml in 200ml of sterile saline in the mare for 3 - 5 days).

Contra-indications
Use in food producing animals or in pregnant animals. Reduce dosage in animals with impaired renal function by half. It should not be used in association with diuretics such as Frusemide.

Pharmaceutical precaution
Store below 25^{o}C. Protect from light

1.17 Metronidazole

Dosage Form
Injectable solution

Therapeutic group
Antibacterial and Antiprotozoal agent.

Composition
Each ml contains 500mg of Metronidazole.

Indication/use
Post-partum metritis, pyometra, endometritis, abortion, repeat breeding, wound infections, hoof infections including abscesses and thrush, sinusitis, balanitis, balanoposthitis, otitis externa, gingivitis and anal sacculitis.

Dose/administration
Cattle & buffaloes: 4ml/kg body weight intravenous daily for 7 days; Intra-uterine: 25 - 50ml every alternate day for 3 days; Topical: quantity will depend upon the nature of lesions treated. The treatment must continue for 7 days.

Pharmaceutical precaution
Store below 25°C and protect from light.

1.18 Oxytetracycline HCL

Dosage Form
Injectable solution

Therapeutic group
Broad spectrum antibacterial.

Composition
Each ml contains stable aqueous solution equivalent to Oxytetracycline HCl 50mg.

Indication/use
It is indicted in the treatment and control of a wide range of common systemic, respiratory and local infection caused by or associated with organisms sensitive to oxytetracycline in cattle, sheep and pigs. Treatment of infections caused by pathogenic bacteria, certain *Rickettsiae, Chlamydia, Actinomycetes, Mycoplasma,* protozoa and some large viruses.

Dose/administration
Give by I/M or slow I/V route; Cattle & horse: 2 - 5mg/kg body weight, (1 - 2ml/25kg) daily for 3 - 5 days; Pig, sheep & goat: 4 - 9mg/kg body weight (2 - 2.5ml/25kg) daily for 3 - 5 days; Dog & cat: 1ml/10kg body weight daily for 3- 5 days.

Contra-indications
Not to be used in renal or hepatic damage. Avoid I/V route in dogs. Dilution with solutions of calcium salts will cause precipitation and should be avoided.

Pharmaceutical precaution
Store in cool dry place and protect from light. Solution may darken on storage but the potency remains unaffected unless the product is not expired.

1.19 Sulphamethoxazole & Trimethoprim

Dosage Form
Solution or bolus.

Therapeutic group
Di – amino pyrimidine – potentiated antibiotic.

Composition
Each sachet(5g) contains 2g of Sulphamethoxazole and 400 mg of Trimethoprim.

Indications/use
Mixed bacterial infections affecting Gastrointestinal tract, urinary tract and genital tract.
Dose/ administration
Chicks : 2.5g/100 birds. (water consumption per day per chick is 80ml approximately which comes to 8 liters for 100 chicks therefore the dose rate is 2.5g in 8liters of drinking water or 25mg/bird or 25mg in 80ml of water.
Growers , Broilers : 5g/100 birds. (water consumption approximately 160ml/bird/day which comes 16 liters for 100 birds therefore administer at the rate of 5g per 16 liters for 100 birds
Layers : 10g/100 birds. Water consumption per layer per day is 210 ml therefore administer @ of 10g in 21 liters of water for 100 layers.

1.20 Tetracycline Hydrochloride (Water soluble powder 5g/100g)

Dosage Form
Water soluble powder

Therapeutic group
Antibacterial agent.

Composition
Each 100 g contains 5 g tetracycline HCl

Indications/uses
For prevention and treatment of a wide variety of infections of the respiratory, GI, genital and urinary tract in large and small animals and birds.

Dose /administration
Administered in drinking water.

Large animals: - 2.5 - 5 g/15 kg body weight

Small animals: - 1g/kg body weight.

The above dosage may be increased or doubled in case of very severe infections.
Poultry: Treatment: - 5 g in 4.5 liters of drinking water. The dosage may be increased or doubled in severe cases. Treatment must be continued until 24 hours after the symptoms disappear. During treatment birds should be given only the medicated water.

Contra-indications/warnings
Use in late pregnancy or in neonates can cause permanent discoloration of rapidly growing teeth. Broad spectrum antibiotic use may result in over growth of non susceptible organisms, particularly monolia; if new infections appear during treatment, appropriate measures should be taken. Prolonged oral antibiotic therapy combination with restricted diet may indicate use of concurrent multivitamin supplementation.

Pharmaceutical precautions
Store below 25° C.

2.1 Albendazole

Dosage Form
Tablet

Therapeutic group
Anthlemintics-antinemtodal against round worms and to some extent to flukes

Composition
Each tab contains 150mg Albendazole

Indication
Anthelmintic (broad spectrum) covering hemonphus, trichostrongylus, for the treatment and control of early immature and mature liver flukes*(F.gigantica/F.hepatica*) in sheeps, goats,cattle and for adult flukes in buffalo.

Dose and administration
Cattle: for all type of worms infestation: 7.5mg/kg B.W; Liverfluke 10 mg /kg B.W
Horse: 5-10 mg/kg B.W; Sheep, goat and pig: 5mg/kg B.W(&.5mg/kg B.W for liver fluke); Dog; 15mg /kg B.W; Poultry; 5mg/kg B.W adult bird. For dog and poultry the treatment should be repeated for 3 consecutive days.

Counseling
Care should be taken not to exceed dose rate during the first month of pregnancy.

Pharmaceutical precautions
Store in cool, dry and dark place.

2.2 Oxyclozanide

Dosage Form
Oral Suspension of 3.4% w/v.

Therapeutic group
Anthelmintics-Flukicide and Nematodal drug

Composition
Suspension strength of 3.4% w/v in 1liter jar. Each ml contains 34mg of Oxyclozanide.

Indication
For the treatment and control of Fascioliosis/liver fluke in cattle, sheep and goat. In

immature from of liver fluke in sheep 3 times the recommended dose is highly effective. It is used in acute fascioliosis.

Dose and administration
Given as oral drench. (10 mg/kg B.W in cattle or 15 mg/kg.body weight in sheep orally).

Contraindication
Do not overdose in cattle. Side affect are occasionally enhance in animals suffering from severe Liver damage or dehydration at the time of dosing.
Oxyclozanide does not taint milk or in any way directly affect its quality or suitability for human consumptions. Can be given to young, pregnant and lactating animals with due regards to the physical condition of the animals in advance pregnancy.

Pharmaceutical precautions
Store at room temperature not exceeding 28^0C and shake well before use

2.3 Rafoxanide + Levamisole combination

Dosage Form
Oral suspension of Rafoxanide 1.5% w/v& Levamisole 1.5% w/v oral suspension; 1000ml/1 liter jar.

Therapeutic group
Anthlemintics (Flukicide + Nematodicide).

Composition
Each 5 ml contains 75mg of Rafoxanide and 75 mg of Levamisole hydrochloride

Indication
It is used in the treatment and control of mixed worms infestations, against mature and immature blood sucking nematodes, lungworms and adult and young liver fluke.

Dose and administration
Orally 1ml/2kg body weight in large animals (Rafoxanide @ 7.5mg.kg body weight and Levamisole @ 7.5 mg/kg body weight).

Contraindication
Care should be taken if given to horses as safety margin is much narrow.

Counseling
Administer as a drench or in feed or with water. Shake properly before use. Avoid contact with eyes. Wash hands thoroughly with water after handling the drug. Animals should not

be slaughtered within 14 days and milk should not be drawn within 24 hours for human consumption after cessation of treatment.

Pharmaceutical precautions
Store at room temperature within 10 to 25 degree centigrade. Should not be exposed to light.

2.4 Triclabendazole

Dosage Form
Bolus

Therapeutic group
Anthlemintics -Flukicide

Composition
Each boli contains 250mg or 900mg of Triclabendazole.

Indication
For the treatment and control of early immature and mature liver fluke (F.gigantica/F. hepatica) in sheep, goats, cattle and for adult flukes in buffalo.

Dose and administration
Sheep and goat: 10mg/kg body weight (1 bolus of 250mg per 25kg body weight)
Cattle and Buffalo: 12 mg/kg body weight. (1 bolus of 900 mg per 75kg body weight)

2.5 Fenbendazole

Dosage Form
Granules and Tablet

Therapeutic group
Anthelmintics-Nematocide

Composition
Fenbendazole B.P (Vet) 25% w/w and also 1.5g bolus

Indication
Effective against all type of gastro-intestinal roundworms found in cattle, sheep, goat, horse and pig. Lung worms in cattle, sheep and goat. The normal dose eliminate in sheep. Effective on the immature worms also. For treatment of pregnant bitches to reduce pre-and post-natal transfer of helminthes infestation to puppies. Safe in pregnant animals and stud males.

Dose and administration
For cattle, sheep, goat, horse and pig; 5mg/kg B.W to make a suspension dissolve 120gm in 2 L of water.1 ml of suspension contains 50mg albendazole. Administrate at dose rate of 1ml/3kg B.W For tapeworms in sheep and goat 10ml/15kg B.W

Therapeutic precautions
Store at room temperature and protect from heat and light.

2.6 Levamisole HCl

Dosage Form
Injectable solution

Therapeutic group
Broad spectrum Anthelmintics against round worms as infectious.

Composition
Each ml contains 75 mg Levamisole HCl.

Indication/uses
Broad spectrum anthelmintic used in the treatment and control of nematode infections in cattle and sheep - Dictyocaulus spp., Trichostrongylus spp., Cooperia, Ostertagia, Haemonchus spp., Nematodirus spp, Bunostomum spp, Oesophagostomum spp., Chabertia spp.

Dosage and administration
By S/C injection only @ 7.5 mg/kg B.W *Cattle:* 1 ml per 10 kg; *Sheep*: 0.5 ml per 5 kg

Contra-indications/warnings
Do not exceed dosage. Safe in pregnant animals but care is to taken in heavily pregnant or stressed animals. Milk for human consumption must not be taken during treatment and before 84 hours after treatment. Handle with care; avoid contact with eyes and skin. Levamisole can cause idiosyncratic reactions and serious blood disorders in a very few number of people with symptoms like dizziness, nausea, vomiting, or abdominal discomfort.

Pharmaceutical precautions
Store below 25^{o} C. Protect from light. The time between first and last withdrawal should not exceed 28 days.

2.7 Piperazine citrate

Dosage Form
Syrup

Therapeutic group
Anthelmintics-Nematocide

Composition
Each ml contains 400mg of Piperazine citrate as anhydrous I.P. 40% w/v

Indication/uses
Used in Ascaridia in horses and cattle, nodular worms in swine and small strongyloides in horses including Ascaridia and capillaria worm infestation in poultry.

Dosage and administration
Cattle, buffalo, calf, horse: 10-20 ml per 30 kg B.W Pig*:* 10 ml per 25 kg B.W *Dogs and cats:* 0.2 ml per kg B.W *Poultry:* 4 -6 weeks age 20 - 25 ml per 100 birds in 3 - 5 liter drinking water. Birds with 6 weeks and above 40 ml per 100 birds in 5 - 10 liter drinking water.

Contra-indications/warnings
Over dosage may cause vomiting, diarrhoea, and ataxia in dogs and cats.

Pharmaceutical precautions
Store below 25^{o}C. Protect from light.

2.8 Niclosamide

Dosage Form
Oral tablet

Therapeutic group
Anthelmintics-Intestinal Anthelmintics-Taenicide

Composition
Each tablet contains 500mg of Niclosamide

Indication/uses
Treatment against Tapeworm infestation in all animals and birds and Amphistomiasis in cattle and sheep.

Dosage and administration
50mg per kg body weight orally and repeat the dose after one to two week (1 tablet per 10

kg body weight if one tablet is 500mg).

Contraindication
In chronic constipation, a laxative should be given the night before treatment or a purgative should be given after 2 hours after the medication in simple stomach animals and after half a day in ruminants.

2.9 Praziquantel

Dosage Form
Tablet of 50mg per tablet

Therapeutic group
Anthelmtinics-Taenicide and against Schistosomiasis

Composition
Each tablet contains 50 mg Praziquantel

Indication/uses
Against mature and immature forms of adult tapeworm in dogs and cats, including hydatid tapeworm *Echinococcus granulosus* in dogs.

Dose and administration
Against Tapeworms/ Cestodes(adult, juveniles and larval forms)
Given orally @ 5 mg/kg B.W (e.g. 1 tablet/10 kg) in general. For *Dogs:* up to 2.5 kg 1/4 tablet, 2.6 - 5 kg 1/2 tablet, 6-10 kg 1 tablet, 11 - 20 kg 2 tablet, 21- 30 kg 3 tablet, over 30 kg pro rata, *Cats:*Kittens and young cats 1/4 tablet, Adult cats 1/2 tablet. Repeat at 2-3 weeks and later every six weeks if necessary. Can be given to pregnant animals.

Against Schistosomiasis
In cattle 60mg/kg body weight orally and repeated after one month based on the laboratory results.

Pharmaceutical precautions
Store in cool, dry place and protect from the direct sunlight.

2.10 Tetramisole

Dosage Form
Oral powder

Therapeutic group
Anthlemintics

Composition
Each jar contains 100g of the powder with the strength of Tetramisole HCl B.P. 30% w/w. Each gram powder contains 300mg of Tetramisole.

Indication
Broad spectrum Anthelmintics mainly against round worms (Lungworms, Ascaris, strongyles and strongyloides etc).

Dose and administration
Oral administration @ 15mg/kg body weight for all livestock. In elephant 4.5 to 5mg/kg body weight orally.

Contraindication
It has a narrow safety margin and should be careful while deworming animals.

Therapeutic precautions
Store in cool, dry and dark places.

2.11 Ivermectin

Dosage Form
Injectable liquid

Therapeutic Group
Anthelmintics –Endoparasiticide and Ectoparasiticide

Composition
Each ml contains 10 mg of Ivermectin in 10ml vial.

Indication/uses
For the treatment and control of gastro-intestinal nematodes/roundworms, lungworm, eye worm, warbles and also external parasites like tick, lice and mites in cattle sheep, and pigs **(ecto and endoparasites except tapeworm and flukes).**

Dosage and administration
Given subcutaneously in Cattle, sheep, goat, poultry, and camel @200 microgram (0.2mg)/ kg body weight or 1ml/50 kg B.W (if the presentation is 10mg/ml of the liquid). In pig given S/C @ 1 ml/33 kg (300 microgram or 0.3mg per kg body weight).

Contra-indications/warning
Do not use in lactating cows or in dairy cows due 28 days prior to calving. Not to be administered I/V or I/M. Avoid contact with the eyes and skin. May not be used in other species. Should not be used in cattle and other livestock within 21 days of slaughter.

Pharmaceutical precautions
Store below 25° C. Protect from light.

2.12 Praziquantel+Pyrantel pamoate+Febantel

Dosage Form
Tablet

Therapeutic Group
Anthelmintic-cestodes,nematodes and mixed infestations

Composition
Each tablet contains Praziquantel 50mg+Pyrantel pamoate144mg+Febantel 150mg

Indication/uses
Anthelmintics against tapeworms (both adult and immature stage),round worms and hook worms

Dose and administration
Dogs and cats- 1 tab/10kg body weight orally

Pharmaceutical precautions
Store in cool,dry place and protect from direct sunlight

3.1 Amitraz

Dosage Form
Liquid 12.5%

Therapeutic group
Ectoparasiticide

Composition
Each ml contains 125mg Amitraz

Indication/uses
For prevention and control of ectoparasitic infestations like ticks, mites, lice and keds in cattle, sheep, goat and pig. Found to be effective against hump sore, ear sore, tail sore in cattle, buffalo, sheep and goat.

Dosage and administration
For external application as spray or wash
Prepare spray/wash on the day of treatment using clean water

Animals	For ticks	For mites, lice and keds
Cattle Sheep/goat Pigs	2ml/liter of water 2ml/liter of water 4ml/liter of water	2ml/liter of water 4ml/liter of water 4ml/liter of water

In severe cases of mange or lice a second treatment is recommended 7 - 10days after the first treatment

Contra-indications
Not recommended in horse, cats and pups.

Counseling:
Harmful if swallowed, irritating to eyes, avoid working in spray mist. Wash hands and exposed skin thoroughly before eating, drinking or smoking after work.

Pharmaceutical precautions
Store in a cool place not exceeding 25^{o}C

3.2 Cypermethrin

Dosage Form:
Liquid 10% w/v

Therapeutic group:
Ectoparasiticides

Composition
Each ml contains 100mg cypermethrin. Cypermethrin is a contact poison producing muscular excitations and convulsions by its effect on nerve cell membrane, delays depolarisation leading to rapid paralytic action.

Indication/uses
Against ectoparasites like flies, lice & ticks in cattle, sheep, goat. Lice & sarcoptic mites in pigs. Fleas & ear mites in dogs.

Dosage and administration
Cattle, sheep, goat, pigs & horse: 15 - 20ml in 20 liter of water. Spray the animals thoroughly. The walls & bedding should also be sprayed for better results. Repeat after 15days if necessary. Avoid contamination of feed & water. Action may last for at least 14days.

Contra-indications
Avoid direct contact with eyes and skin. Prevent licking.

Counseling
Keep out of reach of children; avoid direct contact with eyes and skin. Prevent licking.

3.3 Deltamethrin

Dosage Form
External application liquid of 1.25% EC

Therapeutic group
Ectoparasiticides

Composition
Each ml contains 12.5mg Deltamethrin.

Indication/uses
Effective against ticks, lice, mites, flies, etc

Dosage and administration
To be used as dip or spray. Against ticks: 2ml/litre of water. Mites: 4ml/litre of water. Lice: 1ml/liter of water. Flies: 2ml/liter of water. For curative purposes, 2 treatments at 12 to 15 days interval are necessary.

Contra-indications
Severely stressed or ill animals should be avoided, dangerous to fish. Avoid contact with eyes and skin.
This product is poisonous if absorbed through skin, inhaled, or swallowed.

Pharmaceutical precautions
Store below 30°C. Protect from light.

Pharmaceutical precautions
Store in a cool place not exceeding 25°C

3.4 Flumethrin

Dosage Form
Liquid 1%w/v solution

Therapeutic group
Ectoparasiticides

Composition
Each ml contains 10 mg of Flumethrin

Indication
Ectoparasite infestation

Dose and administration
1ml per 10 kg body weight, evenly along the midline of back from front of the shoulder to tail.

Contra-indication

Avoid direct contact with eye and skin and prevent licking

Pharmaceutical Precautions
Store in a cool and dry place

4.1 Clotrimazole

Dosage Form
Cream/ Ointment

Therapeutic group
Antifungal drug

Indication
In fungal infections (ringworm). It is active against a variety of pathogenic dermatophytes.

Composition
Each gram contains 10 mg of Clotrimazole as 1% w/w in water base ointment..

Dosage and administration
For external application in fungal infections regularly for at least one month. If the reaction to the tissue noted with signs of allergy/anaphylactic reaction discontinue the use.

Contraindications
Avoid contact with eyes and mucous membranes. It will produce mild irritation, erythema, blistering, oedema, pruritis and urtecaria.

Counseling
Puncture nozzle seal with the piercing point of cap.

Pharmaceutical precautions
Store in cool and dry place.

4.2 Griseofulvin

Dosage Form
Oral tablet

Therapeutic group
Antifungal

Composition
Each tablet contains 125 mg of Griseofulvin

Indication/uses
In systemic infections mainly in dogs and cats with Ringworm (*Trichophyton and Mycosporum*). Also used to treat Onychomycosis (fungus infection of nails) and ergotism.

Dosage and administration
Given through oral route in Cattle @ 7.5 – 10 mg/kg body weight (1 tablet/15 kg body weight), horse @100mg/kg B.W (1 tablet per kg body weight) , calf@20-30mg/kg body weight (1 tablet per 5 kg body weight) and dogs and cats @ 7-20mg/kg body weight daily for 20 days. The drug has fungistatic effect and the therapy must be continued till shedding of the infected layers occur (at least one week after the disappearance of the clinical signs).

Contra-indications/warnings
Allergic and photosensitivity actions may occur, leucopenia, proteinuria and pigmentation of genitalia. Contraindicated in pregnancy as it is teratogenic.

Counseling
High dietary fat intake is recommended in dogs and cats with therapy which will increase the absorption of the drug.

Pharmaceutical precautions
Store in a well closed container.

4.3 Ketoconazole

Dosage Form
Tablet

Therapeutic Group
Antifungal

Composition
Each tablet contains 200mg Ketoconazole

Indication/uses
In systemic infection mainly in dogs and cats with coccidiomycosis,dermatomycosis,histo plasmosis and blastomycosis

Dose and administration
Dog & cat 10mg/kg B.W orally

Contraindications and warnings
Contraindicated in pregnancy as it is tetratogenic and use with caution in hepatic impaired animals

Pharmaceutical precautions
Store in cool and dry place

5.1 Buparvaquone

Dosage Form
Injectable liquid

Therapeutic Group
Antiprotozoal

Composition
Each ml contains 50 mg of buparvaquone

Indication/uses
Used against the schizonts and piroplasmal stages of *Theileria spp*

Dose and administration
2.5mg/kg B.W intramuscular

Contraindications and warnings
Avoid intravenous and subcutaneous administration

Pharmaceutical precautions
Store in cool place

5.2 Diminazene aceturate Phenazone

Dosage Form
Injectable

Therapeutic group
Anti-protozoal drug

Composition
Diamenazine aceturate 70 mg and Phenazone 375 mg

Indication
Treatment for babesiosis and trypanosomiasis

Dose and administration
cattle and horses: 3.5mg/kg B.W. I/M
Dogs: 0.1ml per 2kg B.W I/M or S/C only once.

Contra-indication
Cannot be used intra-venously. Local reactions may occur at the site of injection, especially

in horses. Total dose should not exceed 9g per animal per day. Contraindicated in camels.

Pharmaceutical Precautions
Store in a cool place

5.3 Quinapyramine sulfate and chloride

Dosage Form
Injectable powder.

Therapeutic group
Antiprozoal drugs.

Composition
A prosalt containing 1.5gms of Quinapyramine sulfate and 1gm of Quinapyramine chloride.

Indication
Prevention and treatment of trypanosomiasis

Dose and administration:
By S/C only in horses, camel, cattle, sheep, goat, pig, dog at 0.025ml/kg body weight (after adding 15ml distilled water for injection).

Contra-indication
Over dosage in debilated and young animals can cause trembling, salivation, sweating, increased respiration and heart rate and death.

Pharmaceutical precautions
Avoid moisture and store in dry place.

5.4 Diaveridine and Sulfaquinoxaline

Dosage Form
Oral powder

Therapeutic group
Antiprozoal drugs.

Composition
Each 200gms contains 15gms of Diaveridine and 18gms of Sulfaquinoxaline as powder.

Indication
Treatment of intestinal and ceacal coccidiosis, fowl typhoid and fowl cholera.

Dose and administration
Poultry: 10gms in 10 liter of water or 100gms in 50kg feed/day for 2-3 days. Repeat after 2 days using 10gms in 20 liters of water or 100gms in 100kg of feed/day for next 2-3 days.

Contra-indication
Use as per the dosage and avoid other sources of water during treatment period.

Pharmaceutical precautions
Store in cool dry place. Once opened packet should be properly sealed for next use.

5.5 Metronidazole

Dosage Form
Tablet

Therapeutic group
Anti-protozoal drug

Composition
Metronidazole 400 mg

Indication
Dog: Intestinal amebiasis, trichomoniasis, giardiasis, gingivitis, empyma, Balantidium infections andother anaerobic bacterial infections .
Cattle, Buffalo : Bovine Trichomoniasis.

Dose and administration
Dog: 25-50 mg/kg body weight/day in divided doses
Cattle- 20mg/kg body weight in divided doses

Contra-indication
Avoid use in pregnancy and higher doses may cause neurological disorders.

Pharmaceutical Precautions
Store in a cool and dry place

5.6 Sulphachlorpyrazine sodium powder

Dosage Form
Powder

Therapeutic group
Antiprozoal drugs.

Composition
Each gram contains 300mg Sulphachlorpyrazine sodium.

Indication
Broad spectrum of activity against Coccidiosis including fowl typhoid and fowl cholera.

Dose and administration
Chickens & turkeys: 0.03% solution (1g per litre). Treat for 3 days or more. In severe infections increase the concentration to 1.5 - 2gm per liter.

Contra-indication
No other water other then fresh water should be provided.

Pharmaceutical precautions
Store in cool place.

6.1 Antimony Potassium Tartarate + FeSO4+ CoSO4 boli

Dosage Form
Boli

Composition
Each bolus contains Antimony pot. Tartrate 2gm, Ferrous sulphate 2gm, Copper sulphate 50 mg, Cobalt chloride 100mg

Indications/uses
To cure ruminal stasis (decreased ruminal movement) caused by mouldy feeds, indigestible roughage, low protein diet and over eating, resulting in anorexia and sudden drop in milk production.

Dosage and administration
Oral route-2 boli twice daily for 2-3 days. Provide plenty of drinking water

7. ANTACID

7.1 Aluminum Hydroxide & Dimethyl Polysiloxane

Dosage Form
Liquid

Composition
Each 5ml contains dried aluminum hydroxide 250mg, dimethyl Polysiloxane 40mg, Magnesium hydroxide 250mg.

Indications/use
Ruminal stasis due to grain over load, gastritis, reflux oesophagitis, peptic ulcers, gastric hyper acidity, dyspepsia.

Dosage and administration
Oral route: Cattle, buffalo: 30gm (in ruminal lactic acidosis 1gm/kg B.W); Dogs: 100 - 200mg and Cats: 50 - 100mg.

Contra-indications/warnings
As the duration of action is short, quick liberation of carbon dioxide may cause gastric distention and rebound acidity. Avoid use of other drugs along with antacids, as it impairs their absorption. Chronic ingestion of Aluminum hydroxide may lead to hypophostaemia, increased reabsorption of calcium and other bone salts.

Pharmaceutical precautions
Store in a cool place

7.2 Omeprazole

Dosage Form
Tablet, Injectable solution.

Therapeutic group
Proton pump inhibitor.

Indications/use
Gastric and duodenal ulcers, Erosive Gastritis,Oesophagitis and hypersecretory conditions.

Composition
Each tablet contains 10mg of omeprazole and each ml contains 1mg of omeprazole.

Dose/ administration
Dog: 0.5 – 1.5mg/kg B.W I/V OD.
Cat: 0.75 – 1 mg/kg B.W Oral OD.

Pharmaceutical precaution
Store below 25 ^{0}C and protect from light.

7.3 Pantoprazole

Dosage Form
Injectable solution.

Therapeutic group
Proton pump inhibitor.

Indications/use
Gastric and duodenal ulcers, Erosive Gastritis,Oesophagitis and hypersecretory conditions.

Composition
Each vial contains 40mg of Pantoprazole

Dose/ administration
0.4 mg/kg I/M, I/V BID.

Pharmaceutical precaution
Store below 25 ^{0}C and protect from light.

7.4 Ranitidine HCL

Dosage Form
Tablet and Injectable liquids

Composition
Tab 150mg and 300mg of 10's and inj. 50mg in 2ml ampoules

Therapeutic groups
H2-receptor antagonist that inhibits stomach acid production

Indication/use
Gastritis, gastric/ duodenal ulcers

Dose/Admnistration
Dog/cat 0.5mg/kg B.W, I/M, S/C, I/V, oral

Precautions
Avoid use in pregnancy, lactating animals and patients with renal disorders.

7.5 Silica in Dimethicone

Dosage Form
Suspension

Composition
Each 100 ml contains Silica in Dimethicone 1% Arachis Oil 10%.

Indications/uses
For the treatment of frothy bloat and tympany in cattle, sheep and goats.

Dosage and administration
Oral route or intra-ruminally: Large Animal: 100 - 200ml dilute with equal quantity of water; Small Animal: 20 - 30ml dilute with equal quantity of water

Pharmaceutical precautions
Store in a cool dry place

8. INTRAUTERINE

8.1 Nitrofurazone+Urea+Metronidazole+Povidone Iodine

Dosage Form
Bolus

Therapeutic Group
Antiseptics

Composition
Each bolus contains Nitrofurazone 60 + urea6g + Metronidazole 100mg + Povidone Iodine 50mg

Indication/uses
Used in metritis,pyometrs,cervicitis,vaginitis and retention of placenta

Dose and administration
Large animals: 2-4 boli intra-uterine
Small animals: 1-2 boli intra uterine

Pharmaceutical precautions
Store in cool and dry place

8.2 Trimethoprin+Sulphamethaxazole+ Urea

Dosage Form
Pessary

Therapeutic group
Anti bacterial

Composition
Trimethropin 0.1g, Sulphamethaxazole 0.5 g, Urea 6 g

Indications
In post parturient bacterial infections and other female genital infection

Dose and administration
2-4 boli in infected horn

Pharmaceutical Precautions
Store in a cool and dry place

9.1 Calcium Gluconate

Dosage Form
Injectable Solution

Composition
Each ml contains 89mg Calcium Gluconate

Indication/uses
Hypocalcaemia, chronic calcium deficiency, rickets, osteomalacia, osteoporosis. In the treatment of lead poisoning (acute colic) and fluoride poisoning. Also given in gastro-intestinal disorders such as tympany and acid indigestion

Dosage and administration
Dog: (75 - 500mg) 5 to 7ml slow I/V daily
Cattle: (3 - 12g) 20 to 30ml I/V or S/C

Contra-indications/warnings
S/C injection of calcium salts in digs and cats may cause necrosis at the site and in cattle swelling may persist for several days.

Pharmaceutical precautions
Store in cool place.

9.2 Cobalt, Copper, Manganese, Ferrous, Zinc

Dosage Form
Bolus

Composition
Each bolus contain Cobalt- 0.056gm, Copper-0.700g, Iodine- 0.140gm, Iron- 0.140gm, Manganese- 0.560gm, Selenium- 0.004gm, Zinc- 0.28gm

Indication
Regulation of estrus cycle, improve breeding efficiency, repeat breeding, habitual abortion and to ensure early conception.

Dosage & Administration
Cow/Buffalo- 1 bolus/week

9.3 Inorganic Phosphorus

Dosage Form
Injectable liquid

Composition
Each ml contains equivalent to 79.4mg sodium acid phosphate

Indications/uses
Acute and chronic phosphorus deficient conditions like anorexia, pica, debility and exhaustion, rickets and osteomalacia, tetany and paresis, lamneness, impaired weight gain, post-partum haemoglobinuria, downer cow syndrome, infertility and as general tonic.

Dosage and administration
By I/V or S/C route. Can be administered with other I/V calcium preparations in hypocalcaemia animals
Large Animal: 5ml
Small Animal: 1ml

Contra-indications/warnings
Infusions of high concentrations of phosphate reduce serum calcium levels and produce symptoms of hypocalcaemia tetany. Use with caution in those patients with renal impairment, cirrhosis, cardiac failure, hyper natremia, and other edematous and sodium retaining states

Pharmaceutical precautions
Store in a cool dry place protected from direct sunlight

9.4 Iron Dextran

Dosage Form
Injectable solution

Composition
Each ml contains 50 mg elemental iron

Indication/uses
Piglet anaemia, iron deficiency anaemia, and in anaemia associated with severe parasitism.

Dosage and administration
By I/M route only.
Cattle and horse: 5 - 10 ml weekly.
Piglet: 150 mg (3 ml) at 3 days old and repeated at 3 weeks age with 100 mg (2 ml) I/M.
Dog: 1 -2 ml weekly

Contra-indications/warnings
Avoid repeated use of injectable iron sources within 7 days. Inject into the neck muscle or side of neck. Do not inject animals with wet or dirty skin.

Pharmaceutical precautions
Store below 28° C.

9.5 Mineral Mixture

Dosage Form
Powder

Composition
Contains calcium, phosphorus, manganese, sodium chloride, magnesium, iodine, zinc, copper, cobalt, etc

Indication/uses
Mineral deficiency disorders like impaired digestion and assimilation, retarded growth and muscular dysfunction. For faster growth, improved fertility, higher productivity

Dosage and administration
At the rate of 1kg per 100kg concentrate mixture.
Adult cattle: 28g per animal daily
Calf: 5 to 15g per calf daily.

Pharmaceutical precautions
Store below 28°C.

9.6 Organic Phosphorous

Dosage Form
Injectable solution

Therapeutic group
Minerals

Composition
Each ml contains 0.2 gm of Sodium salt of 4-dimethylamino-2 methylphenyl-phosphinic acid

Indication/use

It is used as a tonic in general metabolic disorders, debility, exhaustion, repeat breeding and infertility due to phosphorus deficiency.

For disorders of bone formation as in rickets and osteomalacia.To promote callus formation

in fractures in combination with calcium and vitamin D. For treatment of tetany and paresis resulting from calcium, magnesium and phosphorus imbalance (as in milk fever).

For prevention and treatment of disease associated with parturition and purpeural tetany in cows, leaky teats, metabolic diseases of liver, anoestrus, nonspecific endometritis etc.

Dose/administration
In acute conditions
Large Animals : 5-15 ml.
Small Animals : 1-3 ml.

One half of the dose should be given by intravenous route and the half by subcutaneous or intramuscular injection, divided over several sites.
Injections should be repeated at short intervals until there is evidence of improvement.
For chronic conditions, 5-10 subcutaneous or intramuscular injections should be given at 48 hour intervals with following dose rates:
Large animals : 2.5-5 ml
Small animals : 1-2 ml

Pharmaceutical precaution
Store in room temperature away from direct sunlight

9.7 Yeast extract + Ferrous Sulphate $FeSO_4$ + Copper Sulphate, $CuSo_4$ + Vitamin B 12 + Lactic acid base bolus

Dosage Form
Bolus

Indication/uses
Anorexia, disturbed rumen motility and microfloral imbalance, simple indigestion, ruminal acidosis, ruminal stasis

Composition
Each bolus contains Ferrous Sulphate 1g, Copper Sulphate 50mg, Vit B_{12} 20 mcg, yeast 300mg

Dosage and administration
2 boli BID

Contra-indications/warnings
Avoid use in non ruminants and emaciated animals. Provide enough drinking water.

10.1 B-Complex & Liver extract

Dosage Form
Injectable solution.

Therapeutic group
Vitamins.

Composition
Containing vitamin B_1 (thiamin), B_2 (riboflavin), niacinamide, pyridoxine, vitamin B_{12} (cyanocobalalmin), crude liver extract, etc**.**

Indication/use
Hepatitis, jaundice, loss of appetite, emaciation, general weakness, parasitic anemia, neurological disorder and in debility.

Dose/administration
By deep I/M route only; Cattle, buffalo, horse: 4-5ml twice weekly; Dog: 0.25 - 0.5ml twice weekly.

Pharmaceutical precaution
Store below 25^{o}C. Protect from light.

10.2 Vitamin A

Dosage Form
Injectable solution.

Therapeutic group
Vitamins.

Composition
Each ml contains 300,000IU vitamin A.

Indication/use
Infertility associated with vitamin A deficiency, night blindness, xerophthalmia and keratomalacia, hyperkeratinization of skin, stunted growth, debility, as a supportive treatment in respiratory, GI and UTI.

Dose/administration
By deep I/M route-Non specific infertility: Cows & bulls: 6ml on first and third day; Other conditions: cattle & horse: 12ml at weekly intervals. Calf, sheep, goat: 4 - 8ml weekly; Dogs & cat: 2- 6ml weekly in divided doses

Pharmaceutical precaution
Store below 25° C. Protect from light.

10.3 Vitamin B-Complex

Dosage Form
Injectable solution.

Therapeutic group
Vitamins.

Composition
Each 5ml contains Vitamin B_1 - 5mg, B6 - 2mg, B_{12} - 4mcg, B_2 - 2mg, Nicotinamide 20mg & Pantothenyl alcohol 3mg**.**

Indication/use
Vitamin B deficiency conditions.

Dose/administration
I/M or I/V-Small animals: 1 - 2ml OD/BID; Large animals: 5 - 10ml OD/BID

Pharmaceutical precaution
Store below 25°C. Do not freeze.

10.4 Vitamin K

Dosage Form
Injectable solution.

Therapeutic group
Vitamins.

Composition
Each ml contains 10mg vitamin K (Phytomenadione**).**

Indication/use
Coagulopathies associated with coumarin, warfarin poisoning in dogs and cats; sweet clover (dicoumarol) poisoning in cattle and horses, vitamin K deficiencies. Aid in prevention of excessive hemorrhage associated with reduced synthesis of clotting factors, e.g. hepatic failure.

Dose/administration
By I/M or S/C route:Horse & cattle: 0.5 - 2.5 mg/kg body weight twice daily; Dog & cats: 0.25 – 2.5mg/kg body weight I/M, S/C or slow I/V in 5 % dextrose at maximum 1 mg/min.

Contra-indications
Use in pregnancy. Not effective in heparin over dosage

Counseling
Blood transfusion may be indicated in severe cases.

Pharmaceutical precaution
Store below 25°C. Do not freeze.

10.5 Vitamins AB2D3K

Dosage Form
Oral powder.

Therapeutic group
Vitamins and amino-acids.

Composition
Vitamin A - 82500IU, Vitamin D_3 - 12000IU, Vitamin B_2 - 52 mg and Vitamin K - 10mg.

Indication/use
For increased productivity and growth in animals, to stimulate milk production and increase fat content of the milk, to prevent muscular dystrophy, to improve fertility. Helps to maintain growth and production when feed consumption is subnormal. To build resistance to fight against infections. To prevent curled toe paralysis and to prevent rickets. To insure proper coagulation of blood.

Dose/administration
1. Other products that contain B2(1.25g), B6(0.62g), calcium(1.25g), B12(6.25mg), Lysine(5g),methionine(5g) and choline(5g) per 100 g.
Form: powder
Feeding rate: poultry: 100g/liter of water.

2. vitamin A 12000 IU, vitamin D3 6000 IU, vitamin E 48mg, vitamin B12 20mcg per ml.
Form: liquid.
Indication: to promote growth, fertility, resistance to infection and overcome stress.
Dosage: oral.'
Cattle and horse: 10-20ml OD.
Calf, sheep, goat, pig: 5-10ml OD.
Dogs and cats: 5-10ml OD.
Chicks: 5ml/100birds.
Growers: 7ml/100birds.
Layers: 10ml/100birds.
Available in 30ml and 100ml quantity.

Pharmaceutical precaution
Store below 25°C.

10.6 Vitamins with amino-acids

Dosage Form
Oral powder.

Therapeutic group
Vitamins and amino-acids.

Composition
Contains vitamin A, D, E, B_2, B_6, B_{12}, K, niacinamide, calcium pantothenate, folic acid, choline chloride, L-lysine, L-methionine, L-tryptophane.

Indication/use
In livestock: Improves growth rate and weight gain, increases resistance to infection, checks abnormal estrus periods, stimulates milk production and enhances milk fat content. In poultry: Increases resistance to infection, prevents chick mortality, improves egg production, hatchability and egg quality, increases body weight and carcass yield in broilers.

Dose/administration
As feed supplement: Cattle, buffalo, horse: 10 - 25g per animal per day; Sheep, goat, pig: 5 - 10g per animal per day; Poultry: 1g per liter of water, 4 days a week; Dog: 1 - 2.5g per animal per day.

Pharmaceutical precaution
Store below 25°C. Do not freeze.

11.1 Calcium, Magnesium, Phosphorous & Dextrose

Dosage Form
Inject able solution.

Composition
Calcium borogluconate ~25 %, magnesium hypophosphite ~5%, phosphorus in physiological proportion, dextrose monohydrate ~10 %

Indication/uses
Treatment of milk fever, hypomagnesaemia (grass tetany), hypoglycaemia(ketosis) and post - parturient hemoglobinuria in cattle, buffalo, and sheep.

Dosage and administration
By I/V or S/C or a combination of these two routes
Cattle, buffalo and mare: 180 to 360 ml
Sheep and goat: 25 - 75 ml.

Contra-indications/warnings
Before I/V injection the solution should be warmed to body temperature and must be administered slowly to avoid possible coronary depression (heart block). As with any hypertonic solution, pain and swelling may be seen following administration; massage the injection sites to spread the solution for quicker absorption and to reduce the risk of tissue reaction. Avoid solution contamination. Discard unused portion within 24 hours.

Pharmaceutical precautions
Store below +25^{o} C. Protect from light.

11.2 Dextrose saline

Dosage Form
Injectable solution

Composition
Dextrose 5 g per 100 ml 20gm per 100ml in normal saline

Indication/uses
To supply energy and fluid in dehydration as may occur in diarrhoea, super purgation, persistent vomiting, exhaustion, under nourishment and fevers accompanied with toxaemia. Also used in shock, syncope and collapse, in post operative care and as antidote in some poisoning e.g. Insulin. Dextrose in higher concentration is also used in ketosis, acetonemia, pregnancy toxaemia. To maintain blood volume.

Dosage and administration
By I/V, S/C, I/P route
Cattle: - 400-500 ml or more
Ewe: - 50 ml
Piglet: - 4 ml
Dog: - 10 - 50 ml

Contra-indications/warnings
Before I/V injection the solution should be warmed to body temperature. Do not use if solution is not clear.

Pharmaceutical precautions
Store below 28° C.

11.3 Normal saline

Dosage Form
Injectable solution

Composition
Sodium chloride 90 mg per 100 ml

Therapeutic group
Electrolyte

Indication/uses
In shock, haemorrhage and as post operative surgical care, post parturient aid, blood volume extender.

Dosage and administration
By I/V, S/C routes
Cattle: - 400-500 ml or more
Ewe: - 50 ml
Piglet: - 4 ml
Dog: - 10-50 ml

Contra-Indication/ warnings
Before I/V injection the solution should be warmed to body temperature. Do not use if solution is not clear.

Pharmaceutical precautions
Store below 28° C.

11.4 Ringers Lactate

Dosage Form
Injectable solution.

Composition
Each 100 ml contains Dextrose 29 g, sodium chloride 0.6 g, pot. chloride 0.04 g, calcium chloride 0.027 g, sodium lactate 0.312 g

Therapeutic group
Electrolyte

Indication/uses
Calf scour, diarrhoea, dehydration, debility, ketosis, hepatitis, poisoning, haemorrhages, vomiting for rehydration and maintaining electrolyte balance.

Dosage and administration
By I/V or S/C route
Horse & cattle: 500 - 2000 ml daily for 3 - 4 days
Calf, sheep, goat, pigs: 100 -200 ml daily for 2 - 3 days
Dog: 25 - 100 ml daily for 2 - 3 days

11.5 Sodium bicarbonate

Dosage Form
I/V Injectable solution

Composition
7.5% W/V of 25ml vial

Therapeutic group
Alkalizing agent

Indication
Metabolic acidosis, barbiturate toxicity, in severe diarrhoea which is often accompanied by significant loss of the bicarbonate.

Dose & Administration
For horses, the contents of one or more 100 ml or more of 7.5% solution may be given rapidly by the intravenous route, using a needle and syringe. The amount of bicarbonate to be given over a four-to-eight-hour period is approximately 2 to 5 mEq. per kg. of body weight, depending upon the severity of the acidosis as judged by the lowering of total CO_2 content, blood pH and clinical condition of the animal.

Contraindications
Over dosage and alkalosis should be avoided. It is contraindicated in animals losing chloride by vomiting and animals receiving diuretics.

Precautions
The potentially large loads of sodium given with bicarbonate require that caution be exercised in the use of Sodium Bicarbonate in animals with congestive heart failure or other edematous or sodium-retaining states, as well as in animals with oliguria or anuria.

Not for intravenous injection in dogs, cats or other small animals.

The addition of sodium bicarbonate to parenteral solutions containing calcium should be avoided, except where compatibility has been previously established. Precipitation or haze may result from sodium bicarbonate - calcium mixtures.

12.1 Gamma Benzene Hexachloride proflavin

Dosage Form
Cream and Spray

Therapeutic Group
Antiseptic

Composition
Each tube contains gamma benzene hexachloride 0.1%, proflavine hemisulfate-0.1 %, and cetrimide- 0.45% in a tube of 100g.

Each spray of Gamma benzene contains 0.1% w/w of Gamma benzene Hexachloride IP, proflavin hemisulphate 0.1% w/w and Cetrimide solution BP 0.45% w/w and contains natural fly repellent oils.

Indication/uses
External application of the cream
To treat traumatic wounds, maggot wounds and as fly repellent in operated sites. In maggot wounds apply the cream only after the removal of maggots.

External spray
Clean the wounds properly and apply the pray on affected parts thoroughly 2-3 times daily, until complete healing of the wound occurs. It is a powerful fly repellent, maggoticide and curative

Dosage and administration
Apply the ointment twice daily after clipping the hairs till the wound heals.

Counseling
Shake bottle before spray. Spray from one feet distance. Press knob completely while spraying.

Pharmaceutical precautions
Store in cool place and do not freeze. Protect from direct light.

12.2 Gentamycin

Dosage Form
Cream/ointment (for external use only)

Composition
Gentamicin Sulphate- 0.1% w/w

Indication/uses
Topical antimicrobial
Apply twice daily on affected parts/wound

12.3 Nitrofurazone

Dosage Form
External cream as 0.2%w/w

Therapeutic group
External antiseptic/anti-infective

Composition
Each tube contains nitrofurazone 0.2 % w/w in a jar of 500g.

Indication/uses
Treatment of bacterial infection of surgical or traumatic origin. Active in presence of blood, serum and pus. In superficial wounds, burns, ulcers, etc.

Dosage and administration
Apply to cleansed affected part once or twice daily until healed.

Contraindication
Known hypersensivity

12.4 Maggoticidal

Dosage Form
Spray

Composition
Extract Tailapatra (Eucalyptus globules) - 60mg, Nimba (Azadiracta indica) 50mg, Bhutrina (Andropogon citrastus) -40mg, Devadaru (Cedrus deodara) -28mg, Haridra (Curcuma longa) - 2mg

Indication/Uses
Herbal topical broad spectrum antibacterial, antifungal, antipruritic & anti-inflammatory spray.

Direction for use
Clean the affected areas after clipping the hairs and spray the required quantity twice daily or as directed by veterinarian

Pharmaceutical precautions
Store in cool and dry place, away from direct sunlight, shake well before use

12.5 Indradaru+Surbhidaru+Somvalka+Tarun Antiseptic

Dosage Forms
External antiseptic cream

Therapeutic group
Antiseptic cream/antifungal/antipruritic/anti-inflammatory/fly repellent/miticide

Composition
Each 100 gm contains (Indradaru- 25g, Surbhidaru-10g, Somvalka- 35g,Tarun- 05g)

Indication
Mange, Ringworm, Eczema, Degnalla, and other fungul infections. Can be used in foot rot in sheep and foot lesions in FMD diseases. All types of wounds including surgical wounds and burns.

Dose and administration
Clean the affected part and apply daily till the condition gets cured.

13. EYE OINTMENTS/DROPS

13.1 Chloramphenicol

Dosage Form
Eye lotion, applicaps

Composition
Each gram contains 20 mg Chloramphenicol

Indication/uses
For treatment of specific bacterial and certain clamydial infections of the eye of cats, dogs, horses, cattle and sheep (supported by experience or laboratory studies).

Dosage and administration
For topical administration to the conjunctival sac. Apply in the eye once or twice daily or more frequently if required. Continue treatment for 48 hours after the eye appears normal.

Contra-indications/warnings
Do not apply to animals producing milk for human consumption. Use a separate tube for different animal to prevent transmission of infection. Should not be applied to animals sensitive to chloramphenicol.

Pharmaceutical precautions
Store at room temperature not exceeding +30^{o} C. Avoid contamination of the product.

13.2 Gentamicin Sulphate Eye & Ear Drops

Dosage Form
Drops

Composition
Gentamicin sulphate-0.3%, Clotrimazole1%, Betamethasone dipropionate- 0.025%, w/v, Lignocaine HCl 2% w/v
Drops- 50ml & 30ml

Indication
Eye- Conjuntivitis, Keratitis, Corneal ulcer, Blepheritis, Hordeolum, Trachoema
Ear- otitis

Direction for use
Apply 2-3 drops daily on unaffected & affected eye daily & affected ear.

14.1 Analgin Pitofenone hydrochloride, fenpiverinium bromide

Dosage Form
Injectable solution.

Therapeutic group
Imidopyrin analgesic.

Indications/use
Inflammation of musculoskeletal system, Lameness, painful conditions, non-specific pyrexia.

Composition
Each ml contains 500 mg of Analgin, 2mg Pitofenone hydrochloride, 0.02mg of Fenpiverimine bromide.

Dose/ administration
Large animal : 20 – 60 ml I/M
Dogs and cat : 1-2 ml I/M.
Calf and foal : 5 -15 ml I/M

Precautions
Give only Intramuscular route.

Pharmaceutical precaution
Store below 25 ^{0}C and protect from light.

14.2 Ibuprofen

Dosage Form
Tablet

Therapeutic group
Ant inflammatory/ antipyretic

Composition
Tablet of 200mg and 400mg

Indications/uses
It is used principally for symptomatic treatment of osteoarthritis in dogs.

Dosage and administration
For analgesia, inflammatory conditions and pyrexia
Dog: 10mg/kg B.W at 24-48hrs interval, PO BID

Contra-indications/warnings
Not recommended for cats

14. 3 Ketoprofen

Dosage Form
Injectable liquid.

Composition
Each ml contains Ketoprofen USP 100 mg, Benzyl Alcohol USF 1%w/v and water for injection IP q. s. to 1ml

Therapeutic group
Analgesic

Indications/uses
Pyrexia, clinical and sub-clinical mastitis, udder edema, lame-ness, all types of inflammation along with antimicrobial therapy.

Dosage and administration
Cattle, Buffaloes, camels, pigs, sheep and goats - 3 mg per kg body weight {1ml/ 33kg body weight} by I/M, I/V, or S/C routes, for 3-5days.
Horses – 2.2mg/kg body weight (1ml/45kg body weight) by I/V route for 3-5 days
Dogs and cats – 2mg/kg body weight (1ml/50kg body weight) by I/M, I/V or S/C route for 3-5 days

Contra-indications/warnings
Not to use in hypersensitivity to drugs

Pharmaceutical precautions
Should be stored at room temperature

14.4 Meloxicam

Dosage Form
Injectable liquid

Composition
5mg/ml vial for injection in 10ml vial.

Therapeutic group
Analgesic, antinflammatory and antipyretic

Indications/uses
It is used principally for symptomatic treatment of osteoarthritis in dogs.
Inflammatory conditions associated with pneumonia, pleuritis, mastitis, prolapsed of uterus, laminitis, myositis, arthritis, surgical interventions, otitis, premature labour.

Dosage and administration
Dogs: for osteoarthritis, analgesia, inflammatory conditions:-Initially 0.2mg/kg, PO, I/V, I/M or S/C on first day and subsequently 0.1mg/kg PO, I/V or S/C

Cats: – for osteoarthritis, analgesia, inflammatory conditions:-Initially 0.2mg/kg, PO, I/V, I/M or S/C on first day and subsequently 0.1mg/kg PO, I/V or S/C

Pneumonia and prolapsed-Cow/sheep/goat/pig/dog/horse – 0.5mg/kg B.W
Other conditions- Cow/sheep/goat/pig/dog/horse – 0.2-0.3mg/kg B.W

Contra-indications/warnings
Not to use in hypersensitivity to drugs, active GI ulcerations or bleeding, impaired hepatic, cardiac or renal functions or haemorrhagic disorders in dogs.

Pharmaceutical precautions
Should be stored at room temperature

14.5 Paracetamol and Maloxicam

Dosage Form
Injectable,Bolus.

Therapeutic group
Non-steriodal anti inflammatory drug.

Indications/use
Pyrexia of unknown origin, Rheumatic conditions, pain, colic.

Composition
Each ml contains Paracetamol 150 mg and 5mg of Meloxicam.

Dose/ administration
Large ruminants: 25-60 ml or 1-2 boli BID
Small ruminants : 3 – 7 ml.Dog: 2-5ml or ½ bolus BID

Precautions
Over dosage may lead to renal and hepatic toxicity.

Contraindications
Contraindicated in cats.

Pharmaceutical precaution
Store below 25 ^{0}C and protect from light.

14.6 Phenylbutazone & Sodium salicylate

Dosage Form
Injectable liquid.

Composition
Each ml contains 200mg phenylbutazone and 20mg sodium salicylate.

Therapeutic group
Analgesics

Indication/uses
Pyrexia, symptomatic treatment of inflammatory and painful conditions of muscle, bone and joints. Indicated in all cases of fever associated with painful syndromes, especially in ephemeral fever. Also used in inflammatory complications of various traumatic and microbial affections.

Dosage and administration
By slow I/V or I/M route: Cattle and horses: 20 - 30ml/day for first two days. Half the dose on the following days; Sheep, goat, calf, foal and pigs: 10ml for first two days. Half the dose on following days; Treatment should be continued till the symptoms subside.

Contra-indications/warnings
Do not use in cats. Accidental injection into the carotid artery results excitement, prostration and sometimes death

Pharmaceutical precautions
Store in cool place.

15. ANTIHISTAMINICS

15.1 Chlorophenaramine maleate

Dosage Form
Injectable solution and tablet

Theraupetic group
H-1 Blocker Alkylamine derivative.

Composition
Each ml contains 10mg mg chlorpheniramine maleate, and each tablet contains 8mg chlorpheniramine maleate

Indication/uses
Itching, eczema, dermatitis, insect bite, tail eczema in horses, inflammation of the hooves in cattle, anaphylactic shock, toxemia, pulmonary emphysema in cattle and horses, laminitis, & bloat in cattle.

Dosage and administration
I/M or I/V route. Repeat after 8 - 12 hours if necessary.
Cattle : 30-50 mg Total dose.
Dog : 0.4 -2 mg/kg B.W BID.

Precautions
Sedation ,CNS excitement , Gastrointestinal disturbances .

Contraindications
Contraindicated in Pregnant animals due to its terratogenic effects.

Pharmaceutical precautions
Store in cool dark place. Do not freeze

16.1 Dexamethasone

Dosage Form
Injectable solution.

Therapeutic group
Steroids.

Composition
Each ml contains 4mg dexamethasone sodium phosphate**.**

Indication/use
Intravenous therapy in cases where emergency treatment is indicated, particularly shock and circulatory collapse, hog fever, acute mastitis and burns; acetonaemia (ketosis) in cattle; inflammatory conditions in all species, as in arthritis, laminitis, dermatitis, etc.

Dose/administration
By I/V or I/M route: Cattle & horse: 2.5 - 10ml (10 to 40mg); Calf, foals, sheep, goat, & pigs: 0.5 – 2.5ml (2 to 10mg); Dog: 0.13 - 1ml; Cat: 0.13 - 0.25ml

Contra-indications
Should not be used in the presence of infection without antibiotic cover. Should be used with care in congestive heart disease, renal insufficiency, diabetes, and degenerative eye disease. Administration during the latter stages of pregnancy in cattle and sheep may induce early abortion. Wound healing may be delayed.

Counseling
Gradual withdrawal is advised after prolonged treatment of animals.

Pharmaceutical precaution
Store in cool dark place. Do not freeze

16.2 Isoflupredone acetate

Dosage Form
Injection

Therapeutic group
Glucocorticoid(steroids)

Composition
Each ml contains 2 mg of isoflupredone acetate

Indication
For the treatment of ketosis, musculoskeletal disorders, allergic reactions, infection and toxicity, and shock.

Dose and administration
Cattle- 10- 20 mg intamusculary and the dose may be repeated after 24 hr
Horse- 5 – 20 mg intramuscularly

Contra-indication
Should not be used in pregnant animals

Pharmaceutical Precautions
Store in room temperature(15- 30 ^{0}c)

16.3 Prednisolone

Dosage Form
Tablet and Injectable solution

Composition
Each ml contains 10 mg prednisolone, each tab contains 5mg Prednisolone

Indication/uses
Steroid responsive conditions including treatment of allergies, urticaria, insect bites, dermatitis, and pruritis. Used in the treatment of bovine ketosis in combination with dextrose. Given in conjunction with appropriate antibiotic or antibacterial agents when indicated.

Dosage and administration
By I/M or intra-articular/peri-articular route
Cattle and Horse: - 10 to 20 ml.
Calf and Pig: - 2 to 5 ml
Dog and Cat: - 1 to 3 ml

Tablet:
Dog: 0.5 mg/kg B.W QID orally for 5-10 days
Cat-2.5-5mg in every 24-48 hrs orally

Contra-indications/warnings
Corneal ulceration, diabetes mellitus, tuberculosis, renal insufficiency and pregnancy especially the last trimester. Use in horses with laminitis (founder). Corticosteroids lower the immune response to infections, and may delay wound healing and fracture repair, particularly in older animal. Prolonged glucocorticoid therapy may suppress adrenocortical activity.

Pharmaceutical precautions
Store below 28^{o} C. Protect from light.

17.1 Buserelin acetate

Dosage Form
Injection

Therapeutic group
Hormones

Composition
Each ml contains 0.004 mg or 4 mcg buserelin acetate

Indication and uses
It causes simultaneous release of LH and FSH from pituitary. Indicated in reduced fertility as a result of ovarian dysfunction, induction of ovulation and improvement of conception rate in cows, she buffaloes, mares and rabbits.

Dose and administration
By I/M route or if required by I/V or S/C route.
Cows and she buffaloes: Acyclia (true anoestrus): 5 ml

Oestrus should occur within 8 - 22 days after treatment. If no heat is observed or there are no palpable follicle on the ovary after this date then the dose may be repeated. If however a corpus luteum is palpated, then prostaglandin F_{2a} or one of its analogue should be administered, thus allowing the animal to return to heat 2- 3 days later.

Improvement of conception rate after AI, synchronisation of heat: 2 ml

Receptal should be administered at the time of insemination or service, or up to 6 - 8 hours before. Ovulation is induced within 24 hours of treatment. Pregnancy rate in cows may also be improved by giving a single injection on day 12 after insemination by helping to prevent leutolysis and consequent embryo mortality.

Follicle atresia (anovulation) and delayed ovulation: 2 ml

Administered at the time of insemination, or 6 - 8 hours before insemination. Ovulation usually follows within 24 hours.

Follicular cysts with or without symptoms of nymphomania: 5 ml
A CL will usually be clearly detectable on either the affected or normal ovary within 8 days after injection. The response to treatment should be checked after 10 - 14 days. If no CL is present, or if newly formed cysts are detected, treatment should be repeated. The animal usually comes into heat after 20 days of treatment.

Prophylaxis of fertility disorders by induction of oestrus cycle - 5 ml I/M

Receptal administered prophylactically after 10-14 days post partum induces ovarian function(ovulation) and accelerates uterine involution.

Note: The induction of ovulation is not possible in the presence of a functional CL.
Mare:

Anovulation associated with prolonged oestrus and a well developed follicle: 10 ml

Should be given on the first day when the follicle has reached its maximum size, this being determined by previous clinical history and rectal examinations. The injection is given best 6 hours prior to service. The mare should be served again the next morning if she is still in oestrus. If ovulation does not occur within 24 hours of treatment, then the injection should be repeated.

Improvement of conception rate: 10 ml.
The injection is given at service or optimally 6 hours before.
Anoestrus: 5 ml.
Injection is administered twice at an interval of 24 hours. If no oestrus occurs within 10 days, repeat on the 11th and 12th after the first treatment.

Cystic ovarian changes with or without prolonged or permanent oestrus: 10 ml

One treatment is usually sufficient but may be repeated if there is no evidence of response (e.g. regression of cysts or remission of the prolonged or permanent oestrus) within 10-14 days of first injection.

Warning
To be used for animal treatment only.

Pharmaceutical precautions
Store in a cool and dark place below +25^{o} C. Use before the expiry date printed on the container.

17.2 CIDIROL (Oestradiol Benzoate)

Dosage Form
Tablet of 0.5mg and 10mg

Therapeutic group
Hormones

Composition
Natural steroidal oestrogen and it has low oral activity. It is used in the therapeutics as it releases parent molecule on hydrolysis.

Indication
Used in synchronization, prostatic hypertrophy, excessive libido and anal oedema in dogs. In dogs @ 1- 3 mg/kg daily orally

Contra-indications/warnings
Polydypsia, polyuria, GI upsets, suppression of red cell production. Chronic use may lead to feminization in males

17.3 CIDR-B intravaginal Progesterone

Dosage Form
Insert/tablet of 1.38g of progesterone releasing insert

Therapeutic group
Hormones

Composition
Each insert contains 1.38 gm of progesterone.
Cidirol (Oestradiol benzoate) 10 mg capsules

Each capsule contains 10 mg oestradiol benzoate.
Cidirol - (Oestradiol benzoate) inj.

Each ml contains 0.5 mg Oestradiol benzoate

Indication/uses
Synchronization of oestrus and treatment of anoestrus

Dosage and administration
Synchronization and treatment of Anoestrus:
PROGRAMME A:
CIDR-B + estradiol capsule:
Day 0 Insert CIDR-B + estradiol capsule
Day 12 Remove CIDR-B
Day 14-15 Inseminate on observed heat

PROGRAMME B:
CIDR-B + oestradiol injection

Day 0 insert CIDR-B
Day 7 removal of CIDR-B
Injection of 1 mg estradiol 24 to 48 hrs after removal of insert
Most animals will come to heat over the next 2-5 days after injection

17.4 Hydroxy Progesterone caproate

Dosage Form
Injectable Liquid

Therapeutic group
Hormones

Composition
Each ml contains 250 mg of hydroxyprogesterone caproate

Indication
Threatened abortion and habitual abortion, repeat breeding caused due to failure of implantation (nidation) of zygote in uterus associated with progesterone deficiency.
Induction of estrus- Continuous administration of progesterone followed by sudden withdrawal gives a negative feedback to hypothalamus resulting in ovulatory heat. Prolapse of uterus due to higher level of estrogen causes excessive contraction of uterus.

Dosage and administration
Habitual abortion in early pregnancy in cows and Buffaloes– 2ml intra- muscular after $1^{1/2}$ month of pregnancy. To be repeated 4-5 times at every 10days and interval.

Habitual abortions in mid or late pregnancy in cows and Buffaloes – 2ml for 3days intra-muscular. To be repeated every week for 3 weeks

Induction of oestrus in post partum anoestrus condition in cattle and Buffaloes – 1ml intramuscular. To be repeated after 10 days if female does not come in heat or oestrus.

Repeat breeders with weak corpus luteum – 1ml intra- muscular after insemination followed at weekly interval for 3 weeks

Prolapse of uterus due to pronounced heat in cattle and Buffaloes – 2ml intra- muscular. To be repeated on the 3rd day if necessary. In habitual pronounced estrus 2ml to be given intra- muscular at the beginning of oestrus.

Post-partum prolapse of uterus – 2ml intramuscular on alternate days for three times followed by weekly for three weeks.

Antepartum prolapse of uterus – 2ml intramuscular every two days for three times.

17.5 Medroxy Progesterone

Dosage Form
Tablets

Therapeutic group
Hormones

Composition
Each tab contains 10 mg medroxy progesterone

Indication
Postpone or suppress oestrus, pseudo-pregnancy, mammary tumours and habitual abortions

Dosage and administration
Postpone or suppress oestrum:
In dog: (up to 25 kg body weight) @ 5 mg daily and above 25 kg body weight @ 10 mg daily; 50 mg S/C at anoestral stage. Repeat every 6 months.
In cat: 2.5 mg daily
Prevent abortion
In cat: @1-2 mg once weekly and stop 7-10 days before parturition.

Pharmaceutical precautions
Cystic endometrial hypoplacia may occur

17.6 Oxytocin

Dosage Form
Injectable Liquid

Therapeutic group
Hormones

Composition
Each ml contains 10 iu/ml, chlorbutol 0.5 mg

Indication/uses
Uterine inertia, retention of placenta, mastitis in milking cows. (It stimulates a let down of milk and this flushing action on the milk duct is thought to clear tissue debris and facilitate penetration of antibiotics administered into the teat canal after stripping). Useful after caesarian surgery to cause uterine contraction

Dosage and administration

By I/V, I/M or S/C

Animal	Obstetrics	Milk letdown
Cow and mare -	75 - 100 iu	10 - 20 iu
Ewe -	30 - 50 iu	2 - 10 iu
Sow -	30 - 50 iu	5 - 20 iu
Bitch -	5 - 25 iu	2 - 10 iu
Queen -	5 - 10 iu	1 - 10 iu

Contra-indications/warnings

Cervical obstruction or closed cervix, in dystocia prior to correction of abnormal presentation, severe pre-eclamptic toxaemia, predisposition to uterine rupture (high parity and previous caesarian section), faetal distress, protracted labour. Not effective for longer than 2 days post partum.

Pharmaceutical precautions

Store below 28° C. Protect from light.

17.7 PG 600 injection – 400IU

Dosage Form

Injection

Therapeutic group

Hormones

Composition

Each 5 ml glass vials contains Serum Gonadotrophin 400 IU and Chorionic Gonadotrophin 200 IU

Indication and uses

For promotion of fertile oestrus cycle in gilts and sows

Dose and administration

By sub cut route in pigs @5 ml at the base of the ear.

Gilts*: S*hould come in oestrus within 5 days of administration;

Sows post weaning*: t*o promote early post partum oestrus the injection to be given within 48 hours of weaning;

Barren sows*:* Cases of suboestrus or anoestrus due to hormonal imbalance may respond favorably within 5 days of administration.

Note: Oestrus induced with oestrogens may or may not be associated with ovulation, but

frequently re-establishes the oestrus cycle. Service or AI should be postponed until oestrus occurs naturally 3 weeks after stilboestrol induced heat.

Contra-indications/warnings
In case of any anaphylactic reaction give adrenaline 1-3 ml of 1: 10,000 solution I/M.

Pharmaceutical precautions
Store at +2 to $+8^0$C in a dark place. To be used at once after re-constitution

17.8 Prostaglandin

Dosage Form
Injection

Therapeutic group
Hormones

Composition
Each ml contains 5 mg Prostaglandin F_2a

Indication and uses
For synchronisation of heat, embryo transfer, for therapy of cystic corpus luteum, chronic metritis, pyometra, & for induction of parturition & abortion

Dose and administration
Cow and buffalo: For synchronization of heat : 25 mg. Two injections 11 days apart between 5th and 18th day of oestrus cycle.
For induction of heat: 25 mg between 5th and 18th day and a second dose may be administered in non responders after 11 days. For treatment of chronic metritis, pyometra, induction of abortion after 2nd month of pregnancy, and cystic corpus luteum : 25 mg.

Sheep: For synchronization of heat: 5 to 20 mg. Non responders may be again treated on the 6th day. Induction of lambing: 20 mg after 140th day of pregnancy.

Mares: To induce heat: 3 to 5 mg.

Pigs: Induction of farrowing after 113th. day of pregnancy: 25 mg I/M or 5 to 10 mg I/M on two days & labour starts approximately 27 hours from last treatment.
Dog: For abortion: 20 mcg/kg from day 33 - 53 of gestation every 8 hours or 30 mcg/kg every 12 hours for 72 hours (total dose 180 mcg/kg) results in abortion within 56 - 80 hours after the treatment begins, the bitches should be hospitalised and food with held 24 hours before starting the treatment. In pseudopregnancy: 0.5 mg/kg

Cats: For abortion: O.5 mg/kg during 3rd trimester of pregnancy results in abortion after 24 hours of treatment.

Contra-indications/warnings

Pregnant woman and persons with asthma or other respiratory disease must not handle the drug. Milk from treated animals is not suitable for human consumption for 7 days following injection. Do not use in pregnant animals unless indication is for abortion. Non steroid anti-inflammatory agents like indomethacin should not be used simultaneously. Must not be administered I/V

Pharmaceutical precautions

Store in a cool and dark place below +15^{o} C.

18.1 Lignocaine HCl

Dosage Form
Injectable Liquid.

Therapeutic group
Local anesthetic.

Composition
20 mg/mL lignocaine HCl.

Indication
Infiltration anesthesia, peripheral nerve block, spinal and epidural anesthesia.

Dose and administration
Large animals: Obstetrical use: 5 - 10ml, Laprotomy use: 10 - 15ml, S/C or epidural
Small animals: Obstetrical correction: 1 - 2ml epidural, Laprotomy: 2.5 - 5ml S/C.

Contra-indication:
Not to be used as intravenous injection during infiltration. To be used with care in animals with cardiac problems.

Pharmaceutical precautions
Store below 30^{o} C. Protect from light.

19.1 Ketamine

Dosage Form
Injectable Liquid.

Therapeutic group
Sedatives & anesthetic.

Composition
10mg or 50mg ketamine HCl.

Indication
For sedation, tranquilization, and as general anesthetic agent for minor surgical procedures that do not require skeletal muscles relaxation in cats. Ketamine maybe used in conjunction with xylazine in dogs, cats, horse and donkey.

Dose and administration
Cats: for minor surgery, suturing restraint: 11 - 22 mg/kg body weight I/M; Castration, catheterization: 22 - 33mg/kg I/M. General, abdominal, orthopaedic surgery and major density: 33 - 44mg/kg I/M.
Ketamine & Xylaxine combination.

Cat: xylazine (1.1mg/kg) and atropine (0.3mg/kg) by I/M injection maybe used 20mins pior to ketamine at 22mg/kg.

Horse and Donkey: xylazine is administered by slow I/V at 1.1mg/kg. The horse should appear sedated by 2mins post injection and then ketamine at 2.2mg/kg I/V is administered (don't delay ketamine injection longer then 5mins after xylazine administration). Anesthesia will last for 10 - 30mins.

Dogs: xylazine at 1mg/kg I/M, immediately follow by ketamine at 15mg.kg I/M. Anesthesia will last for about 25mins.

Swine: 10 - 15mg/kg I/M with xylazine at 0.5 - 1mg/kg I/M.

Contra-indication
Do not use ketamine as a sole agent in horse and donkey and in renal and hepatic failure. Hypertension, congestive cardiac failure, stroke.

Pharmaceutical precautions
Store in cool dark place. Following withdrawal of the 1st dose, use the product within 3 months.

19.2 Triflupromazine

Dosage Form
Injectable liquid.

Therapeutic group
Tranquilizer.

Composition
20mg triflupromazine HCl.

Indication
Pre-anesthetic.
Dose and administration

By I/V or I/M route: Dog: 1 - 2mg/kg (0.5 - 0.1ml/kg) I/V or 2 - 4mg/kg (0. 1-0.2ml/kg) I/M; Cattle: 10mg/100kg (0.5ml/100kg) I/V or a max. Of 100mg (5ml) I/M; Pigs: 80mg/100kg I/V or 120mg/100kg I/M; Sheep: 1mg/10kg I/V or a max of 40mg I/M.

Pharmaceutical precautions
Store in cool place.

19.3 Xylazine

Dosage Form
Injectable liquid.

Therapeutic group
Sedative.

Composition
20 mg Xylazine HCl.

Indication
Sedation of a wide variety of domestic, wild or exotic species such as cattle, dogs, cats, horses, laboratory animals, zoo animals and deer.

Dose and administration
By I/V or I/M route: Cattle: 0.25 - 1.5ml (5 - 30mg)/100kg I/M, 0.15 - 0.27ml/100kg body wt by slow I/V; Horse: 3 - 5ml/100kg slow I/V; Cat: 0.15/kg I/M; Dog: 0.05 - 0.15ml/kg I/M; Sheep: 0.05 - 0.1mg/kg; Pigs: 2 - 3mg/kg; Birds: 5 - 10mg/kg.

Contra-indication
Cardiovascular disease, Shock, acute or chronic cardiac insufficiency, severe respiratory

depression, late pregnancy. Condition in dogs & cats where emesis is undesirable, E.g. obstruction of esophagus, torsion of stomach, hernia. Take normal precaution in managing any unconscious or semi conscious ruminants to prevent inhalation pneumonia and bloat. Don't leave the animals under the influence of xylazine in the sun. In ruminants lower dose should be used if sedation without recumbency is desired.

20.1 Cloxacillin & Ampicillin

Dosage Form
Intra-mammary infusion ointment

Therapeutic group
Antibiotics

Composition
Each tube contains cloxacillin sodium 200mg and ampicillin 75mg

Indication/uses
Mastitis in lactating cattle and buffaloes (early treatment) caused by penicillin resistant Staphylococci, E. coli, Streptococci and other sensitive organisms

Dosage and administration
By instillation
Milk out the infected quarter, thoroughly clean the teat with surgical spirit and infuse one tube every 12hours per affected quarter or after each regular milking for 1 to 6 instillation.

Contra-indications/warnings
Always wear gloves when administering the preparation. Persons sensitive to penicillin must be careful to avoid contact with the product. Milk from treated cows should be discarded until all the colour residues have disappeared.

Pharmaceutical precautions
Store below 25^0C

20.2 Cefoperazone

Dosage Form
Intramammary suspension

Therapeutic group
Broad spectrum antibiotic

Composition
Cefoperazone 250mg/syringe.

Indications
Treatment of clinical mastitis.
Dose/Administration

Single dose- 10ml syringe/ quarter after milking.

Contraindications/safety/precautions
Contra-indicated in animals known to have exhibited allergic reactions to cephalosporin.

Pharmaceutical precautions
Not compatible with aminoglycosides.
Milk withdrawal: milk consumption only after 84hrs of last treatment.
Meat: 2 days after the treatment.
Storage: do not store below 25^0c

20.3 Tetracycline, Neomycin, Bacitracin, Prednisolone

Dosage Form
Intramammary infusion ointment.

Therapeutics
Antibiotic and anti-inflammatory.

Composition
Tetracycline hydrochloride-200mg, neomycin-2250mg, bacitracin-02000IU, prednisolone-10mg per syringe.

Indications
Mastitis

Dose/Administration
One tube/quarter/ day for 5 days.

Contraindications/ precautions
Milk should not be consumed during the treatment and 3 days withdrawal period should be kept.

Pharmaceutical precautions
Store below 25^0C

20.4 Strepto-penicillin-SH

Dosage Form
Intra-mammary infusion ointment

Therapeutic group
Antibiotics

Composition
Each tube contains procaine penicillin 100,000IU, streptomycin sulphate 100mg, sulphamerazine 500mg, hydrocortisone acetate 29mg.

Indication/uses
Acute and chronic mastitis due to susceptible organisms, non-specific mastitis in dairy cows.

Dosage and administration
By instillation
In acute mastitis: Milk out the infected quarter, thoroughly clean the teat with surgical spirit and infuse one tube every 12hours per affected quarter or after each regular milking for 1 to 6 instillation. Chronic mastitis: one tube every 12hours per affected quarter or after each regular milking for 1 to 3 instillation. Dry cows: one tube into each infected quarter, do not milk treated quarter until the animal freshens.

Contra-indications/warnings
Always wear gloves when administering the preparation. Persons sensitive to penicillin or streptomycin must be careful to avoid contact with the product. Milk from treated cows should be discarded until all the color residues have disappeared.

Pharmaceutical precautions
Store below 25^0C

21.1 Cetrimide & chlorhexidine

Dosage Form
Liquid antiseptic

Composition
Contains cetrimide 15% and chlorhexidin gluconate 7.5%

Indication/uses
For general antiseptic purpose, to disinfect wounds, hospital equipment, animal stalls, milking sheds, poultry houses, & farm equipment at strength of 1 in 200 dilutions.

Dosage and administration
For general antiseptic purposes to disinfect wards, hospital equipment, animal stalls, milking sheds, poultry houses and farm equipment at 1 in 200 dilutions. For preliminary cleaning of wounds, burns, and abscesses & rinsing of hands at 1 in 100 dilutions. For pre-operative preparation of skin and scrub up of surgeon's hands at 1 in 30 dilutions. For washing udder of cows & buffalo and milkers hands prior to and after milking, & sterilizing diary utensils at 1 in 150 dilutions. As shampoo for dogs at 1 in 5 dilutions.

Contra-indications/warnings
Because cetridine is a cationic disinfectant it is incompatible with soap

Pharmaceutical precautions
Store below 28^0C. Protect from light. Use prepared solutions within one month

21.2 Glutaraldehyde Derivatives

Dosage Form
Liquid disinfectant

Therapeutic group
Disinfectant/antiseptic

Composition
Each 100gm contains glutaraldehyde 10gm; 1, 6-dihydroxy 2,5-dioxahexanas 10.3gm & polymethylol urea derivatives 4.6gm.

Indications
Disinfection against various bacterial and viral diseases.

Dosage and administration
For preventive disinfection, take 500mL in 50 liters of water (1%) wet surfaces with mob or low pressure sprayers. For specific disinfection
Bacterial and fungal infection - use 3% dilution in water.
Ranikhet Disease – 1% dilution
Infection Bursal Disease – 3% dilution
In house spray 0.5 dilution.

Pharmaceutical precautions
Store in cool place.

21.3 Povidone iodine

Dosage Form
Liquid antiseptic

Composition
Contains 5% povidone iodine

Indication/uses
Surface and equipment disinfection, control of mastitis as a "teat dip" after milking, disinfection of skin, as pre and post operative therapy in wounds and burns, ringworm, cut teats and udder wounds, control of dermal and mucosal infections, treatment of metritis and mastitis.

Dosage and administration
For topical application use full strength. For vaginal douche dilute 1 in 4 parts of water.

Pharmaceutical precautions
Store below 30^0C

22.1 Antibloat

Dosage Form
Oral powder of 1kg

Therapeutic group
Ayurvedic/antibloat

Composition
It contains ayurvedic ingredients

Indication
Given orally gaseous and frothy bloat, tympany, colic and impaction

Dosage and administration
Given orally or directly into rumen in *Cattle, Buffalo, Horse*: 80 gm
Calf, foal, heifer: 40 gm, *Pig, sheep, goat*: 20-25 gm; In Gaseous bloat – the dose to be suspended in 250ml of luke warm water; In Frothy bloat – the dose to be suspended in 250-500ml edible oil; In Impaction: administered with 150-400 gm of Magnesium sulphate; In emergency directly administered into rumen through canula

22.2 Anticough/Expectorent

Dosage Form
Oral powder of 1 kg packet

Therapeutic group
Ayurvedic/expectorant/mucolytic

Composition
It contains ayurvedic ingredients.

Indication and uses
Coughs of all causes.

Dose and administration
Orally in cattle and horse @ 30 to 40 g orally once or twice daily; in calf and sheep, colt, pig @ 6 to 12 g orally once or twice daily; dog and piglet @ 2 to 4 g orally once or twice daily.

22.3 Antidiarrhoeal

Dosage Form
Oral powder of 1kg

Therapeutic group
Ayurvedic/antidiarrhoeal

Composition
It contains ayurvedic ingredients.

Indication
Acute or chronic diarrhoea, dysentery of varying etiology.

Dosage and administration
Given through oral route in *Buffaloes/Cattle & Horse:* 30 to 50 g orally, once or twice daily*; Calf, Sheep, Colt, Pig:* 6 to 10 g orally, once or twice daily; *Dog & Piglet*: 2 - 3 g. orally, once or twice daily and in poultry 0.5 to 1% mixed with the feed.

Pharmaceutical precaution
Store below 25^{o}C.

22.4 Heat inducer

Dosage Form
Capsule

Therapeutic group
Ayurvedic/heat inducer

Composition
It contains ayurvedic ingredients.

Indication
Infertility associated with ovarian dysfunctions like anestrus, silent heat, delayed puberty and infective conditions like metritis, endometritis, cervicitis and vaginitis.

Dose and administration
For mare, buffalo, cow, heifers @ 3 capsules per day for 2 days; in sheep goat, sow and bitch @ 2 capsules per day for 2 days. In case of silent heat or absence of heat after 10 days the course may be repeated on the 11th or 12th day. In retention of placenta @ 2 to 3 capsules after calving. Repeat after 6 to 8 hours if necessary.

22.5 Libido Inducer

Dosage Form
Oral powder packet of 10grams and tablets of 10g

Therapeutic group
Ayurvedic-libidoinducer

Composition
It contains ayurvedic ingredients.

Indication and uses
In depressed libido, poor stud performance, delayed reaction prior to mounting.
For revitalizing depressed libido and improving stud performance in Large animals @3 to 4.5g once daily for 7 to 10 days before resuming collection or natural service; in rams @ 1 to 2 g once daily for 7 to 10 days before resuming collection or natural service. Treatment against temporary impotence or severely depressing libido in large animals @3 to 4.5g once a day for 30 days; in rams 1 to 2 grams daily for 30 days; dogs large @ 1tablet per day for 7 days prior to mating.

22.6 Livertonic

Dosage Form
Oral powder of 100 g cachet

Therapeutic group
Ayurvedic/liver tonic

Composition
It contains ayurvedic liver tonic ingredients.

Indications
Anorexia, liver dysfunctions, hepatitis, jaundice, aflatoxicosis, debility and general weakness and during convalescence.

Dosage and administration
Used through oral route with Cattle & Horse: 40-50gm twice daily for at least two days; Foal, Calf & pig: 20-25 gm twice daily, and Sheep/goat: 10-15 gm daily.

22.7 Rumenotoric/Stomachic

Dosage Form
Oral powder of 1kg

Therapeutic group
Ayurvedic/stomachic/Appetizer

Composition
It contains ayurvedic ingredients.

Indication
Indigestion, Anorexia, ruminal statis, dyspepsia, constipation, flatulence, general debility & stress condition.

Dosage and administration
By oral route: in *Cattle, horse, mule:* -40 to 60 g as a bolus or electuary twice daily; *Calf, colt, heifer, adult Pig:* -20 to 30 g as a bolus or electuary twice daily; S*heep & Goat:* - 10 to 15 g as a bolus or electuary twice daily.

22.8 Spermatogenic

Dosage Form
Oral powder granules of 50g

Therapeutic group
Ayurvedic/spermatogenic

Composition
It contains ayurvedic ingredients.

Indication
Oligozoospermia, sub-optimal sperm motility, low spry count, low sperm viscosity, and viability, abnormal sperm morphology, poor keeping quality of semen.

Dosage and administration
Given orally in large animals (bull/stallion) 10g twice daily for 10 days and the dose may be repeated after one month if required. In small animals (rams) 2 to 4g twice daily for 3 weeks.

Therapeutic precaution
Store in cool and dry place away from direct light.

22.9 Uterine tonic

Dosage Form
Oral powder of 500g.

Therapeutic group
Ayurvedic drug/Uterine tonic

Composition
It contains ayurvedic ingredients

Indication

Retained placenta, involution of uterus, as an ideal uterine cleansing agent, as supportive treatment to manual removal of placenta. For improved breeding efficiency.

Dosage and administration

Given orally in *Cows & buffaloes:* 50-60 gm ; *Mares:* 30-40 gm; *Sheep/goat:* 8-12 gm. Administer one double dose orally mixed with molasses or feed soon after calving and repeat single dose after every six hours till the placenta is shed completely in 24 hours.

23.1 Alum pure

Dosage Form
Crystal 450gm

Therapeutic group
Antiseptic

Indication
5% solution as an antiseptic externally on wound on FMD; Used in eye lotion (ZAB) Composition of ZAB eye lotion: (Zinc sulphate : Alum : Boric Acid at the ratio of 1:2:3).

Pharmaceutical precaution
Store in a cool place not exceeding 25°C

23.2 Benzoic acid

Dosage Form
Crystal 450g

Therapeutic group
Antifungal agent

Indication
Treatment of dermatomycosis (ringworm infestation) it has both fungistatic and karatolytic activity.

Dose/administration
It is used with salicylic acid for external application as white field ointment.

Benzoic acid	-	6g
Salicylic acid	-	3g
Paraffin	-	91g

Contra-indications
Repeated application may cause irritation

Pharmaceutical precaution
Store in a cool dry place not exceeding 25°C

23.3 Boric acid

Dosage Form
Powder 450gm

Therapeutic group
Dusting powder

Indication/use
As dusting powder or ointment in superficial wounds, eyewashes and lotion; As an ingredient in urinary antiseptic.

Dose/administration
Boric Acid ointment as - 10%; Boric Acid Eye Lotion as 2 - 3 %; Boric acid - 15g orally 4hrs prior to hexamine as acidifier of urine in bovines.

Pharmaceutical precaution
Store in a cool dry place

23.4 Charcoal activated

Dosage Form
Powder – 450gm

Therapeutic group
Universal antidote

Indication/use
As an absorbent, and universal antidote mixture mainly in poisoning cases.

Dose/administration
Used in universal antidote mixture in the following rate-Activated Charcoal-50g, Magnesium Oxide Levis-25g, Kaolin-25g, Tannic Acid -25g; Divide into 5 parts & given in a day by stomach tube in large animals.

Pharmaceutical precaution
Store in a cool place not exceeding 25°C

23.5 Chloral Hydrate

Dosage Form
450g packet, 1kg packet.

Composition
Not less than 99.5% $C_2H_3Cl_3O_2$. (USP)

Therapeutic Group
Sedative, Hypnotics.

Indications
Chloral hydrate is generally considered to be a good hypnotic, but a poor analgesic—even at anaesthetic doses. It is the best basal narcotic for horses and adult cattle. Can be used in pigs also.

For initiation/maintenance of surgical anaesthesia (and for a smoother induction/recovery period), it generally must be administered with some other anaesthetic or tranquilizing agent.

It is used post-operatively to allay anxiety and to induce sedation and/or sleep.

Externally, chloral hydrate has a rubefacient action and has been used as a counter-irritant. It is administered by mouth as a liquid or as gelatin capsules. It has also been dissolved in a bland fixed oil and given by enema or as suppositories.

Dose/Administration
It can be administered by stomach tube (orally),I/V injections. Not administered I/M.
Dose: cattle-5-6gms/50 kg B.W of 10% solution I/V or 60ml orally.
Horses-44-60mg/kg B.W of 12% solution I/V 0r 30- 90ml orally.

Onset within 15-20mins and lasts for 40-120mins. Most often chloral hydrate is used with magnesium sulphate and pentobarbital in cattle and horses to allow lower dose of chloral hydrate.

Contraindications/Precautions
When given in small doses, the drug suppresses only the cerebral cortex. Larger doses may cause dangerous respiratory and thermoregulatory depression, cardiac arrhythmias, and severe hypotension.

23.6 Cobalt sulphate

Dosage Form
Powder 450gm

Therapeutic group
Haematinics

Indication/use
Used for preparation of haematinic mixture. Loss of appetite, Pica, emaciation, anemia, weakness, infertility and retarded growth.

Dose/administration
Cattle/buffalo - 500mg/day, Sheep/goat - 100-200mg/ day
Refer 30.10 for preparation and usage of haematinic mixture-orally

Precautions
Cobalt sulphate is a topical irritant and a recognized cause of occupational contact dermatitis.

Pharmaceutical precaution
Store in a cool place not exceeding 25°C

23.7 Copper sulphate

Dosage Form
Crystal 450gm

Therapeutic group
Caustic agent/antiseptic/haematinic

Composition
It is Blue, triclinic prisms or a blue crystalline powder; odourless or almost odourless. Slowly efflorescent in air, when it may have a whitish appearance.

Indication/use
As caustic agent in form of powder or 20% aqueous solution to destroy the exuberant granulation & the walls of fistulae & sinuses; As an antiseptic 1% to 3% solution in vaginitis, urethritis, and fungal skin diseases; As haematinics for assimilation of iron; Antidote to phosphorous poisoning; Closes the oesophageal groove in ruminants so that medicines go directly to the abomasum. First administer 10ml of copper sulphate solution, then after five seconds administer fluid medicine such as anthelmintic; Copper sulphate 5parts per million parts of water kills water snails which act as intermediate host for liver fluke.

Pharmaceutical precaution
Store in a cool dry place

23.8 Dicalcium phosphate

Dosage Form
Powder 450g

Presentation:
25/50 kg bag

Therapeutic group
Mineral supplements

Indications /use
Rickets, pica, deficiency disease conditions, to promote better growth and production. In

birds to prevent thin shelled eggs, cannibalism and stress.

Dosage/Administration
Cattle, horse – 40gm, calf, sheep, goat, pig – 20gm, dog, cat– 5gm, Poultry chick-5gm/100 birds, growers- 10gm /100birds, Layers- 20gm/100 birds Orally.

Precautions
Contraindicated in conditions like diarrhea, gastric disorders, parathyroid disease, lung disease or kidney diseases.

23.9 Ferrous sulphate

Dosage Form
Crystal– 450gm

Therapeutic group
Mineral supplement

Composition
It consists of odorless bluish-green crystals or pale green crystalline powder. Efflorescent in air. Ferrous sulphate oxidizes in moist air becoming brown. It is completely or almost completely soluble in 1.5 parts of water; insoluble in 95% alcohol.

Indication/use
Used in the preparation of haematinic mixtures for anaemia and intestinal astringents in diarrhoea

Dose/administration
Haematinic for adult cattle as follows:

Ferric sulphate	-	80g
Cupric sulphate	-	20g
Cobalt sulphate	-	2g

Mix and give 1/10th of above daily as electuary

As intestinal astringent in adult cattle:

Ferric sulphate	-	4g
Cupric sulphate	-	0.3g
Acid sulphuric dilute	-	4ml
Tincture ginger	-	15ml
Rice gruel	-	600ml

Mix and give orally

Haematinic for calf:

Ferric sulphate	-	25g

Cupric sulphate - 5g
Pulvis Columba - 10g
Sulphur sublimate - 10g
Mix and give 1/10th of above twice daily as electuary

Pharmaceutical precaution
Store in a cool dry place

23. 10 Formaldehyde

Dosage Form
Liquid 450ml bottle

Therapeutic groups
Preservative

Indication/uses
Caustic action-pure formalin may be applied on warts. 1-2% formalin can be used to sterilize the instruments.

Doses and administration
Antizymotic in cases of bloat in cattle. Used in tympany in cattle at a dose rate of 15ml orally, after mixing with water. Formalin used to preserve specimens, dead bodies, and is a hardening agent for histological work. 10% formalin is used as preservatives for HP samples and fecal samples. Antiseptic and footbath in FMD. Used as an antiseptic media and as a foot bath in lesions of the foot as in Foot and Mouth Disease.

Contra-indications
Toxic

Pharmaceutical precaution
Store in a cool place and leak proof containers

23.11 Glycerine

Dosage Form
Liquid 350ml bottle

Therapeutic group
Preservative/exipient

Composition
It is clear, colourless, odourless, hygroscopic, syrupy liquid. It is miscible with water and with alcohol (95%), and practically insoluble in solvent ether, in chloroform and in fixed and volatile oils.

Indication/use
Indicated in treatment of bovine ketosis and pregnancy toxaemia in sheep at dose rate of 350ml to 500ml in cattle and 100 to 150ml in sheep; 50% glycerol saline is used as a preservative for FMD samples; Used as a lubricant in probes and probangs, tracheal tubes etc; Also used as an exipient for electuaries, sweetening agent for mixtures, and electuaries and laxative by giving as an enema.

Dosage/administration
Horse: 300ml, dog: 15ml. Administer with one third volume of water.

Pharmaceutical precaution
Store in a cool place not exceeding 25^{o}C

23.12 Hexamine

Dosage Form
Crystal– 450gm

Therapeutic group
Urinary Antiseptic

Indication/use
Urinary antiseptic in infection of the urinary tract such as nephritis and cystitis.

Dose/administration
(Composition of urinary antiseptic)

Hexamine	-	4 - 8g
Sodium Acid Phosphate	-	30g

Sodium acid phosphate is to be given 4 hours before the administration of hexamine.

Counseling
Hexamine has no action in alkaline urine, so Sodium acid phosphate is added to acidify the urine of Herbivores.

Pharmaceutical precaution
Store in a cool dry place

23.13 Kaolin

Dosage Form
Powder– 450gm

Therapeutic group
Absorbent

Composition
It is a light white odorless powder free from gritty particles and is oily to touch. It is soluble in water and mineral acids.

Indication/use
As adsorbent in the treatment of non specific diarrhea and is an ingredient of the universal antidote.

Dose/administration
Dosage: dogs- 1g-5g water suspension 50mls.
Cattle -25g-250g. 25g per calf twice daily

Pharmaceutical precaution
Store in a cool dry place

23.14 Light magnesium oxide

Dosage Form
Powder 450gm

Therapeutic group
Antacid/Laxative

Composition
A white powder, very slightly soluble in water; insoluble in 95% alcohol, soluble in dilute mineral acids.

Indication/use
Antacids in hyperacidity, gastritis, and intestinal indigestion; Laxatives in constipation; Used in mixture of "universal antidote"; Dose/administration; Large Animals: 150 - 200g orally; Dog: 1 - 2g.

Pharmaceutical precaution
Store in a cool place not exceeding 25^{o}C

23.15 Liquid paraffin

Dosage Form
Oral liquid

Therapeutic group
External and internal lubricant/ laxatives

Composition
Mixture of liquid hydrocarbons, obtained from petroleum. It is a transparent, almost

odourless, colourless, oily liquid, free from fluorescence by daylight. It is insoluble in water and in 95% alcohol, is soluble in solvent ether and in chloroform.

Indication/use

Externally used on the skin, for its softening & protecting effect, as a lubricant for diagnostic instruments such as probang & stomach tube. Internally as a laxative at the following doses

Dose/administration

Dog: 4 - 30ml orally for 3 to 5 days; Pig: 60 - 300ml orally for 3 to 5 days; Horse & cattle: 750ml orally for 3 to 5 days.

Pharmaceutical precaution

Store in a cool place not exceeding 25°C

23.16 Magnesium Sulphate

Dosage Form

Crystal 450gm

Therapeutic group

Purgative

Composition

Magnesium sulphate consists of brilliant colourless crystals or a white crystalline powder; odourless. It is soluble in 1.5 parts of water, but soluble in less than 0.2 parts of boiling water. It is practically insoluble in 95% alcohol.

Indication/use

As an antiseptic at a concentration of 2 - 4%; At saturation as euthanizing agent; As purgative - used in constipation at dose rate of 150 - 200g with water in cattle; As laxative at 0.5 – 1gm/kg body weight; As a general aesthetic agent with chloral hydrate. magnesium sulphate - 6% and chloral hydrate - 12%, when administered by I/V route produces basal narcosis in large animals; Hot saturated solution for hot fomentation in inflammation; A saturated solution of magnesium sulphate may be applied and bandaged over infected wound.

Pharmaceutical precaution

Store in a cool place not exceeding 25°C

23.17 Petroleum jelly

Dosage Form

Liquid 450g

Therapeutic group
Lubricants and also as a base for ointments

Indication/use
Used for lubricating thermometer and stomach tube. And also as an ointments for burns. As a base for ointment preparations.

Dose/administration
Apply on the skin

Pharmaceutical precaution
For external use only

23.18 Potassium permanganate

Dosage Form
Crystal 450gm

Therapeutic group
Antiseptic/disinfectant

Indication/uses
As an antiseptic at 1:1000 - 1:5000 used as wound and mouth lotions; As a caustic agent - powdered potassium permanganate can be applied as a caustic upon ulcers; As an oxidizing agent - used as an antidote in poisoning with strychnine and all alkaloid poisons; Dilute solution as gastric-lavage. Is used as an aqueous solution to wash out the stomach contents; As a teeth cleansing agent.

Pharmaceutical precaution
Store in a cool place not exceeding 25^{o}C

23.19 Potassium iodide

Dosage Form
Crystal – 450gm

Therapeutic group
Anti-fibrotic agent

Composition
Potassium iodide consists of colourless crystals or a white powder; odourless. It is soluble in 0.7 parts of water, in 2 parts of glycerol, and in 23 parts of 95% alcohol.

Indication/use
Used in preparation of Tincture iodine, Lugol's iodine and iodine ointments. The compound

is also used as an anti-fibrotic agent.

Dose/administration

Tincture Iodine:

Iodine	-	2.5%
Potassium iodide	-	2.5%
Alcohol	-	95%

Lugol's Iodine:

Iodine	-	2.5%
Potassium Iodide	-	5%
Distilled water	-	92.5%

Antifibrotic agent: used in treatment of lumpy jaw at a dose rate of 3 - 8g daily for about 10 to 14 days orally. Also used in treatment of udder fibrosis at dose rate of 10g daily for 3 days. Effective for treatment of sporotrichosis.

Pharmaceutical precaution

Store in a cool dry place

23.20 Rectified Spirit

Dosage Form

Liquid 450ml 90% alcohol

Therapeutic group

Disinfectant & Antiseptic

Indication/use

Used as an antiseptic and in the cleaning of suture wounds, teats etc.

Dose/administration

At the discretion of the clinician.

Contra-indications

Hypersensitivity especially on the skin, causes erythermia, acne form eruptions, urticaria and rashes may be seen in skin.

Pharmaceutical precaution

Inflammable. Keep the lid tightly closed during storage

23.21 Salicylic Acid

Dosage Form

Powder 450g

Therapeutic group
Dusting powder

Indication/use
Used as dusting powder & ointment for wound & as an antifungal agent with benzoic acid.

Dose/administration
Composition of Salicylic Acid Ointment 2%

Salicylic Acid	-	2g
Paraffin	-	98g

Pharmaceutical precaution
Store in a cool dry place not exceeding 25°C

23.22 Sodium acid phosphate

Dosage Form
Crystal– 450gm

Therapeutic group
Ingredient for antiseptic/acidifier

Composition
Sodium acid phosphate consists of colourless crystals or a white crystalline powder and is odourless. It is soluble in part of water.

Indication/use
Used as an ingredient in urinary antiseptics, to make the urine acidic in herbivores species.

Dose/administration
The composition and dosage is given under Hexamine.

Pharmaceutical precaution
Store in a cool dry place

23.23 Sodium bicarbonate

Dosage Form
Powder 450gm

Therapeutic group
Antacid

Composition
Sodium bicarbonate consists of a white crystalline powder or white opaque small monoclinic crystals; odourless. When heated it decomposes and at 250°C to 300°C is converted to anhydrous sodium carbonate.

Indication/use
Used as a sedative application for minor burns, insect bites and stings. Antacid, in gastric and intestinal indigestion due to hyperacidity stomachic and anorexia.

Dose/administration
1% solution for sedative application for minor burns, insect bites and stings; Antacid dose - gastric and intestinal indigestion at 2g daily in divided doses in dogs; Stomachic & anorexia in cattle and horses at 15 to 30g orally for 3 to 5 days.

Pharmaceutical precaution
Store in a cool place not exceeding 25°C

23.24 Sodium carbonate

Dosage Form
Powder.

Therapeutic group
Feed additive and component of buffer solution.

Composition
Sodium salt obtained from carbonic acid with purity of 98%.

Indication/ Use
Feed additive. fungicidal, chemical neutralizer, pH regulator, water softener, soaking, washing powder.

Dose and Administration
Up to 400mg/kg of feed is recommended. Additive is intended to be used in all animal species and categories without limitations for age and without withdrawal period. Sodium carbonate is a well-known component of many buffer solutions. However, the relevance of its buffering capacity in feed materials is not demonstrated.

Contra-indications
Over dosage should be avoided. Repeated inhalation dose may pose local effects on the lungs. Low hazard potential however reversible eye and respiratory irritation are noticed.

23.25 Sodium chloride

Dosage Form
Powder

Therapeutic Group
Feed supplement/Purgative/Antiseptic/Electrolyte supplement.

Composition
500g, 1kg, 10kg packs

Indication/Use
As component of feed supplement in all the animal poultry feed. Hypertonic solution as Emetic agent in poisoning. Sodium chloride has many uses in Vet medicine - Ranging from flushing solution to different usages intravenously. The main usage would be as a crystalloid replacement fluid.

Dosage/Administration
On average, cattle should consume 11 to 15 grams of salt per day to meet nutritional requirement. , but dietary levels of NaCl should not exceed 8 percent.
Poultry: 0.15% to 0.20% in feed. Or 5-10g of salt per 4 liters of water to control cannibalism.
Swine: 0.5% in diet.

Contra-indications/warnings
Animals having severe diarrhea. Patients with cardiac problems.
Salt Toxicity. Salt concentrations in drinking water of 1.25% to 2% can result in anorexia, reduced weight gain or increased weight loss, lowered water intake, and collapse.

23.26 Sodium hypochloride (Bleaching powder)

Dosage Form
Powder-450gm

Therapeutic group
Chemical drug- disinfectant

Composition
Sodium hypochlorite (NaCLO) is one of the most widely used chlorine
containing disinfectants. [Commercial chlorine bleach contains 5.25% sodium hypochlorite in aqueous solution and 50,000 ppm available chlorine].

Indication/use
Sodium hypochlorite is considered broad spectrum, being effective against bacteria, enveloped and non-enveloped viruses, mycobateria and fungi.
1:10 bleach solution

(which contains 0.5%
chlorine concentration), a strong disinfectant that
is used to disinfect vehicles and tires.

Dose/administration

Sodium hypochlorite %	Bleach Solution Ratio	Bleach Dilution	ppm (available chlorine)	Comments **Always use on cleaned surfaces
3.33%	2:3	2 parts bleach to 3 parts water	33,333 ppm	Effective for FMD virus – but use with caution

Pharmaceutical precaution
High concentrations are also irritating to the mucous membranes, eyes and skin.
Chlorine compounds are rapidly inactivated by light and some metals so fresh solutions should always be used. Hypochlorites should never be mixed with acids or ammonia as this will result in the release of toxic chlorine gas.

23.27 Sodium Salicylate

Dosage Form
Powder– 450gm

Therapeutic group
Antipyretic & Analgesics

Indication/use
Used in cases of fever and pain
Dose/administration
Dog-300mg to 1 g in divided doses

Pharmaceutical precaution
Store in a cool place not exceeding 25^{o}C

23.28 Sulphanilamide powder

Dosage Form
Powder– 450gm

Therapeutic group
Antiseptic, antimicrobial dusting powder

Indication/use
Used as dressing powder

Dose/administration
Dusting powder sprinkled over the surface of the wounds, cuts etc.

Pharmaceutical precaution
Store in a cool place not exceeding 25°C

23.29 Sulphur sublimate

Dosage Form
Powder 450g
Therapeutic group
Dusting powder

Indication/use
As a dusting powder or ointment for wounds. Also can be used as a laxative

Dose/administration
Composition of sulphur ointment
Sulpha sublimate -10g
Paraffin -90g
Laxative-used in constipation, at a dose rate as follows:
Horse - 30 to 60 g orally
Cattle - 90 t0 10 g
Dog - 1 to 8g.

Pharmaceutical precaution
Store in a cool place not exceeding 25°C

23.30 Tannic Acid

Dosage Form
Yellow to light brown amorphous powder which is highly soluble in water; 1gm dissolves in 0.35ml of water.

Therapeutic Group
Astringent.

Composition
Available as 450 gm packet.

Indication/Use
Used in bowl discharges where bleeding is suspected as it not only checks secretion from the mucus but also bleeding from the vessels. The immediate effect is upon mucous surfaces, and soft parts generally, are to contract them, whilst some also coagulate the albumin with which they are brought into contact. Used topically to treat dermatological

disorders and in burns.

Dosage/Administration
Can prepare 10% to 20% ointment with glycerine for topical application.

Contraindications/Precautions
High levels of dietary tannin hinder with the absorption of proteins and other feed nutrients and hence affect the growth and performance of animals. Interferes with the oral vaccines for its observation hence tannic acid should not be given before vaccination. Hepatocarcinogenic to some extent.

23.31 Tincture Benzoin

Dosage Form
Liquid 450ml

Therapeutic group
Antiseptic and Styptic

Indication/use
Used as an antiseptic and styptic (to control external bleeding), Inhalation in Human and Small Animal in case of nasal obstruction, viral respiratory conditions.

Dose/administration
5 ml in 500 ml hot water.

Pharmaceutical precaution
Store in dark bottle away from sunlight

23.32 Tincture Iodine

Dosage Form
Liquid 450ml

Therapeutic group
Antiseptic

Indication/use
Used as an antiseptic

Dose/administration
Apply on the skin

Pharmaceutical precaution
Store in dark bottle away from sunlight

23.33 Turpentine oil

Dosage Form
Liquid/oily

Therapeutic group
Carminative

Composition
Turpentine is the oil distilled from the oleoresin obtained from various species of Pinus and rectified. It is clear, bright, colourless liquid with a characteristic odour.

Indication/use
As surfactant, counter-irritant and carminative at dose rate of 15 to 60ml as single dose in horses and cattle, and 3 to 15ml as single dose in sheep; As fly repellent; As maggoticide; As an antiseptic such as in foot rot; As massaging oil in case of sprains.

Pharmaceutical precaution
Store in a cool place not exceeding 25^{o}C

23.34 Zinc oxide

Dosage Form
Powder 450gm

Therapeutic group
Dusting powder

Indication/use
Used as dusting powder or ointment in case of eczema, superficial wound and burns
Composition of Zinc Oxide ointment - 15%
Zinc Oxide - 15g
Paraffin - 85g

Dose/administration
Topical application BID till recovery.

Pharmaceutical precaution
Store in a cool place not exceeding 25^{o}C

24.1 Acetozolamide

Dosage Form
Tablet

Therapeutic Group
Diuretics

Composition
Each tablet contains 250mg of acetazolamide

Indication/uses
Used in case of acidic urine and glaucoma

Dose and administration
2-5mg/kg BW TID

Contraindications and warnings
Avoid use in Addison's disease, pregnancy and during lactation.
Avoid in cats.

Pharmaceutical precautions
Store in cool and dry place.

24.2 Frusemide

Dosage Form
Injectable solution

Composition
Each ml contains 10 mg frusemide

Indication/uses
Chronic CHF, pulmonary oedema and ascitis, localised oedema, eg. mammary oedema in cows; suppression of lactation in pseudopregnancy or normal lactation in bitches and queens; adjunct to digitalis therapy. Safe to use during pregnancy.

Dosage and administration
By I/M or slow I/V route once or twice daily
Horse & Cattle: 1-2 mg/kg B.W
Dog and cat: 2-4 mg/kg B.W BID
Pig: 5 mg/kg B.W

Contra-indications/warnings

Anuria. Long term therapy may result in hypokalaemia. Impaired renal or hepatic function. Contraindicated in concurrent therapy with aminoglycoside antibiotics

Pharmaceutical precautions

Store below + 20° C. Protect from light.

25.1 Ergometrine Maleate

Dosage Form
Injectable solution.

Therapeutic group
Uterine stimulant.

Composition
Each ml contains 0.5mg ergometrine as maleate and tartrate**.**

Indication/use
Ergometrine is an ergot alkaloid and is a powerful uterine stimulant having some vasoconstrictor activity. Produces contraction of uterus and increase the tone of the *os uteri.* Used for expulsion of foetus and foetal membranes. Also employed for the prophylaxis and treatment of postpartum hemorrhages.

Dose/administration
Horse and Cattle: 10 - 20mg orally or parentrally; Sheep and goat: 0.5 - 1mg orally or parentrally
Dog: 0.2 - 1mg orally or parentrally; Cat : Up to 0.125mg orally or parentrally.

Contra-indications
Do not give in pregnant animals unless abortion is intended.

Pharmaceutical precaution
Store below 25^{o}C, protect from light

25.2 Valethamate

Dosage Form
Injectable solution.

Therapeutic group
Uterine tonic.

Composition
Each ml contains valethamine bromide 10mg and water for injection 1ml**.**

Indication/use
Normal labour to help easy expulsion of the foetus, dystocia, hard cervix, to prevent cervical and vaginal tear.

Dose/administration
Horse, cattle: 40 – 50mg I/M; Sheep, goat and pig: 10 – 20mg I/M; Dogs: 5 – 10mg I/M.

Pharmaceutical precaution
Store below 25^{o}C, protect from light.

26.1 Diazepam

Dosage Form
Injectable solution.

Therapeutic group
Anticonvulsive & sedative.

Composition
Each ml contains 5mg diazepam.

Indication/use
Convulsive disorders in foals (including neonatal seizures) and dogs (including status epilepticus) in strychnine poisoning; pre-anesthetic in horses (xylazine/ketamine) and dogs.

Dose/administration
By I/M or slow I/V route: Dogs; pre-anesthetic: 0.2 - 0.6 mg/kg (0.2 - 0.6ml/5kg). Anticonvulsant; 1 ml/5kg slow I/V. In status epilepticus give initial 5mg dose; repeat after 1 - 2minutes if response is inadequate; give pentobarbital sodium 16.5mg/kg by slow I/V if clinical signs persist after second diazepam injection. Strychnine poisoning: 1mg/kg (2ml/10kg) by slow I/V; repeat dose by I/M injection.

Horse; Pre-anesthetic: 12ml/450kg I/M, 20minutes prior to xylazine 1.1mg/kg by I/V injection. Sedation and ataxia occur in 2 - 3minutes. Finalize induction with ketamine 2.2mg/kg by rapid I/V injection. Anticonvulsant: 1 - 4ml/50kg by slow I/V in foals. For convulsant seizures in neonatal foals give 5 - 20mg and repeat as necessary; higher doses may be fatal. Lack of response or rapid seizure reappearance following repeated diazepam doses will necessitate slow I/V phenobarbital sodium injection.

Contra- indications
Use during gestation or pregnancy. Take particular care to avoid injection into small veins or intra-arterial administration; phlebitis and thrombosis may result. Give I/V injection slowly; rapid administration may cause bradycardia and fatal cardiac arrest due to propylene glycol contents.

Pharmaceutical precaution
Store below 25^{o}C.

26.2 Phenobarbitone sodium

Dosage Form
Oral tablets.

Therapeutic group
Anticonvulsive.

Composition
Each tablet contains 30mg phenobarbitone sodium.

Indication/use
Symptomatic or prophylactic control of convulsive seizures, status epilepticus. The only choice of drug in convulsive seizures.

Dose/administration
Dogs & cat: 2.2 – 6.6mg/kg body weight BID orally.

Contra-indications

Polyphagia, polydypsia, polyurea are the effects. In toy breeds, whining is seen

Pharmaceutical precaution
Store below 25^{o}C

27.1 Ondansetron

Dosage Form
Tablet & Injectable

Composition
4mg, 8mg(tabs) & 2mg/ml for injection

Indication/use
Nausea & vomiting

Dosage/administration
Dog & Cat- 0.5mg/kg B.W I/V,
0.5mg/kg B.W/hr infusion for 6 hours
0.5-1mg/kg B.W orally OD or BID

27.2 Metoclopramide

Dosage Form
Injectable solution.

Therapeutic group
Anti-emetics.

Composition
Each ml contains 5mg metoclopramide.

Indication/use
Vomiting due to gastritis, esophageal reflux, impaction.

Dose/administration
I/M, I/V, S/C; dog & cat: 0.01 - 0.2mg/kg body weight**.**

Contra-indications
Restlessness, excitement, extra pyramidal symptoms in young ones.

Pharmaceutical precaution
Store below 25^{o}C.

27.3 Promethazine

Dosage Form
Oral tablets.

Therapeutic group
Anti-emetics.

Composition
Each tablet contains 10mg promethazine**.**

Indication/use
Vomiting and allergic disorders**.**

Dose/administration
Oral:Large animals: 1.5mg – 2mg body weight; Dogs: 1.5 – 2.5mg/kg body weight; Sheep and goat: 2mg/kg body weight.

Contra-indications
Sedation or CNS excitements, GI disturbances and teratogenic effects are the side effects. Higher doses may cause irritability, convulsions, hyperpyrexia, intestinal disorders, nausea, vomiting, constipation or diarrhea. Also potentiates the effect of CNS depressants. Administration along with epinephrine is contraindicated.

Pharmaceutical precaution
Store below 25^{o}C.

28.1 Adrenaline

Dosage Form
Liquid injectable - 1mg/ml

Composition
Each ml contains adrenaline tartrate 1.819mg (1:1000 solutions)

Indication/uses
For treatment of cardiac collapse, allergic and anaphylactic reactions, hemostasis, in cases of epistaxis in horses

Dosage and administration
By slow I/V or S/C for cardiac collapse during anesthesia
Cattle & horse: 2 - 4ml I/V or 2 - 8ml S/C (8 - 17mcg/kg S/C or: 4 - 8mcg/kg I/V)
Dogs: 0.1 - 0.3ml I/V or 1 - 0.5ml S/C (10 - 30mcg/kg)
For allergic and anaphylactic reactions
Cattle & horse: 4 - 8ml I/V or S/C
Dogs: 0.1 - 0.3ml I/V or S/C
Local application in capillary hemorrhage

Contra-indications/warnings
Over dosage may cause cardiac dysarythmias. Contraindicated in hyperthyroid patients, in thyroid and digitalis therapy and also with thiobarbiturate anesthesia

Pharmaceutical precautions
Store below 30^0C. Protect from light.

28.2 Digitoxin

Dosage Form
Oral tablets

Therapeutic Group
Cardiac stimulants.

Composition
0.05mg and 0.1mg tablets.

Indication/Use
Indicated for heart failure or atrial arrhythmias, but because it is metabolized by the liver to a greater extent, some clinicians feel that it should be used instead of digoxin in patients with diminished renal function. Others believe that digoxin may be used in

these patients if adequate serum level monitoring is performed and dosage adjustments are made as necessary. Digitoxin is not routinely used in cats and some clinicians state it is contraindicated in this species.

Dosage/Administration
Dogs:
a) 0.033 - 0.11 mg/kg/day PO divided bid

b) 0.03 - 0.04 mg/kg bid to tid.

c) Oral maintenance: 0.04 - 0.1 mg/kg/day divided q8h; Rapid intravenous digitalization for atrial arrhythmias: 0.01 - 0.03 mg/kg divided; give 1/2 of above dose I/V and wait for 30-60 minutes and give 1/4th the dose I/V; wait another 30-60 minutes and give the remainder if necessary.

d) 0.022 mg/kg q8-12h PO; puppies can tolerate higher dosages than mature dogs

Cats:
Note: Many cardiologists feel that digitoxin should not be used in cats. If used in cats, diligent monitoring is required.
a) 0.0055 mg/kg q12h.

b) 0.005 - 0.015 mg/kg PO once daily.

Horses:
a) 0.03 - 0.06 mg/kg PO for digitalization; 0.01 mg/kg PO for maintenance.
Contraindication/Warnings:

Digitalis cardioglycosides are contraindicated in patients with ventricular fibrillation or in digitalis intoxication. They should be used with extreme caution in patients with glomerulonephritis and heart failure or with idiopathic hypertrophic subaortic stenosis (IHSS).

28.3 Digoxin

Dosage Form
Bolus/inj- 0.25 mg tablet, 0.5mg/ml

Composition
Each tablet contains 0.25 mg digoxin. Each ml contains 0.5mg digoxin

Indication/uses
Atrial fibrillation, Congestive heart failure, atrial flutter and paroxysmal tachycardia
Dosage and administration

By oral route

Species	Total dose	Administration schedule	Daily maintenance dose
Dog	0.11-0.22 mg /kg	0.022 – 0.044mg/kg 12 hourly for 48 hours	0.011mg/kg 12 hourly

Parenteral

Dog	0.022 - 0.044mg/kg	3 divide doses over 24 hours	Oral digoxin 0.011 mg/kg 12 h

Contra-indications/warnings

Digitalis toxicity in over dosage. May produce cardiac arrythmias, anorexia, nausia, vomiting and diarrhoea. Blurred vision, neuralgic pain also noticed

Pharmaceutical precautions

Store in cool place.

29.1 Doxapram

Dosage Form
Injectable solution.

Therapeutic group
Respiratory stimulant.

Composition
Each ml contains 20mg doxapram**.**

Indication/use
Respiratory stimulant used in depression from barbiturates and inhalant anesthetics. In neonates administered into umbilical veins to stimulate respiration (S/C or sublingually).

Dose/administration
I /V, S/C or sublingual: Dog & cat: 5 - 10mg/kg body weight; Horse: 0.5mg/kg body weight.

Contra-indications
Repeated administration may cause seizures.

Pharmaceutical precaution
Store below 25^{o}C.

30.1 Theophyline and Etophyline

Dosage Form
Injectable form Intramuscular, Intravenous solution.

Therapeutic group
Bronchodialators.

Composition
23mg Theophylline and 77mg Etophylline per ml.

Indications
Supportive treatment in Chronic heart Failure in dogs , Bronchial astma in cats, helps in stimulation of respiratory center , has mild diuretic effect and enhances mucocillary clearance.

Dose / administration
Dog: 6-11mg B.W TID.
Cat: 4mg B.W BID.

Precautions
Theophylline and etophylline may induce excitement and may induce hypocalcaemia.

30.2 Salbutamol

Dosage Form
Oral Tablet

Therapeutic group
Bronchodilators

Composition
Each Tablet contains 2mg

Indications
Bronchospasm in dogs and cats.

Dose/administration
Dog : 100-300 mcg/kg B.W TID or QID. PO.
Cat : 100mcg/kg B.W TID or QID. PO.

31.1 Adenochrome monosemicarbazone

Dosage Form
Injectable solution.

Therapeutic group
Systemic haemostatic.

Indications/use
Pre or Post Operative haemorrhages, Haemagalactia, Haemorrhages of various origin.

Composition
Each ml contains 5mg.

Dose/ administration
Cattle , Buffalo : 20-25mg total dose.
Dog : 5-10 mg total dose.

Precautions
Hypersensitivity reactions may occur.

Pharmaceutical precaution
Store below 25 ^{0}C and protect from light.

31.2 Ethamsylate

Dosage Form
Injectable solution

Therapeutic group
Haemostatic drugs

Composition
Each ml contains 125 mg of Ethamsylate B.P.

Indication
Pre-operative and post operative management, haemagalactiany conditions of bleeding, epistaxis and as styptic in local bleeding.

Dose and administration
The drug is given through only I/M or I/V route. Cattle, Dog, Cat 250-500mg QID

Therapeutic precautions
Store in cool places and discard the ampoules if the solution is colored.

31.3 n-butanol and citric acid

Dosage Form
Injectable solution

Therapeutic group
Haemostatic

Indications/use
Post operative internal and external haemorrhages.

Composition
Each ml contains 0.052 mg of N-butanoland 0.5 mg of citric acid .

Dose/ administration
Large animal : 5-10ml Total dose.
Dogs : 0.5 – 1 ml Total dose.

Contraindication
Contraindicated in arterial and venous thrombosis.

Pharmaceutical precaution
Store below 25 ^{0}C and protect from light

32.1 Apomorphine hydrochloride

Dosage Form
Capsule

Composition
Apomorphine is a synthetic derivative of morphine and a centrally acting emetic. Each tablet contains 6.5mg apomorphine

Indication/uses
It is a centrally acting emetic and primary effect is to stimulate dopamine receptors in the chemoreceptor trigger zone. Emesis occurs 3 - 10 minutes after administration. It is also used as an expectorant.

Dosage and administration
Dog: 0.1mg/kg body weight

Pharmaceutical precautions
Store in cool place.

33.1 Atropine sulphate

Dosage Form
Liquid injection

Composition
Each ml contains 1mg atropine sulphate

Indication/uses
As an antispasmodic in treating diarrhea & colic, as an antidote in organo-phosphate poisoning cases, as a pre-anesthetic in dogs, cat, & pig to decrease salivation & bronchial secretion. Also used in sinus bradycardia, A-V block and sick sinus syndrome.

Dosage and administration
By slow I/V or I/M or S/C
Cattle & Horse, pigs, sheep, dogs, cats: As an antidote in OP poisoning: 0.2 - 2ml/kg. Use to produce pupil dilatation and dry mouth, repeat as necessary. As a pre-anesthetic: Cattle & horse: 3 - 6ml/100kg dog & Cat: 0.3 - 1ml/10kg body weight, pig: 0.2 - 0.4ml/10kg body weight. In sinus bradycardia, A-V block, sick sinus syndrome, dog & cats: 1ml/50kg by I/V or 1ml/22kg by I/M or S/C injection 3 - 4 times daily

Contra-indications/warnings
Use with care in older animals; tachycardia, gastro-intestinal obstruction; closed angle glaucoma. Precaution to be observed in CHF, chronic obstructive pulmonary disease (COPD), renal disease and hyperthyroidism.

Pharmaceutical precautions
Store below 30^0C. Protect from light.

34.1 Loperamide

Dosage Form
Tablet

Composition
Each Tablet contains Loperamide- 2mg

Indication/use
Acute & Chronic non-specific diarrhea

Dosage/administration
Dog,Cat- 100mcg/kg body wt. Orally

Precaution
In Cat it may cause morphine like excitability, in dogs it may cause sedation

34.2 Metronidazole and Loperamide

Dosage Form
Bolus

Therapeutic group
Anti-diarrheal

Composition
Each bolus contains 1000mg of metronidazole and 7.5 mg of loperamide,furazolidone 500mg

Indication/use
Used in diarrhea- like in amoebiasis and giardiasis in Dogs. Treating Salmonellosis in Cattle and Buffalo. Effective in Balantidium infection in Swine. Effective in trichomoniasis.

Dose/administration
Small animals : 1-2 boli/day for 3- 5 days depending upon the severity
Large animals: 4 - 6 boli /day for 3 -5 days, depending upon the severity

Pharmaceutical precaution
Store in cool and dry place.

35.1 Lithium Antimony Thiomalate

Dosage Form
Injectable solution.

Therapeutic group
Anti-neoplastic, antifilarial drug.

Composition
Each ml contains 60mg lithium antimony thiomalate.

Indication/use
For the treatment of tropical nasal granuloma (schistosomiasis) in cattle, also useful in treatment of filariasis and Lieshmaniasis in dogs and papillomatosis in cattle and horses**.**

Dose/administration
By deep I/M route; Nasal granuloma: cattle: 20ml deep I/M on 2 to 3 occasions at intervals of one week; Papillomatosis: cattle: 15ml deep I/M on 4 to 6 occasions at intervals of 2 days. As the warts necroses they should be enucleated and the raw surfaces dressed with an antibacterial agent; In horses follow the same course as in cattle; make sure that the injection is given deep I/M as S/C deposition of the solution might result in an area of lightening around the site of injection; Dogs: 1ml I/M raising by increments of 0.5ml to 2.5ml. Injection should be given on alternate days on 4 to 6 occasions.

Pharmaceutical precaution
Store between 2 - 8^{o} C. Do not freeze. Protect from light

35.2 Methotrexate sodium

Dosage Form
Injection and oral tablets.

Therapeutic group
Antineoplastic

Composition
2.5mg and 15mg in 2ml

Indication
For lymphomas and solid tumors' in dogs and cats, TVT, sertoli cell tumour, rheumatoid arthritis.

Dose/ Administration
Dogs & cats: 2.5mg/m^2 daily orally, 0.3-0.8mg/kg B.W I/V weekly.

Contraindications/ precautions
Pre-existing bone marrow depression, severe hepatic and renal insufficiency. Hypersensitive to the drug. Wear gloves while handling the drug.

35.3 Vincrystine Sulphate

Dosage Form
Injectable solution

Therapeutic group
Vinca alkaloid anti- neoplastic /Cytotoxic drug

Composition
Each vial contains 1 mg of Vincrystin Sulphate (anhydrous) & 50mg of Lactose.

Indication/uses
Dogs and Cats: Transmissible Veneral tumor, Lymphosarcoma, Immune thrombocytopenia.

Dosage and administration
Dogs and cats:
TVT : 0.025mg/kg once weekly x 4. I/V
IMMUNE THROMBOCYTOPENIA: 0.01-0.025 mg/Kg I/V in every 7-10 days.

By I/V route only, either directly into the vein or into the tubing of a running I/V infusion, injection being accomplished within one minute. Extreme care must be used in calculating and administering the dose of Vincrystine sulphate since over dosage have serious or fatal outcome.

Contra-indications/warnings
In dogs given slowly and carefully intravenously given weekly or every 14 days if required. Routine use of laxatives and enemas is recommended to ensure regular bowel function. Avoid contact with eyes. Exercise extreme caution in its use in pregnant patients because of its teratogenic effect.

Pharmaceutical precautions
Store the drug between 2 - 8^{o} C. Do not freeze. Protect from light. Do not dilute in solutions that raise or lower the pH outside the range of 3.5 - 5.5. Do not mix with anything other than normal saline or glucose in water.

36.1 Chloropromazine Hydrochloride

Dosage Form
Tablet

Theraupetic grougs
Psycotropic drugs

Composition
Each tablet contains 200mg chlorpromazine HCl .

Indication/uses
For pre-medication in anaesthesia, sedation, control of nausea and vomiting and colic in horses.

Dosage and administration

Dogs & Cats	3.3mg/Kg orally for 1-4 times for antiemetic
	3mg/Kg bid orally for sedative and restraint
	0.5 to 3.3mg/Kg 1to 4 times daily for behaviour problem

Contra-indications/warnings
Renal or hepatic impairment, operators should avoid direct contact.

37.1 Tetanus toxoid

Dosage Form-
Injectable Liquid

Therapeutic group
Biologicals

Composition
Tetanus Toxoid Concentrated is an inactivated vaccine containing ≥ 150 I.U. per dose (1 ml) purified tetanus toxoid

Indication/use
For the active immunisation of horses, to reduce mortality and clinical signs of the disease caused by infection with Clostridium tetani. For the active immunisation of pregnant mares in order to provide passive immunity to the progeny against mortality and clinical disease caused by infection with Clostridium tetani. For the active immunisation of cattle, sheep, pigs and dogs against disease caused by infection with Clostridium tetani in situations where a tetanus threat has been experienced or is expected and for the active immunisation of pregnant cows, ewes, sows and bitches to provide passive immunity to the progeny.

Dose/administration
For horses, cattle, sheep, pigs and dogs: intramuscular injection of 1 ml per animal.Can be used during pregnancy and lactation.

Contra-indication
Do not use in sick animals or in animals that have intercurrent disease, heavy parasitic infestation or are in poor general condition, since in these cases no satisfactory immune response can be expected.

Adverse reactions are very rare. A transient swelling at the injection site up to 3 cm in diameter, lasting for 2 to 3 days, may occur. A slight increase in body temperature, up to 1.5°C, may be observed the day following vaccination.

Pharmaceutical precaution
Store between +2°C and+ 8°C (in a refrigerator). Allow the vaccine to reach room temperature (15-25°C) before use. Shake the vial before use.

37.2 Tetanus antitoxin

Dosage Form
Injectable Liquid

Therapeutic group
Biologicals

Composition
Each vial contains 1500 units of tetanus anti toxin (hyperimmunized serum of horse)

Indication/use
Used in the prevention and treatment of tetanus in animals.

Dose/administration
For prevention of tetanus 1500 units of anti toxin should be given subcutaneously or intramuscularly.
For treatment; administer 10,000 to 50,000 units to horses and cattle, 3,000 to 15,000 units to sheep and swine.
Animals that suffer slow healing puncture wounds or deep abrasions should be given a second dose of antitoxin in 7 days and additionally as considered necessary.

Contraindication
Do not vaccinate within 21 days before slaughter.Anaphylactic reaction may occur following administration of products of this nature.

Pharmaceutical precaution
Store at 2° to 7° C. Do not freeze. Use entire contents when first opened.

38.1 Blood Transfusion kit

Transfusion kit for small animals especially for dogs and cats for blood replacements during excessive blood loss.

38.2 Colostrum substitute for calves

Dosage Form
Oral liquid

Groups
Nutraceuticals

Composition
Bovine colostrums,lactoserum proteins, fructo oligosaccharides, sorbic acid, VitaminD_3, E,C,B1 , Bacillus lechniformis , Bacillus subtilis , Xantan gum, Calcium iodide,Sodium selenite,antioxidizer.

Dosage
½ syringe or 1 syringe (60ml) in the first six hours of life, Second dose can be used after 6 hours later.

38.3 Distilled water

For injection - 5 ml/amp
For preparing Injectable solutions

38.4 Fortifyer for Calves

Dosage Form
Oral liquid

Groups
Probiotics

Composition
Water : 36% , Spiruline : 25% , Glucose : 10% , Appetite stimulant plant(gentian)

Dosage/administration
Introduce the syringe on the back of the tongue and allow the calf to swallow.

38.5 Gut conditioner for dogs and cats

Dosage Form
Liquid

Composition
Montmorillonite , Dextrose, Sorbitol , Sodium chloride ,Propionate, Potassium chloride, Magnessium chloride, Carob flour, xhantan gum, Vegetable coal and flavour.

Dosage/administration
1ml/2kg B.W twice daily (1 dose in the morning and other in the evening during 2 days.

Storage
Store in ambient temperature and out of direct sunlight.

38.6 Gut conditioner for calves

Dosage Form
Oral paste

Therapeutic group
Miscellaneous group

Composition
Clay, dextrose, sodium chloride, potassium chloride, magnesium chloride, fructo-oligsaccharides and essential oils of thyme, rosemary and cajeput

Indication/use
It is used to assist in the management of digestive upsets in calves

Dose/administration
Dosage- 1 dose of 10 ml at the first appearance of digestive upsets and a second dose should be given after 6 hours.

Pharmaceutical precaution
Store in a cool place away from direct sunlight

38.7 Neonatal Booster

Dosage Form
Oral paste

Therapeutic group
Miscellaneous group

Composition
Bovine colostrum, lactoserum proteins, clay, sodium propionate, endive fructan, sorbic acid, vitamin A, vitamin D3, vitamin E, Enterococcus faecium, magnesium chloride, sodium selenate, antioxidiser, vitamin PP, vitamin B1, zinc chloride, vitamin B5, vitamin B6, vitamin B2.

Indication/use

It is used in emergency situations where there is no natural colustrum available. Also as a supplement to weak, small calves.

Dose/administration

1/2 syringe or 1 syringe(60ml) in the first six hours of life. A second dose may be used 6 hours later.

Pharmaceutical precaution

Store in a cool place away from direct sunlight

38.8 Rehydration for piglets

Dosage Form

Liquid

Composition

Dextrose, Sodium chium chloride, Potassium citrate, Monopotassium phosphate, Chelated iron, Citric acid, Amino acid.

Administration/dosage

Piglets before weaning : the rehydration solution should be added to the piglet's drinking water in a 2% solution.

Weaners: Add through rehydration solution to 1% drinking and give through 4 days post weaning.

38.9 Rehydration solution for calves

Dosage Form

Liquid.

Composition

Sodium chloride 17%, Dextrose 8%, Sodium acetate 7%, Potassium chloride 6%, Betine:10g,Vitamine 250mg , Glycerol, sodium propionate.

Dosage/administration.

Administer 1 bottle(60ml) directly inside the calves mouth. The elongated shape of the bottle stimulates the calve's reflex and facilitates drinking administer 1 bottle twice daily(one in the morning and other in the evening)during two days (or more depending upon calve's vitality).

39.1 Anthrax Spore Live vaccine

Dosage Form
Injectable Liquid

Description
The vaccine is locally produced suspension of living spores of an encapsulated avirulent strain of Bacillus anthracis (Stain) in 50% glycerine saline.

Indication
For immunization of cattle, buffalo, pigs, sheep and goat against anthrax disease

Composition:
Each dose of vaccine (1ml) contains not less than 10 million of encapsulated avirulent *Bacillus anthracis* spores, strain $34F_2$ Weybridge suspended in physiological saline and glycerine.

Vaccination regimen
Primary vaccination is given at the age of 3-4 months during the month of March/April. Vaccination is not required in a particular area if there has not been outbreak for three years after the last outbreak.

Dosage & administration

Cattle & Buffalo	1 ml S/C
Pig, Sheep & Goat	0.5 ml S/C

Presentation
25 & 50 ml

Storage
Store between $2^0 – 8^0$ C. Do not freeze.

Precautions
Since the vaccine contains the live spores, persons with abrased hands should not handle the vaccine. After vaccination, the syringes and the needles should be thoroughly sterilized in boiling water for 1 hour. **The vaccine should not be used during an outbreak**.

39.2 Black Quarter (BQ) vaccine

Dosage Form
Injectable Liquid form

Description
This is a formalin treated anaculture of C*lostridium chauvoei*.

Indication
For immunization of cattle, buffalo, yaks sheep & goat against Black Quarter

Composition
It is a yellowish liquid containing inactivated *Clostridium chauvoei* in suspension. The cell volume of the suspension should be 0.25% or better.

Vaccination regimen
As young animal are more susceptible to the disease, vaccinate animals from 3 to 4 months onwards and revaccinate annually till animals are about 3 years of age. In endemic areas, healthy adults may be vaccinated.

Dosage & administration

Cattle, Buffalo & Yaks	5 ml S/C
Sheep & goat	2 ml S/C

Presentation:
280 ml

Storage
Store between 2^0 – 8^0 C and protect from direct sunlight. Do not freeze.

Precautions
The vaccine should not be used during an outbreak.

39.3 Haemorrhagic Septicaemia (HS) vaccine

Dosage Form:
Injectable Liquid form

Description
This vaccine is a homogenous suspension of formalized P*asteurella multocida* (6: B).

Indication
For immunization of cattle, buffalo and yaks against Haemorrhagic Septicaemia

Composition
Each dose of vaccine (4ml) contains not less than 2 mg dry weight of *Pasteurella multocida* Carter's type B.

Vaccination regimen
It is recommended that the primary vaccination be given at 3-4 months of age. Vaccinate prior to onset of monsoon season and migration. Although immunity lasts for one year, bi-annual vaccination is recommended in April/ May and August/September.

Dosage & administration
Cattle & Buffalo 4 ml S/C

Presentation:
280 ml

Storage
Store between 2^0 – 8^0 C. Do not freeze.

Precautions
The vaccine bottle should be thoroughly shaken before use. Animals should not be sent for grazing for 7 days following vaccination. The vaccine should not be used during an outbreak. Strict aseptic precaution must be observed during vaccination lest it may develop into an abscess.

39.4 Hemorrhagic septicemia and Black quarter combined vaccine (HS+BQ)

Dosage Form
Injectable liquid form

Description
Contains formaldehyde inactivated cultures of *Pasteurella multocida* and *Clostridium chauvoei* adsorbed on aluminium hydroxide gel

Indication
Recommended for prophylactic vaccination against HS and BQ in cows and buffaloes.

Vaccination regimen
Primary vaccination-Six months of age and above
Revaccination-To be done annually. Revaccination is recommended in case of adverse climatic conditions like unseasonal rains, cyclones etc since it can also cause stress in animals.

Dosage & administration
Cattle, buffalo & calf 3 ml S/C in mid-neck region.

Presentation

Available in polypropylene vials of 90 ml (30 doses)

Storage
Store between 2^0 – 8^0 C. Antigenicity of the vaccine deteriorates if the temperature is allowed to fluctuate beyond this range.
At no stage should the vaccine be allowed to freeze.

Precautions
Generally no adverse reactions are noticed. A slight swelling may appear at the site of inoculation which disappears quickly.
In rare cases hypersensitivity may occur, immediate treatment with antihistaminics is advocated

39.5 Classical Swine Fever vaccine

Dosage Form
Injectable Freeze dried form

Description
The vaccine is prepared by suspension of spleen and lymph nodes from experimentally infected rabbits after attaining high level of viraemic fever.

Indication
For active immunization of pigs against Classical swine fever disease.

Composition
It contains attenuated Lapinised strain of Classical swine fever virus in freeze dried form.

Vaccination regimen
Primary vaccination is given at 45-60 days of age. Subsequent vaccination is to be done annually

Dosage & administration
1 ml of reconstituted vaccine S/C

Presentation
10 doses vial. Diluent is supplied separately.

Storage
Store at -20^0 C. Transport between 2^0 – 8^0C.

Precautions
After vaccination the animals should be observed for about an hour for any hypersensitivity

reaction. *If hypersensitivity occurs, immediate treatment with antihistaminic is advocated.*

39.6 Thermostable Newcastle (I-2) Disease vaccine

Dosage Form
Liquid form

Type
Eye drop

Description
Live Newcastle Disease avirulent virus strain I-2 diluted with 2% gelatin and PSG for immunization of chickens against New Castle Disease.

Although the I2 vaccine is Thermostable, but it is still advised to keep away from sunlight so that it remains active outside the cold chain.

Indication
For active immunization against Newcastle Disease in poultry.

Composition
Contains Thermostable avirulent I2 strain of Newcastle Disease virus.

Vaccination regimen
At the village level, chickens should be vaccinated at least one month before an outbreak is likely to occur. Vaccine is safe for use in chickens of all ages including day old chicks. Primary vaccination is done at 3-4 weeks of age and revaccination should be done every three months in Farms & endemic areas and every 4 months in non-endemic areas.

Dosage & administration
Instill one drop into the eye per chick.

Presentation
4 ml and 8 ml vials (100 & 200 doses)

Storage
Store at -20^0 C. Transport between $2^0 – 8^0$C.

39.7 E. coli oral vaccine

Dosage Form
Oral liquid form

Description
It is a culture of different strains of E. coli growth in a suitable medium.

Indication
The vaccine is used for protection of susceptible pigs against E. coli infection.

Vaccination regimen
One vial broth culture vaccine is mixed with 1.5 kg of feed and fed per sow. The vaccine should be given for 3 consecutive days starting from 75 days of gestation.

Storage
Store between $2^0 – 8^0$ C. Do not freeze.

39.8 Foot and Mouth Disease vaccine (FMD Oil)

Dosage Form
Injectable liquid

Description
Contains inactivated tissue culture FMD strains O, A, and Asia-1 adjuvanted with mineral oil and inactivated with aziridine compound.

Indication
For active immunization of cattle, buffalo, pigs, sheep and goat against Foot and Mouth disease

Vaccination regimen
Ruminants:
Primary vaccination: 4 months of age and onwards
First revaccination (booster): 9 months after primary vaccination

Subsequent vaccination is to be done annually

Dosage & administration

Cattle & Buffalo	2 ml deep I/M
Pig, Sheep & Goat	1 ml deep I/M

Presentation
Available in polypropylene vials of 100 ml

Storage
Store between $2^0 – 8^0$ C. At no stage should the vaccine be allowed to freeze.

Precautions
Injection with mineral oil into humans can produce serous localized reactions and care should be taken to avoid accidental inoculation. The vaccine should not be used during an outbreak.

39.9 Rabies vaccine

Dosage Form
Injectable liquid

Description
Rabigen vaccine is prepared from fixed Rabies vaccinal strain Pasteur VP12 grown in Baby Hamster Kidney cell line and inactivated with beta-propiolactone.

Indication
Active immunization of Dogs, Cats, Cattle and Horses, and in principle all mammals against Rabies.

Composition
Contain inactivated VP12 Rabies strain and adjuvanted with 10% v/v Aluminium hydroxide gel .

Vaccination regimen
Carnivores – a single injection from 3 months of age, *Herbivores* – a single injection from 6 months of age.

Primary vaccination can be administered at an early age, but a repeat injection must be given at 3 or 6 months of age depending of the species.Annual vaccination is recommended.

Dosage & administration
1 ml S/C or I/M

Presentation
10 ml vial

Storage
Store between 2^0 – 8^0 C. Do not freeze.

Precautions
Only healthy and dewormed animals should be vaccinated.

39.10 Raksharab vaccine

Dosage Form
Injectable liquid

Description
Raksharab vaccine contains tissue culture Rabies virus, CVS (Challenge Virus Standard) strain, produced in BHK(Baby Hamster Kidney) 21 cell line and inactivated with aziridine compound

Indication
The vaccine is intended for immunization of dogs and other domestic animals against Rabies for prophylaxis and post bite therapy.

Composition
Each dose contains inactivated "CVS" Rabies viral antigen with a potency ≥ 2.5 IU per dose with Aluminium hydroxide gel as adjuvant.Thiomersal 0.01% w/v added as preservative.

Vaccination regimen
For vaccination of animals of 3 months. If primary vaccination is given below three months of age, a booster dose is recommended in the 3rd month.
Annual booster dose is recommended in endemic areas.

Dosage & administration
1 ml S/C or I/M

Presentation
10 ml vial

Storage
Store between 2^0 – 8^0 C. Avoid freezing.

Immunity
The immunity is for a period of three years.

Precautions

Vaccinate only healthy animals.

39.11 Fowl pox vaccine

Dosage Form
Injectable Freeze dried

Description

This vaccine contains Fowl pox vaccine virus strain received from Tri Bio Laboratories; USA. The virus is grown in cell culture derived from Specific Pathogen Free (SPF) eggs, harvested and freeze dried with suitable stabilizer.

Indications
It is recommended for active immunization of chicks in production at farm level.

Vaccination regimen
Vaccination is recommended at 8th and 16-18 th weeks age birds.

Dosage & administration

Wing web method	0.02 ml per chick
Intramuscular route	0.2 ml per chick

For route of administration please refer the leaflet that comes along with the vaccine. In case of re-current Fowl pox problematic flocks, vaccination by intramuscular method is preferred.

Presentation
1000 doses vial

Storage
Store between 2^0 – 8^0 C preferably in the deep freeze and transport through cold chain system.

39.12 Marek's disease vaccine

Dosage Form
Injectable freeze dried

Description
This vaccine contains live Marek's disease vaccine

(MD) virus (HVT FC-126) strain of Turkey Herpes virus cell associated in frozen form received from Tri Bio Laboratories; USA.The vaccine virus is produced in chick embryo cell culture derived from Specific Pathogen Free (SPF) eggs, harvested and freeze dried with suitable stabilizer.

Indication
This vaccine is recommended for active immunization of chicks in production at hatchery level against Marek's disease.

Vaccination regimen
Vaccination is done at day old age by subcutaneous route in the lower neck region. In case of disease outbreaks at late stages, the chicks should be boosted with 0.2 ml dose at 12-14 days of age.

Dosage and administration
0.2 ml S/C

Presentation
1000 doses vial

Storage
Store between 2^0 – 8^0 C preferably in the deep freeze and transport through cold chain system.

Reconstitution
Store the diluents in the refrigerator overnight, to chill before use. Allow the pellet to dissolve completely with diluent.Reconstituted vaccine should be stored on ice and used completely within one hour.

39.13 Infectious Bursal Disease (Gumboro) Disease vaccine

Dosage Form
In freeze dried pellet-Eye drop/ Drinking water method

Description
This vaccine contains Infectious Bursal (Gumboro) Disease vaccine virus Intermediate Type Strain received from Tri Bio Laboratories; USA in lyophilized form .The virus is produced in chick embryo cell culture derived from Specific Pathogen Free (SPF) eggs, harvested and freeze dried with suitable stabilizer.

Indication
This vaccine is recommended for active immunization of chicks in production at farm level against IBD against infections.

Dosage & administration
Eye drop method: 0.03ml per chick
Eye drop method should be used for primary vaccination. Instill one drop into the eye per chick. Use reconstituted vaccine immediately.

Drinking water method: sufficient vaccine mixed with water for birds to be vaccinated
Litres of water to be added

Age of birds	200 doses
14-18 days	2-3 liters
21-28 days	3-4 liters

Drinking water method
For drinking water method, before giving the vaccine, withhold the birds from drinking water for at least two hours to allow birds to get thirsty. Do not use chlorinated water. Vaccination should always be conducted during cool hours.

Presentation
200 doses

Storage
Store the vaccine between 2^0 – 8^0 C preferably in the deep freeze and transport through cold chain system.
Diluent must be stored and transported at room temperature.

Reconstitution
Store the diluents in the refrigerator overnight, to chill before use. Allow the pellet to dissolve completely with diluent.Reconstituted vaccine should be stored on ice and used completely within one hour.

39.14 Newcastle Disease vaccine Lentogenic B1

Dosage Form
Injectable Live & freeze dried form

Description
This vaccine contains Newcastle disease Lentogenic B1 strain received from Tri Bio Laboratories, USA and the virus is grown in Specific Pathogen Free (SPF) eggs, harvested and freeze dried with suitable stabilizer.

Indications
It is recommended for active immunization of different age group chicks and layer flock in production against field strains of Newcastle disease virus and this vaccine is more suitable for priming of young chicks during their first week of life.

Vaccination regimen
This vaccine is recommended for young chicks between 1-6 days of age

Dosage & administration
Nasal instillation / eye drop method: 0.03 ml per chick

Presentation
200 doses vial

Storage
Store between 2^0 – 8^0 C preferably in the deep freeze and transport through cold chain system.

Reconstitution
Store the diluents in the refrigerator overnight, to chill before use. Allow the pellet to dissolve completely with diluent.Reconstituted vaccine should be stored on ice and used completely within one hour.

39.15 Newcastle Disease vaccine Mesogenic (R2B / Mukteswar)

Dosage Form
Live & freeze dried form, Injectable

Description
This vaccine contains Newcastle disease Mesogenic virus strain received from IVRI, Izatnagar, U.P. in lyophilized form and the virus is grown in Specific Pathogen Free (SPF) eggs, harvested and freeze dried with suitable stabilizer.

Indications
It is recommended for active immunization of birds and layer flock in production against field strains of Newcastle disease viruses.

Vaccination regimen
Vaccination is recommended for birds at the age of 8-9 weeks & 16-18 weeks

Dosage & administration
Intramuscular / subcutaneous route: 0.5 ml per chick

Presentation
100 & 200 doses vial

Storage
Store between 2^0 – 8^0 C preferably in the deep freeze and transport through cold chain system.

Reconstitution
Store the diluents in the refrigerator overnight, to chill before use. Allow the pellet to dissolve completely with diluent. Reconstituted vaccine should be stored on ice and used immediately.

40.1 Antiseptics

Boric acid	1-2%
Hydrogen peroxide	1:5 to 1:10
Potassium permanganate	1:1000 to 1: 5000

40.2 Mouth Washes

Alum	1%
Boric acid	2-3%
Copper sulphate	0.5%
Potassium permanganate	1:2000
Sulphanilamide	1%

Collutoria (mouth wash)

-Tannic acid	30g
-Glycerine	150ml

-Mix well and smear in buccal mucosa.

40.3 Skin antiseptics (antipruritic)

Magnesium sulphate	2-4%
Sodium carbonate	2-5%

40.4 Disinfectants

Alcohol	70%
Formalin	5%
Sodium carbonate	4%
Sodium Hypochlorite	4%
Tincture iodine	5-7%

40.5 Antiseptic Ointments

a. Whitfield ointment

A. Benzoic acid	*6 parts*
Salicylic acid	3 parts
Paraffin jelly	100 parts

For external application for fungal infections. Apply topically to the affected area daily.

b. Boric acid ointment:

Boric acid	10gm
Paraffin	90gm

c. Zinc oxide ointment

Zinc oxide	15g

Paraffin	85g

d. Sulphur ointment

Sulpha sublimate	10g
Paraffin	90g

For treatment of mange. Apply topically to the affected area daily

e. Salicylic ointment

Salicylic acid	20g
Paraffin jelly	980g

Used in treatment of wounds.

40.6 Lotion

a. Boric acid eye lotion

Boric acid	2gm
Distil water	98ml

b. Salicylic lotion

Salicylic acid	2g
Tannic acid	2g
Spirit	30ml

40.7 Urinary antiseptics

Hexamine	4-8gm
Sodium acid Phosphate	30g

40.8 Universal Antidote

Activated charcoal	50gm
Magnesium oxide Levis	25g
Kaolin	25g
Tannic acid	25g

Divide into 5 parts and given in a day by stomach tubes.

40.9 Haematinics

Haematenic: Drugs or agents which increases the number of red blood cellular haemoglobin content in the blood.

General

Cattle

Ferri Sulph	-	50g
Copper Sulph	-	20g

Cobalt sulph/chloride - 2g
Calcium Lactate - 150g
Mft pulv Sig 1/10 daily orally (indicate divide the above drug into 10 equal parts and give each part daily).

a. Formula I
Ferric Sulphate 5g
Cupric Sulphate 500g
Cobalt sulphate 100g
Mix and make 20 such packets, administer 1 dose orally twice for 10 days (use water to drench).

b. Formula II
Ferric Sulphate 40g
Cupric Sulphate 10g
Calcium Lactate 100g
Cobalt Sulphate 200g
Mix and make 10 equal parts administer 1 dose daily for 10 days as drench.

40.10 Stomachic

Stomachic: Drugs which increases the secretion of gastric juice.
Cattle
Sodium Bicarbonate 15g
Sodium Chloride 15g
Prepare 12 packets of such powder and give one packet twice daily orally. Note: indicate you have to make 12 such powder each containing above ingredients in the quantity as given above.
Magnesium Sulphate 200g
Sodium Chloride 125g
Sodium Bicarbonate 30g
Aqua (water) 560ml
Mft mist Sig ½ Bid orally
Note: indicate that the above drug is to be made into mixture and divided into two equal parts and be given each half two times in a day. You can also give equivalent amount of drug for another day or two if the condition of animal warrants it.

40.11 Carminative

Carminative: Drugs which prevent the formation and help in expulsion of gases from gastro-intestinal tract.
Cattle
Formalin 5ml

Sodium Chloride 150g
Water 500ml
Mft mist Sig ½ bid orally. Note: indicate that the above drug is to be made into mixture and divided into two equal parts and be given each half two times in a day. You can also give equivalent amount of drug for another day or two if the condition of animal warrants it.

40.12 Antizymotic

Antizymotic: drugs or agents which arrest/control fermentation.
Cattle
Formalin - 15ml
Aqua ad - 1000ml
Mft haust Sig ½ bid orally.

40.13 Purgative for Cattle

Purgative: Drugs or agents which will cause watery evacuation of bowels
Cattle
Magnesium Sulphate- 250g
Sodium Chloride - 150g
Aqua ad - 1000ml
Mft haust Sig now orally

40.14 Alterative

Alterative: Drugs which modify tissue changes and improve nutrition to various organs (to be given in condition of debility and weakness)
Cattle
Mag Sulph - 30g
Sod. Bicarb - 8g
Ferri Sulph - 15g
Mft pulv 1, such 16 Sig 1 powder twice daily in feed.
Mag Sulph - 60g
Sulphur - 8g
Mft pulv 1, such 16 Sig 1 powder twice daily in feed.

40.15 Febrifuge

Febrifuge : Drugs which reduce the temperature in fever
Sod Salicylate - 60g
Sod Bicarb - 60g
Mft pulv Sig ½ bid orally.

40.16 Antiseptic and Absorbent

Antiseptic and Absorbent
Mag sulph - 20gms
Glycerine - equal parts
Mft paste, Sig pack the infected wound or apply on region of edema.

41. 1 Breeding Inducing Agent

41.1.1 Salmon Gonadotropin Releasing Hormone and Domperidone

Dosage Form
Injectable liquid.

Therapeutic group
Spawning Hormone.

Composition
Each ml contains:-
Salmon Gonadotropin RH - 20 mcg
Domperidone - 10 mg
Propylene glycol IP - q.s.

Presentation
10 ml Vial.

Indications/Use
It is used for artificial induction of spawning in fish.

Dosage and administration
Interpretational or intramuscularly @ of 0.5 ml/kg body weight in case of male fish and 0.25 ml/kg body weight in case of female fish.

Pharmaceutical Precaution
Store at room temperature. Protect from direct light.

41.1.2 Synthetic Gonadotropin Releasing Hormone

Dosage Form
Injectable liquid.

Therapeutic group
Spawning Hormone.

Composition
Each ml contains Synthetic Gonadotropin Releasing Hormone, 10ml vial
Indications/Use

It is used for artificial induction of spawning in fish.

Dosage and administration
Interpretational or intramuscularly @ of 0.5 ml/kg body weight (Dosage can be adjusted depending on condition)

Pharmaceutical Precaution
Store below or at 25° C.

41.1.3 Synthetic Salmon gonadotropin releasing hormone and Pimozide

Dosage Form
Injectable liquid.

Therapeutic group
Spawning Hormone.

Composition
Each ml contains:
Salmon Gonadotropin Releasing Hormone
Salmon Gonadotropin RH - 20 mcg
Pimozide - 10 mg

Indications/Use
It is used for artificial induction of spawning in fish.

Dosage and administration
Calculated dosage can be administered intramuscularly in brooder as per the following dosage upon knowing the weight of fish.

Species	Dose Female(ml/kg)	Male(ml/kg)
Catla (Catla Catla)	0.40-0.50	0.20-0.30
Rohu	0.20-0.40	0.10-0.20
Mrigal	0.20-0.40	0.10-0.20
Silver Carp	0.40-0.50	0.20-0.25
Grass Carp	0.40-0.50	0.20-0.25

Pharmaceutical Precaution
Store at room temperature. Protect from direct light.

41.2. Anaesthetics

41.2.1 Benzocaine

Dosage Form
Powder

Therapeutic group
Anesthetics.

Composition
Each 100g contains minimum of 99% benzocaine.

Indications
It is used as anesthetics for fish so to reduce handling stress.

Dose & Administration
It is not soluble in water and hence standard stock solution should be prepared by dissolving in acetone of ethanol (100 gm of benzocaine in 1 litre of acetone/ethanol). This is then used at rate of 1 ml per litre of water as anesthetics.

Pharmaceutical Precaution
Keep tightly closed, away from bright light. Keep between 10° C and 30° C. The stock solution is photo liable and should be kept in dark bottle.

41.2.2 phenoxy ethanol

Dosage Form
Viscous immersion liquid

Therapeutic group
Anesthetics.

Composition
500ml bottle contains minimum of 99% 2 phenoxy ethanol.

Indication: It is used as anesthetics for fish so to reduce handling stress especially during breeding and also used to sedate fish during transportation.

Pharmaceutical Precaution: Keep tightly closed, away from bright light. Store at Room temperature (below 30° C).

Dose & Administration
Take 2-4 ml of 2 phenoxy ethanol and dissolve well in 10 liters of water contained within plastic tub. Transfer the fish to be into the anesthetic solution, the fish will lose its

equilibrium within 1-2 minutes.

In case of transportation of fry or fingerling use 1 ml of 2 phenoxy ethanol for every 5 liters of water contained within durable plastic bag. Transfer the fish in the transportation bag (which contains solution of water and phenoxyethanol) and diffuse oxygen into bag and then seal the bag tightly.

41.3 Chemicals for Bath and treatment

41.3.1 Acriflavin

Dosage Form
Reddish brown powder

Therapeutic group
Bactericides.

Composition
Acriflavin Neutral 100 %

Indication
Acriflavin is effective against external parasitic, fungal and bacterial treatment and as well as added in transport water during transportation of fish against bacterial infection.

Dose & Administration
Make 1-2 ppm of solution in case used in transportation of fish and 10 ppm solution if they are used to treat bacterial and fungal infection in fish.

Pharmaceutical Precaution
Store at Room temperature (below 30° C).

41.3.2 Chloramine Trihydrate

Dosage Form
White water soluble powder

Therapeutic group
Bactericides.

Composition
500 gram contains minimum assay 99% matter insoluble in absolute ethanol 1.5%.

Indications
Used against Bacterial Gill Disease

Dose & Administration
Administer @10, 15 and 20 ppm for 60 minutes in continuous flow or static bath system for three alternative days.

Pharmaceutical Precaution
Keep tightly closed, away from bright light. Temperature between 10° C to 30 ° C.

41.3.3 Malachite Green Hydrochloride

Dosage Form
Crystal form

Therapeutic group
External parasiticides

Composition
Green water soluble crystal.

Indication
Used against all external parasite.

Dose & Administration
Pond treatment @ 2ppm four times a week is suggested. Tropical application on external wounds. Bath in 0.2 ppm malachite green for 10 minutes in case of fungus Saprolegnia infection and in 5 ppm malachite green for 5 minutes in case of Branchiomycosis infection.

Pharmaceutical Precaution
Store at 10-30° C.

41.3.4 Sodium Chloride

Dosage Form
White crystal which is soluble in water

Therapeutic group
External parasiticides and fungicidal

Composition
500g jar contains minimum assay 99%, Lead 0.0005%

Indication
Used against all ecto parasite Myxosporodians in all Fresh water fish and fungal disease.

Dose & Administration
Prepare 3 % salt solution in water contained within plastic tub followed and dip the fish depending upon severity of infection. Also short term bath in 3 % solution is done as prophylaxis during stocking in new pond. Bath in 5% sodium chloride for 10 minutes in case of fungus *Saprolegnia* infection and Bath in 3-5% sodium chloride for 5-10 minutes in case of fungus *Branchiomycees* infection. Bath in 3-5% NaCl for 30 sec to 1 min in case of argulus infestation.

Pharmaceutical Precaution
Keep tightly closed, away from bright light.

41.4 Antiseptics/Disinfectants

41.4.1 Copper sulphate

Dosage Form
Crystal

Therapeutic group
Antiseptic/disinfectant.

Composition
500g contains green water soluble crystal.Minimum assay 98.5%, Iron 0.08%, Chloride 0.005%, Alkalies 0.5%

Indication
Used against external parasites and phytoplankton bloom control.

Direction for use
Administer @ of 0.4-1 ppm once daily for 5-11 consecutive days to control wide spread of Ichthyophthirius multifilis. Pond treatment @ 0.5 ppm controls phytoplankton bloom. Copper sulphate bath 1; 2,000 for 3-4 days in case of tail and fin rot. For control of Saprolegniasis, give short term bath in 20 ppm of copper sulphate.

Pharmaceutical Precaution:
Keep tightly closed, away from bright light. Temperature between 10° C to 30 ° C.

41.4.2 Potassium Permanganate

Dosage Form
Crystal 500 gm

Therapeutic group
Antiseptic/disinfectant.

Composition
White crystal which is soluble in water.

Indication
Used against all external parasites and in prophylactic bath treatment.

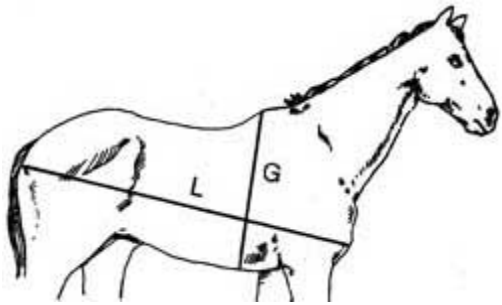
Dose & Administration
Pond treatment @ 2ppm four times a week is suggested. Tropical application on external wounds. Bath in 0.2 ppm malachite green for 10 minutes in case of fungus *Saprolegnia* infection. Bath in $KMnO_4$ 1: 100,000 for 15-30 minute in case of *Dactylogyrus*. As prophylactic bath in 3-5 ppm potassium permanganate for 15 seconds during stocking or shifting fish. Bath in 2-3 ppm KMnO4 in case of EUS.

ANNEXURE

1. Estimation of body weight in Livestock

The body condition of a livestock is generally assessed by visual observation. The references to an animal being too thin, in good flesh, or obese all relate to the animal's weight. Therefore, the weight of an animal can be used as a measurement tool to determine its well-being, or the presence of problems which may threaten the health of the horse. Several methods can be used to determine the body weight of livestock in an approximate scale.

a. Body weight in horses



A ruler is used to connect the appropriate values on the condition score and height scales, and the weight is read where it intersects the weight scale.

Fig. 1 Measurement of girth and length

1 hand = 10.2 cm (4 inches)
Girth and Body Length Measurements
Using the girth measurement together with the body length measurement in the following calculation may produce a slightly more accurate measurement than using a weight tape.

Adulthorses:

$$\text{Weight (kg)} = \frac{(\text{girth measurement in cm})^2 \times (\text{length measurement in cm})}{11{,}900}$$

Foals 0-60 days:

$$\text{Weight(kg)} = \frac{\text{girth measurement in inches} - 25}{0.07}$$

Measurement of weight without tape

The weight can be estimated without the use of weigh tape in horses

Table 1. Estimating a Horse's Weight without Weight Tape

Girth Length		Weight	
(inches)	(cm)	(lbs)	(kg)
30.0	76	100	45.5

40.0	102	200	91.0
45.5	116	300	136.5
50.5	128	400	182.0
55.0	140	500	227.0
58.5	148	600	273.0
61.5	156	700	318.0
64.5	164	800	364.0
67.5	171	900	409.0
70.5	178	1000	455.0
73.0	185	1100	500.0
75.5	192	1200	545.0
77.5	197	1300	591.0

Using formula with girth and body length measurement

This horse weight prediction equation is shown below:
(Heart girth x Heart girth x Body length) divided by 330 = Wt (Ibs)

b. Cattle

2.1 Cattle Calculator

Girth (cm)	Weight (kg)	Girth (cm)	Weight (kg)	Girth (cm)	Weight (kg)
65	35	125	170	185	508
70	40	130	190	190	552
75	45	135	210	195	598
80	50	140	230	200	648
85	59	145	252	205	698
90	69	150	272	210	748
95	79	155	295	215	798
100	89	160	325	220	850
105	103	165	360	225	905
110	118	170	392	230	969
115	134	175	427		
120	150	180	467		

c. Small ruminants

Measure the heart girth of small ruminants (goats or sheep) using a tape measure or string. Pull the tape tight. Use the table below to estimate the weight.

Heart girth		Body weight		Heart girth		Body weight	
(in)	(cm)	(Ib)	(kg)	(in)	(cm)	(lb)	(kg)
10 ¾	27.3	5	2.3	18 ¾	47.6	25	11.3

11 ¼	28.6	5½	2.5	19¼	48.9	27	12.2
11 ¾	29.9	6	2.7	19 ¾	50.2	29	13.2
12 ¼	31.1	6½	3	20 ¼	51.4	31	14.1
12 3/	32.4	7	3.2	20 ¾	52.7	33	15
13 ¼	33.7	8	3.6	21 ¼	53.9	35	15.9

Heart girth		Body weight		Heart girth		Body weight	
(in)	(cm)	(Ib)	(kg)	(in)	(cm)	(lb)	(kg)
13 ¾	34.9	9	4.1	21 ¾	55.3	37	16.8
14 ¼	36.2	10	4.5	22 ¼	56.5	39	17.7
14 ¾	37.5	11	5	22 ¾	57.8	42	19.1
15 ¼	38.7	12	5.4	23¼	59.1	45	20.4
15 ¾	40	13	5.9	23 ¾	60.3	48	21.8
16 ¼	41.3	15	6.8	24¼	61.6	51	23.1
16 ¾	42.7	17	7.7	24 ¾	62.9	54	24.5
17¼	43.8	19	8.6	25¼	64.1	57	25.8
17 ¾	45.1	21	9.5	25 ¾	65.4	60	27.2
18 ¼	46.4	23	10.4	26 ¼	66 7	63	28.6

Heart girth		Body weight	
(in)	(cm)	(lb)	(kg)
32 ¾	83.2	105	47.6
33¼	84.5	110	499
33¾	85.7	115	52.2
34 ¼	87	120	54.4
34 ¾	88.3	125	56.7
35 ¼	89.5	130	59
35 ¾	90.8	135	61.2
36¼	92.1	140	63.5
36 ¾	93.4	145	65.8
37 ¼	94.6	150	68.1
37 ¾	95.9	155	70.3
38 ¼	97.2	160	72.6

Heart girth		Body weight	
(in)	(cm)	(lb)	(kg)
38 ¾	98.4	165	74.8
39¼	99.7	170	77.1
39 ¾	101	175	79.4
40¼	102.2	180	81.6
40 ¾	103.5	185	83.9
41 ¼	104.8	190	86.2
41¾	106.1	195	88.4

4. Shaeffer's formula for Cattle

This method of estimating body weight is used for cattle and buffaloes using the following formula:

$$\text{Live weight in lbs} = \frac{\text{Length x Girth square}}{300}$$

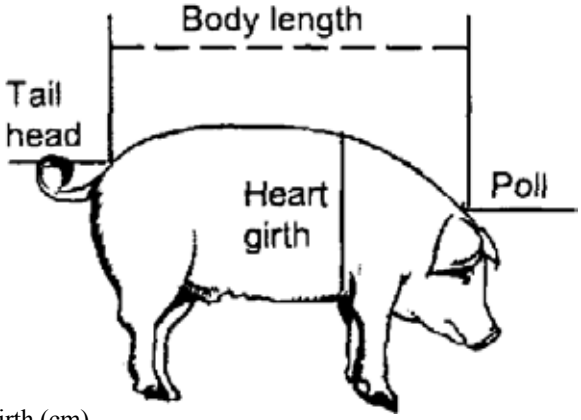
where measurement are in inches.

5. Aggarwala's modified shaeffer's formula for India Cattle

$$\text{Live weight in seers} = \frac{\text{(Girth)x(length)}}{Y}$$

Where y is equal to 9.0 if girth is less than 65", 8.5 if the girth is between 65- 80" and 8.0 if the girth is over 80" and one sheer is equal to 0.93kg.

d. Estimating body weight in swine



Heart girth (cm)

Body length (cm)	Body weight(kg)						
	80	90	100	110	120	130	140
80	36	40	48	60	75	94	116
90	42	47	55	67	82	101	123
100	50	55	63	75	90	108	130
110	59	64	72	84	90	117	139
120	69	74	82	94	109	120	150
130	80	85	94	105	120	139	161
140	93	98	106	118	133	151	173
150	107	111	120	132	147	165	187

Source: Dayrit (1979)

2. DOSE CALCULATIONS AND UNITS

Accurate dosing is critical to the proper utilization of all pharmaceuticals. To calculate the correct dose of drug you need to know the concentration of the drug, the weight of the animal, and the recommended dose rate of the drug in question for the specific animal you are administering the drug to.

Units of measurements

SI unit is another name for the metric system of measurement. The aim of metrication is to make calculations easier than with the imperial system (which includes ounces, pounds, stones, inches, pints etc). SI stands for *Systeme Internationale* and it is now recognized as the standard system for measurement in most disciplines around the world. The SI system defines a base unit for a particular measurement (for example the gram for measuring weight) and a prefix (e.g. kilo, milli) when the actual numbers in the measurement become very large or very small. For example one millionth of a gram could be written as 0.000001g or 1mcg. The second version is easier to read than the first and easier to work with once you understand how to use units and prefixes. It is also less likely to lead to errors, especially when administering drug doses.

Conversion table:

Kilogram	Hectogram	Decagram	Gram	Decigram	Centigram	Milligram
1	0	0	0	0	0	0
	1	0	0	0	0	0
		1	0	0	0	0
			1	0	0	0
				1	0	0
					1	0

1 gram = 1000 milligrams and 1 milligram =1000 micrograms
300mg = 0.3g 0.5g = 500mg 750micrograms = 0.75 mg
2500ml = 2.5l 0.025m = 25mm 0.05mg = 50 micrograms

Common routes of drug administration include:

a) Oral administration

b) Parenteral administration
-Intravenous
-Intramuscular

-Subcutaneous
-Intraperitoneal
-Intrathoracic
-Intradermal

c) Inhalation (pulmonary route)

d) Topical administration (local application)

Pharmaceutical preparations are often expressed as:
Percentage: It simply means per hundred. 5% means 5 parts of the active ingredient in 100 parts of the preparation. For example a 10% solution of xylazine is 100mg/ml and a 2% solution of xylazine is 20mg/ml. Percentage concentration of the drug is expressed in 3 ways.

* **Weight in weight (w/w):** Is the percentage of solids in solids. E.g. Ointments and powders. However, percentage solutions of solids in liquids are rarely made weight in weight (e.g.. when both solids and liquids are taken in weight).

* **Weight in volume (w/v):** Percentage solutions of liquids are usually made weight in volume. These types of percentage solutions are common in pharmacy where solids are taken by weight and liquids are taken by volume. Eg. Mixtures and lotions. **Mg/ml -** Manufacturers usually provide concentrations of their product in milligrams (mg) of drug per (ml) of solvent.

* **Volume in volume (v/v):** Percentage solutions of liquids are usually made volume in volume. Since both solute and the solvent liquid are taken by volume, use of same subunit of volume for both is essential. Eg. Emulsions and spirits.

Parts per million (ppm): This is the way of expressing strength particularly concentrations of very dilute preparations. A 1 ppm solution contains one part of the solute in one million parts of solution. It is important that two parts must have same units except in metric system where 1gm = 1ml.

International unit (IU):
International Units per ml of solvent is used for some preparations like penicillin and some of the fat soluble vitamins. This is actually a measurement of activity and doses use the same unit of measure to make calculations easier.

Powders:
You may receive drugs in a powdered form and be given the milligram/gram of active drug in the vial. For example, Dicrysticin sulfate comes in powdered form with 2.5gm (2500mg) per vial..

Percent solutions:
One part of a substance solid or liquid mixed with 99 parts of a solvent to make a total of 100 parts of the prescribed formulation makes 1-% solution. In metric system 1gm of solid or 1ml of a liquid dissolved in 99 ml of solvent to make 100 ml of prepared solution makes 1-% solution.

Examples of solution of various strength.
Strength percentage
1 in 1 100%
1 in 10 10%
1 in 100 1%
1 in 1000 0.1%
1 in 10,000 0.01%

To convert into percentage 1 in 400 = 1/400 X 100 = 0.25%
1 in 700 = 1/700 X 100 = 0.143%
1 in 2500 = 1/2500 X 100 = 0.04%
3 in 1000 = 3/1000 X 100 = 0.3%

Some examples of calculations:
Anaesthetics

Thiopentone sodium injection: Calculate the total dose for a dog weighing 12kg at the dose rate of 25mg/kg body weight! For safety reasons the drug should be administered as 2.5% solution.

Comes as 0.5gm vial, dose rate is 25mg/kg as 2.5% solution and body weight of animal is 12kg.

To prepare 2.5% solution
2500mg in 100ml 2.5% solution
500mg in ? 2.5% solution
= 100 X 500/2500
= 20ml
= 25mg/ml

Total dose required
= 12 X 25
= 300mg

Therefore, total dose will be 300/25
=12ml.

Xylazine hydrochloride:
Comes as 2% solution
Required dose rate is 1mg/kg
To be given for 10 kg dog.
Total dose required 1X10 = 10mg
Solution contains 20mg/ml
= 0.5ml

Ø Antibiotics
Example:
The conc. of antibiotic is 50 mg/ml
Dose rate is 5-mg/kg body weight
The weight of the animal is 300 kg.
Calculation:
The animal weighing 300 kg @ dose rate of 5 mg/kg body wt. = 1500 mg
The conc. of antibiotic is 50 mg/ml,
Therefore the animal of 300 kg requires = 1500/50 =30 ml of antibiotic.

Ø Deworming drugs
Example:
A cow suffering with chronic diarrhoea is found to have 500 epg of fasciola. Using Triclabendazole 900 mg bolus, find the quantity of bolus to be given to the animal weighing 430 kg at the dose rate of 10-mg/kg body wt.
Solution:
Dosage = 430 kg x 10mg/kg body wt = 4300 mg
As one bolus contains 900 mg of triclabendazole, 4300 mg will be in = 4300/900 = 5 bolus approximately.

Ø Dilution of liquids
The basic formula
Concentration of
final soln.(% or ratio)
Total quantity of stock solution = …… X Total quantity of
Concentration of stock Final soln.
soln.(% or ratio)

Example:
We have cythion with stock concentration of 50%. Making a total of 5 litres of diluted solution, how much quantity of cythion we need to mix with water to make a final concentration of 2%?
Solution:
Concentration of stock cythion…….50%

Concentration of final solution…….2 %
Total quantity of final solution……..5 litres (5000 ml)
Substituting in the above formula:
2
X(?) = **……** X 5000 ml = 2/50 x 5000 = 200 ml. Of stock cythion
50
i.e. add 200 ml of stock cythion in 4800 ml of water to make 2% final concentration of cythion.

Example:
Make a 1/200 dilutions of a neat sample in a final volume of 4 ml.
4000 = 200 x X (4ml = 4000 µl)
X= 4000/200 = 0.02 ml (20 µl)
i.e. 0.02 ml of neat sample in 3.98 ml water or 20 µl in 3980 µl of water.

Intravenous Drips:
The rate of flow of fluid down intravenous infusion lines must be regulated and this is often controlled by a device known as an infusion controller. The controller measures precise volumes of liquid and releases tiny droplets, each of exactly the same volume, down the IV line (tube) at precise intervals. The infusion controller has a thumb-wheel which allows the operator to alter the flow of liquid. Some controllers require you to set the Flow Rate, which is measured in Millilitres per Hour. Others require you to set the Drip Rate, measured in Drips per Minute. It is important that you know which you are dealing with. This will be written on the machine itself. To calculate the Flow Rate, this is simply the volume in millilitre divided by the duration in hours. Both these values will be prescribed.
Example: A dog requires 500ml IV infusion over twelve hours. What is the flow rate?
Answer: 500 divided by 12 is 41.66ml/hr. If you do not the facility to enter decimals then round to the nearest whole number. The answer would then be 42ml/hr.

3. EVDP Monitoring at various levels developed through group works at Second EVDP Co-ordination Meeting held on 8th to 10th April 2013.

A. EVDP MONITORING AT THE DZONGKHAG LEVEL

Roles and ToR of DVO:

- The DVO's will be the EVDP focal person of the concerned Dzongkhag
- Technical backstoping to the field colleagues on usage
- Involve DVO during the time of national drug review (addition and deletion of drugs)
- Timely montioring and evaluation of drugs and equipment in the LEC cneters
- Incharge of DVH
- DVO's shall provide crash/refresher course to the field colleagues especially with regard to compounding and usage of the non-patent drugs at regular interval in consultation with RLDC
- Intra Dzongkhag drug mobilization

Stream line in distribution of drugs

- Six monthly drugs reporting
    - jan to june—mobilization
    - July to Dec-- quantification
- Annual drug indent requisition through G2C service (optional)
- A list of drugs available in LCS should be distributed to the DVO/EVDP focal person
- Reception, verify and collection of drugs by concerned EVDP focal person after reception of the available drug list from LCS
- Segregate drugs as per the geog drug indent and dispatch to the centers by DVO/EVDP focal person after collection from LCS
- Separate indent for consumables anually
    - July to Dec.. i.e towards the end of Dec

Mechanisim of monitoring

- Visit LEC centers twice a year to monitor and evaluate drugs and equipment
  - **One before sending the drug indent to RLDC/LCS (April-May)**
  - **Once after distribution of the drugs to the centers**

Coordination/Linkage

- The DVO shall take a lead role in compilation of the drug indent report from the LEC's and punch into the system
- DVO's upon compilation of the data, shall forward it to the RLDC's
- The DVO's shall communicate with the regional focal person with regard to inter-Dzongkhag drug mobilization
- DVO's shall intimate directly to the store officer LCS with regard to the status and availability of the drugs

B. EVDP MONITORING AT REGIONAL LEVEL

Roles of Regional Focal Person.

- ❖ Co-ordinate and bridge a link between NCAH and DVH.
- ❖ Compile, verify and submit the drug indent to NCAH.
- ❖ Update and synchronize the drug indenting format in the region.
- ❖ Collect and compile the six monthly drug reports.
- ❖ Initiate and follow up on the inter and intra dzongkhag drug mobilization.
- ❖ Monitor and standardize the EVDP at DVH and RNR-ECs
- ❖ Technical backstopping on the drug usage, storage, formulary, and proper dispensing at the centre and Dzongkhag level.
- ❖ Maintain buffer stock of drugs to be supplied during times of emergency.
- ❖ Regulate and ensure minimum standards in compliance with the DRA norms with feedbacks and recommendations.
- ❖ Monitor effective maintenance of expired drugs inventory.
- ❖ Ensure proper disposal of expired drugs with fullfillment of the required DRA regulations and procedures before disposal.
- ❖ Scrutinize on failing to meet the minimum requirements.

Mechanism for EVDP monitoring

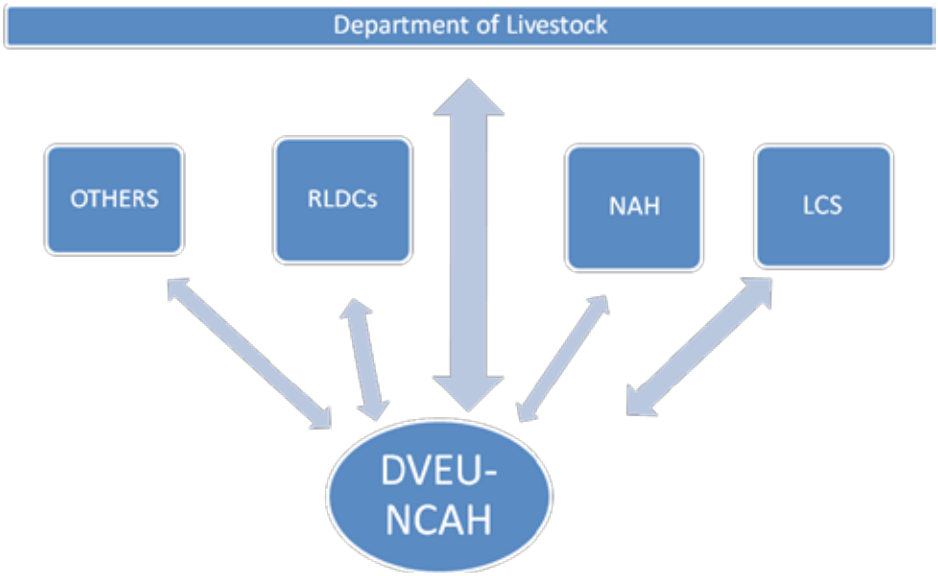
1. Routine- Bi-annually
2. Adhoc (on demand)

- **Six monthly drug reporting mechanism**
- Mechanism and ToR
- Receive the drug reports from all the Dzongkhag within the stipulated time frame
- Compile the data received
- Forward the report to NCAH

C. EVDP MONITORING AT THE NATIONAL LEVEL

- Develop mechanism, TORs, formats for EVDP monitoring at the national level.
- Develop formats for compilation, analysis and feedback mechanism of 6 monthly drug reports
- Annual budgeting based on 6 monthly reports (Jul-Dec)- quantification.

Monitoring and feedback mechanism



4. MODULE FOR DRUGS DISTRIBUTION FROM LCS TO USER

Drug distribution from LCS to animal health centres.

Drugs distribution should be done twice in a year from LCS.

1st distribution in around October to November.

2nd distribution in March to April.

Distribution from LCS should be upto DVH with separate geog package with challan.

DVH incharge will receive the medicine consignment for the dzongkhag.

DVH incharge and respective LEC incharge will verify the consignment , and if any discrepancies found will be intimated to LCS.

Respective LEC incharge should lift the medicine from DVH with in two weeks.

DLO will make the transportation available either from Dzongkhag or RLDC.

Module for transportation back of expired drugs from animal health centers to LCS.

- DVOs/DVH incharge should monitor and collect information on expired drugs from the geogs.
- Geog incharge after completing ground formalities will submit the note sheet to DLO to be endorsed by Dasho Dzongda.
- After approval of write off geog incharges should submit the expired drugs to DVO/DVH incharge.
- DVOs/DVH incharge should inform their respective RLDC about the expired drugs in the dzongkhag.
- Collection of expired drugs should be made by RLDC for further disposal.

5. REGULATORY COMPLIANCE

SL. #	Issues	Solutions
1.	Temperature monitoring system where there is erratic power supply	Need for back up power supply in the centres
2.	Temperature monitoring in the medicine storage room	Fully mechanized temperature controlled room required (if feasible in the VH)
3.	No uniformity in storage/dispensing	Develop standard procedures for all the centres
4.	Lack of standard compounding procedures	Required necessary facilities and equipments to strictly follow the formulary
5.	ADR not reported	Sensitization on reporting of ADR to field staff (Observation from the field staffs and to follow up the cases).
6.	Difficulty in maintaining cold chain at grass root level(Remote and scattered settlements)	Where possible pool the animals to be vaccinated and reduce the coverage time.
7.	Frequency and follow up on DRA inspection	Field officials to strictly follow DRA guidelines.
8.	Requirement of dress with name tags.	Refer BMRR 2012 to procure budget for these requirements. Uniform dress code
9.	Separate compounding and dispensing room	Not to compromise the provisions of BMRR
10.	Non compliance with DRA regulations during inspections	Institution head to be contacted by DRA inspectors for any further actions
11.	Procurement of Restricted drugs(Rarely used drugs)	DRA to explore the possibilities

6. STANDARD OPERATING PROCEDURES(SOP)

a. SOP, LCS.

1. Receiving of the supplies from the suppliers
2. Segregation of the supplies.
3. Check and verify supplies against invoice.
4. Move the supplies to quarantine.
5. Inform NCAH for QIS.
6. Co-ordinate and facilitate QIS.
7. Prepare good receipt note(GRN).
8. Update/entry in the inventory system/stock register.
9. Transfer to respective stores and shelves.
10. Forward invoice along with copy of GRN for payment
11. Obtain distribution order from NCAH.
12. Plan distribution according to the remoteness of the center.
13. Distribute supplies from the fresh consignment and the total quantity for the remote centers.
14. Prepare store issue note (SIN) which should be in triplicate.
15. pack supplies as per SIN and indicate the box which has the SIN in duplicate.
16. Load conveyance with supplies which are on the way.
17. Prepare consignment challan in duplicate.

b. SOP for RLDC,DVH, LECs & CU

- Receive consignment as per the challan.
- Sign challan and send the duplicate.
- Locate the box containing SIN.
- Check the consignment as per SIN.

- Remark and verify SIN and send the duplicate to LCS.
- Update the stock ledger/inventory.
- Arrange the supplies in the store.
- Within the center
- Receive requisition (GIN/SR) from user units.
- Check stock before issuing the supply.
- Check previous issue quantity and frequency of requisition.
- Update stock ledger after the issue.
- Dispensing.
- Receive supplies as per the requisition.
- Dispense supplies as per prescription.
- Enter quantity dispensed in the treatment register.

c. SOP for mobilization

Within the Dzongkhag.

- Prepare quarterly stock report of the supplies.
- Share the report amongst the LECs.
- Request supplies from the LECs as per the report.
- Issue supplies to the LECs in the prescribed form.
- Receive supplies from LECs.
- Send the duplicate back to the LECs which has supplied**.**

d. SOP for disposal of expired drugs

1. Segregation at Source

A. Packaging materials

Remove all the secondary packaging materials and dispose as general dry waste as per the

method under the Medical Waste guideline. However, treat all the contaminated packaging materials with medicinal products as Pharmaceutical waste.

B. Hazardous Waste

i. Segregate the pharmaceuticals waste into Hazardous according to the Hazardous list as per the Table i.(Hazardous List).

ii. Discard Hazardous waste into the leak –proof (double layered) purple plastic bags or containers and labelled as "Hazardous Pharmaceuticals waste" with the name of place where produced (e.g. ward).

iii. Biological and vaccines should be treated as infectious waste and disposed accordingly.

C. Non-Hazardous Waste

i. Considered all Pharmaceuticals "not listed" on the hazardous list, as non-hazardous and further segregate into liquid and solid /semi solid dosage forms.

ii. Discard non-hazardous Pharmaceuticals waste into the green plastic bags or containers and labelled as "Non- Hazardous Pharmaceuticals waste: Liquid waste OR Non- Hazardous Pharmaceuticals waste: Solid waste" and name of place where produced.

Crush the used Ampoules or vials ampoules which contained Non-hazardous Pharmaceutical wastes on a hard, impermeable surface and dispose off as "Sharps".

2. Weighing of waste

i. The Store In-Charge or the designated focal person should weigh the waste handed from other wards or departments using appropriate personnel protective equipments and appropriate weighing machine.

ii. Record the weight of the waste on the waste generation record (Refer annexure ..)
iii. Compile weight recorded on the register/Form…. at the common storage site and

3. Transportation to Disposal Site

All waste-bag seals should be in place and intact at the end of transpotation.

4. ***Disposal Methods***

A. Hazardous Waste: Encapsulation and Landfill

i. It should be immobilized or encapsulated prior to disposal into landfill as per the encapsulation method below:

If the waste is with their secondary packages, remove materials from their package but not from the primary packaging (strips/blisters/bottles/sachets).

Fill a steel/plastic drum up to 75% capacity with pharmaceutical waste
Fill the remaining space with the following at approximate ratios by weight**:**
Cement 15%
Lime 15%
Water 5% or more to obtain required consistency
Close the lids of the drum and place the drums at the base of the land fill and cover with soil.

Once the wastes are encapsulated, it may be disposed off with the municipal wastes or ordinary landfill.

ii. Incineration of hazardous pharmaceutical waste is an option.

C. Non-Hazardous Liquid Solid waste: Sewer

i. Non-hazardous pharmaceutical liquid dosage form waste such as large volume parenteral fluids (salts, amino acids, lipids, glucose), vitamins and eye drops (but not antibiotics or cytotoxic drugs can be diluted (dilution factor - water in 1:3 Ratio) and flushed into the sewers in small quantities.

Fast flowing water sources should be used to flush the diluted liquid pharmaceutical wastes. Do not discharge even small quantities of pharmaceutical waste into slow-moving or stagnant water bodies.

Non hazardous liquid waste other than large volume parenteral fluids (salts, amino acids, lipids, and glucose), vitamins and eye drops should be land filled as it is.

4. FORMS FOR TECHNICAL BACKSTOPPING TO THE LEC/RNR-EC and DVH

Date……

1. General Information

Name of the centre:

No. of chiwogs: **Livestock population:**

Geo-coordinates: Latitude (N):_____Longitude (E):_____ Altitude:____m

2. Staffing

Name of staff	Designation	Qualification	Arrival date.	Duties

3. Monitoring of Vaccine use, storage and surroundings of centre.

Sl.No	Particulurs	Yes/No	Remarks	Requirement as per act & regulation
1	Is the surrounding of the health care centre maintained clean?			Please consider cleaning and clearing the compound.
2	Is there centre sign board?			This is necessary as per the standing rules of DRA.
3	Is there proper fencing of unit?			Fencing of the centre will facilitate better functioning of the centre.
4	Is there pharmacy signboard?			This is necessary as per the standing rules of DRA.
5	Is the pharmacy unit maintained clean?			Should be kept neat and clean at all times. No huge resources required for the same.
6	Are the products of the category labeled on the shelves?			Different category of the product should be labeled on the shelves

7	Are there any expired medicines on shelves?			Always check the expiry date
8	If yes to Q5, are they separated?			All the expired medicinal must be separated and stored in separate containers and notify the authorities in form XV
9	Are there expired drugs in the store?			Consider minimizing resource wastage through drug expiration. Can mobilize excess drugs nearing expiry date with help of DLO/DVO.
10	Is the store properly arranged?			Must be arranged properly. Medical product should be store as per directives.
11	Are the shelves maintained clean?			Must be neat and clean. Do not need huge resources.
12	Are the medicinal products stored appropriately?			All the medicinal products otherwise specified shell be stored below 25° C.
13	Does the pharmacy have vaccines, biological and laboratory and laboratory agents?			It should be separated from medicines
14	Does the pharmacy have separate compounding area?			Pharmacy should have separate compounding area
15	Is there tap water in the compounding room?			Water must be available in the time
16	Are there hormones in the centre?			Hormones should be used under strict guidance of vets.
17	Do they use lab coat while handling drugs?			Should wear lab coat whenever they handle drugs.
18	Is there name tag on their lab coat?			All the individual handling drugs should wear lab coat with name plate.
19	Are there any vaccines stored?			

20	If yes to Q19, are they stored as per the label?			All vaccines shell be stored at 2-8 degree centigrade other wise specified on the label
21	If yes to Q20, is there daily temperature monitoring chart?			Temperature recording of the vaccines should be monitored
22	Is there thermometer available? (Room and refrigerator)			Thermometer should be available in the store
23	Is there inspection/AI crate in the centre,			There should be crate in the centre; this will facilitate treatment of animal.
24	Is there wall chart in centre with the information on annual progress report on: a) Clinical cases/ Deworming/ Vaccination/Breeding/ ecto-parasite. b) Feed and fodder. c) Information of the geog. d) Livestock population. e) List of villages with HH			All the information should be displaced on the charts.
25	Are they using following register? Treatment. Vaccination. Deworming. Sterilization. Breeding. Visitor.			Should keep every record.
26	Is there disposal/biological pit?			Should have

4. Constraints faced regarding drugs and suggestion for improvements

5. Cold chain facilities

a. Refrigerator

	Capacity	No.	Date received	Location	condition

b. Cool Box

Make	size	No	Location.	Condition

a) Visits

Visits by	Last visit date	No. of visits annually	Technical support given
DLO			
RVO/VO			
Laboratory staff			
Others			

Expired drug inventory format

Name of the unit :
Date of inventory :

SI No	Generic name	Presentation	Quantity expired	Batch no.	Manuf. Date	Expiry date	Date of receipt	Cost involved	remarks

6. For mobilization of drugs and instruments.

a. Drug stock nearing expiry date..

Name of drugs	Quantity	Expiry date

b.**List of acute shortage of drugs and instruments.**

Name of drugs/instruments	Quantity required.

Incharge of centre…… Collected by _____

5. Store Issue Note (SIN)

Name of Facility:
Geog.:
Dzongkhag.:

Sl.no	Name of drugs/ supplies	Batch no	Mfd. date	Exp. Date	Qty issued	Qty used	Remarks

6. Good Receipt Note

Name of supplier:
GRN no.:
Invoice no.:

Sl.no	Name of drugs/supplies	Batch no	Mfd. date	Exp. Date	Qty received

7. Six month drug report Form :

Name of Centres …… Dongkhag:……

Sl. NO.	Name of drugs	Composition/ Strength	Presen-tation	Quantity used/ssued						Total used/ issued	Stock balance	Batch No.	Manuf. date	Expiry date	Quantity required
				Jan	Feb	Mar	Apr	May	Jun						

8. Form for Annual Indent for General Consumable items & Equipments

Annual Indent for General Consumable items & Equipments
Name of Centre_____ Indent Date_____

Sl. No.	Items	Quantity in use	Qty. in stock as of ……	No. of month out of stock	Quantity required	Reason for replacement/ addition

Note: This form will be used for indenting the annual requisition of equipment and other consumables not included in form 1.

eg. Burdizzo castrator, autosyringes,
syringes, cotton etc.

9. ANNUAL INDENT FOR VACCINE
FOR THE FY --

NAME OF CENTRE …… INDENT DATE ….....Dzongkhag:……

Sl. No.	Vaccine	Vaccine type/ specifications	Quantity received in FY ----------	Total vaccination done from July to Dec. ----------	Stock balance as of --------- (No. of doses)	Details of balance Type/ Mfg date/ Exp date.	Quantity required for for FY ----------. (Doses)	Remarks

Note: This form will be used for submitting the annual vaccine requisition

10. Stock ledger

Stock Ledger
Department of Livestock
Ministry of Agriculture & Forests
Royal Government of Bhutan

Code:
Name:
Strength:
Dosage Form:

Receipt											Issue					
Date	Received from	Challan/ bill no	Opening balance	Qty. received	Batch No.	Mfg. Date	Expiry Date	Total Qty.	Rate (Nu.)	Total (Nu.)	Qty. issued	Issued to	Challan/ bill no.	Stock balance	Initials	Remarks

11. PROPOSAL FOR CHANGES TO THE ESSENTIAL VETERINAY DRUG LIST (EVDL)

Proposed by _____ Designation _____

Name of NAH/ DVH/LEC/RNREC/Farm_____

FOR ADDITION

Level of health care at which the drug should be made available (NAH/DVH/LEC, RNREC/Farms/others)

Generic name of drug _____

Dosage form _____ Strength _____

State its action, therapeutic use and side effects:

_____

_____

Is there a drug on the EVDL with similar therapeutic action?

If yes, which drug? _____

_____

State with supporting evidence the advantage that the new drug has over similar drugs on the EVDL in the same therapeutic group. _____

State any other reasons for including the new drug: _____

_____

FOR DELETION

Level of health care from which the drug should be deleted (NAH/ DVH/LEC/RNREC/ Farm).

Generic name of drug _____ Dosage form _____

Strength _____

State reason(s) for proposed deletion: _____