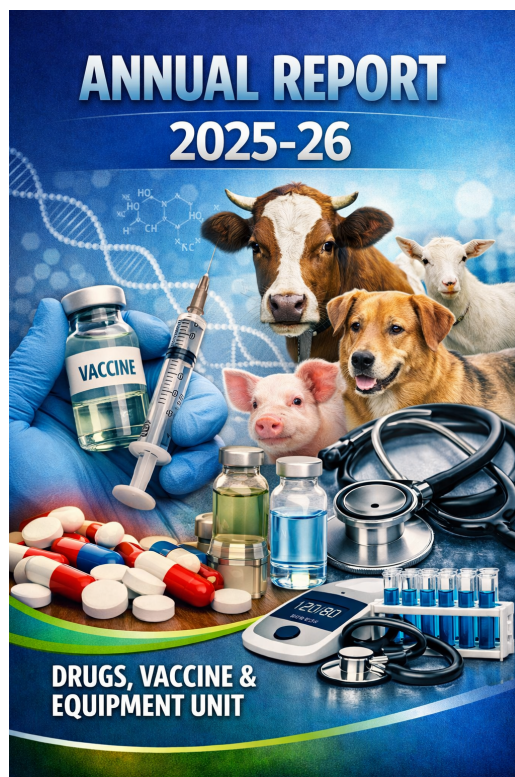


Annual Report 2025-26

Drugs Vaccine & Equipment Unit

National Center for Animal Health



Executive Summary

*The **Drugs, Vaccine & Equipment Unit (DVEU)** under the National Center for Animal Health continued to play a central role in ensuring the availability, quality assurance, and rational distribution of veterinary medicines, vaccines, equipment, and non-drug consumables across the country during FY 2025–26. Guided by its mandates of procurement, distribution, monitoring, regulatory compliance, and technical support, the Unit contributed significantly to strengthening veterinary service delivery and safeguarding national animal health security.*

*In terms of **procurement**, medicines worth **Nu. 33.65 million** were acquired, covering a wide range of categories including antimicrobials, anthelmintics, acaricides, anti-protozoals, gastrointestinal drugs, minerals, vitamins, fluids, and specialized drugs such as analgesics, hormones, intramammary infusions, and antiseptics. Direct procurement from India supplemented critical gaps, amounting to Nu. 3.51 million plus Nu. 0.18 million GST. Vaccine procurement totaled **Nu. 20.92 million**, with major investments in Foot and Mouth Disease (Nu. 4.46M), Lumpy Skin Disease (Nu. 7.88M including transportation), Classical swine fever (Nu. 1.52M), Newcastle disease (Nu. 2.09M), and Anti-rabies (Nu. 1.09M), together accounting for more than 70% of vaccine expenditure.*

*Equipment procurement amounted to **Nu. 2.40 million**, including automatic syringes, doctor's bags, IV stands, stethoscopes, thermometers, ear tag applicators, and data loggers, while non-drug consumables worth **Nu. 10.25 million** were procured, covering surgical instruments, suture materials, bandages, absorbents, clinical supplies, and animal management tools.*

*On **distribution**, medicines supplied to central agencies totaled **Nu. 1.65 million** against a ceiling of Nu. 6.30 million, revealing significant underutilization and variances across agencies. Medicines distributed to Dzongkhags amounted to **Nu. 32.18 million** against a ceiling of Nu. 32.80 million, reflecting close alignment overall, though with notable overutilization in Tashigang and underutilization in Zhemgang. Equipment and non-drug consumables distribution reached **Nu. 40.87 million** across Dzongkhags, with Tashigang, Samtse, and Sarpang accounting for nearly one-third of the total, while central agencies received **Nu. 3.66 million**, with NVH Motithang alone utilizing more than half.*

*The **annual reconciliation** at the Livestock Central Store revealed net surpluses in both equipment (Nu. 56,510.81) and medicines (Nu. 21,894.95), despite discrepancies arising from conversion standards, recording errors, and transit shrinkage. Corrective measures were recommended, including standardized units of measurement, periodic audits, and improved packaging safeguards, to strengthen inventory management and accountability.*

*On **governance and technical support**, the Unit successfully convened the **15th National Veterinary Medicine Committee (NVMC) meeting**, which emphasized veterinary medicine governance, procurement cycle efficiency, and uniformity in clinical practice. Key proposals included standardized clinical dress for the Department of Livestock and PCV2 vaccination for government pig breeding farms.*

*Beyond committee work, the Unit provided **technical inputs for disease investigations**, like IBD outbreaks at NPDC Sarpang & Dagana dzongkhags upporting outbreak response and diagnostic coordination in collaboration with field veterinarians and laboratories. Staff also served as resource persons for other national workshops like laboratory corodinationm meeting, course validation for Diploma in Laboratory Technology, National residue monitoring program and updating meat insopection manual.*

*In addition, the Unit also corodinated the **Fleming Fund activities**, providing technical inputs for antimicrobial use (AMU), antimicrobial resistance (AMR), and antimicrobial consumption (AMC) surveillance and dairy practitioner's engagement. These efforts ensured integration of Bhutan's veterinary surveillance data into global reporting frameworks, supporting evidence-based decision-making and international commitments under WOA, FAO, and WHO platforms.*

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1. About the unit

Drugs Vaccine & Equipment Unit (DVEU) under the National Center for Animal Health (fig. 1) ensures that the quality essential veterinary items (veterinary medicines, vaccines, non-drug items and equipment) are made available in all animal health centers at all times.

The unit is mandated to ensure the effective management of veterinary pharmaceuticals, biologicals, and clinical equipment.

2. Mandates

The unit has following mandates:

1. Procurement of medicines, vaccines, equipment and non-drug items
2. Quality assurances of the medicinal products procured.
3. Rational distribution of medicinal products and equipment and non-drug items.
4. Monitoring the expiry of medicinal products
5. Assist in Regulatory compliances
6. Assist Livestock Central Store, in storage and inventories management
7. Analysis of medicines/consumables/equipment usage information generation
8. Technical Supports-Organizing National Veterinary Medicine Committee (NVMC) meetings and EVSS meetings; review and update of formulary and guidelines.
9. Arrangement of emergency requirements
10. Lase with other agencies national (BFDA, MoH) international (WOAH, WHO, FAO)
11. Monitoring of usage of medicines in mandate dzongkhags and central agencies/farms of the western region.

3. Organogram

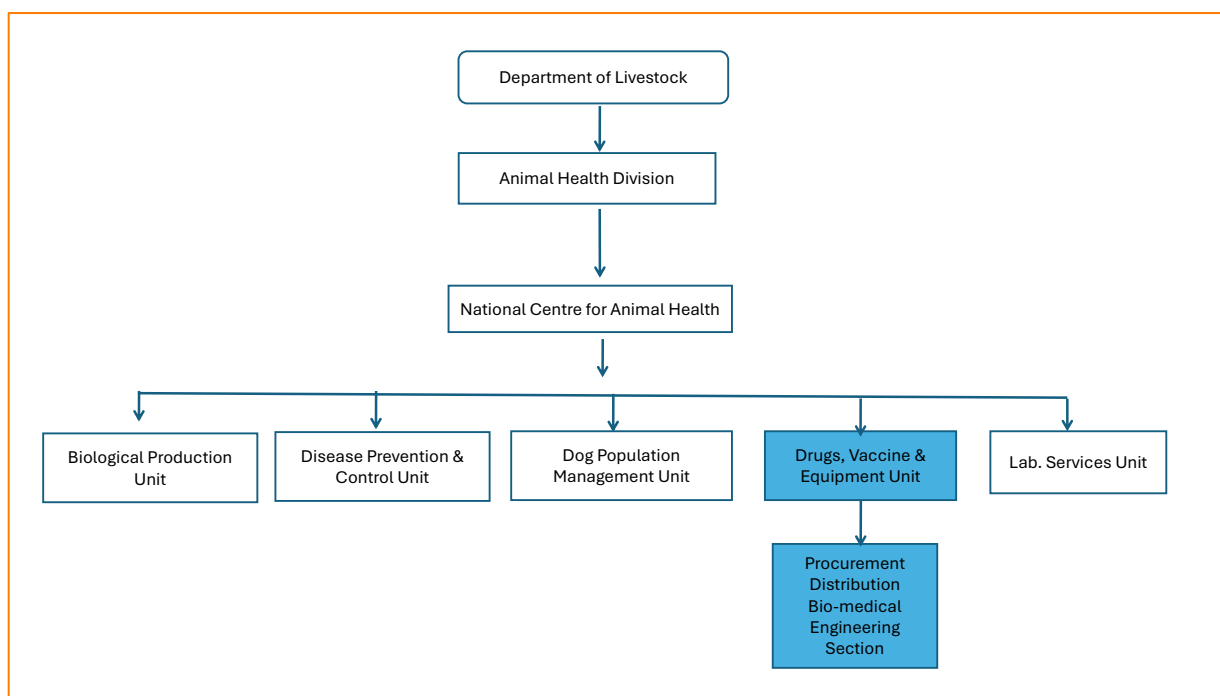


Figure 1 Organogram of DVEU

The procurement function consolidates national requirements, evaluates supplier compliance, and secures timely acquisition of drugs, vaccines, and consumables in line with established standards. Distribution ensures equitable and efficient supply chain management, delivering essential resources to regional and district veterinary centers to support disease prevention, treatment, and emergency response. The biomedical engineering section provides technical oversight, including maintenance, calibration, and repair of veterinary equipment, thereby safeguarding operational reliability and extending service life.

Through this integrated framework, the Drugs, Vaccine & Equipment Unit plays a critical role in strengthening veterinary service delivery, maintaining supply chain resilience, and supporting national animal health security. Its work directly contributes to the Department of Livestock's mandate of safeguarding animal health and ensuring preparedness for emerging challenges.

4. Man power

1. Dr NK Thapa. Animal Health Specialist II (Head)
2. Mr. Namgay Dorji, Sr. LHS

5. Procurement

5.1 Equipment Procurement

The detailed timeline for the procurement process of the veterinary equipment are represented below (fig 1)

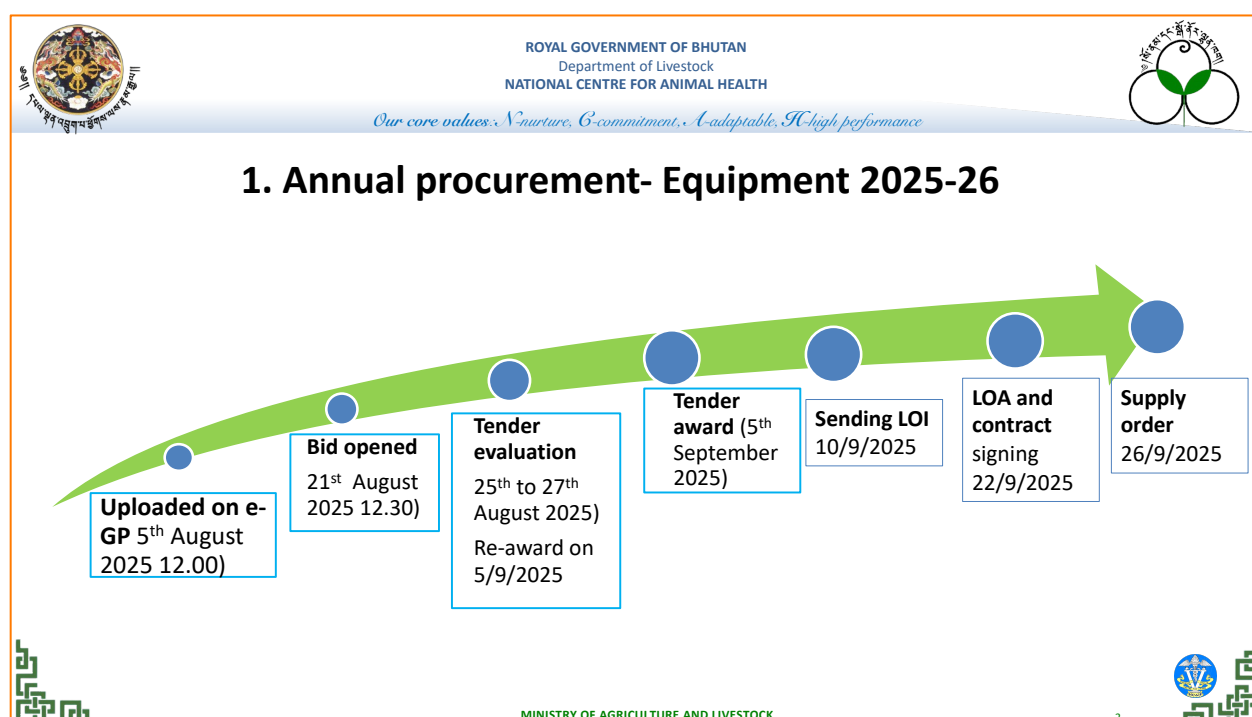


Figure 2 Procurement process of veterinary equipment.

During the reporting year, essential veterinary and clinical equipment was procured to strengthen service delivery across facilities. Major acquisitions included **automatic syringes** (270 units, Nu.

488,700) and **doctor's bags** (152 units, Nu. 375,440), ensuring frontline readiness. Clinical support equipment comprised **IV stands** (700 units, Nu. 782,600), **stethoscopes** (198 units, Nu. 155,430), and **veterinary thermometers** (327 units, Nu. 59,841). For animal identification and monitoring, **ear tag applicators** (117 units, Nu. 116,415) and **data loggers** (25 units, Nu. 362,500) were procured. Additionally, a **token dispenser** for NVH was acquired at Nu. 61,000 to streamline service management. The total expenditure for these procurements amounted to **Nu. 2,401,926**, reflecting targeted investments in diagnostic, monitoring, and frontline veterinary tools to enhance operational efficiency and service quality. The details are tabulated below in table 1.

Table 1 List of equipment procured during 2025-26

Sl no	Item Name	Supplier Name	Rate (Nu.)	Qty	Total Amount
1	Automatic syringe	Karma Tshongkhong	1810	270	488700
2	Doctor's Bag	Druk Wangmo Supplier	2470	152	375440
3	IV stand	KMT PMS	1118	700	782600
5	Stethoscope	Karma Tshongkhong	785	198	155430
6	Veterinary thermometer	Druk Wangmo Supplier	183	327	59841
7	Applicator for Ear tag	Axis Technologies	995	117	116415
8	Data logger	SALS	14500	25	362500
9	Token dispenser (NVH)	Getwell Pharma			120000
		TOTAL			2460926

5.2 Medicine procurement

The timeline for the procurement process for medicine and non-drug consumables is sketched below in fig.3.

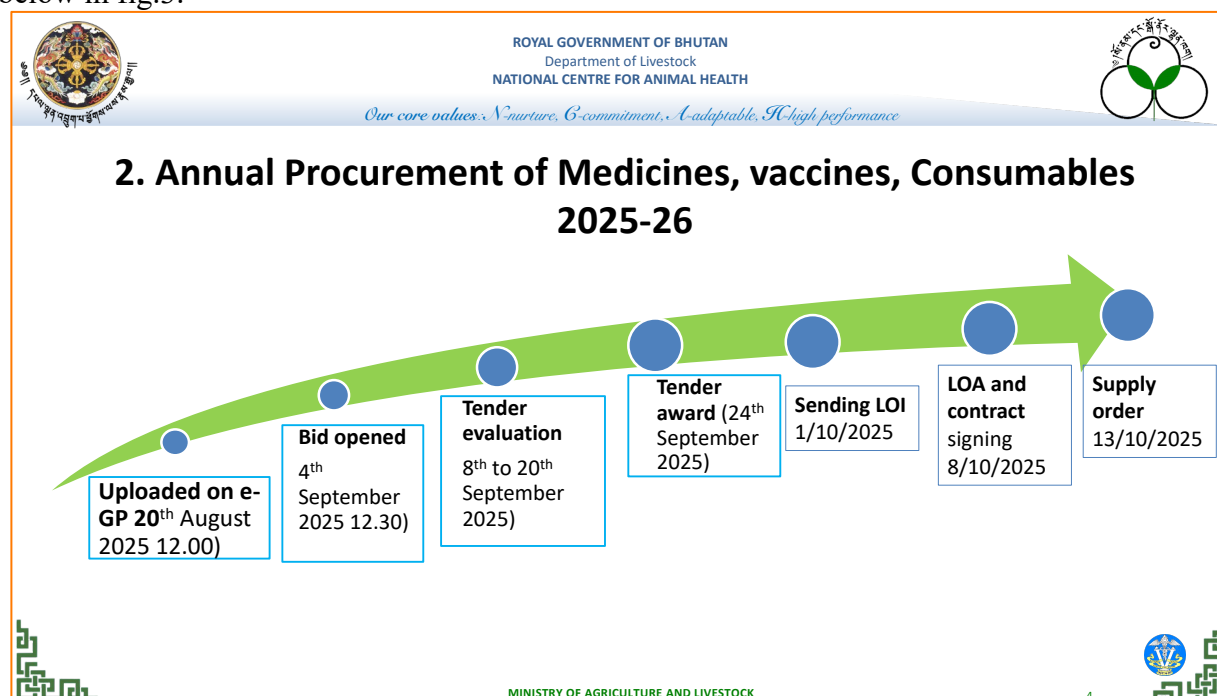


Figure 3 Procurement process for veterinary medicines, vaccines and non-drug consumables

During the year, the Drugs, Vaccine & Equipment Unit procured a comprehensive portfolio of veterinary medicines to ensure uninterrupted animal health services across the country. The total expenditure amounted to **Nu. 33.65 million**, reflecting a balanced investment in antimicrobials, antiparasitics, supportive therapies, and specialized drugs.

A significant share was directed towards **antimicrobials**, accounting for approximately Nu. 5.1 million. Key items included *Amoxycillin trihydrate bolus*, *Amoxycillin + Clavulanate tablets*, *Azithromycin*, *Gentamicin* (cream and injection), *Oxytetracycline* (LA and SA), and *Sulphadiazine + Trimethoprim powder*. These ensured effective management of bacterial infections in livestock.

Anthelmintics contributed Nu. 1.35 million, with major purchases of *Albendazole*, *Fenbendazole*, *Levamisole + Oxytoclozanide suspension*, *Ivermectin*, and *Praziquantel combinations*, supporting parasite control programs nationwide.

Procurement of **acaricides and insecticides** amounted to Nu. 3.1 million, dominated by *Deltamethrin solution* (Nu. 1.86 million) and *Flumethrin*, alongside *Gamma Benzene ointment* and *Maggotidal sprays* for ectoparasite management.

Anti-protozoals, including *Diaminazine aceturate* and *Amprolium + Sulfaquinoxaline powder*, accounted for Nu. 3.66 million, while **antifungals** such as *Clotrimazole*, *Itraconazole*, and *Ketoconazole* totaled Nu. 0.16 million.

A wide range of **gastrointestinal drugs** were procured at Nu. 1.1 million, including rumenotronics, antacids (*Omeprazole*, *Ranitidine*, *Pantoprazole*), anti-bloat powders, anti-diarrhoeals, laxatives (*Ispaghula husk*, *Liquid Paraffin*), and hepatotonics (*Ursidiol capsules*, *liver tonic powders*).

Minerals and vitamins formed a major component at Nu. 2.2 million, with large volumes of *Iron Dextran injections* (Nu. 1.24 million), *Mineral mixture powder* (Nu. 0.43 million), and *Vitamin B-complex injections* (Nu. 0.10 million).

Supportive therapies such as **fluids and electrolytes** amounted to Nu. 0.83 million, covering *Calcium borogluconate*, *Dextrose solutions*, *Normal Saline*, and *Ringer's Lactate*.

Specialized categories included **analgesics, anaesthetics, and anti-inflammatories** (Nu. 0.49 million), **hormones** (Nu. 2.5 million, including *Buserelin acetate*, *CIDR-B progesterone inserts*, *Oxytocin*, and *Prostaglandins*), and **intramammary infusions** (Nu. 1.7 million).

Further investments were made in **antiseptics and disinfectants** (Nu. 1.8 million, including *Formaldehyde*, *Glutaraldehyde*, *Povidone Iodine*, and *Potassium Permanganate*), as well as specialized drugs such as *cardiac stimulants*, *anti-convulsants*, *anti-emetics*, *haemostatics*, and *aquatic medicines*, together totaling approximately Nu. 2.0 million.

Details in annexure (1)

5.3 Direct Procurement

Some medicines not quoted or single high quotes were procured directly from the supplier nearby India. The procurement list includes a wide range of **medicines** and **consumables** essential for veterinary use. Under medicines, notable entries are Benzathine Penicillin injections in both 24 lakhs IU and 6 lakhs IU presentations, Omeprazole injections, Ursidiol capsules, and Amino acid solutions. Other critical drugs include Chloramphenicol eye ointment, Butorphenol Tartrate, Methadone, Oxytocin, Propofol, Thiopentone Sodium, Strepto-penicillin, Gabapentin, Maropitant citrate, Metoclopramide, Pimobendan tablets, Adenochrome monosemicarbazone, Botrophase, Tetanus toxoid, and Salbutamol injections. These items are sourced from manufacturers such as Jakson, Oscar, Cure Healthcare, Oriyon, Vivaldis, and others, with GST applied at 5%. The consumables section covers specialized needles for automatic syringes and semi-circle surgical needles in multiple specifications, along with advanced data loggers for monitoring temperature and humidity. Altogether, the medicines and consumables worth amount to Nu. 3,513,420 (3.5M) with an additional Nu. 175,671 (0.18M) as GST, ensuring comprehensive coverage of therapeutic, surgical, and monitoring needs for veterinary services were procured directly as it could not be sourced during normal tender of 2025-26. The details are tabulated in annexure 2.

5.4 Procurement of Non-drug Consumables

The consolidated procurement of veterinary surgical, clinical, and animal management supplies was carried out, encompassing diverse categories to ensure comprehensive operational readiness. Under **surgical instruments**, a wide range of forceps, scissors, hooks, clamps, catheters, masks, splints, drapes, gloves, syringes, and hypodermic needles were acquired, with high-value items including trocars (Nu. 311,454) and large splints (Nu. 994,500). The **suture materials** section covers monofilament polyamide, monoglyde, polyglactin, PGA sutures, and silk thread, with significant allocations such as PGA sutures amounting to Nu. 320,131. In **bandages and absorbents**, absorbent wool (Nu. 685,170), surgical gauze sheets (Nu. 382,500), and plaster bandages form the bulk of consumables. The **clinical and gynecology equipment** category includes aprons, autoclave tape, Buhner prolapse needles, butterfly scalp vein sets, dispensing materials, IV cannulas, IV sets, nitrile gloves (Nu. 307,476), ultrasound gel, and biohazard bags (Nu. 249,375). Finally, **animal management tools** such as ear tag pens and AI gloves were procured, totaling Nu. 91,611 and Nu. 198,750 respectively.

The overall procurement expenditure stands at **Nu. 10,245,842.6**, reflecting a balanced investment across surgical, clinical, consumable, and animal management essentials, thereby strengthening veterinary service delivery and ensuring preparedness for diverse operational requirements. The details are tabulated in annexure 3.

5.5 Vaccine Procurement

During the year, the Unit undertook extensive procurement of veterinary vaccines to safeguard livestock health and strengthen national disease prevention programs. The total expenditure amounted to **Nu. 20.92 million**, reflecting a strategic balance between routine immunization and emergency preparedness.

Key investments included **Anti-rabies vaccine** (7,000 doses, Nu. 1.09 million) and **Foot and Mouth Disease (FMD) vaccine** (5,000 doses, Nu. 4.46 million), which together formed the backbone of preventive health measures. Poultry health was supported through **Fowl pox vaccine** (6,626 doses, Nu. 0.97 million), **HS & BQ combined vaccine** (5,000 doses, Nu. 0.96 million), **Infectious Bursal Disease (IBD) vaccine** (14,470 doses, Nu. 1.23 million), **Marek's disease vaccine (HVT strain)** (2,000 doses, Nu. 0.70 million), and **Newcastle disease vaccines** (R2B strain: 15,000 doses, Nu. 1.28 million; B1 strain: 12,500 doses, Nu. 0.81 million). For swine health, **Classical swine fever vaccine** (1,900 doses, Nu. 1.52 million) was procured, while small ruminant protection was ensured through **Peste des Petits Ruminants (PPR) vaccine** (50 doses, Nu. 0.02 million).

The largest share of expenditure was directed towards **Lumpy Skin Disease (LSD) vaccines**, with 3,200 doses at Nu. 2.82 million and 1,600 doses at Nu. 4.60 million, supplemented by transportation costs of Nu. 0.47 million. The total LSD investment reached **Nu. 7.88 million**, underscoring the priority given to outbreak response and disease containment.

Overall, the vaccine procurement portfolio demonstrates a strong emphasis on priority livestock diseases such as FMD, Newcastle disease, Classical swine fever, and LSD, which together accounted for more than 70% of the total expenditure. This strategic investment ensured adequate stock for nationwide immunization campaigns and reinforced rapid response capacity for emerging disease threats (table. 2).

Table 2 Different animal vaccines procured

Vaccine procurment 2025-26				
S.N.	Vaccine	Rate (Nu.)	Qty.	Amount(Nu.)
1	Anti-rabies vaccine	155.75	7000	1090250
2	FMD vaccine	891.22	5000	4456100
3	Fowl pox	147	6626	974022
4	HS & BQ combined vaccine	191.5	5000	957500
5	Infectious bursal disease (IBD) vaccine	85	14470	1229950
6	Mareks disease vaccine (HVT strain)	350	2000	700000
7	Newcastle disease vaccine R2B	85	15000	1275000
8	Newcastle disease vaccine B1	65	12500	812500
9	Classical swine fever vaccine	800	1900	1520000
10	PPR Vaccine	450	50	22500
11	Lumpy Skin disease vaccine	881	3200	2819200
12	Lumpy Skin disease vaccine	2872	1600	4595200
13	Transportaion of LSD vaccine			468377.1
	TOTAL			20920599.1

6. Medicine Distribution

6.1 Medicine Distribution to Central agencies

For FY 2025–26, the distribution of medicines against budget ceilings across central agencies revealed several highly significant deviations. Overall, medicines worth Nu. 1.65 million were distributed against a ceiling of Nu. 6.30 million, leaving a substantial under-utilization of Nu. 4.65 million. The most striking case was BLDCL, which distributed Nu. 1.64 million despite having no approved ceiling, reflecting a major variance. Similarly, NCBC Bumthang exceeded its ceiling by Nu. 357,211.60, and Yak Farm Haa overshoot by Nu. 60,586.70. In contrast, NVH Motithang demonstrated efficient utilization, distributing Nu. 1.28 million against a ceiling of Nu. 2.20 million, leaving a surplus of Nu. 915,643.97. Several smaller agencies, including RLDC Kanglung, NCAH Serbithang, and NRDCRLF Haa, showed significant under-utilization with variances exceeding Nu. 90,000 each. These figures highlight critical imbalances: some agencies operated without ceilings yet distributed large volumes, while others under-utilized their allocations. This calls for strengthened budget planning, monitoring, and ceiling alignment to ensure equitable and accountable distribution of veterinary medicines across all agencies (fig. 4, table 3).

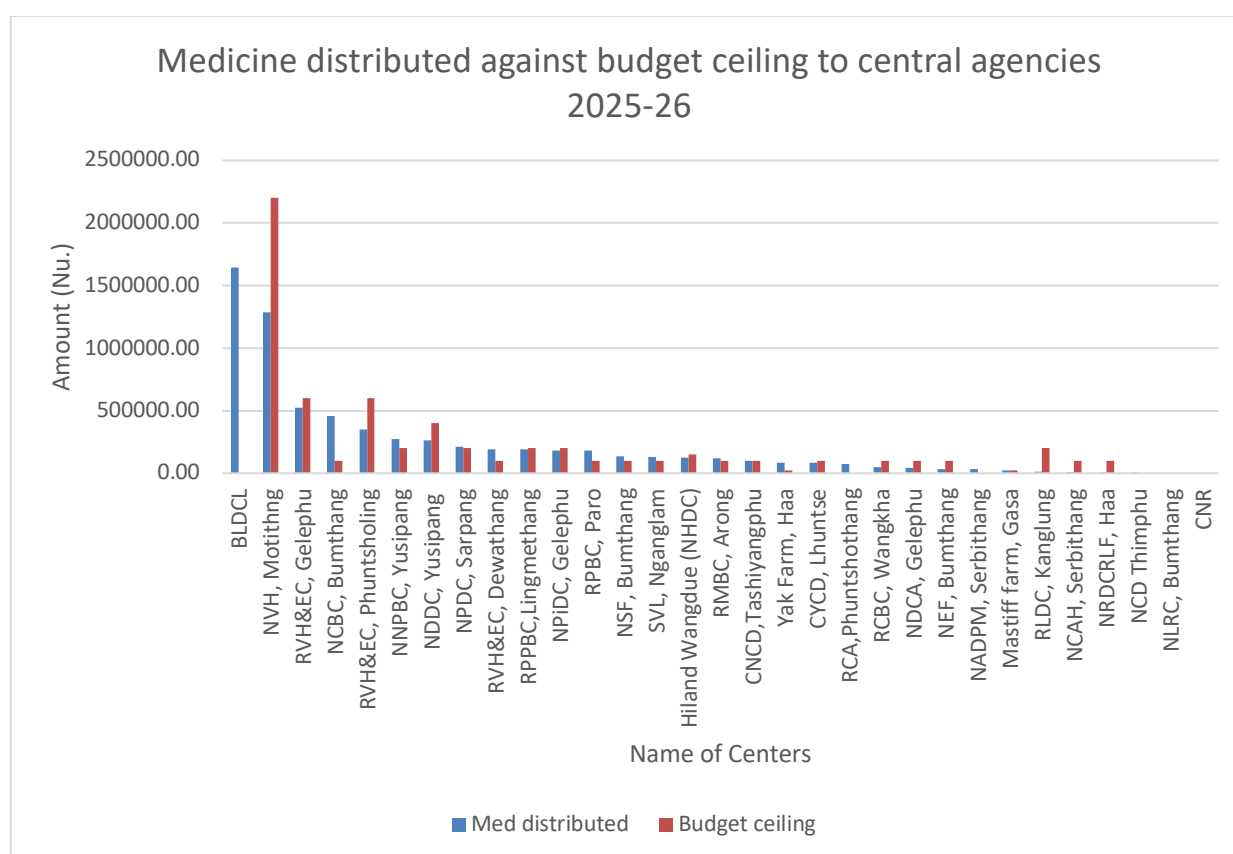


Figure 4 Medicines distributed against budget ceiling to central agencies

Table 3 Medicines distributed against budget ceiling to central agencies

S.N.	Central agency	Med distributed	Budget ceiling
1	BLDCL	1645405.26	0
2	NVH, Motithng	1284356.03	2200000
3	RVH&EC, Gelephu	525873.23	600000
4	NCBC, Bumthang	457211.60	100000
5	RVH&EC, Phuntsholing	351793.50	600000
6	NNPBC, Yusipang	273529.88	200000
7	NDDC, Yusipang	263930.95	400000
8	NPDC, Sarpang	213682.10	200000
9	RVH&EC, Dewathang	193483.07	100000
10	RPPBC, Lingmethang	192341.36	200000
11	NPiDC, Gelephu	181781.81	200000
12	RPBC, Paro	180567.57	100000
13	NSF, Bumthang	135251.33	100000
14	SVL, Nganglam	130499.63	100000
15	Hiland Wangdue (NHDC)	123095.80	150000
16	RMBC, Arong	121640.81	100000
17	CNCD, Tashiyangphu	98228.05	100000
18	Yak Farm, Haa	85586.70	25000
19	CYCD, Lhuntse	84150.57	100000
20	RCA, Phuntshothang	71455.00	0
21	RCBC, Wangkha	46720.09	100000
22	NDCA, Gelephu	41216.50	100000
23	NEF, Bumthang	35051.95	100000
24	NADPM, Serbithang	31561.75	0
25	Mastiff farm, Gasa	22979.68	25000
26	RLDC, Kanglung	13207.60	200000
27	NCAH, Serbithang	6366.30	100000
28	NRDCRLF, Haa	423.00	100000
29	NCD Thimphu	280.00	0
30	NLRC, Bumthang	0.00	0
31	CNR	0.00	0
	Total	6811671.12	6300000

6.2 Medicine Distribution to Dzongkhags

For the fiscal year 2025–26, the distribution of veterinary medicines against the approved budget ceilings across Dzongkhags and central agencies revealed several highly significant trends. Overall, medicines worth Nu. 32.18 million were distributed against a ceiling of Nu. 32.80 million, reflecting a close alignment with only a marginal surplus of Nu. 614,076.36. Notably, Tashigang recorded the most significant over-utilization, distributing Nu. 3.90 million

against a ceiling of Nu. 2.60 million, exceeding by Nu. 1.30 million. Similarly, Bumthang exceeded its ceiling by Nu. 796,817.28, and Tashiyangtse by Nu. 570,749.42. On the other hand, Zhemgang underspent by Nu. 515,953.92 while Haa and Samdrupjongkhar also showed substantial under-utilization. Agencies such as Samtse and Punakha demonstrated near-perfect alignment, with differences of only Nu. – 21,991.42 and Nu. –40,097.01 respectively. These figures highlight both strong budget adherence in several districts and significant deviations in others, underscoring the need for improved forecasting and monitoring to ensure equitable and efficient resource allocation nationwide. (Fig. 5, table 4).

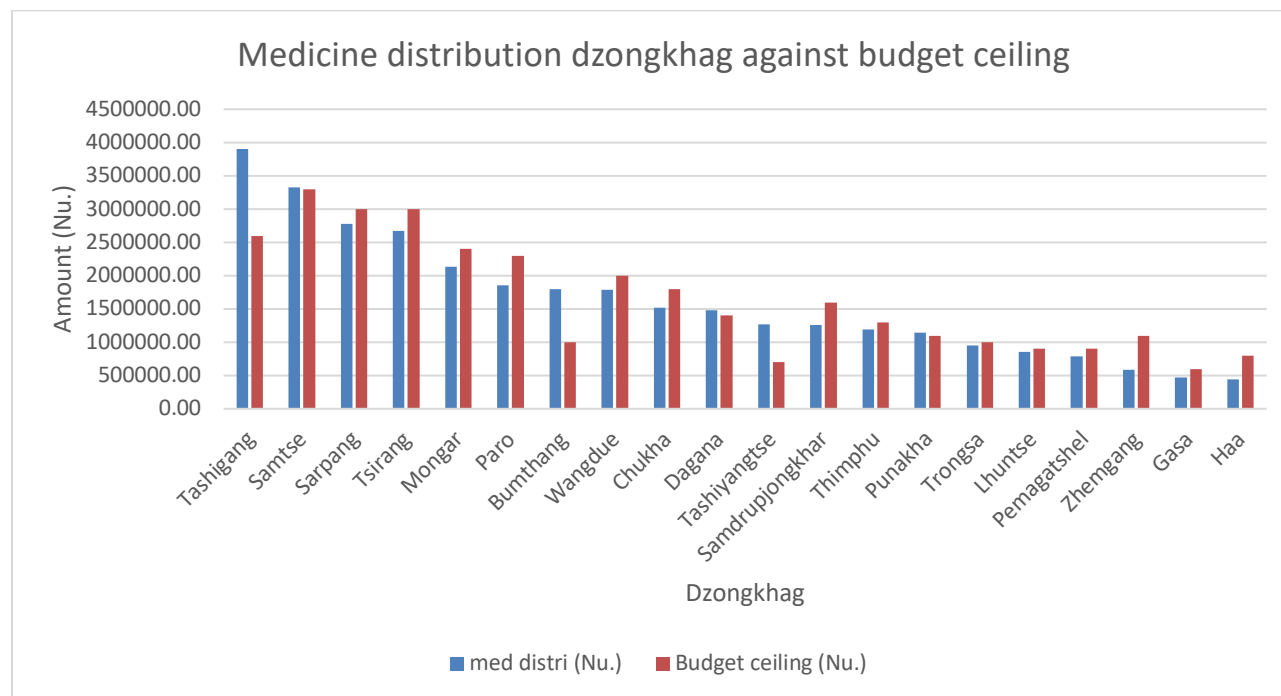


Figure 5 Medicines distributed to dzongkhags against budget ceiling

Table 4 Medicine distributed to dzongkhags against budget ceiling

Dzongkhag	Medicine distributed (Nu.)	Budget ceiling (Nu.)
Tashigang	3900745.79	2600000
Samtse	3321991.42	3300000
Sarpang	2774305.61	3000000
Tsirang	2674282.58	3000000
Mongar	2130501.11	2400000
Paro	1858784.93	2300000
Bumthang	1796817.28	1000000
Wangdue	1788458.44	2000000
Chukha	1516398.11	1800000
Dagana	1476356.00	1400000

Tashiyangtse	1270749.42	700000
Samdrupjongkhar	1255760.17	1600000
Thimphu	1188256.93	1300000
Punakha	1140097.01	1100000
Trongsa	954987.87	1000000
Lhuntse	856705.39	900000
Pemagatshel	789117.39	900000
Zhemgang	584046.08	1100000
Gasa	469950.18	600000
Haa	437611.93	800000
Total		32800000

7. Equipment and non-drug consumables distribution

7.1 Distribution to Dzongkhags

For FY 2025–26, the procurement of veterinary and clinical equipment across Dzongkhags amounted to Nu. 40.87 million, with three agencies recording the highest expenditures. Tashigang led with Nu. 4,598,474.71, followed by Samtse at Nu. 4,205,085.40, and Sarpang at Nu. 3,180,794.04. Together, these three Dzongkhags accounted for nearly one-third of the total procurement, underscoring their significant role in resource utilization. Other notable contributors included Tsirang (Nu. 3.10 million), Mongar (Nu. 2.85 million), and Wangdue (Nu. 2.55 million). The figures highlight concentrated investment in a few key Dzongkhags, reflecting both regional demand and strategic prioritization in equipment distribution (Fig. 7, table 5).

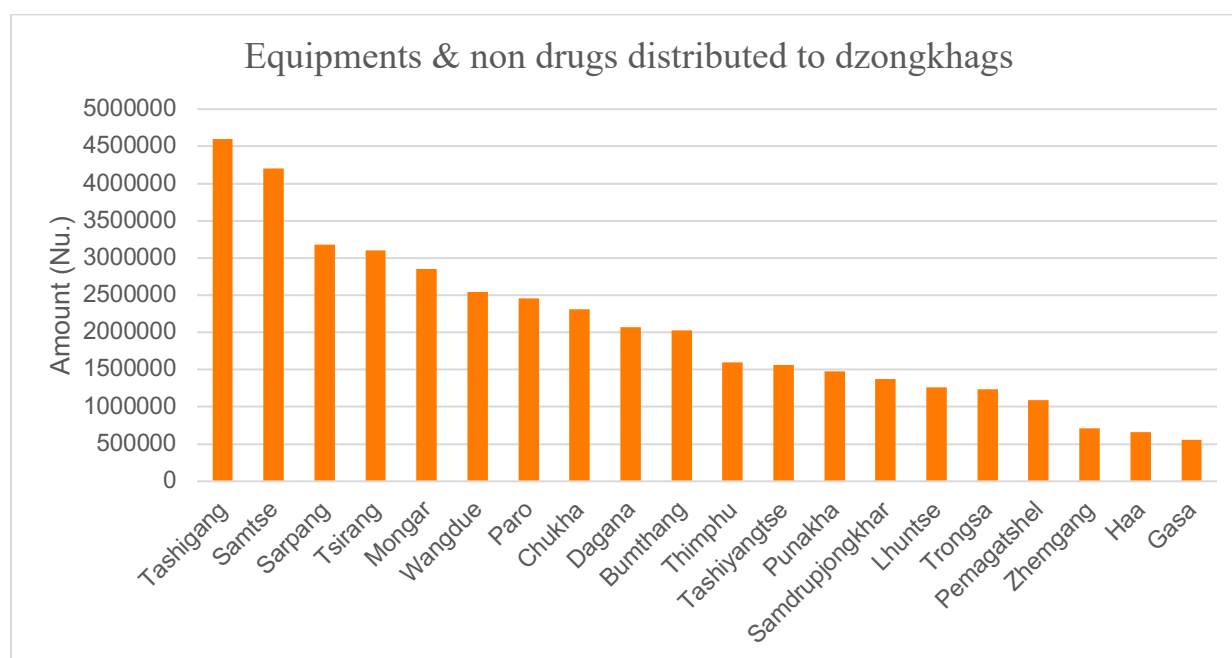


Figure 6 Equipment and non-drug consumables distributed to dzongkhags

Table 5 Equipment and non-drug items distributed to dzongkhags (amount)

Dzongkhags	Equip (Nu.)
Tashigang	4598474.71
Samtse	4205085.4
Sarpang	3180794.04
Tsirang	3104877.56
Mongar	2850204.06
Wangdue	2547297.77
Paro	2453935.36
Chukha	2309330.48
Dagana	2067400.3
Bumthang	2025662.73
Thimphu	1596513.43
Tashiyangtse	1563526.91
Punakha	1473612.06
Samdrupjongkhar	1375498.17
Lhuntse	1264984.98
Trongsa	1236336.87
Pemagatshel	1089009.75
Zhemgang	713219.33
Haa	658057.8
Gasa	557942.01
Total	40871763.7

7.2 Distribution to Central agencies

For FY 2025–26, the distribution of equipment across central agencies totaled Nu. 3.66 million, with significantly high amounts concentrated in a few institutions. The largest allocation was recorded at NVH Motithang, which utilized Nu. 1,909,710.95, accounting for more than half of the overall distribution. This was followed by RVH&EC Phuntsholing at Nu. 721,294, and RVH&EC Dewathang at Nu. 190,149.70. Together, these three agencies represented the most significant share of equipment distribution, underscoring their critical role in service delivery and operational capacity. The remaining agencies received comparatively smaller amounts, with several recording allocations below Nu. 100,000, highlighting a concentrated investment pattern favoring major referral and regional centers (Fig.8, table 6).

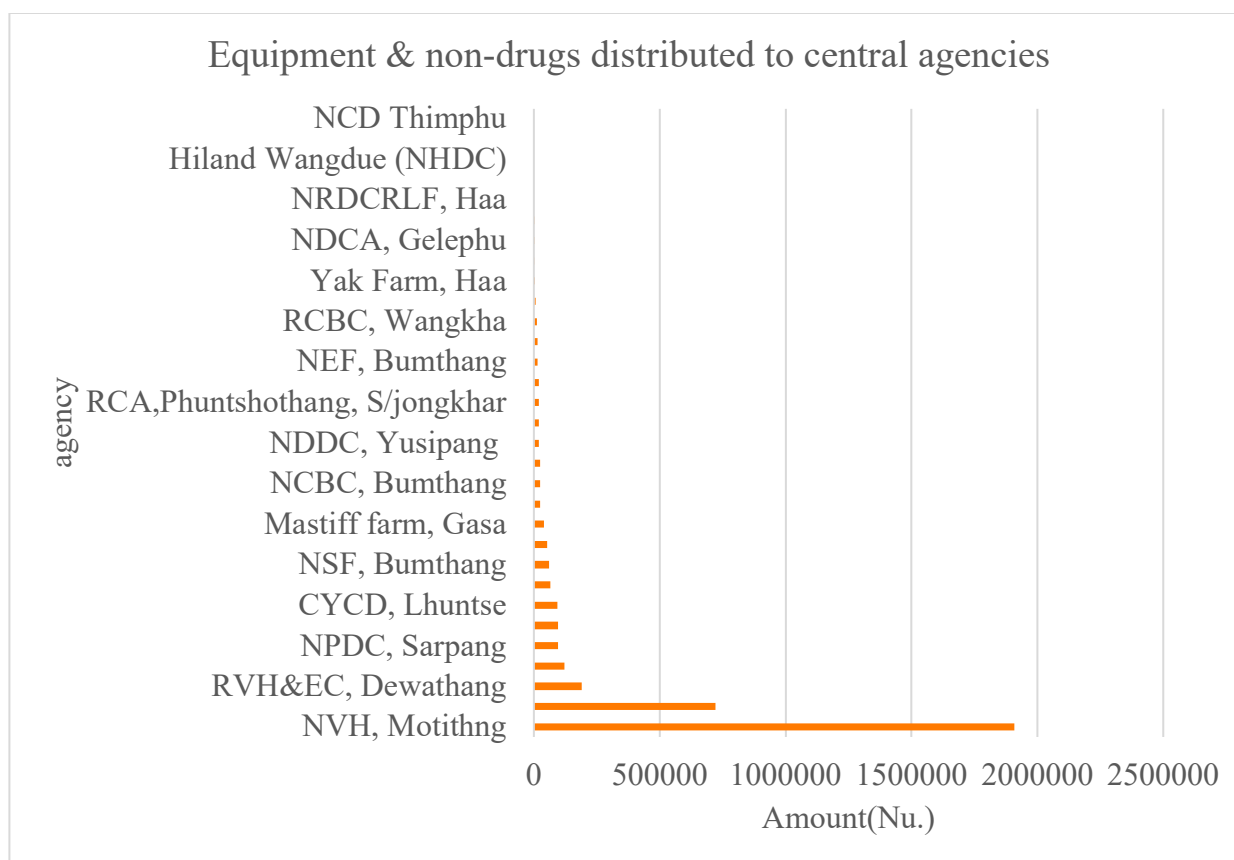


Figure 7 Equipment and non-drug items distributed to central; agencies

Table 6 Equipment and non-drug items distributed to central agencies (amount)

Central agency	Equipment (Nu.)
NVH, Motithng	1909710.95
RVH&EC, Phuntsholing	721294
RVH&EC, Dewathang	190149.7
RVH&EC, Gelephu	120806.57
NPDC, Sarpang	96609.5
RLDC, Kanglung	95067.9
CYCD, Lhuntse	92912.92
NNPBC, Yusipang	64696.55
NSF, Bumthang	59245.32
NPiDC, Gelephu	52661.2
Mastiff farm, Gasa	40486.25
CNCD, Tashiyangphu	25590.16
NCBC, Bumthang	25405.72

RPBC, Paro	25017.85
NDDC, Yusipang	20957.72
RMBC, Arong	20560.01
RCA, Phuntshothang, S/jongkhar	19973.1
SVL, Nganglam	19731.25
NEF, Bumthang	14365.01
RPPBC, Lingmethang	14356.87
RCBC, Wangkha	11486.93
NLRC, Bumthang	8044.25
Yak Farm, Haa	4454.65
NCAH, Serbithang	2800
NDCA, Gelephu	2199.5
BLDCL	1144
NRDCRLF, Haa	0
NADPM, Serbithang	0
Hiland Wangdue (NHDC)	0
CNR	0
NCD Thimphu	0
TOTAL	3659727.88

8. Annual Reconciliation at Livestock Central Store for FY 2025–2026 for Regularization

The Annual Reconciliation at the Livestock Central Store for the financial year 2025–2026 was conducted to regularize stock discrepancies across both equipment and medicines. In the category of equipment and non-drug items, the reconciliation revealed a total unreconciled amount of Nu. 126,497.53. Within this, excess stock was valued at Nu. 91,504.17, while deficit stock accounted for Nu. 34,993.36. After balancing these figures, the net outcome reflected a surplus amount of Nu. 56,510.81. Similarly, in the category of medicines, the total unreconciled amount stood at Nu. 61,256.35, comprising excess stock worth Nu. 41,575.65 and deficit stock valued at Nu. 19,680.70. This resulted in a surplus balance of Nu. 21,894.95.

The reconciliation exercise identified several underlying causes for these mismatches. One of the primary reasons was the absence of standardized units of conversion in the system, which led to inconsistencies when recording items during receipt and issue—for example, strips being converted to jars, milliliters to grams, or vials to ampoules without uniform standards. Additionally, errors were noted during peak periods of annual distribution and packaging, when the high workload contributed to recording inaccuracies. Occasional issuance of items was also not properly reflected in the ledger, further contributing to discrepancies. Moreover, some

shortages were likely the result of distribution errors, transit damage, or physical shrinkage during handling and storage.

Despite the presence of these discrepancies, the reconciliation exercise ultimately revealed net surpluses in both categories, which is a positive outcome. However, the findings underscore the need for corrective measures to strengthen future stock management. Recommended actions include upgrading the system to incorporate standardized units of measurement, conducting refresher training for staff to minimize errors during peak distribution periods, instituting periodic audits to detect mismatches early, and improving packaging and transit safeguards to reduce shrinkage and damage. By implementing these measures, the Livestock Central Store can enhance the accuracy, reliability, and accountability of its inventory management processes, ensuring smoother reconciliations in subsequent financial years.

9. 15th National Veterinary Committee (NVMC) Meeting

15th NVMC meeting was held on 1st of May 2026 at NCAH conference in person for the members residing in Thimphu and virtual for the members outside Thimphu in view of conserving the fossil fuel.

The NVMC meeting began with a welcome note delivered by Dr. Lungten, Program Director at NCAH and a permanent member of the committee, followed by an opening address from Dr. Kinley Dorji, Vice Chair of NVMC and Superintendent of NVH, who emphasized the importance of strengthening veterinary medicine governance. The agenda was then formally adopted under the guidance of Dr. N.K. Thapa, Secretariat, NVMC (DVEU, NCAH), who also led the follow-up discussion on resolutions from the 14th NVMC meeting to ensure continuity and accountability. Dr. Thapa further facilitated the selection of the NVMC Chair, updated the membership list, and briefed members on their roles and responsibilities. After a short tea break, the session resumed with Mr. Namgay Dorji presenting on the EVSS strategy and procurement cycle, covering focal responsibilities, indent versus distribution mechanisms, emergency requisition issues, and coordination with outside agencies. This was followed by Dr. Thapa's proposal for updates on equipment, consumables, and medicines to strengthen supply chain efficiency. Dr. Tenzin Wangchuk from NVH Motithang then presented a proposal for a standardized design of clinical dress for the Department of Livestock, highlighting the need for uniformity and professional identity. Subsequently, Dr. Thapa introduced the PCV2 vaccination proposal for government pig breeding farms, outlining its benefits for herd health management. The meeting concluded with deliberations under Any Other Business, which included discussions on LSD vaccination in cattle, before formally closing the workshop.

Date: 1/05/2026) Venue: NCAH Serbithang (Virtual for members residing outside)

9.1 Agenda

Time	Activities	Lead
9:30-9:35 AM	Welcome Note	Dr. Lungten, PD, NCAH, NVMC permanent member
9:35- 9:45 AM	Opening Address	Dr. Kinley Dorji, vice chair NVMC /Superintendent, NVH)

9: 45-9:55 AM	Adoption of agenda	Dr. NK Thapa Secretariat, NVMC (DVEU, NCAH)
9:45-10:15 AM	Follow up on resolutions of 14 th NVMC	Dr. NK Thapa, NVMC (DVEU, NCAH)
10:15-10:30 AM	Selection of chair, Updating NVMC Members, briefing on roles	Dr. NK Thapa, Secretariat, NVMC (DVEU, NCAH)
10:30-11:00 AM	Tea break	
11:00-11:30 AM	EVSS strategy-procurement cycle/VSS focal, indent vs distribution, issues on emergency requisition, outside agencies	Mr. Namgay Dorji, Secretariat, NVMC (DVEU, NCAH)
11:30-12:00 AM	Proposal for updates on equipment, consumables, medicines	Dr. NK Thapa, Secretariat, NVMC (DVEU, NCAH)
12:00- 12:30 AM	Proposal for standard design for Clinical dress for DoL	Dr. Tenzin Wangchuk, NVH Motithang
12:30-12:45 PM	PCV2 vaccination proposal at government pig breeding farms	Dr. NK Thapa, Secretariat, NVMC (DVEU, NCAH)
12:45-1:00 PM	AOB – LSD vaccination in cattle closure of workshop	

9.2 Minutes of the 15th National Veterinary Medicines Committee (NVMC) Meeting

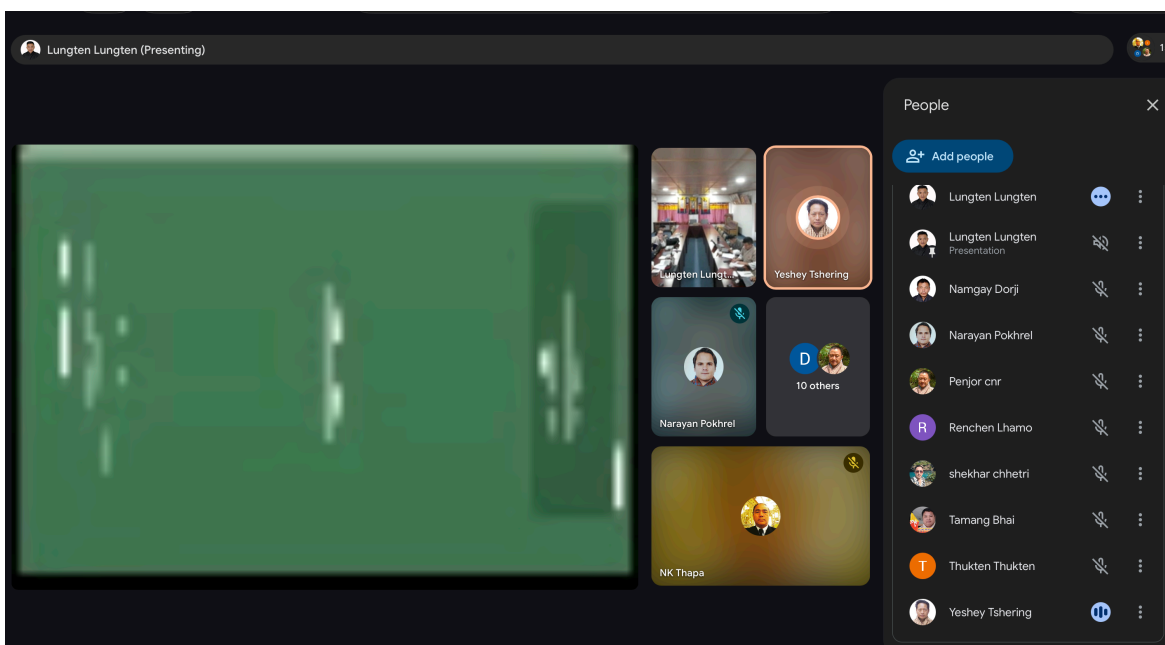
Date: 1st May 2026, **Venue:** NCAH Serbithang and members outside Thimphu attended virtually

A. Participants (in-person)

1. Dr. Kinley Dorji, Specialist Head, NVH, Motithang (Vice-chair)
2. Dr. Lungten, PD NCAH (Permanent member)
3. Dr. Tenzin Wangchuk, Sr. VO, NVH, Motithang (Co-opt member)
4. Dr. Jamtsho, VO, DVH, Thimphu (Co-opt member)
5. Ms. Menuka Rai, Head, BPU (Co-opt member)

Secretary

1. Dr. NK Thapa, Head, DVEU, Head DVEU (Secretary)
2. Mr. Namgay Dorji, Sr. LHS, DVEU (Secretary)



Other co-opt members attended virtually

The chair (Chief, AHD) could not attend due to other priority engagement hence, the vice chair (Head, NVH) convened the meeting. During the meeting, following resolutions were made:

1. NVMC Meeting Modality

The NVMC meeting is one of the important technical meetings and hence it is very difficult to discuss and resolve most of the issues. Therefore, as far as possible, provided the resources are available, henceforth the meeting be conducted in person, recognizing the technical importance. **(Action: NCAH)**

2. Distribution pattern of Medicines, Consumables, and Equipment

Currently the practice of the distribution of medicines, consumables and equipment are done on 70% first lot and 30% second lot for the same item. Since all the items are purchased in one lot, 100% of the items indented and whichever are received at LCS during the distribution time will be distributed in the first lot. The items received after the first distribution shall be distributed in the second lot. **(Action: NCAH/LCS)**

3. EVSS Supply Cycle

The existing EVSS supply cycle was reviewed and was proposed such that first distribution be made by January to February and second lot by April-May. The supply cycle shall be reviewed and compared with that of the Ministry of Health and revise/ adopt accordingly. **(Action: NCAH)**

4. Medicine indent for non-departmental agencies

Currently, the medicines, consumables and equipment are being distributed to the non-departmental agencies like CNR, BLDC, NCD without indent collection. This often leads to the shortage in the regular distribution to animal health centers. Hence, the house recommended to

collect indents from non-departmental organizations also and separate estimate shall be submitted for additional budget during annual budget proposal. **(Action: NCAH)**

5. Medicine Indent

In most of the cases, it has been found that there is significant mismatch of medicine indent verses distribution in some of the dzongkhags. Often the medicines were collected 4 to 5 times more than indented and in some, un-indented medicines were being collected which leads to shortage in other dzongkhags/centers. Hence, medicine indents shall be prepared realistically, based on actual requirements rather than assumptions as far as possible. **(Action: NVH, RLDC/ RVHs/ DVHs/ Central agencies)**

6. Vaccine Indent

Since vaccine indents has to be based on projections of the available/upcoming farms currently there is confusion as whether to follow FRS projection or VIS data. The house recommended that though both the database is going to be integrated and preferably, FRS projection could be used for vaccine indents shall be used as it will have records of the farms and the animals. **(Action: NVH, RLDC/RVHs/DVHs/Central agencies)**

7. Tender Evaluation Criteria

Difficulties are often encountered during the tender evaluation as the criteria set on Standard Bidding Document (SBD) are not very clear. Hence, before uploading the tender, the criteria/ requirements shall be properly set and uploaded in the Standard Bidding Document (SBD). **(Action: NCAH)**

8. Equipment List Updates

Based on the field requirements and suggestions, following items shall be included in the equipment list:

1. Multiparameter Monitor for Surgery
2. Farrier set (For Cattle & Equine) for hoof trimming
3. Burdizzo castrator (bull)
4. Surgical table (Stainless steel adjustable height)

9. Clinical Dress Standardization

Considering the different clinical dress code used in the animal health centers currently, the requirement of uniform clinical dress code was felt very important. Based on the presentation made by NVH, a three-color scheme shall be adopted for: Veterinarians, Veterinary Paraprofessionals and Lab technicians. The proposals shall be submitted to the department for approval. **(Action: NVH, NCAH, DoL)**

10. PCV2 Vaccination Proposal

Based on the requisition for vaccination of pigs at NNPBC Yusipang against Porcine circo virus (PCV) type 2 and Porcine Respiratory and Reproductive Syndrome (PRRS), a feasibility study was conducted. The findings suggested for introduction of vaccination against PCV2 only as PRRS was not detected in RT-PCR. A pilot vaccination program could be implemented at NNPBC by including appropriate strains/genotypes. A detailed proposal shall be submitted to the Department. **(Action: NCAH, AHD DoL)**

11 New NVMC Chair

Following the completion of two years chairmanship tenure by the Chief, AHD, the committee selected the Program Director, NCAH, through open poll and PD, NCAH shall be the Chair of NVMC for the period of two years (**Action: AHD/NCAH/NVH**)

9.3 Amendments in Essential veterinary medicine list

A. Medicine

i. Tetracycline Powder

Each gram contains Tetracycline hydrochloride I.P. – 50 mg

ii. Azithromycin Tab & Azithromycin Inj segregated

iii. Albendazole

Albendazole 150 mg Tab & Albendazole 600 mg Boli segregated

iv. Melbimycin Alfoxonar

Selected 15 mg Melbimycin + 75 mg Alfoxonar Presentation 3tab/strip

v. Sodium Bicarbonate Inj. 7.5 % w/v -200 ml selected instead of 25 ml

vi. Mineral Mixture powder composition

Calcium	20.0 %
Phosphorus 1	2.0 %
Magnesium	5.0 %
Sulphur	1.8-3.0 %
Copper	0.10 %
Zinc	0.80 %
Manganese	0.12 %
Iodine	0.026 %
Iron	0.40 %
Cobalt	0.012%

vii. Calcium Borogluconate

Specifications refined as each 450 ml contains:

Calcium (as calcium gluconate) I.P.	1.86% w/v
Boric Acid I.P.	4.21% w/v
Magnesium hypophosphite	5% w/v
Dextrose (anhydrous) I.P.	20% w/v
Chlorocresol I.P.	0.1% w/

B. vaccines

i. Mareks Disease Vaccine

Specifications included

Bivalent MD cell associated is combined HVT FC-126 strain (Serotype 3) and Rispen strain (Serotype 1) grown on SPF chick embryo fibroblast culture.

I. Consumables

i. 2-0 suture

2-0 suture (needle round)- suturing internal organs with 2-0 suture needs round needle instead of cutting edge.

Specification

Absorbable polyglycolic acid (PGA) 30 mm ½ circle round bodied.

ii. 1-0 Suture

Absorbable polyglycolic acid (PGA) 40 mm ½ circle reverse cutting.

iii. Cotton

Zigzag cotton: accurate weighing.

iv. POP

5 cm X 2.70 m X 12 X 1 (Unit Packet)

6

II. Equipment (new addition)

Table 7 List of new addition of equipment

1	Partition room Multipurpose Bedside/Chairside 3-Fold & Detachable divider for surgery Screen/Partition with Green Cotton Curtain for Clinic table
2	Multiparameter monitor (Display & hardware: 12.1" high-resolution LED screen (touchscreen) with multiple layout modes, Lightweight and portable (< 4 kg with battery), Built-in rechargeable lithium-ion battery (standard ~4 h, optional ~8 h), Fan-less design reduces dust and fur interference. Standard monitoring parameters: ECG (3 or 5 leads) with veterinary-specific algorithm, SpO ₂ (pulse oximetry) for oxygen saturation and perfusion index, NIBP (non-invasive blood pressure) with veterinary-optimized algorithm, Temperature (typically 2 channels), Respiration rate (RR). Extended/optional parameters: Side-stream CO ₂ (capnography) to track end-tidal CO ₂ (etCO ₂), IBP (invasive blood pressure), Cardiac output (C.O.) monitoring, Data & alarms Trend storage of vital data (up to ~1200 hrs in some models), Configurable alarms for all monitored parameters, Provide comprehensive physiologic monitoring. Configuration can be customized based on species and clinical scenario.
3	Farrier set (Cattle & Equine) Lukar 8 pcs farrier tools kit horse hoof trimmers, includes horse hoof nipper, horseshoe cutting pliers, hoof nail clincher, hoof hammer, hoof knife, rasp file, horseshoe brush
4	Burdizo castrator 18-inch length, surgical grade stainless steel, clinical grade and (bloodless castrator) autoclave able Material, antirust,
5	Surgical table V top, electrically operated lifting mechanism with a 300mm range, 124.5cm×61cm×56cm-99cmH (stainless steel),

10. Technical supports

10.1 Assessment of Infectious Bursal Disease (IBD) Outbreak and Vaccine Efficacy at the National Poultry Development Center (NPDC), Sarpang

Dr. NK Thapa (NCAH), Dr. Rinzin Loday (RVH & EC Gelephu), Ms. Menuka Rai (BPU), Mr. Dawa Tshering (LSU)

Summary

In early July 2025, the National Poultry Development Centre (NPDC), Sarpang, reported an outbreak of Infectious Bursal Disease (IBD) in two sheds just days after routine vaccination. Although the mortality remained low (about 2%), the event raised concerns about vaccine efficacy and farm-level biosecurity.

An investigation was carried out between 6–9 August 2025 to review vaccination practices, vaccine quality, cold chain management, and biosecurity compliance. Samples collected from affected sheds tested positive for IBD through rapid antigen tests and RT-PCR. The same batch of vaccine (Batch No. IN24-010, valid until October 2025) had also been distributed to over 40 other government and private farms, but no outbreaks were reported elsewhere. This indicated that vaccine failure was unlikely, and the issue was more likely linked to farm-level handling and cold chain lapses.

At NPDC, weaknesses were noted in vaccine storage and transportation, including the absence of continuous temperature monitoring and reliance on attendants rather than trained technical staff for administering vaccines. In addition, the presence of wild birds around sheds, movement of staff from nearby villages, and the farm's history of previous outbreaks suggested possible breaches in biosecurity and environmental persistence of the virus.

The outbreak in Dagana in August 2025, traced to chicks supplied from NPDC, further highlighted the risk of virus spread through movement of birds or fomites. Overall, the assessment ruled out vaccine inefficacy but pointed to cold chain management gaps, questionable vaccination practices, and inadequate biosecurity as the main contributors.

The report recommends stricter biosecurity protocols, disinfection before restocking, vaccination by competent personnel, improved cold chain monitoring with temperature loggers, and a review of the national vaccination schedule in line with global guidelines. It also stresses the need for continued virus characterization and vaccine strain matching to ensure long-term protection.

1. Introduction

Infectious Bursal Disease (IBD), commonly known as Gumboro disease, is a highly contagious viral infection caused by Infectious bursal disease virus (IBDV; double-stranded RNA; genus Avibirnavirus; family Birnaviridae) affecting young chickens mostly age group 3-5 weeks (<17 weeks). It is characterized by immunosuppression and increased susceptibility to secondary infections. IBDV affects mostly chicken and turkey however, it also being found in free-living wild birds like ostriches, pigeons, Baltic ducks, Herring gulls, and sparrows.

Common symptoms due to the classic IBD virus include depression, ruffled feathers, trembling, diarrhea, vent pecking, hemorrhages on thigh and breast muscles, and/or variable mortality. Birds may pick at their own vents as the bursa becomes inflamed. Lesions usually occur in the bursa of Fabricius, which can become swollen and edematous at 3 to 4 days post-infection then quickly regress to a smaller size.

The virus is nonenveloped, icosahedral capsid with bi-segmented genome. There are two serotypes of IBDV are serotype 1 and serotype 2 with serotype 1 only pathogenic to chicken. The virus is also further classified as classical virulent IBDV (cvIBDV), very virulent IBDV (vvIBDV), antigenic variant IBDV (avIBDV) and attenuated IBDV (aIBDV). All the birds may get affected with variable mortality and may go up to 90% by very virulent strains (vvIBDV). The IBD virus (IBDV), is highly resistant and can persist in the environment for extended periods, posing challenges to eradication. The newer variant IBD viruses, becoming increasingly prevalent around the world, cause a subclinical infection with little to no clinical signs or lesions other than a rapid regression in bursal size. Even though a bird may survive the initial acute infection, there can be subsequent problems.

On 7 July 2025, NPDC Sarpang reported an outbreak of IBD in Shed 35, two days after administering the final scheduled vaccination at 28 days of age. The outbreak spread to Shed 34 within two days, resulting in an overall mortality of 2% (79 numbers) over the period of nine days. Given the recurrence of IBD outbreaks in the farm's history (2022, 2023), an investigation was initiated to assess probable causes, vaccine efficacy, and biosecurity compliance, with the objective of recommending corrective measures.

2. Materials and Methods

2.1 Farm Visit and Epidemiological Assessment

Visit was conducted from 6–9 August 2025.

Gathered farm records, vaccination history, vaccine batch, mfg, expiry storage etc. mortality data, and management practices.

Inspected biosecurity infrastructure and potential risk points for pathogen entry.

2.2 Vaccination History

Vaccine: (Intermediate type strain, live manufactured by Venkateshwara Hatcheries), batch No.IN24-010 mfg. 30/5/2024 expiry date:31/10/2025, the vaccines were brought from DVH Sarpang and used for vaccination

NPDC schedule: 3, 14, and 28 days of age

Manufacturer's recommendation: 10 days or older, eye drop/oral 0.03ml per chick or in drinking water sufficient quantity, should not use disinfectant in water line and chlorinated, vaccine not recommended in stressful conditions or in clinically sick/ debilitated birds.

2.3 Sample Collection

To assess the status of IBD in the farm, samples were collected from affected sheds (PS 34, PS 35) and unaffected sheds, as well as from nearby backyard poultry flocks:

- Cloacal swabs (pooled and individual samples).
- Serum samples for ELISA.

2.4 Laboratory Testing

- **Rapid test (Ag detection)** – on cloacal swabs and bursal tissue.
- **RT-PCR** – confirmation of IBD viral RNA.

2.5 Collect information on IBD outbreak in other areas

- The history on outbreak of IBD in other parts were also enquired and extracted from VIS and LIMS for linking of outbreak.

2.5 Data Analysis

- Mortality trends analyzed post vaccination dates in excel and other AI tools

- Epidemiological linkage assessed for potential environmental, wildlife, and human-associated transmission.

3. Results & Discussion

3.1 Outbreak at NPDC

First mortality case was observed in Shed 35 on 7/7/2025 which was diagnosed as IBD by DVH Sarpang (table 2) and confirmed at NCAH by RT-PCR. The outbreak occurred 2 days after the 28th day vaccination. This was followed by outbreak in shed 34 on 9/7/2025 (table 1), which occurred 7 days after the 28th day vaccination. The overall mortality in both the sheds were about 2%.

Shed LPS 34:

Vaccination schedule: 7/6/2025 (3 days), 18/6/2025 (14 days), 2/7/2025 (28 days)

Table 1 Mortality in shed 34

Date	Total Stock	Total died	% Mortality
9/7/2025	1948	13	0.7
10/7/2025	1935	16	0.8
11/7/2025	1919	9	0.5
12/7/2025	1910	1	0.05
Total		38	2

*Outbreak after 7 days of last vaccination.

Shed: LPS 35

Vaccination: 10/6/2027 (3days), 21/6/2025 (14 days), 5/7/2025 (28 Days)

Table 2 Mortality in shed 35

Date	Total Stock	Total died	% mortality
7/7/2025	1934	6	0.3
8/7/2025	1928	12	0.6
9/7/2025	1916	14	0.7
10/7/2025	1902	6	0.3
11/7/2025	1896	3	0.2
Total		41	2

*Outbreak after 2 days after last vaccination

The daily mortality rates were below 1% in both the sheds.

The mortality started after 7 days of 28th day vaccination in shed 34 and 2 days after 28th day of vaccination in shed 35 (fig 1). The outbreak occurred at 5 weeks of age.

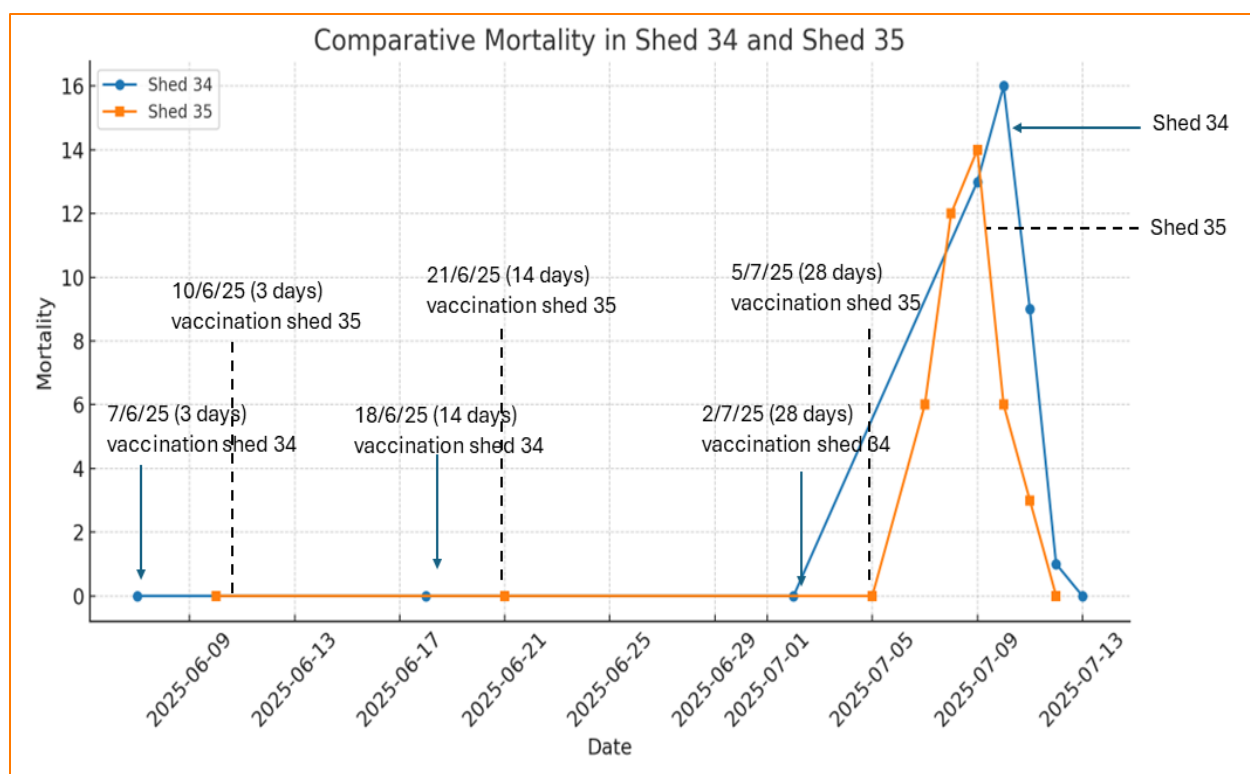


Figure 1 Outbreak trend in relation to vaccination

3.2 Vaccines and Cold chain

The IBD vaccine (Batch No. IN24-010; Mfg. May 2024; Exp. Oct 2025) intermediate type, live IP, with a potency of $>10^3$ EID₅₀, grown in SPF chick embryo fibroblasts and lyophilized, manufactured by Venkateshwara Hatcheries were used for vaccinating the PS flocks IBD vaccine. Since the initial stock had expired, about 10,000 doses of IBD vaccine was borrowed from DVH Sarpang and vaccinated. About 65 vials of the same batch of vaccine were stored in a pharmaceutical freezer at NPDC.

In total about 17500 vials (200 doses/vial) of IBD vaccine batch no. IN24-010 manufactured on May 2024, expiry date October 2025 were procured, and the stock was received on 22/12/2024.

Table 3 IBD vaccine of same batch no. IN24-010 distributed to different agencies

S.N.	Issued To (Agency Name)	No. of vials issued	Total doses issued	Date of Issue	Challen No.	Remarks
1	Dzongkhag Veterinary Hospital - Sarpang	1500	300000	3-Jan-2025	1627	Vaccines taken by NPDC to vaccinate poultry during June 2025

2	Dzongkhag Veterinary Hospital - Tsirang	500	100000	23-Jan-2025	1634
3	Dzongkhag Veterinary Hospital - Wangdue	45	9000	24-Jan-2025	1636
4	Phodrang Dzongkhag Veterinary Hospital - Samtse	250	50000	13-Jan-2025	1637
5	Dzongkhag Veterinary Hospital - Paro	250	50000	3-Feb-2025	1639
6	Regional Pig and Poultry Breeding Centre - Lingmithang	42	8400	3-Feb-2025	1640
7	Dzongkhag Veterinary Hospital - Punakha	35	7000	6-Feb-2025	1641
8	Dzongkhag Veterinary Hospital - Chukha	520	104000	14-Feb-2025	1642
9	Dzongkhag Veterinary Hospital - Chukha	260	52000	14-Feb-2025	1642
10	Dzongkhag Veterinary Hospital - Thimphu	9	1800	19-Feb-2025	1644
11	Bhutan Livestock Development Corporation Ltd. - Samrang	150	30000	25-Feb-2025	1646
12	Regional Poultry Breeding Centre - Khangkhu	23	4600	11-Mar-2025	1647
13	Native Poultry and Hiefer Breeding Centre - Sertsham	10	2000	13-Mar-2025	1649
14	Private Poultry Farms	8	1600	17-Mar-2025	1653
15	Dzongkhag Veterinary Hospital - Zhemgang	60	12000	24-Mar-2025	1656
16	Private Poultry Farms	20	4000	27-Mar-2025	1659

17	Regional Poultry Breeding Centre - Khangkhu Dzongkhag	25	5000	1-Apr-2025	1663	Outbreak occurred in Goshi geog
18	Veterinary Hospital - Dagana Dzongkhag	98	19600	3-Apr-2025	1664	
19	Veterinary Hospital - Samtse Dzongkhag	400	80000	3-Apr-2025	1665	
20	Veterinary Hospital - Mongar Dzongkhag	45	9000	15-Apr-2025	1673	
21	Veterinary Hospital - Trashigang Dzongkhag	13	2600	18-Apr-2025	1678	
22	Bhutan Livestock Development Corporation Ltd. - Samrang	150	30000	22-Apr-2025	1681	
23	Regional Poultry Breeding Centre - Khangkhu Dzongkhag	21	4200	22-Apr-2025	1682	
24	Veterinary Hospital - Thimphu Dzongkhag	3	600	8-May-2025	1687	
25	Veterinary Hospital - Bumthang Dzongkhag	5	1000	9-May-2025	1688	
26	Veterinary Hospital - Tsirang Dzongkhag	500	100000	12-May-2025	1689	
27	Bhutan Livestock Development Corporation Ltd. - Samrang	150	30000	12-May-2025	1690	
28	Regional Pig and Poultry Breeding Centre - Lingmithang Dzongkhag	5	1000	20-May-2025	1691	
29	Veterinary Hospital - Zhemgang Dzongkhag	8	1600	20-May-2025	1692	
30	Veterinary Hospital - Punakha	13	2600	30-May-2025	1694	

31	Dzongkhag Veterinary Hospital - Mongar Bhutan Livestock	23	4600	5-Jun-2025	1696
32	Development Corporation Ltd. - Samrang Dzongkhag	125	25000	9-Jun-2025	1697
33	Veterinary Hospital - Samdrup Jongkhar Dzongkhag	200	40000	9-Jun-2025	1698
34	Veterinary Hospital - Chukha Dzongkhag	2647	529400	17-Jun-2025	1702
35	Veterinary Hospital - Trashigang Dzongkhag	45	9000	18-Jun-2025	1704
36	Veterinary Hospital - Lhuentse Dzongkhag	10	2000	18-Jun-2025	1705
37	Veterinary Hospital - Punakha Dzongkhag	22	4400	25-Jun-2025	1708
38	Veterinary Hospital - Samtse National Poultry Research and Development Centre - Sarpang Dzongkhag	675	135000	25-Jun-2025	1709
39		100	20000	10-Jul-2025	1714
40	Veterinary Hospital - Sarpang Dzongkhag	900	180000	18-Jul-2025	1718
41	Veterinary Hospital - Thimphu	17	3400	22-Jul-2025	1719

Same batch of IBD vaccine IN24-010 was distributed by BPU, NCAH to about 41 different agencies including government farms private farms and district veterinary hospitals (table 3).

Table 4 Geog wise number of farms where same batch of vaccines distributed by DVH Sarpang during June 2025

Geogs	Broiler	Layer	Total
Sengye	1	2	3
Gakidling	8	1	9
Sompangkha	5	0	5
Dekidling	10	5	15

Chudzom	1	0	1
Samtenling	1	1	2
chuzargang	2	0	2
Total	28	9	37

Same batch No. IN24:010 of IBD vaccine was issued by DVH Sarpang to different private farms of seven geogs during the month of June 2025 (table 4). However, no outbreaks were reported from these farms.

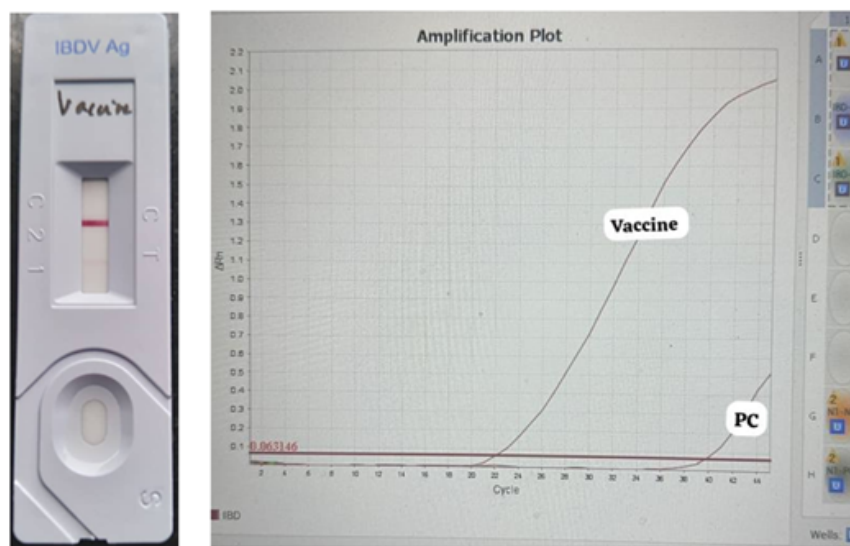


Figure 2 Antigen testing for vaccine rapid test (left) and RT-PCR (right)

The vaccine was tested for antigen and showed presence of IBD antigen in both rapid test and RT-PCR (fig 2).

It was found that DVH Sarpang has refrigerator with temperature log chart to store vaccines which shows there was no temperature fluctuations. However, temperature data loggers were not employed to monitor the cold chain during transportation and at stored at NPDC Farm's cold storage to the poultry shed. The cold room of BPU, NCAH is monitored regularly with data logger (fig 3) where the vaccines are stored and verified by BFDA before it is distributed to the Dzongkhags and Livestock health facilities.

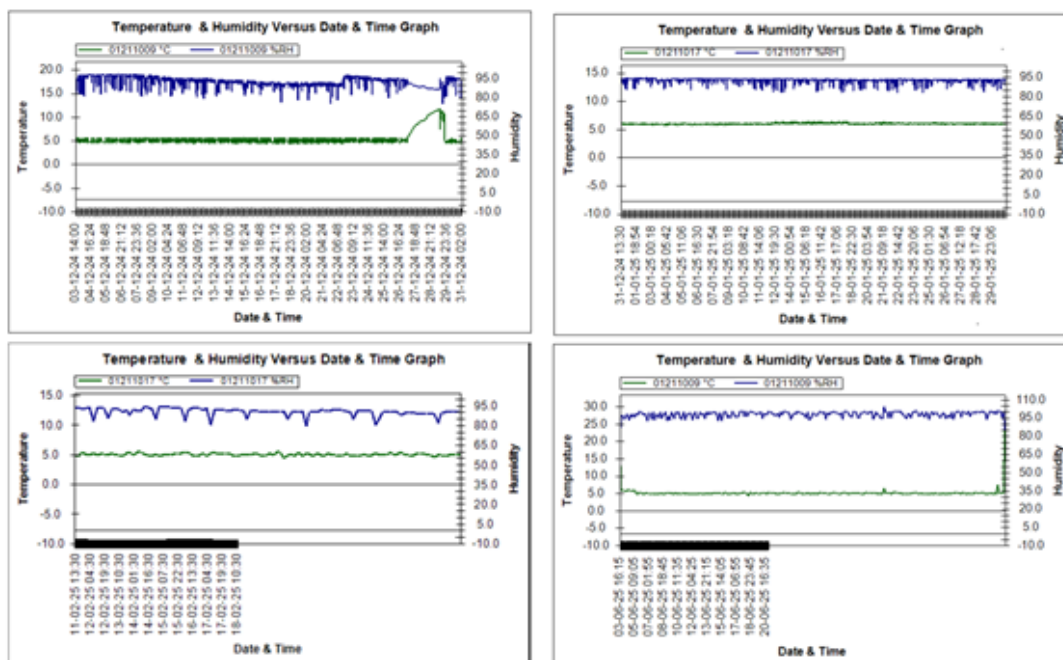


Figure 3 Temperature log chart for cold room at BPU

As informed, vaccination was conducted under the strict supervision of the health in-charge, maintaining cold chain temperatures between 2°C and 8°C. It is administered via the intra-ocular or drinking water method. Given the high ambient temperature and humidity during this time of the year, additional care was taken by conducting vaccinations in the early cool morning hours. The vaccination schedule followed by the farm is 3, 14 and 28 days of age eye drop/oral method 0.03ml per chick. Vaccination is done under the supervision of the health In-charge of Farm.

3.2 Past outbreaks of IBD

As per the record since 2010, a series of outbreaks of IBD had occurred except during 2012 and 2013. Maximum outbreak was recorded during 2014 which declined afterwards (fig 4).

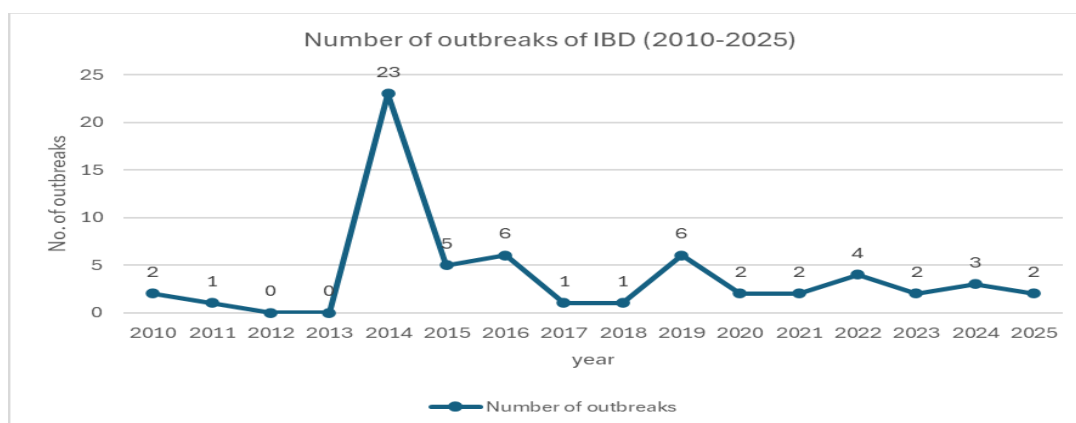


Figure 4 outbreaks of IBD (2010-2025)

3.3 Diagnostic investigations record of IBD (2023-2025)

Lab records showed the last positive case was detected during 10th July 2023 and after that on 7th July 2025 at NPDC.

Table 5 IBD investigation record

Date of Investigation	Samples tested	Results	Conducted by	Remarks
10/7/2023	Cloacal swab	Rapid test to IBD positive	RVH & EC	NPDC Sarpang
18/8/2023	Bursa	Rapid test to IBD Negative	RVH & EC	NPDC Sarpang
23/8/2023	Cloacal swab (3 nos. pool)	Rapid test to IBD Negative	RVH & EC	NPDC Sarpang
19/10/2023	Cloacal swab (2nos.)	Rapid test to IBD Negative	RVH & EC	NPDC Sarpang
23/03/2024	Tracheal swab	Rapid test to IBD Negative	RVH & EC	NPDC Sarpang
23/3/2024	Cloacal swab (6 nos. pool)	Rapid test to IBD Negative	RVH & EC	NPDC Sarpang
7/5/2024	Cloacal swab	Rapid test to IBD positive	DVH Sarpang	Sompangkha geog, Sarpang
16/5/2024	Cloacal swab	Rapid test to IBD positive	DVH Sarpang	Samtenling geog, sarpang
1/6/2024	Cloacal swab	Rapid test to IBD positive	DVH Samtse	Norgeygang, geog, Samtse
7/7/2025	Postmortem examination; Rapid test of bursa	Rapid test to IBD positive (from Bursa)	DVH, Sarpang	NPDC Sarpang
10/7/2025	Postmortem examination; Rapid test of bursa; molecular test	Rapid test to IBD positive (from Bursa) RT-PCR positive	NCAH	NPDC Sarpang
14/8/2025	Postmortem examination; Rapid test of bursa; molecular test	Rapid test to IBD positive (from Bursa) RT-PCR positive	NCAH	Goshi geog Dagana

As per the enquiry, no outbreaks of IBD were reported from other government farms (RPBC Paro and RRPBC Lingmethang) over the past one year. No reports of outbreaks in the Gelephu thromde over the past one year. Also currently no outbreak was reported from Sarpang area however, cases of positive in rapid test to IBD were reported from Sompangkha geog on 7/5/2024 in the flocks of Mon Maya Tamang (vaccinated) two doses given and before a third dose outbreak occurred. Further the outbreak was also reported in flock of Mr. Binod Monger of Samtenling geog on 16/5/2024 under Sarpang Dzongkhag which was not reported through VIS or any other communication. An outbreak was also reported on 1/6/2024 at Norgaygang geog, Samtse dzongkhag. Another outbreak was detected on 9/8/2025 at Goshi geog, Dagana (table 5). The gross lesions observed in the carcass of the poultry from Goshi geog, Dagana, are typical lesions consistent with IBD (fig 5). Further, the swab samples from Bursa of Fabricius tested positive to IBD both in rapid test and RT-PCR (fig 6).

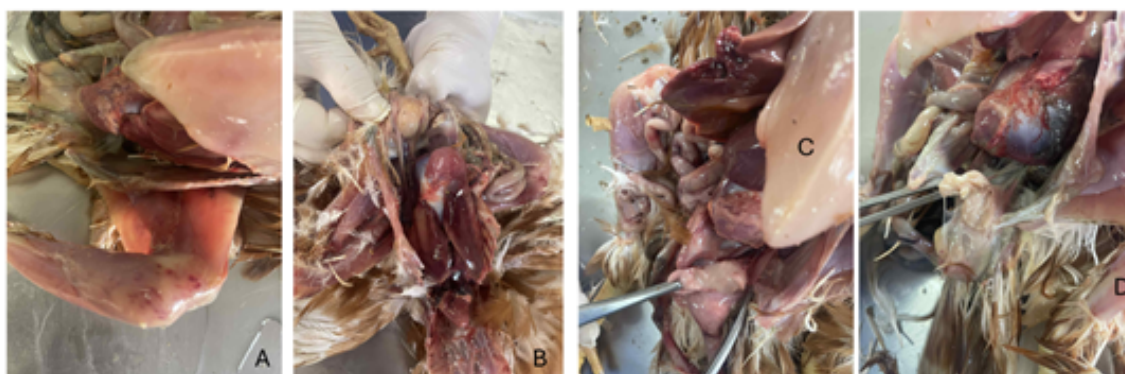


Figure 5 Hemorrhages in thigh muscle(A), enlarged Bursa (B), Edema of Bursa (C), Cheesy exudates in bursa (D). Positive to IBD on rapid test.

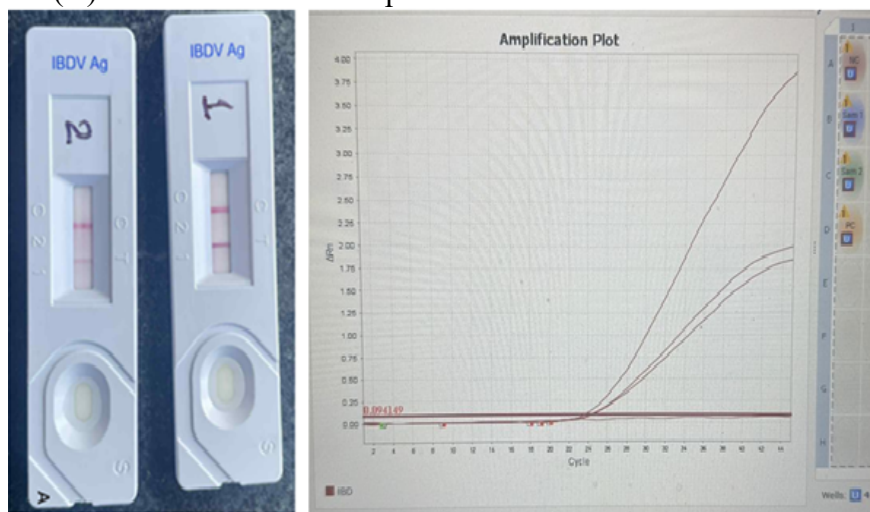


Figure 6 IBD samples of Dagana test positive to IBD in both rapid test and molecular test
Timeline of the outbreak pattern of IBD in Goshi geog Dagana was analyzed and found that chicks were introduced from NPDC Sarpang on 18/6/2025 followed by vaccination on 20/6/2025 (3days), 1/7/2025(14 days) and 15/7/2025 (28 days). The outbreak occurred on 9/8/2025 in the farm at Goserling geog Dagana. It indicates the sub immunization of bird with vaccines (fig 7). The outbreak at Dagana occurred at 6 weeks of age.

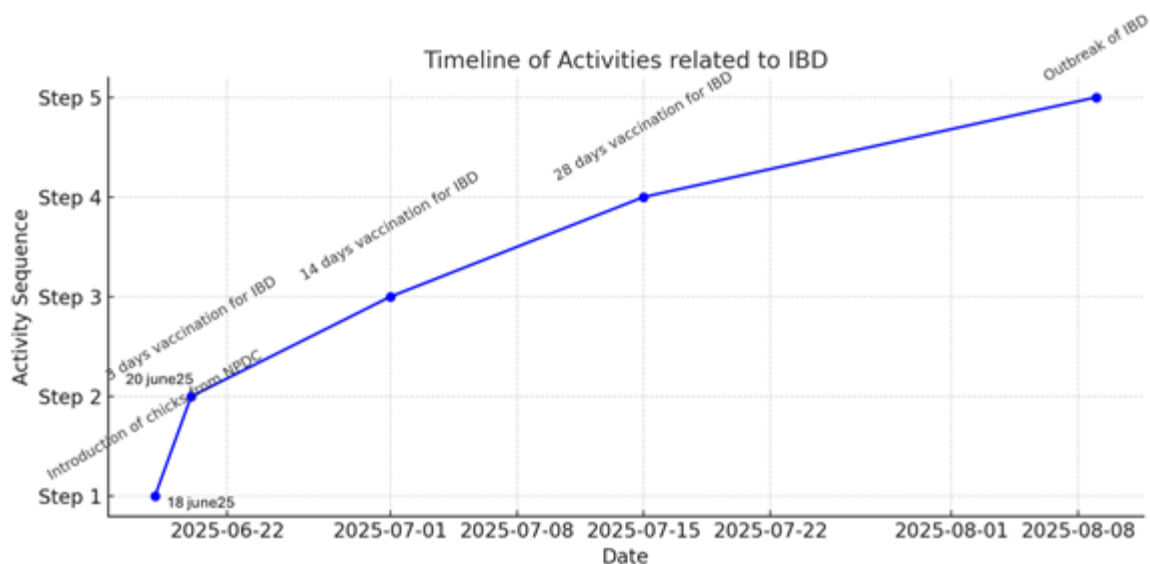


Figure 7 Timeline of IBD outbreak at Dagana

Overall assessment on seasonal patterns revealed the outbreaks occurred mostly during the month of May to July in all the years (2023-25) (fig 8).

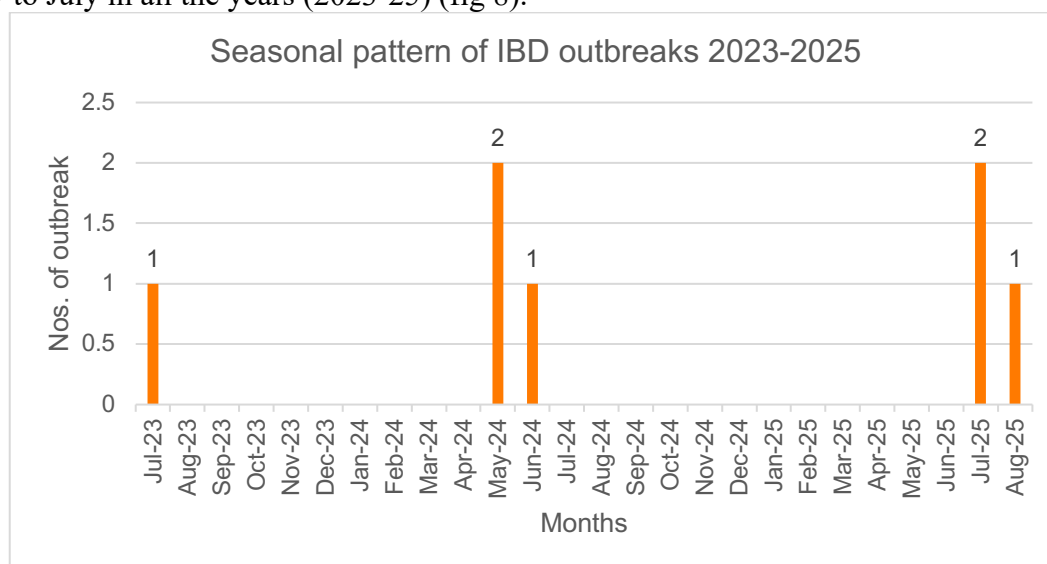


Figure 8 Seasonal pattern of IBD outbreak

3.1 Vaccines, cold chain & Vaccination

3.1.1 Outbreak onset within 2–7 days after the 28 days of vaccination indicates that field virus exposure likely occurred before protective immunity developed or the vaccine failed to produce protective level of antibody.

3.1.2 Outbreak could occur in vaccinated bird due to virus mutation as some of the studies indicated.

3.1.3 The same batch of vaccine distributed to other areas did not report of outbreaks; hence, the vaccine failure is mostly likely attributed to the storage condition at the point of vaccination.

- 3.1.4 No temperature monitoring devices are available during vaccine transportation or movement from cold storage to sheds. The vaccine need to be transported between 2-8 degree centigrade during transportation and storage.
- 3.4.2 The use of freezer without continuous temperature monitoring presents a risk for unnoticed cold chain breaches.
- 3.2 Biosecurity
 - 3.2.1 Wild birds (peacocks, pigeons) were frequently observed near sheds, posing a risk of mechanical transmission.
 - 3.2.2 Night guards commuting from nearby villages with backyard poultry increased human-mediated transmission risk.
 - 3.2.3 Environmental and Historical Risk- the IBD virus is known to persist in poultry houses for months and high summer temperatures (~38°C) & humidity (97%) may have stressed birds, reducing immune competence.

4. Conclusion

As per the assessment, the outbreaks occurred only at NPDC which were vaccinated by IBD vaccine batch No. IN24-010 brought from DVH Sarpang. Later the outbreak also occurred at Dagana where the chicks were supplied from NPDC. However, no outbreaks were reported from other place in which the same batch of vaccines were distributed to the farmers by DVH Sarpang. Similarly, the same batch of vaccine distributed by BPU to other agencies did not report of any outbreaks. Therefore, the vaccine inefficacy can be ruled out at this point of time.

The details of the vaccines collected, transported, stored and administered at NPDC were not found in which there was suspicion of cold chain break down. Detailed information on the vaccination procedure (no temperature and chart record in NPDC) and the competency of the vaccinator which is also done by the attendant although under technical supervision is also questionable. Due to the relatively stable nature of the IBD virus, the outbreaks in Dagana could have originated from NPDC along with the fomites, chicks or vehicles. Viruses can also be introduced into the farm by attendant or officials if strict farm biosecurity is not practiced which is observed in the farm. The possibility of the infection could have also persisted in the farm from the previous outbreak if thorough disinfection of the farms was not done.

5. Recommendations

- 5.1 The vaccination should be strictly done by the competent technical person with proper record of all the dossier information (dose, reconstitution, and route).
- 5.2 To follow strict biosecurity and decontamination protocol before restocking given the history of repeated exposure and stable nature of the virus. Proper disinfection of the farm including the equipment with appropriate disinfectants, the changing of disinfectant recommended earlier to be considered.
- 5.3 All farm attendants recommended to stay within the farm premises with minimal contact with the poultry birds unless strict protocols or biosecurity are in place. Foot dips with recommended disinfectants, changing clothes and boots (not in the same room, but different for exit and entry), washing facilities are some of the critical measures.
- 5.4 The current vaccination schedule of 3, 14 and 28 days in contrast to the Hyline protocol: 15–18, 21–25, and 28–32 days and the manufacturer's instructions, the present vaccine manufactured by Venkateshwara hatcheries is at 10 days of age to the national guideline for

vaccination i.e starting at 5-7 days of age will be reviewed and discussed during next NVMC meeting.

5.6 Virus characterization, and vaccine strain matching will be done by the NCAH Serbithang.

5.7 Improve Cold Chain Management, use temperature data loggers during vaccine storage and transport, maintain dedicated pharmaceutical-grade refrigerators with continuous monitoring using temperature charts.

5.8 The water in the tank must be changed before administering the vaccine to ensure fresh clean water and not use chlorinated or other disinfectants. The warmer water in the tank can compromise the vaccine's efficacy.

10.2 Feasibility of Vaccination Against PCV2 and PRRS at Government Pig Breeding Farms,

Dr. NK Thapa, Menuka and Dr. Tshering Choden

Porcine Circovirus Type 2 (PCV2) and Porcine Reproductive and Respiratory Syndrome (PRRS) are major swine pathogens with significant economic impact on pig production worldwide. A feasibility study was conducted to evaluate vaccination against these diseases in government pig breeding farms in Bhutan, including the National Nucleus Pig Breeding Centre (NNPBC, Yusipang), Regional Pig & Poultry Breeding Centre (RPPBC, Lingmethang), and National Pig Research and Development Centre (NPRDC, Gelephu). Serological surveillance (2021–2023) and molecular diagnostics (2021–2025) confirmed persistent circulation of PCV2, with seropositivity ranging from 63–100% and RT-PCR positivity up to 62.5%. In contrast, PRRS seropositivity was detected at low levels (9–24%), but repeated RT-PCR assays confirmed absence of active infection. Cost analysis indicated that vaccinating the total herd population of 2,994 pigs would require Nu. 373,052 for a one-time PCV2 vaccination program. International evidence supports PCV2 vaccination as a cost-effective intervention to improve herd immunity, reduce mortality, and safeguard genetic nucleus herds. Based on current findings, vaccination against PCV2 is strongly recommended, while PRRS vaccination should be deferred until active circulation is detected. Complementary measures including strengthened biosecurity, periodic surveillance, and cost optimization strategies are essential to sustain productivity and protect the national pig breeding program.

1. Introduction

National Nucleus Pig Breeding Centre (NNPBC) was established during 2016 at Yusipang. The farm was initiated by importing new stock of Landrace and Yorkshire breeds of pigs from privately owned farms in Thailand during July 2016. The farm maintains the Great Grand Parents (GGP), Grand Parents (GP) and Parent Stock (PS) to supply genetically improved piglets and PS to the other government breeding farms in other parts of the country. However, the pig farm at Wangchutaba rears mainly the local breed in small numbers. Regional Pig & Poultry Breeding Centre in the eastern part (RPPBC), Lingmethang breeds and supplies piglets for the eastern region and National Pig Research and Development Center (NPRDC) Gelephu breeds and supplies to the south-central parts of the country. Therefore, NNPBC at Yusipang plays a critical role in supplying quality breeding stock to the national piggery development program. Hence, maintaining herd health and genetic potential is crucial to ensure productivity, reduce mortality, and safeguard farm biosecurity.

However, the farm had been experiencing various disease conditions leading to mortality at various rates. Seropositivity of Porcine Circovirus Type 2 (PCV2) was detected earlier in the farms. PCV2 is a key component of the Porcine Circovirus Associated Diseases (PCVAD), leading to growth retardation, immunosuppression, and reproductive failure. Similarly, seropositivity of PRRS (Porcine Reproductive and Respiratory Syndrome) was also detected in the farms earlier. PRRS is also one of the most economically significant swine diseases worldwide, causing severe reproductive losses in sows and respiratory distress in growing pigs.

Both PCV2 and PRRS contribute to significant production losses in breeding and growing pigs. Immunosuppression caused by PCV2 can exacerbate the clinical severity of PRRS and other infections. Vaccination is an internationally recommended strategy for managing these diseases, alongside strict biosecurity measures. Protecting the nucleus breeding herd is essential, as disease introduction into multiplier and smallholder herds would have national-level consequences.

Given the endemic risk of both diseases in the farm, a vaccination intervention could be considered to improve herd immunity, production efficiency, and sustainability of the breeding program. Hence, the feasibility study of vaccination of the pigs against PCV2 and PRRS was carried out with the following objectives:

2. Objectives

To evaluate the feasibility of introducing vaccination against PCV2 and PRRS in three of the government pig breeding farms v.i.z. NNPBC, Yusipang, RPPBC, Lingmethang and NPRDC Gelephu.

3. Materials and Methods

3.1 Data Collection

3.1.1 Serological Surveillance: The data on serological surveillance of PCV2 and PRRS conducted in the government farms from 2021–2023 were collected and analyzed.

3.1.2 Molecular Diagnostics: The record of RT-PCR assays performed for confirmatory diagnosis of PCV2 and PRRS between 2021–2025 were compiled and analyzed.

3.1.3 Literature Review: Published reports on disease epidemiology, vaccine efficacy, and international recommendations were conducted.

3.2 Vaccination Strategy Assessment

Available commercial vaccines and their strategies practiced in other countries were referred.

The available information on website were:

- Available commercial vaccines for PCV2 (Ingelvac CircoFLEX®, Circovac®).
- International vaccination schedules for piglets and breeding stock.
- Indicative cost estimates based on market prices

5. Results

4.1 PCV2 Status

Porcine circoviruses (PCV) belong to the genus *Circovirus* in the *Circoviridae* family and are considered as one of the most important pathogens for swine industry worldwide (Segales, 2005; Segales, 2012). Porcine circovirus type 2 (PCV2) is reported to be the primary causative agent of several syndromes collectively known as porcine circovirus-associated disease (PCVAD) and the most significant manifestation of PCVAD the post-weaning multisystemic wasting syndrome (PMWS) (Savic et al. 2012; Segales et al. 2019). Clinical manifestation of wasting, dyspnoea, enlarged lymph nodes, paleness of skin and diarrhoea have been reported earlier (Allan and Ellis, 2000). Genotypically, only PCV2a, PCV2b, and PCV2d are considered major genotypes due to their high prevalence, worldwide distribution, and persistent circulation over the years (Franzo et al., 2016; Franzo and Segalés, 2018). Genotype 2b and 2d are common in India, China and Thailand and PCV2 d as dominating genotype in the world (Franzo et al., 2024).

During 2021, Seropositivity was detected as high as 96-100% at NNPBC Yusipang, RPBC Lingmethang and wangchutaba farms (table 1) and 50% of the clinical samples were positive to PCV2 through molecular test (table 2) at NNPBC Yusipang (Thapa et al, 2023).

Table 1: Details of screening of serum samples for PCV2 & PRRS by ELISA (2021)

Sl. No.	Farm	Serum (n)	Positive to PCV2	Positive to PRRS
1	RPPBC Lingmethang	29	28/29(96.5%)	7/29(24.1%)
2	NNPBC Yusipang	11	11/11(100%)	1/11(9%)
3	NPBC Wangchutaba	5	5/5(100%)	0
Overall		45	44/45(97.7%)	17.7%

Thapa et al, 2023

Table 2 Molecular test for oropharyngeal swab of NNPBC Yusipang (2021)

Diseases	Nos. tested(n)	Nos. positive	Percentage
PCV2	10	5	50%
PRRS	10	0	0

Thapa et al, 2023

Further, seroprevalence study conducted during 2022-23 also revealed seropositivity of 63% to 100% at all the three government farms (table 3).

Table 3. Seroprevalence of PCV2 at different centers (2022-23)

Farm	Total samples tested	Positive	%
NNPBC, Yusipang			
Boar	4	3	75
Dry Sow	4	4	100
Gilt	5	4	80
L/Sow	4	4	100
NA	3	3	100
Suckler	5	0	0
Weaner	5	1	20
Total	30	19	63

NPRDC, Gelephu			
Adult	2	2	100.0
Boar	4	2	50.0
Dry Sow	7	7	100.0
Gilt	10	8	80.0
Grower	2		0.0
L/Sow	7	7	100.0
Weaner	9	8	88.9
Y/Boar	1	0	0.0
Young Boar	7	7	100.0
Total	49	41	83.7
RPPBC, Lingmethang			
Boar	2	2	100
Dry Sow	4	4	100
Gilt	6	6	100
L/Sow	6	6	100
Pregnant	6	6	100
Young	4	4	100
Total	28	28	100
Grand Total	107	88	82

PCV2 was also confirmed through RT-PCR tests from the samples of NNPBC Yusipang from 2023-25 where the positivity ranged from 9% to 62.5% (table 4).

Table. 4 Molecular test results for PCV2 (2023-2025)

<i>Year</i>	<i>Nos. tested</i>	<i>Positive</i>	<i>%</i>
2023	17	2	11.8
2024	16	10	62.5
2025	11	1	9.1
<i>Overall</i>	<i>44</i>	<i>13</i>	<i>29.5</i>

4.2 PRRS Status

PRRS (Porcine reproductive and respiratory syndrome) is caused by Porcine reproductive and respiratory syndrome virus (PRRSV). Common symptoms include respiratory signs, such as coughing, sneezing, labored or rapid and shallow breathing, along with nasal discharge, are common respiratory manifestations. Reproductive complications are also characteristic of PRRS, including late-term abortions, stillbirths, mummified fetuses, decreased farrowing rates, and the birth of weak or underdeveloped piglets.

During 2021, seropositivity to PRRS were detected at the ranges of 9% to 24% at RPBC (table 1) and NNPBC however, all the clinical samples were negative in molecular tests (table 2), (Thapa et al., 2023). Similarly, all the samples tested for PRRS from 2018 to 2023 were negative in RT-PCR (table 5).

Table 5. Molecular tests for PRRS (2018-23)

<i>year</i>	<i>No. tested</i>	<i>Positive</i>	<i>%</i>
2018	2	0	0.0
2021	8	0	0.0
2022	10	0	0.0
2023	4	0	0.0
<i>Overall</i>	<i>24</i>	<i>0</i>	<i>0.0</i>

At this stage, the presence of PCV2 is confirmed through both sero-surveillance and RT-PCR in the farms. However, though seropositivity of PRRS detected, it is negative in RT-PCR indicating absence of disease in the farms. Hence, only the vaccination against PCV2 could be adopted in the government breeding farms.

4.3 Vaccination Options and Feasibility

Considering the list price of a PCV2 vaccine, 1 USD/dose, the annual cost of sow vaccination in every cycle in a herd of 1000 heads is about 2300 USD in Poland, excluding work and the vaccination of sows appeared to have no effect on reproductive performance (Cybuski et al., 2020). one-dose PCV2 vaccine administered intradermally with a needle-free injector is safe and provides protection when challenged with a field PCV2 strain (Hsieh et al., 2025). Dual-genotype vaccine CircoMax, containing both PCV2a and PCV2b, provides better protection than a single-genotype vaccine with PCV2a alone. The online price of 50 dose/50ml vial is \$67.95 per dose \$1.4 x Nu.89=Nu.124.6/ dose.

Porcine circovirus vaccine type 2 manufactured by Boehringer Ingelheim Animal Health USA Inc. suggests 1ml IM single dose for piglets of 3 weeks age.

4.4 Cost Estimates

The total stock as of October 2025 of all three government farms was 2994 (table 6). This was taken as basis for calculation for one time vaccination based on the online availability of cots of commercial vaccine.

Table 6: Stock as of October 2025

<i>Farms</i>	<i>Total stock</i>
RRPBC Lingmethang	200
NPDC, gelephu	1800
NNPBC Yusipang	994
Grand total	2994

Total cost of vaccination: 2994 x 124.6=Nu. 373052

5. Discussion

The results demonstrate **persistent PCV2 circulation** in NNPBC, posing risks of immunosuppression, growth retardation, and reproductive failures. PCV2 also predisposes pigs to secondary infections and worsens clinical outcomes of other diseases, including PRRS.

Although seropositivity for PRRS has been detected, repeated molecular testing confirms its absence in clinical cases at present. Therefore, vaccination against PRRS is not recommended until further evidence indicates circulation of PRRSV in the country.

Vaccination against PCV2, on the other hand, is strongly justified. International experience shows that vaccination significantly improves growth performance, reduces mortality, and enhances herd immunity. Combined with strict biosecurity, vaccination can safeguard the genetic nucleus herd and prevent disease dissemination to multiplier and smallholder farms nationwide.

6. Conclusion

PCV2 is confirmed in the NNPBC herd by both serology and RT-PCR hence, vaccination is feasible, cost-effective, and highly recommended. Hence, PCV2 vaccination, complemented by stringent biosecurity and periodic monitoring, will enhance productivity and protect the national pig breeding program.

PRRS is not confirmed by molecular tests hence, vaccination should be deferred until active circulation is detected.

7. Recommendations

7.1 Adopt PCV2 vaccination at government pig breeding farms with the following strategy:

- **Piglets:** Single dose at 3–4 weeks of age.
- **Breeding Stock:** Pre-breeding vaccination with booster as per manufacturer's guidelines.

7.2 Strengthen farm biosecurity: All-in/all-out systems, disinfection protocols, and strict quarantine measures.

7.3 Continuing surveillance: Periodic serological and molecular monitoring for both PCV2 and PRRS to guide future decisions.

7.4 Cost optimization: Engage with suppliers for vaccine procurement and negotiate prices for sustained program implementation.

7.5 Scale-up approach: After pilot implementation at Yusipang, extend vaccination to other government and private farms if results are favorable.

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10.3 Laboratory Coordination Meeting

The unit provided technical support during the laboratory coordination workshop held at Bumthang, in leading the development of test categorization at various animal health laboratories in the country on 13-14 October 2025, at Bumthang:

The National Centre for Animal Health (NCAH), with financial support from the Pandemic Fund, organized the National Veterinary Laboratory Coordination Meeting.



A total of 54 participants, veterinarians and laboratory technicians from the National, Regional Centres, and District Veterinary Hospitals and Laboratories across the country attended the meeting. The event was graced and addressed by hon'ble Dasho Dzungda Dasho (Dr.) R.B. Gurung, who emphasized the importance of collective purpose, and the critical role of veterinary laboratories in safeguarding animal and public health in the country.

The meeting aimed to bring laboratory professionals to strengthen diagnostic capacity, harmonize standards, and enhance information sharing for more effective disease surveillance and response. Bhutan's veterinary laboratories play a vital role in early detection and diagnosis of animal diseases, enabling timely control and prevention measures. The National Veterinary Laboratory at

NCAH serves as the national referral lab, while regional and district laboratories form the backbone of the diagnostic network.

Recent disease challenges such as Lumpy Skin Disease (LSD) and African Swine Fever (ASF) highlight the urgent need for strong coordination, modern diagnostic tools, and rapid communication channels among laboratories.

By working together, the national laboratory network aims to stay aligned with global best practices and ensure a timely, coordinated, and science-based response to emerging animal health threats, protecting both livestock and livelihoods.

10.4 Workshop on Meat Inspection Manual, SOPs, and Animal Quarantine Station Operation Manual

The DVEU also provide the technical support for development of meat inspection manual (Antemortem and postmortem inspection).

The Bhutan Food and Drug Authority (BFDA), Ministry of Health organized a five-day workshop at Metta Resort, Paro (4th–8th May 2026) to review and develop the Meat Inspection Manual, SOPs, and Animal Quarantine Station Operation Manual.



The five-day workshop opened with remarks by the Chief, PABD, setting the tone for a comprehensive review of Bhutan's meat safety and inspection systems. Day 1 featured an overview of national meat safety regulations and inspection requirements, followed by presentations on current practices across Tsirang, Thimphu, Phuentsholing, Paro, and Gelephu. Sessions also introduced meat safety licensing and organized participants into groups for manual reviews. Over Days 2 and 3, intensive group exercises and presentations focused on revising and finalizing chapters of the Meat Inspection Manual, with emphasis on retailing, transportation, licensing, and inspection standards. Day 4 shifted attention to the Animal Quarantine Manual,

where groups refined operational procedures for quarantine stations, covering animal movement control, biosecurity measures, and station management. On Day 5, participants presented the finalized Meat Inspection Manual and Animal Quarantine Manual, consolidating group comments into polished documents in both PDF and PPT formats. The workshop concluded with closing remarks by the Chief/Focal and a vote of thanks by Rigzen Choden Gyaltsen.

Group composition reflected specialized focus areas: Group 1, led by Dr. Tenzin Wangchuk, worked on Antemortem and Post-Mortem Examination; Group 2, under Kaling Dorji, reviewed the Meat Shop Inspection Manual; and Group 3, guided by Gem Gyeltshen, addressed Meat Safety Licensing. Additional groups were formed to review sections of the Animal Quarantine Manual. The regulatory framework discussions emphasized aligning Bhutan's practices with international benchmarks to ensure consumer safety and trade readiness, while inspection practice case studies highlighted challenges such as inconsistent enforcement of on-farm slaughter regulations, limited infrastructure, and manpower shortages. Recommendations centered on strengthening abattoir oversight, harmonizing inspection protocols, and building veterinary officer capacity. Licensing sessions introduced criteria for Good Hygiene Practices (GHP) and Good Manufacturing Practices (GMP), alongside ISO 17020 compliance to enhance credibility and uniformity. Manual development exercises refined standards for retailing, transportation, and shop inspections, while quarantine manual reviews strengthened Bhutan's preparedness against transboundary animal diseases.

Group presentations ensured inclusivity and ownership, with structured feedback leading to consolidated final documents. The workshop outcomes included the production of updated SOPs for inspection, licensing, and quarantine operations, thereby reinforcing Bhutan's food safety and biosecurity framework. Overall, the workshop fostered evidence-based decision-making, strengthened collaboration among veterinary officers, regulators, and stakeholders, and promoted collective accountability in safeguarding public health.

10.5 Workshop on Subject Experts for Validation of Diploma in Laboratory Technology (DVLТ)

The unit also provided technical support in validating the diploma in laboratory technology course to be conducted by RIHS, KGUMSB.

The seven-day workshop on **Subject Experts for Validation of Diploma in Laboratory Technology (DVLТ)** was held at Hotel Kingaling, Tshokorna, Punakha from 8–14 February 2026 was organized by the KGUMSB. The workshop provided a platform to critically review and validate the proposed DVLТ curriculum. The sessions covered programme information, aims, objectives, graduate attributes, and module structures, with extensive discussions on sequencing, assessment methods, and differentiation between medical and veterinary laboratory tracks. Subject areas such as hematology, immunology, microbiology, parasitology, veterinary anatomy, and One Health—including AMR awareness—were thoroughly examined to ensure relevance and depth at the diploma level. The deliberations emphasized the importance of biosafety, biosecurity, and quality assurance practices, while also aligning the curriculum with national academic standards and international benchmarks.



The workshop helped in clarifying the role of diploma-level veterinary laboratory technicians in supporting diagnostic services and strengthening Bhutan’s animal health system. The collaborative group work fostered critical thinking and inclusivity, allowing diverse expertise to refine modules and reduce duplication across subjects. The unanimous recommendation to introduce DVLT alongside the existing DMLT reflects a balanced approach to addressing both human and animal health needs.

The outcomes, including finalized recommendations on module revisions, assessment weighting, and inclusion of AMR in the One Health module, will directly contribute to strengthening laboratory training standards and service delivery. Overall, the workshop reinforced the value of evidence-based decision-making and collective accountability in advancing veterinary laboratory education and animal health services in Bhutan.

10.6 Stakeholder Consultation Workshop to Prioritize Agri-food Products and Chemical Residues for Inclusion in the National Residue Monitoring Program (NRMP)

DVEU under NCAH also provided technical support by presenting on the important veterinary medicines of residue significance.

The Stakeholder Consultation Workshop to Prioritize Agri-food Products and Chemical Residues for Inclusion in the National Residue Monitoring Program (NRMP) was held from 1–3 April 2026 at Meeta Resort, Paro, under the leadership of the Bhutan Food and Drug Authority (BFDA). The workshop marked a critical step in strengthening Bhutan’s food safety systems and aligning national practices with international standards, particularly in the context of WTO accession and compliance with the Codex Alimentarius Commission. Over three days, participants from the Department of Agriculture, Department of Livestock, Department of Agricultural Marketing and Cooperatives, and BFDA engaged in technical discussions, presentations, and group exercises to prioritize commodities and residues for monitoring. The deliberations highlighted the dual importance of residue monitoring—protecting public health from risks associated with pesticides, veterinary drugs, and contaminants, while also facilitating trade and enhancing the credibility of Bhutanese exports.



The sessions provided valuable insights into Bhutan's food safety frameworks, including the Food Act, Pesticide Act, and Biosafety Act, alongside the role of the SPS Enquiry Point in ensuring transparency in trade measures. Presentations on pesticide use revealed challenges such as illegal imports, weak disposal systems, and limited oversight, while discussions on veterinary drug use underscored the risks of residues in milk, meat, eggs, and fish due to widespread antimicrobial application. Codex standards and national Maximum Residue Limits (MRLs) were examined as benchmarks for harmonization, with emphasis on balancing consumer safety, agricultural practices, and trade facilitation. Laboratory capacity presentations showcased Bhutan's growing analytical infrastructure, including LC-MS/MS and GC-MS/MS methods, while also identifying gaps in validated methods, manpower, and resources.

Group work formed the core of the workshop, with teams prioritizing agri-food commodities, pesticide residues, and veterinary drugs for inclusion in the NRMP. The outputs, consolidated through peer feedback, provided a consensus-based roadmap for phased implementation of the program up to 2030. Key recommendations included risk-based sampling, Codex-aligned SOPs, standardized assessment frameworks, and strengthened stakeholder coordination. The workshop outcomes reinforced the importance of evidence-based regulatory decision-making, transparency, and collaboration among agencies.

11. Fleming fund phase II activities

11.1 Workshop on development of Antimicrobial Resistance (AMR) Surveillance Strategy and Data Analysis on AMR in Mastitis

As a focal for AMR and Fleming fund, the unit coordinated the AMR surveillance strategy data analysis on AMR in the mastitis workshop at Bumthang.

A four-day workshop on development of Antimicrobial Resistance (AMR) Surveillance Strategy and Data Analysis on AMR in Mastitis is being conducted in Bumthang from 6–9 October 2025. The workshop was attended by representatives from National Center for Animal Health (NCAH),

National Veterinary Hospital (NVH), Regional Livestock Development Center (RLDC), Kanglung, Regional Veterinary Hospital and Epidemiology Center (RVH & ECs), Phuntsholing, Gelephu, Dewathang and Dzongkhag Veterinary Hospitals (DVH) Thimphu, Samtse, Yangtse, Monger and College of Natural Resources (CNR), Lobeysa.



The Antimicrobial Resistance (AMR) Surveillance Strategy was developed for different animal species and covered key modules focused on strengthening the national AMR surveillance framework across multiple animal species. The workshop emphasized standardization of surveillance protocols, reporting mechanisms, and strategic planning for national AMR monitoring and response in animal Health. Analysis was also carried out on the AMR data from the mastitis surveillance.

The workshop was organized by the DVEU, National Centre for Animal Health (NCAH) in collaboration with Fleming Fund, PMU. The event is funded by the Fleming Fund Country Grant phase II.

11.2 Report on dairy practitioner engagement for antimicrobial use (That focused on mastitis, clean milk production, udder health and responsible antibiotic use) at Yoeseltse Gewog Samtse Dzongkhag.

26/09/2025 to 29/09/2025)

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1. Executive Summary

This report presents an extensive overview of a two-day capacity-building training conducted to provide progressive dairy farmers from the Samtse Dzongkhag with crucial knowledge and practical skills for mastitis control and responsible antimicrobial use (AMU). The training was coordinated by Regional Veterinary Hospital in collaboration with Dzongkhag Livestock sector, samtse with budgetary support from FLEMING involving veterinary professionals. The initiative aimed to address rising concerns about over antimicrobial resistance (AMR) in dairy farming through education on mastitis detection, prevention, treatment protocols including selective dry cow therapy, antimicrobial use, and clean milk production practices. Through a combination of interactive sessions, practical demonstrations such as the California Mastitis Test (CMT), and hygienic milk sampling techniques, the training contributed to better animal health management, higher milk quality, and farmer livelihoods while tackling AMR threats.



2. Introduction

Mastitis is an inflammatory condition of the mammary gland typically caused by bacterial infection, leading to significant productivity losses, poor milk quality, and increased treatment costs. It constitutes one of the major economic burdens in dairy production systems globally. Competing against this challenge is the growing global public and animal health threat posed by AMR, which arises largely from inappropriate and indiscriminate antimicrobial use in both human and veterinary settings. Given the increasing resistance of mastitis pathogens against commonly used antibiotics, prudent antimicrobial use on dairy farms is essential to safeguarding treatment efficacy and preventing the spread of resistant microbial strains.

Recognizing this urgency, the training was structured as an extension of national-level veterinary professional training to equip dairy farmers with practical skills and awareness on identifying mastitis early, understanding its economic impact, practicing responsible antibiotic use, and employing hygienic milking and dry cow management practices that reduce infection risks and antibiotic reliance.

3. Objectives

- To enhance farmers' understanding of mastitis, including symptoms (clinical and subclinical) and its economic impact.
- To build practical skills in udder examination, early illness recognition, and clean milk production.
- To train farmers in conducting and interpreting the California Mastitis Test (CMT), and in proper sterile milk sample collection and handling.
- To promote farm-level practices for environmental and milking hygiene to prevent contagious and environmental mastitis.
- To increase awareness of the link between microbial count, milk quality, and pricing, and encourage timely consultation with animal health professionals.
- To strengthen farmer engagement in Antimicrobial resistance control through rational antibiotic use, withdrawal periods and preventive health practices.

4. Dairy Practitioner engagement for antimicrobial use Training site.

The two days training on dairy practitioner engagement for antimicrobial use was held at Yoeseltse GewogTshogde Hall from 27th September to 28th September 2025.Tashicholing

5. Training Methodology

The training was designed employing a multidimensional approach to maximize learning and behavior change:

5.1 Educational Sessions: Simplified lectures covered mastitis etiology, clinical and subclinical presentation, economic effects, available treatment options including selective dry cow therapy, AMU principles, withdrawal periods, and the science behind AMR.

5.2 Interactive Discussions:

Open interactive based conversations to share experiences, traditional practices, challenges, and farmer concerns with problem-solving in the community.

5.3 Practical Demonstrations: Hands-on training for udder examination, sterile milk sampling, milk storage and sample transport protocols, and interpreting California Mastitis Test (CMT) results were demonstrated.

5.4 Environmental Hygiene Practices: The farmers were given management practices aspect which focus on enhancing milking hygiene, sanitation of equipment, and dry period management to reduce mastitis risk was highlighted during the training.

5.5 Peer Learning: Question answers and challenges were discussed for collaboration, shared experience by the farmers in relation to the field context, and to ensure effective communication among the farmers, Platforms such as WhatsApp and telegrams were recommended for real-time communication and resource sharing.

6. Training Agenda overview

6.1 Day 1: Foundational Knowledge and Awareness

- The training was started by setting training objectives by Chief Dzongkhag Livestock officer and FlemingFund Project Management Unit (FFPMU) followed by following topics:
- Overview of AMR: causes, consequences, and government initiatives targeting responsible antimicrobial regulation
- Understanding mastitis—difference between clinical and subclinical, its causes, and identification of symptoms

- Treatment strategies focusing on preventive practices, dry cow therapy options (highlighting selective over blanket antibiotic approaches)
- Economic impact analysis illustrating production losses and potential cost savings through improved management. Responsible antimicrobial use principles, including detailed explanations on withdrawal periods to protect public health
- Environmental hygiene practices tailored to on-farm mastitis risk mitigation

6.2. Day 2: Practical Skills and Field Application

- Best practices for producing clean, antibiotic residue-free milk employing careful handling and storage techniques
- Hands-on practice on sterile milk sample collection with the California Mastitis Test (CMT) for early subclinical mastitis detection
- Dry cow therapy exercises emphasizing selective treatment and hygiene protocols to optimize cure rates while minimizing antibiotic use
- Farmer group discussions on hurdles in mastitis control and antibiotic use, sharing local challenges and lessons learned
- Introduction to Transboundary Animal Diseases (TAD) with implications for dairy health security
- Closing session with training feedback and discussion

7. Training Achievements and Results

The training program was successfully conducted with a total of 76 participants, comprising 66 productive dairy farmers who supply dairy products to the Jamtsholing Gyelsung Academy and 10 veterinary professionals. These participants came from four gewogs: Tashicholing, Ugyentse, Yoeseltse, and Namgaycholing. Among the 66 dairy farmers, 40 were female and 26 were male, reflecting a strong participation of women in the dairy farming sector. This diverse group significantly contributed to enhancing the overall regional capacity for dairy health management, ensuring improved knowledge and skills were imparted to both farmers and veterinary professionals across these communities.

The training sessions saw the highest number of participants coming from Yoeseltse Gewog, with a total of 30 dairy farmers attending. This was followed by Tashicholing Gewog, which contributed 21 participants, and Ugyentse Gewog with 10 participants. Namgaycholing Gewog had the lowest representation, with only five dairy farmers taking part in the training. Overall, the total number of participants included a significant proportion of women, who made up 58% of the attendees, while men accounted for 42%.

These farmers represented diverse farm sizes and production scales, meaning the outreach and knowledge dissemination had a positive effect on the local dairy sector. Their active participation reflected a strong willingness to adopt new practices critical for sustainable farming and combating antimicrobial resistance.

Through the practical session, the farmers widely acquired essential skills needed for effective mastitis control. This included accurate detection of both clinical and subclinical mastitis by learning to perform and interpret the California Mastitis Test (CMT) signaling udder infections early before visible symptoms appear. The hands-on sterile

milk sampling training empowered farmers to collect samples hygienically, ensuring reliability of diagnostic testing and targeting treatment to infected animals specifically

These competencies allow timely intervention, targeted antibiotic use, and ultimately, reduction of antibiotic misuse. They also gained knowledge on respecting antibiotic withdrawal periods—the required time after antimicrobial treatment before milk can be safely consumed or sold—thus ensuring milk safety for consumers and reducing public health risks from residues.

The training also raised farmers’ awareness of the socioeconomic burden mastitis imposes through decreased milk production, poor quality, increased veterinary costs, and lost income. Understanding this connection motivated farmers to improve milk quality proactively and implement better disease control strategies to protect and enhance their economic viability.

Most importantly, the farmers were empowered to become animal health workers in their communities. Equipped with essential knowledge and practical skills, they emerged as advocates for responsible antimicrobial use, directly contributing to the mitigation of antimicrobial resistance “a growing global threat”.

By promoting judicious antibiotic use and improved mastitis management, these farmers play a crucial role in sustaining effective treatments and protecting public health in the long term. This holistic enhancement in knowledge, skills and practices represents a key milestone in evolving dairy farming practices toward sustainability, animal welfare, and food safety.

8. Challenges

Some of the challenges that emerged during the training include.

- Initial gaps in knowledge particularly about subclinical mastitis and implications of AMR among farmers slowed early comprehension
- The staff may not be able to attend quickly to all reported cases due to the high workload and travel time within gewog and clinical cases place. This delay can exacerbate health issues in livestock
- Ineffective treatment causes higher recurrence rates and more severe clinical mastitis cases, exacerbating economic losses through decreased milk production and quality
- Resistance from some farmers to alter entrenched antibiotic usage habits driven by traditional practices and lack of immediate perceived risks.
- Variability in farm infrastructure and resource availability (rubber mat, Water shortage and lack of farm labour) hindered uniform implementation of hygienic protocols and management across participants.

9. Recommendations

Despite the challenges outlined, the following are some key recommendations.

- Conduct periodic refresher Training (AMU) complemented by on-farm advisory visits for personalized reinforcement of best practices and troubleshooting.
- Strengthen veterinary outreach and diagnostic support services accessible to farmers, including provision of materials for milk sample collection and reagents for testing.
- Identify and implement 60:40 cost sharing mechanism methods to farm infrastructure like rubber mat, water storage construction to implement hygienic farm practices and long-term strategies
- Integration of the Department of Livestock with the Department of Immigration to hire foreign farm attendants to address labor shortages in the livestock sectors could be practical

for physically demanding or specialized tasks in livestock management as we have seen aged people are currently serving in these roles.

- Foster formation of farmer networks to enable shared resources, collective learning, and mutual support in mastitis and AMU management.
- Identify and enable farmer champions who successfully adopt and evangelize prudent antimicrobial use and mastitis control to wider communities.

10. Conclusion

This technical training initiative has played a crucial role in empowering dairy farmers in three Dzongkhag under Samtse Dzongkhag by equipping them with essential theoretical knowledge and practical skills needed to manage mastitis effectively and use antimicrobials judiciously. By emphasizing hands-on learning experiences and actively involving farmers in the process, the training fostered significant behavioral changes. These changes are vital for reducing the occurrence of mastitis, a common and costly dairy disease, while simultaneously addressing the growing global concern of antimicrobial resistance (AMR).

The success of the program highlights the importance of continuing such training efforts to reinforce and update farmers' competencies regularly. It also points to the need for adequate infrastructural support, such as access to quality veterinary services, diagnostic tools, and proper facilities for hygienic milking practices. Furthermore, aligning relevant policies to support responsible antimicrobial usage and mastitis control measures is essential to ensure these practices are sustained over time.

Sustained implementation of these integrated approaches will not only improve animal health and welfare but also enhance milk quality and safety for consumers. Ultimately, these measures contribute to the long-term economic stability and welfare of dairy farmers while mitigating the serious public and animal health threats posed by “silent pandemic” that is antimicrobial resistance.

11.3 Dairy practitioner engagement training of AMU

Venue: Deothjung Resort, Trashigang, **Date:** 16th–17th September 2025

Participants: Progressive Farmers of Druk Chikthuen Namley Tshodgye in Gongthung, Yangyeer gewog. **Funding Support:** Fleming Fund



Introduction

The Regional Livestock Development Centre (RLDC) in Kanglung, in partnership with the Project Management Unit of the Fleming Fund, conducted two-day training for dairy farmers of Gongthung in Yangnyer Gewog under Trashigang Dzongkhag. The program focused on mastitis management, antimicrobial resistance (AMR), and clean milk production. It aimed to strengthen farmers' knowledge and skills in udder health management, which is essential for improving dairy productivity and ensuring milk safety.

The training covered the diagnosis of clinical and subclinical mastitis, treatment options, preventive measures, and the economic impact of the disease on smallholder farmers. Farmers also learned practical methods of milk testing, hygienic collection and storage, and techniques for clean milk production. These practices are intended to improve the quality of milk supplied to the market and ensure consumer safety.

A key component of the training addressed antimicrobial resistance. Farmers were taught about the careful use of antibiotics, the importance of observing withdrawal periods, and the risks of misuse or overuse. Trainers explained that inappropriate antibiotic use reduces the effectiveness of treatment in animals and contributes to antimicrobial resistance, which threatens both human and animal health. The sessions were interactive, with group discussions and practical demonstrations. Participants practiced the California Mastitis Test (CMT), a reliable tool for early mastitis detection, and were trained in on-farm practices to reduce infection risks and strengthen herd health. By the end of the program, farmers were expected to gain a clear understanding of the causes, symptoms, and prevention of mastitis, along with its economic consequences, and to acquire practical knowledge on the proper use of antimicrobials in safeguarding public health.

The training was held at Deothjung Resort, Trashigang, and facilitated by officers from Regional Livestock Development Center (RLDC), veterinary officers, and extension agents from Dzongkhags with both theoretical sessions and hands-on practical demonstrations.

The program was conducted with funding support from the Fleming Fund, under the department's initiative to strengthen AMR surveillance and promote prudent antimicrobial use in livestock production systems.

This training was part of the ongoing cascade model, where extension agents trained in the last financial year were tasked to transfer knowledge and skills to farmers at the grassroots level.

Objectives

- To create awareness on clinical and subclinical mastitis and its economic implications.
- To enhance farmers' knowledge and skills on clean milk production practices.
- To train farmers on field milk testing (CMT) for early detection of mastitis.
- To promote responsible use of antibiotics and adherence to withdrawal periods.
- To strengthen on-farm mastitis management practices and environmental hygiene.
- To contribute to the national efforts in combating antimicrobial resistance.

Methodology

The training was delivered through a combination of lectures, video and pictorial demonstration, and practical sessions. Farmers actively participated in group activities such as California Mastitis Test (CMT) demonstrations and discussions on on-farm hygiene practices with experience sharing and interactive question-answer sessions.

Key Highlights

- Farmers gained hands-on experience in field milk testing using CMT.
- The importance of environmental hygiene in preventing mastitis was emphasized.
- Farmers were sensitized on the economic losses associated with mastitis.
- Practical guidance was provided on responsible antimicrobial use and observing withdrawal periods to ensure food safety.
- Farmers raised relevant issues regarding mastitis challenges specific to Yangnyeer Gewog, which were addressed by facilitators.

Outcomes

- Enhanced farmer awareness and capacity on mastitis management and clean milk production.
- Improved farmer knowledge on early detection of mastitis using simple field tests.
- Strengthened understanding of antimicrobial resistance risks and the need for responsible drug use.
- Farmers committed to adopting better on-farm practices for udder health and milk hygiene.

Way Forward

- Continuous follow-up and monitoring of trained farmers to ensure adoption of recommended practices.
- Extension agents to provide regular backstopping support in Yangnyeer Gewog.
- Further awareness programs to be scaled up to other gewogs for wider impact.
- Sustain capacity building initiatives to strengthen AMR control at the farm level.

Acknowledgement

The program was successfully conducted with the active participation of farmers, dedicated facilitation by officers and extension agents, and logistical support from the RLDC. Special acknowledgment is made to the Fleming Fund for their financial support, without which this training would not have been possible.

Agenda for the Training.

Day 1. Date- 16th Sep 2025 (All Participants)

Time	Session/Topic	Facilitator
8:30-9:00	Registration	RLDC
9:00-9:15	Welcome and Opening remarks	ORD RLDC
9:15-9:45	Aim and Objectives of the workshop	PMU
9:45- 10:30	Overview on AMR/Milk Project and Government Initiatives	ORD/VO
10:30-11:00	Tea Break and Group Photo	All
11:00-11:30	Overview of Mastitis and understanding the causative agents, symptoms.	VO Trashigang

11:30-12:00	Diagnosis of mastitis, clinical and subclinical, udderhealth	RLDC
12:00-13:00	Treatment and prevention of mastitis	Extension agent
13:00-14:00	Lunch Break	
14:00-15:00	Economic impact of mastitis	Extension agent
15:00-15:30	AMR, responsible use of antibiotics and withdrawal periods	VO, Trahsi Yangtse
15:30-16:00	Tea Break	
16:00-17:00	On-farm mastitis management practices (environmental hygiene)	Extension agent

Day 2: Date- 17th Sep 2025

Time	Session/Topic	Facilitator
09:00 - 10:30	Clean milk production techniques	Extension agent
10:30-11:00	Tea Break	
11:00-11:30	Methods of collection of sterile milk sampling, storage and transportation	RLDC
11:30 - 13:00	Principle and procedures of Field Milk Testing with CMT	RLDC
13:00 - 14:00	Lunch Break	
14:00 - 15:00	Practical: Field Milk Testing Group activity	Group Work
15:00-15:30	Issues and challenges in the management of mastitis	RLDC
15:30-16:00	Tea Break	
16:00-17:00	Discussions and closing	All

11.4 Report on Monitoring and Evaluation (M&E) Field Visit on Veterinary Information System (VIS)

The Monitoring and Evaluation (M&E) field visit on the Veterinary Information System (VIS), conducted from 26 January to 11 February 2026, was undertaken to validate system functionality,

assess utilization, and identify operational challenges before nationwide roll-out. The multidisciplinary team visited Regional and District Veterinary Hospitals and farms across Samtse, Zhemgang, Trongsa, Tsirang, Dagana, Phuentsholing, Dewathang, and Gelephu, engaging staff through live demonstrations, verification of disease reporting, and mentoring on data entry and navigation. The enhanced VIS showed notable strengths such as integrated modules, real-time reporting, and automated evidence-based decision support, but several constraints were observed. Poor internet connectivity, reliance on mobile hotspots, and inadequate IT equipment hindered timely reporting, while the web-based nature of VIS limited real-time field data entry. Training gaps were evident, with staff showing varied digital literacy and reliance on peer troubleshooting. Importantly, the system demonstrated strong alignment with the One Health approach, integrating domestic and wildlife disease surveillance, laboratory data, and logistics monitoring, thereby strengthening zoonotic disease detection and coordinated outbreak response. Financial procedures were followed, though some logistical advances were not approved. Overall, the VIS was found to be technically robust and strategically aligned with national digital transformation goals, but its success depends on addressing infrastructure and capacity gaps. Recommendations include developing offline data entry capability, providing portable IT devices, allocating networking budgets, conducting structured training programs, preparing user manuals and SOPs, and establishing a technical support helpdesk. The visit concluded that VIS has strong potential to enhance surveillance, logistics management, and One Health integration, provided that connectivity, equipment, and training challenges are resolved for sustainable nationwide implementation.

1. Introduction

In accordance with the approved proposal and Officer Order, a Monitoring and Evaluation (M&E) Field Visit on the Veterinary Information System (VIS) was conducted from 26 January to 11 February 2026.

The visit was undertaken following the completion of the enhancement phase of the VIS in 2025 and subsequent Training of Trainers (ToT). The system is currently under pilot implementation in selected District Veterinary Hospitals (DVHs) and Regional Veterinary Hospitals (RVHs).

The M&E aimed to validate system functionality under real field conditions, assess utilization patterns, identify operational challenges, provide hands-on mentoring, and collect structured feedback prior to nationwide roll-out.

2. Areas Covered

Regional Veterinary Hospitals (RVHs), District Veterinary Hospitals (DVHs) and Farmsin: Samtse, Zhemgang, Trongsa, Tsirang, Dagana, Phuentsholing, Dewathang, Gelephu

3. Composition of the M&E Team

The multidisciplinary team comprised representatives from:

- Disease Prevention and Control Unit (DPCU) – VIS Focal Person
- Drug, Vaccine and Equipment Unit (DVEU)
- Livestock Central Stores (LCS)

This composition ensured integrated assessment of disease surveillance, drug and vaccine management, and inventory control modules within the VIS platform.

4. Objectives of the M&E Visit

The specific objectives were to:

- Review functionality and utilization of VIS at field level
- Assess data entry, reporting, and feedback mechanisms
- Identify operational challenges faced by field staff
- Provide hands-on technical guidance and corrective measures
- Collect feedback for refinement before nationwide roll-out

5. Field Implementation and Activities

5.1 Team Engagement and On-site Demonstration



At each DVH and RVH, structured technical sessions were conducted, including:

- Live VIS system demonstration
- Verification of disease case reporting
- Review of vaccination and treatment records

- Assessment of drug, vaccine, and equipment stock modules
- Review of Livestock Central Store integration
- Hands-on mentoring was provided to extension staff to improve system navigation, report extraction, and data accuracy.

• **Key Findings**

6.1 System Strengths

The enhanced VIS demonstrates significant improvement compared to the earlier version:

- Integrated modules accessible through a single login
- Unified disease surveillance, laboratory linkage, and logistics management · Real-time reporting capability where connectivity exists
- Automated report generation for evidence-based decision-making
- The system architecture supports data flow across surveillance, diagnostics, and supply chain management in a coordinated manner.

6.2 Network Connectivity Constraints



- Poor and unstable internet connectivity in remote Gewogs
- Limited WiFi and LAN infrastructure
- Reliance on personal mobile hotspots
- Delays in real-time data entry
- Connectivity remains the single most critical bottleneck for effective VIS implementation.

6.3 Web-Based System Limitation during Field Operations



Veterinary services are primarily delivered in the field, including:

- Mass vaccination campaigns
- Disease outbreak investigations
- Routine clinical treatments
- Sterilization programs

Since VIS is web-based, real-time entry during field activities is often not feasible. Data are commonly recorded manually and entered later at the office, resulting in delayed reporting and limited real-time visibility.

6.4 Inadequate IT Equipment



- Most centers are equipped with low-specification desktop computers
- Lack of portable devices (laptops/tablets)
- Desktop systems unsuitable for mobile field-based operations
- Delayed data entry affects reporting timeliness

6.5 Training and Capacity Gaps

- No structured comprehensive training prior to pilot phase
- Variation in digital literacy among extension staff
- Difficulties in data entry, report extraction, and navigation
- Heavy reliance on peer consultation for troubleshooting
- The M&E visit provided immediate on-site capacity strengthening.



7. Integration of One Health Concept within VIS

The enhanced VIS platform is aligned with the national One Health approach, which recognizes the interconnectedness of animal health, human health, and environmental health. The system integrates:

- Domestic animal disease surveillance
- Wildlife disease surveillance
- Laboratory data management
- Drug and vaccine logistics monitoring



During the field visit, engagement sessions were conducted with forestry officials to demonstrate:

- Wildlife disease reporting module
- Medicine indentation system
- Integrated store management functions

This integration strengthens:

- Early detection of zoonotic diseases
- Coordinated outbreak response
- Shared data visibility between livestock and wildlife sectors
- Evidence-based decision-making

By consolidating surveillance and logistics data into a unified platform, VIS operationalizes the One Health framework at the field level, contributing to national pandemic preparedness and health security.

8. Financial Implementation

As per financial procedures:

- Vehicle mileage and TA/DA (DSA) were submitted and processed through the online e-DATS system in accordance with Royal Government of Bhutan regulations.
- The advance for logistics (working lunch and refreshments) was not approved by the Project Officer

9. Overall Assessment

The enhanced VIS is technically robust, well-integrated, and strategically aligned with national digital transformation goals in animal health. However, successful nationwide roll-out requires strengthening:

- Reliable internet connectivity
- IT hardware support (portable devices)
- Structured training programs
- Dedicated networking budget
- Development of offline data entry functionality



10. Recommendations

- Develop offline data entry capability with later synchronization.
- Provide laptops/tablets to field extension staff.
- Allocate dedicated budget for networking infrastructure.
- Conduct national-level ToT followed by cascade training.
- Develop comprehensive user manuals and SOPs.
- Establish a dedicated VIS technical support/helpdesk mechanism.
- Conduct periodic post-roll-out M&E exercises.

11. Conclusion

The Monitoring and Evaluation Field Visit conducted from 26 January to 11 February 2026 provided critical operational insights into pilot implementation of the enhanced Veterinary Information System. The system demonstrates strong potential to:

- Strengthen real-time animal disease surveillance
- Improve drug and vaccine stock monitoring
- Integrate wildlife and livestock disease reporting
- Support evidence-based decision-making under the One Health framework
- Addressing infrastructure and capacity gaps will ensure successful nationwide roll-out and long term sustainability of the VIS under the Pandemic Project

ANNEXURE

1. Medicine procured during 2025-26 FY

Sl. No.	Generic Name	Composition/ Strength	Presentation	Rate (Nu.)	Total Qty.	G. total amount (Nu.)
I	ANTIMICROBIALS					
1	Amoxycillin trihydrate bolus	1.5 gm/bolus	2 boli/strip	18.5	8100	149850
2	Amoxycillin + Potassium clavulanate tablet	375 mg/ tablet (250 mg amoxycillin + 125 mg potassium clavulanate)	10 tab/strip	150	3000	450000
3	Amoxicillin+Clavulanate inj	1.2g	1.2g/vial	43	0	0
4	Ampicillin + Cloxacillin Inj.	1 gm + 1 gm	2 gm vial	45.5	1500	68250
5	Azithromycin inj/ TAB	100 mg/ ml	100 ml vial	4840	391	1892440
6	Benzathine Penicillin Inj.	24 lakhs IU per vial	24 lakhs IU vial	53.3	3120	166296
7	Benzathine penicillin LA Inj.	600,000 IU	600,000 IU vial	38.9	2450	95305
8	Cefotaxime Inj.	1 gm/vial	1 gm vial	19.22	605	11628.1
9	Ceftriaxone Inj.	Ceftriaxone 500 mg	500 mg/vial	21	951	19971
10	Cephalexin bolus	250mg /bolus	2 boli/strip	21	3774	79254
11	Clindamycin tablet	150 mg/ tab	10 tab/strip	35	528	18480
12	Doxycycline hyclate tab	50 mg tab	100 tab/jar	90	485	43650
13	Enrofloxacin inj.	Enrofloxacin 100 mg/ml	30 ml vial	31.89	660	21047.4
14	Enrofloxacin tab	150 mg tab	10 tab/strip	60	2431	145860
15	Gentamicin Cream	Gentamicin Sulphate - 0.1% W/W	50 gm or 120 gm tube	80	7745	619600
	Gentamicin inj.					
	Gentamicin inj.	40 mg/ml	30 ml vial	41.6	700	29120
17	Metronidazole inj.	500 mg/ml	100 ml vial	17	2100	35700
18	Oxytetracycline LA Inj.	200 mg/ml	30 ml vial	102	1500	153000
19	Oxytetracycline SA	50 mg/ml	50 ml vial	65	770	50050
20	Strepto-penicillin Inj.	Streptomycin sulphate 2.5 g + Procaine penicillin G 15 lacs IU + Penicillin G Sodium 5 lacs IU	2.5 gm vial	47	855	40185
21	Sulphadiazine + Trimethoprim powder	400 mg+80 mg/gm	100 gm sachet	175	5980	1046500

22	Sulphadimidine Inj.	33.33%	100 ml vial	104	512	53248
23	Tetracycline HCl W/S	5 gm per 100gm	100 gm sachet	45	8670	390150
24	Trimethoprim + Sulphadiazine bolus	400 mg+2 gm	4 boli/strip	48	8100	388800
II	ANTHELMINTICS					
A	FLUKICIDE					
1	Albendazole tab	150 mg tab, 600mg tab	12 tab/strip	10	21267	212670
2	Levamisole + Oxyclozanide suspension	Levamisole 3.0 % + Oxyclozanide 6 % W/V	1L jar	342	1488	508896
3	Triclabendazole bolus	900 mg bolus	5 boli/strip	38	3970	150860
B	NEMATICIDE					
1	Fenbendazole bolus	1.5 gm bolus	5 boli/strip	50	9670	483500
2	Piperazine citrate solution	40 % solution	450 ml bottle	175	1022	178850
C	CESTOCIDE					
1	Praziquantel tab	50 mg tab	50 tab/jar	60	116	6960
D	BROAD SPECTRUM ANTHELMINTICS					
1	Ivermectin Inj.	1% W/V injectable liquid	10 ml vial	35.55	3900	138645
2	Ivermectin tab	10 mg/tab	10 tab/strip	10.5	5000	52500
3	Praziquantel + Pyrantel pamoate + Febantel	50 mg+144 mg+150 mg	10 tab/strip	45	3750	168750
4	Tetramisole powder	30% Tetramisole	500 g tin	595	318	189210
5	Milbemycin oxime & Afoxolaner	30mg Melbimycin oxime + 150mg Alfoxonar,	3 tablets/ packet	851	507	431457
III	ACARICIDES/INSECTICIDES					
1	Deltamethrin solution	1.25 % EC	1L bottle	310	6000	1860000
2	Flumethrin	1% solution	100 ml bottle	154	4000	616000
3	Gamma Benzene Hexachloride ointment	Gamma benzene 0.1 %, Proflavine hemisulphate 0.1% and Cetrinide 0.45 %	100 gm tube	60	11500	690000
4	Maggotocidal Spray	Gamma benzene 0.1 %, Proflavine hemisulphate 0.1% and Cetrinide 0.45 %, ecalyptus oil,	100 ml bottle	88	7550	664400

		turpentine and neem oil				
5	Propoxer+Coumophos+Sulphanilamide dusting powder	Each gram of powder contains Propoxer 20 mg, Coumophos 30 mg, Sulphanilamide 50 mg	40 g bottle	0	0	0
IV	ANTIFUNGALS				0	0
1	Clotrimazole ointment	1% ointment	15 gm tube	25	2890	72250
2	Itraconazole	100 mg/tab	10 tabs/strip	41.89	1100	46079
3	Ketoconazole	200 mg tab	10 tab/strip	30	1372	41160
V	ANTI-PROTOZOALS					
A	ANTI-HAEMOPROTOZOAL					
1	Diaminazine aceturate Inj.	Diminazine 70 mg + Phenazone 375 mg	30 ml vial	105	840	88200
B	ANTICOCCIDIAL					
1	Amprolium+Sulfaquinoxaline powder	Amprolium 100 g+Sulfaquinoxaline 100 g+Vitamin K3 2g	100 gm sachet	282	6500	1833000
2	Diaveridine + S'Quinoxaline powder	3.3 % W/W, 18.7% W/W	100 gm sachet	282	6500	1833000
VI	GASTROINTESTINAL DRUG					
A	RUMENOTORIC/STOMACHIC					
1	Antimony Pot. Tartrate + FeSO ₄ + CuSO ₄ + Cobalt chloride bolus	Antimony Pot. Tartrate 2g + H ₂ SO ₄ 2g + CuSO ₄ 50mg + Cobalt chloride 100mg	4 boli/strip	35	0	0
2	Rumenotoric/stomachic powder	Zingiber officinale, Peucedenum graveolens, Terminalia, Chebula, Tinospora cordifolia, Embellia ribes	1 kg pkt	77	3665	282205
B	ANTACIDS					

1	Aluminium Hydroxide suspension	Dried aluminum hydroxide 250mg + Dimethyl polysiloxane 40 mg + Magnesium hydroxide 250 mg in each 5 ml	450ml bottle	100	1327	132700
2	Omeprazole inj	Omeprazole sodium 42.6 mg/vial	40 mg vial	18.7	1326	24796.2
3	Ranitidine inj.	25 mg/ml	2 ml amp	6	2045	12270
4	Pantoprazole inj	40mg/vial	40mg/vial	12	763	9156
5	Ondansetron inj	4mg/2ml	2ml vial	8	1187	9496
C	ANTI- BLOAT					
1	Anti-bloat powder	Dirghjeerak, Vishva, Mahaushad, Raktpushpak, Dhenuka, Chatra,Ramath, Peeta, Deepya, Rohini, Sripkala, Chandrika, Madhura, Somraji, Lavanajulabi, Aksheev, Manthapak, Tiktak, Krishna, Krishn, Katambhara, Golomi, Katuveera,Markandika ,Ramanthi.	1 kg pkt	61.22	3964	242676.08
2	Simethicone oral suspension	100ml	100ml/jar	45	2790	125550
D	ANTI-DIARRHOEALS					
1	Loperamide tab	2 mg tab	10 tab/strip	11	3625	39875
2	Metronidazole + Loperamide tab (Specifically anti-diarrheal)	1000 mg+7.5 mg/tab	4 tab/strip	37	4523	167351
				37	4523	167351
E	LAXATIVES					
1	Dioctyl sodium sulfosuccinate	20 mg/ml	225 mg/12ml tube	0	0	0
2	Ispaghula (Psyllium) husk	100% pure	1 kg/jar	879	300	263700
3	Liquid Paraffin suspension	IP 450 ml	450 ml bottle	98	1450	142100
F	ANTISPASMODICS				0	0
1	Dicyclomine hydrochloride	10 mg/ml	30 ml vial	60	215	12900

G	HEPATOTONICS					
1	Liver tonic powder	99% purity powder: Tephrosea pupurea - 10%, Tarminalia Chebula - 10%, Tarminalia Belerica - 20%, Phyllanthus niruri - 20%, Andrographis Paniculate - 20%, Acacia catechu - 10%, Boerhavia diffusa - 10%	100 gm sachet	15.11	11445	172933.95
2	Ursidiol Capsule	75 mg tablet	10 tablets/strip	821	685	562385
H	METABOLIC ACIDOSIS				0	0
1	Sodium Bicarbonate Inj.	7.5% solution W/V	25 ml	16	1208	19328
2	Sodium Bicarbonate powder	IP 450 gm net	450 gm pkt	43	1320	56760
VII	REPRODUCTIVE DRUGS (I/UTERINE PREPARATION)					
1	Nitrofurazone+Urea+Metronidazole bolus	60 mg + 6g +100 0mg bolus	4 boli/strip	15.5	3000	46500
2	Uterine tonic Liquid	Each 5ml contains extract derived from herbs; Lodhra ext. 200mg, Each 5ml contains extract derived from herbs; Lodhra ext. 200mg 1 L bottle 73 Ashokchall 400mg, Aswagandha 100mg, Satavar 100mg, Amla 100mg, Bhrnraj 50mg, Dashmool 50mg, Deodar 100mg, Balmoool 150mg, Mosh ras ext. 50mg Maju 50mg, Nag kesar 25mg Jeevanti 50mg, Kamal pushpi ext. 150mg, Chandan 25mg Bahera 200mg,	1 L bottle	73	2640	192720

		Gokshru ext. 100mg Amra beej 50mg, Vividang 50mg Manjeeth ext. 50mg, Mai ext. 100mg Colour : caramel				
VIII	MINERALS					
1	Butaphosphan + Cyanocobalamin inj. (Phosphorus inj.)	Butaphosphan 100 mg + Cyanocobalami n 50 mcg per ml	30 ml vial	36	0	0
2	Iron Dextran Inj.	50 mg in 1ml	2 ml amp	27	46000	1242000
	Iron Dextran Inj.	50 mg	100 ml vial	660	72	47520
3	Magnesium Sulphate powder	450 gm net	400 gm pkt	35	1367	47845
4	Mineral Mixture powder	Ca, P, Mn, NaCl, Mg, Zn, I, Co, Cu	1 kg pkt	54.2	8000	433600
5	Yeast extract + Ferrous sulphate + Copper sulphate + Vit B+ Lactic acid base bolus	FeSO4 50mg + Vit B12 20mcg + Yeast 300mg	4 boli/strip	11.5	4000	46000
IX	VITAMINS					
1	B-complex inj.	Thiamine 10 mg + Riboflavin 3mg + Niacinamide 10 0mg + vitamin B12 10 mcg	10 ml vial	16.9	6200	104780

2	Methylcobalamin + Vit B6 inj. (Neurovet/Neuroxin)	Methylcobalamin 500 mcg + Vit B6 50 mg + Nicotinamide 50 mg per ml	10 ml vial	53	2760	146280
3	Vitamin A inj.	600,000 IU in 2 ml	2 ml amp	18.2	750	13650
4	Vitamin K inj.	10 mg vit K (Phytomenadione) per ml	1 ml amp	36.5	590	21535
5	S-adenosyl-methionine (SAME)	100mg, combination tablets containing SAME with silymarin (milk thistle), Vitamin E, and zinc	10 tablets/strip	209	308	64372
X	FLUIDS, ELECTROLYTES & AMINO ACIDS					
1	Amino acid solution	L-isolucine 0.5 gm, leucine 0.74 g, lysine acetate 0.931 g, lysine 0.66 g, Methionine 0.44 g, Phenylalanine 0.51 g, Threonine 0.44 g, Tryptophan 0.2 g, Valine 0.62 g, Arginine 1.2 g, Histidine 0.3 g, alanine 1.4 g, Glycine 1.1 g, Proline 1.12 g, Serine 0.65 g, Tyrosine 0.02=4 g, Taurine 0.1 g	10% solution	0	0	0
2	Calcium, Magnesium, Phosphorus & Dextrose Inj. (Calcium borogluconate)	Calcium 25%, Magnesium hypophosphite 5% & Dextrose monohydrate 10%	450 ml bottle	156.2	1860	290532
3	Dextrose 5% Inj. (5D)	5% Dextrose solution	500 ml bottle	35	2632	92120
4	Dextrose Normal Saline Inj. (DNS)	Sodium chloride-0.9g, Glucose anhydrous-0.5g	500 ml bottle	39	5404	210756
5	Normal Saline Inj. (NS)	0.9% solution	500 ml bottle	30	6860	205800

6	Ringers Lactate (RL)	Sodium chloride 0.6 g, Pot. chloride 0.04 g, Calcium chloride 0.027 g, Sodium lactate 0.312 g in each 100 ml	500 ml bottle	35	6860	240100
XI	EYE/EAR OINTMENT/DROPS					
1	Chloramphenicol eye ointment/applicaps	20 mg in each gram	100 capsules/jar	75.6	1150	86940
2	Ciprofloxacin ear/eye drops	Ciprofloxacin 0.3%	5 ml vial	11	2000	22000
3	Cyclosporine eye drop	Cyclosporine 1%	5 ml vial	0	0	0
4	Patented Hyaluronic acid + amino acids + bio salts eye drop	Hyaluronic acid (0.4%), Glycine (0.1%), Proline (0.075%), Leucine (0.01%), Lysine (0.01%), Bio salts (Sodium chloride, Disodium Phosphate, Potassium Chloride, Potassium Phosphate)	5 ml vial	321.25	279	89628.75
5	Ketorolac eye drops	0.5% w/v ketorolac	5 ml vial	25	0	0
XII	ANALGESIC/ANTIPYRETICS/ANTI-INFLAMMATORY DRUGS					
1	Butorphenol Tartrate	10ml	10 ml vial	185	0	0
2	Carprofen caplets	25 mg/caplets	100 caplets/bottle	700	183	128100
3	Flunixin meglumine inj.	Flunixin meglumine 50 mg per ml	10 ml vial	61	1558	95038
4	Meloxicam Inj.	5 mg/ml	30 ml/50 ml vial	25	0	0
5	Tramadol inj.	10mg/ml/50 mg/ml	10 ml/20 ml vial	0	0	0
6	Fentanyl inj	50mcg/ml	10ml vial	0	0	0
7	Methadone inj	10mg/ml	5ml vial	0	0	0
XIII	ANTI-HISTAMINES					
1	Chlorpheniramine maleate inj.	10 mg in 1 ml	30 ml vial	18	2440	43920
2	Chlorpheniramine maleate tab	4 mg per tablet	10 tab/strip	12	4430	53160

XIV	STEROIDS					
1	Dexamethasone inj.	4 mg/ml	5 ml vial	16	2075	33200
2	Prednisolone tab	5 mg tab	10 tab/strip	65	1917	124605
3	Prednisolone acetate inj.	1% solution	10 ml vial	19.5	1055	20572.5
XV	IMMUNE MODULATOR					
1	Oclacitinib	3.6 mg/ tab	100 tablets/ bottle	1675	0	0
XVI	HORMONES					
1	Buserelin acetate inj.	0.004 mg/ml	10 ml vial	289.98	1213	351745.74
2	CIDR-B intravaginal progesterone releasing inserts	One device contains 3 medicated ring which contain - Green = Progesterone IP 186 mg, Pink = Progesterone IP 400 g	1 insert/packet	23987	47	1127389
3	FSH (Follitropin) inj.	700 IU FSH/vial	20 ml vial	0	0	0
4	Hydroxyprogesterone caproate inj.	250 mg/ml	2 ml vial	47.9	0	0
5	Oestradiol benzoate inj. (CIDIROL)	0.5 mg/ml	50 ml vial	0	0	0
6	Oxytocin inj.	5 IU in 1 ml	1 ml amp	19	5115	97185
7	PG (Estrumate) inj.	20 mg/ml	20 ml	3312	211	698832
8	PG600 inj.	400IU PMSG + 200IU HCG	One dose vial (5 ml)	6219	29	180351
9	Prostaglandin F2 alpha (Natural)	5 mg/ml	5 ml vial	260	680	176800
XVII	ANAESTHETICS, SEDATIVES , TRANQUILIZERS					
1	Guaifenesin powder	> 99% purity	5 kg/ bag	28700	0	0
2	Isoflurane	100% w/w	250 ml/bottle	2099	50	104950
3	Ketamine inj.	50 mg per ml	10 ml vial	175	1400	245000
4	Lignocaine HCL inj.	2% solution	30 ml vial	175	3360	588000
5	Propofol	10 mg/ml	10 ml	59.2	60	3552
6	Thiopentone Sodium inj.	1 gm vial	10 ml	950	55	52250
7	Xylazine HCL inj.	20 mg per ml	30 ml vial	179	0	0
	Xylazine HCL inj.	21 mg per ml	31 ml vial	178	2000	356000
XVIII	INTRAMMARY INFUSIONS					
1	Cefoperazone sodium I/mammary	250 mg/tube	10 ml tube	180	1845	332100
				180	1845	332100

2	Procaine penicillin G + Streptomycin sulphate + sulphamerazine + Hydrocortisone	Procaine penicillin G IP 100, 000 units, Streptomycin sulphate 100mg, sulphamerazine 0.5 g, Hydrocortisone 20 mg	6 ml tube	52	9549	496548
3	Strepto-penicillin I/mammary	Procaine penicillin G-100000 IU, Streptomycin sulphate-100 mg	6 ml tube	109	8000	872000
XIX	ANTISEPTICS/DISINFECTANTS					
1	Boric acid	Pure Pharmaceutical grade	500 gm pkt	155	252	39060
2	Cetrimide + Chlorhexidine solution	Cetrimide 15% + Chlorhexidine gluconate 7.5%	1 L bottle	352	300	105600
3	Copper Sulphate	450 gm net	450 gm pkt	210	0	0
4	Formaldehyde	37-40% solution	500 ml bottle	58	485	28130
5	Glutaraldehyde Derivatives solution	Each 100 ml contains Glutaraldehyde 7.0 g Dihydroxy, Diohexane 9.5 g, polymethyl urea 16.23 g	500 ml Jar	578	760	439280
6	Hydrogen peroxide	(H ₂ O ₂) 3% pharmaceutical grade	500 ml bottle	55	0	0
7	Potassium Permanganate (Crystal)	450 gm net	450 gm pkt	540	1570	847800
8	Povidone Iodine solution	5% solution	100 ml bottle	40	8400	336000
9	Rectified Spirit	90 % Alcohol	450 ml bottle		0	0
10	Sulphanilamide powder	Pharmaceutical grade	450 gm pkt	413	0	0
11	Zinc Oxide powder	IP , 450 gm net	450 gm pkt	170	264	44880
12	Zinc Sulphate anhydrous powder	Pharmaceutical grade	500 gm pkt	221.75	144	31932
XX	EXPECTORANTS					

1	Anticough/Expectorant powder/anti-tussive	Vasa/Adhatoda vesica Leaf (21%), Kantakari/Sol.n um xanthocarpum Aerial Part (15), Tulasi/Ocimum sanctum Aerial Part (14%), Rhizome, Bibhitaka/Terminalia belerica Pericarp (9%),Karchoora /Curcuma zedoaria Rhizome (7%), Yashti/Glycyrrh iza glabra Root (5%),Other ingredients: Include Shirisha, Vacha, Narasara, and Soraka,	1 kg pkt	87	3620	314940
XXI	NON-PATENT/CHEMICAL DRUGS					
1	Alum Pure powder	99% pure cyrsytal	450 gm pkt	45	0	0
2	Benzoic acid powder	I.P. 450 gm net	450 gm pkt	147	414	60858
3	Glycerin suspension	IP minimum 98% purity	450 ml bottle	98	1222	119756
4	Hexamine powder	I.P. 450 gm net	400 gm pkt	163	1040	169520
5	Petroleum Jelly (WSF)	IP 450 gm net	450gm jar	145	599	86855
6	Sodium acid phosphate powder	IP 450 gm net	450 gm pkt	155	1121	173755
7	Turpentine Oil	IP 1000ml	1 liter bottle	167	962	160654
8	Carboxymethyl cellulose powder	99% power:Carboxy Methyl Cellulose Sodium, Salt, CarboxyMethyl Cellulose Sodium	500 G Jar	465	127	59055
XXII	DIURETICS					
1	Acetazolamide	250 mg/tab	10 tabs/ strips	30	189	5670
2	Frusemide inj.	50 mg/ml	10 ml vial	16.6	1101	18276.6
3	Frusemide Tab	20 mg/tab	10 tabs/ strips	85	1341	113985
4	Mannitol inj.	200 mg/ml	100 ml bottle	379	86	32594
XXIII	ANTI-CONVULSANT DRUGS					

1	Diazepam inj.	5 mg/ml	2 ml amp/ 10 ml vial	0	0	0
2	Phenobarbitone sodium	30 mg tab	10 tab/strip	0	0	0
3	Gabapentin capsules/tablets	100mg, 300mg	100 capsules/jar	1995	61	121695
4	Levetiracetam	500mg tab	15 tab/strip	35	230	8050
XXIV	ANTI-EMETICS					
1	Maropitant citrate	10 mg/ml	20 ml vial	3990	90	359100
2	Metoclopramide HCL inj.	5 mg/ml	10 ml vial	0	0	0
3	Promethazine tab	25 mg tab	10 tab/strip	15	1000	15000
XXV	CARDIAC STIMULANTS					
1	Adrenaline inj.	1 mg/ml	1 ml X 10 amp/pkt	87.5	1100	96250
2	Atropine Sulphate Inj.	0.6 mg/ml	1ml vial/10 ml vial	13	500	6500
3	Doxapram inj.	20 mg/ml	20 ml vial	3219.92	52	167435.84
4	Pimobendan tablet	5mg /tablet	100 tablets/jar	1875	77	144375
XXVI	HAEMOSTATICS					
1	Adenochrome monosemicarbazone	5 mg/ml	10 ml vial	46.9	582	27295.8
2	Botropase	Haemocoagulase 1IU + Sodium chloride IP 0.9% per ml	2 ml amp	0	0	0
3	Etamsylate BP	125 mg/ml	2 ml amp	15	1288	19320
4	Salicylic acid powder	450 gm net	450 gm pkt	238	330	78540
5	Tincture Benzoin Compound solution	70-77 % Alcohol	450 ml bottle	147	500	73500
XXVI I	EMETICS				0	0
1	Apomorphine HCL tab	3 mg tab	4 tab/strip	0	0	0
2	Ropinirole eye drop	30 mg/ml	0.3 ml/dropper	0	0	0
XXVI II	ANTINEOPLASTICS					
1	Lithium Antimony Thiomalate inj.	6% W/V	50 ml vial	441	417	183897
2	Vincristine Sulfate inj.	1 mg per vial	1 mg vial	77	486	37422
3	Toceranib	15 mg tab	10 tabs/strip	0	0	0
XXIX	PSYCOTROPIC SUBSTANCE					
1	Chlorpromazine HCl tab	100 mg tab	10 tab/strip	0	0	0
XXX	TOXOIDS/ANTI-TOXINS					

1	Tetanus toxoid	0.5 ml/ml	0.5 ml/1 ml amp	0	0	0
2	Tetanus anti-toxin	1500 IU/vial	1ml amp	0	0	0
XXXI	ANTIDOTE					
1	Charcoal Activated powder	450 gm net	450 gm pkt	125	502	62750
2	Yohimbine inj	10 mg/ml	10 ml vial	822	106	87132
XXXI I	MISCELLANEOUS					
1	Distilled Water in plastic container	5 ml in 1 amp.	5 ml amp	2.99	9000	26910
XXXII I	BRONCHODILATORS					
1	Theophylline inj	100 mg/ per tab	10 tab/strip	0	0	0
2	Salbutamol inj	500 mcg/mL	1ml ampoule	0	0	0
XXXI V	AQUATIC DRUGS (SPECIFIC)					
1	Acriflavine (Fish bath)	Acriflavine Neutral 100 %	250 gm packet	871.92	29	25285.68
2	Benzocaine (Fish Anaesthetics)	Each 100 g contains minimum of 99% Benzocaine	450 ml vial	0	0	0
3	Eco Marine tablet (Fish probiotics)	Probiotics and magnesium supplement for aqua culture pond balance	80 tablets/jar	2500	14	35000
4	Malachite green (External parasite bath/dip)	Malachite green 25 gm per packet	25 gm packets	0	0	0
5	Melafix (Fish bactericides)	1% Melaleuca	500 ml bottle	2761.75	11	30379.25
6	Methylene Blue (Fish fungicides)	Methylene blue (β Dimethylaminol and triphenylethanol in ratio of 13:1)	250 ml bottle	0	0	0
7	Phenoxy ethanol (Fish Anaesthetics)	99% 2 phenoxy ethanol/bottle	500 ml bottle	0	0	0
8	Praziquantel (Prazi Pro) - Fish Anthelmintic Bath/Dip	Oxybispropanol and more than 5% praziquantel by weight	470 ml Jar	0	0	0
9	Salmon Gonadotropin Releasing Hormone analogue and Domperidone (Ovaprim)	Salmon Gonadotropin RH 20 mcg+Domperidone 10 mg per ml	10 ml vial	0	0	0

10	Spawn Pro	1.Salmon Gonadotrophin Releasing Hormone Analog- 20 mcg. 2.Domperidone- 10 mg. Propylene Glycol IP- QS	10 ml vial	750	0	0
11	Synthetic Gonadotropin Releasing Hormone (SGnRH) Analogue (WOVA FH)	Synthetic Gonadotropin releasing hormone Analogue	10 ml vial	0	0	0
12	Synthetic Salmon gonadotropin releasing hormone and Domperidone (Ovatide)	Synthetic peptide protein+Salmon Gonadotropin RH 20 mcg+Domperidone 10 mg	10 ml vial	0	0	0
13	V5 powder for pond aeration	Each Kg packet containing Bacillus subtilis, Bacillus licheniformis, Bacillus pumilus, Bacillus amyloliquefaciens, Bacillus megaterium....not less than 9 x 10 ¹¹ cfu; Silica (as Natural Hydrated Minerals Sodium, Calcium (Aluminium Silicate... not less than 26.0%, Alumina (as Natural Hydrated Minerals Sodium; Calcium (Aluminium Silicate).. not less than 10.0%	1 Kg Jar/pkt	921	21	19341
XXXI V	WILDLIFE DRUGS (SPECIFIC)					
1	Acepromazine inj.	Acepromazine maleate 10 mg/ml	50 ml vial	0	0	0
2	Activon	Diprenorphine HCl	10 ml vial	0	0	0
3	Atipamezole Inj	Atipamezole Inj	10 ml vial	0	0	0
4	Etorphine hydrochloride (Captivon 98)	Etorphine HCl 9.8 mg/ml	10 ml vial	0	0	0

5	Medetomidine (Zalopine) inj.	Medetomidine 10mg/ml	10 ml vial	0	0	0
6	Reverzine Inj	Yohimbine HCl	20 ml vial	1171.25	0	0
7	Trexonil 20 ml	Naltrexone HCl	20 ml vial	0	0	0
8	Zoletil (Dissociative Anaesthetics)	Tiletamine base 250 mg+Zolazepam 250 mg with 5 ml sterile water with a final concentration of 100 mg/ml	5 ml vial	0	0	0
						0
						33650160.89

2. Items procured directly from the nearby Indian town

<i>Sl no.</i>	<i>Description of Item</i>	<i>Unit</i>	<i>Qty.</i>	<i>Rate (Nu.)</i>	<i>Amount (Nu.)</i>	<i>Manufacturer</i>	<i>5% GST</i>
A Medicines							
1	Benzathine Penicillin (Composition 24 lakhs IU per vial, Presentation 24 lakhs IU vial)	Inj, vial	3120	55.3	172536	Jakson/Nicosia/Vetscience	8626.8
2	Benzathine penicillin LA (Composition 6 lakhs IU, Presentation 6 lakhs IU vial)	Inj, vial	2450	38.9	95305	Jakson/Tragus	4765.3
3	Omeprazole inj, (Composition Omeprazole sodium 42. 6 mg per vial equivalent to 40 mg omeprazole, Presentation 40 mg vial)	inj, vial	1326	18.7	24796.2	Oscar/Intelico	1239.8
4	Ursidiol Capsule, (Composition, 75 mg tablet, presentation 10 tablets/strip)	strips	600	821	492600	150mg, 15tab/strip, mfg.Cure Healthcare	24630

	Amino acid solution, (Composition 10 % solution, L-isolucine 0.5 gm, leucine 0.74 g, lysine acetate 0.931 g, lysine 0.66 g, Methionine 0.44 g, Phenylalanine 0.51 g, Threonine 0.44 g, Tryptophan 0.2 g, Valine 0.62 g, Arginine 1.2 g, Histidine 0.3 g, alanine 1.4 g, Glycine 1.1 g, Proline 1.12 g, Serine 0.65 g, Tyrosine 0.02=4 g, Taurine 0.1 g, Presentation 100 ml bottle)	bottle	300	270	81000	As per sample catalogue, for ORIYON Healthcare	4050
5	Chloramphenicol eye ointment applicaps, (Composition 20 milligram in each gram, Presentation 100 capsules per jar)	jar	1150	75.6	86940	For PACKSULES	4347
6	Butorphenol Tartrate, (composition 2 ml, presentation 10 ml vial)	vial	435	185	80475	For Neon	4023.8
7	Methadone inj. (Composition 10mg/ml, presentation 5ml vial)	vial	130	450	58500		2925
8	Oxytocin inj, (Composition 5 IU in 1 ml, Presentation 1 ml ampoule)	ampoul e	5115	19	97185	My Med Healthcare	4859.3
9	Propofol, (Composition 10 mg per ml, presentation 10ml vial)	vial	60	59.2	3552	INTELICO	177.6
10	Thiopentone Sodium inj. (Composition 1gm vial, presentation 10ml vial)	vial	55	950	52250	MEDIPECTUS	2612.5
11							

12	Strepto-penicillin I/mammary, (Composition Procaine penicillin G-100000 IU, Streptomycin sulphate-100 mg, presentation 6ml tube)	tube	8000	109	872000	ZONEX AB brand 100mg (10X10 tab) =100 tablet box, for TAKSA LIFE SCIENCE, MKT BY PLANISHOR PHARMA	43600
13	Gabapentin capsules/tablets, (Composition 100mg or 300mg, presentation 100 capsules/jar)	jar	61	1995	121695		6084.8
14	Maropitant citrate, (Composition 10mg/ml, presentation 20 ml vial)	vial	90	3990	359100	VIVALDIS	17955
15	Metoclopramide HCL inj. (Composition 5 mg/ml, presentation 10 ml vial)	vial	300	42.6	12780		639
16	Pimobendan tablet, (Composition 5mg /tablet, presentation 100 tablets/jar)	jar	77	1875	144375	VIVALDIS/ safecon lifes cience	7218.8
17	Adenochrome monosemicarbazone , (Composition 5mg/ml, presentation 10 ml vial)	vial	582	46.9	27295.8	MORVEL	1364.8
18	Tetanus toxoid, (Composition 0.5 ml/ml presentation 0.5 ml/1 ml ampoule)	ampoul e	700	17	11900	DONO	595
19	Salbutamol inj. (Composition 500 mcg/ml, presentation 1ml ampoule)	ampoul e	330	43	14190	KALMIA HEALTHCARE	709.5
B Consumables							
1	Needle for Automatic Syringe, Specification, 15G	Packets	886	82.5	73095	KAVYANS INTERNATIO NAL	3654.8

						SURGICAL COMPANY	
2	Semi-Circle needle SS, regular eye, Specification No. 5 reverse cutting edge	Packets	600	52	31200	manufacture by SURGEON, 6 piece/pkt, Minimun order 600 pkts.	1560
3	Semi-Circle needle SS, regular eye, Specification No. 8 reverse cutting edge	Packets	600	52	31200	manufacture by SURGEON, 6 piece/pkt, Minimun order 600 pkts.	1560
4	Semi-Circle needle SS, regular eye, Specification No. 11 reverse cutting edge	Packets	600	52	31200	manufacture by SURGEON, 6 piece/pkt, Minimun order 600 pkts.	1560
5	Semi-Circle needle SS, regular eye, Specification No. 11 round body	Packets	600	52	31200	manufacture by SURGEON, 6 piece/pkt, Minimun order 600 pkts.	1560
6	Data logger, Specification, Temperature range: - 20 degree Celsius to +50 degree Celsius, (-4-degree F to + 122-degree F). Logger Capabilities- Capacity: at least 65,000 measurements, selectable sampling intervals: 1 second up to 9 hours, recording times up to 1 year, programmable start time/date, recording modes: stop when full, wrap around when full, displays temperature and relative humidity simultaneously, displays memory remaining, displays battery level, high and low set points for	Nos.	25	14500	362500	ENVIRO TECHNOLOGI ES	18125

both temperature and relative humidity, offloads to PC with serial cable, time accuracy: +/-1 minute per week at +20 degree Celsius. Power- 3 AAA Alkaline batteries, user-replaceable. Internal Temperature Sensor- Measurement range: -20 degree Celsius to +50 degree Celsius, Accuracy: +/-0.7 Celsius at +20 degree Celsius, Temperature accuracy drift: Negligible

TOTAL

3368870

168444

Procurement of Non-drug consumables

Sl. No.	Particulars	Specification	Unit	Rate (Nu.)	Total Qty. procured	Total amount (Nu.)
A	Surgical Instruments					
1	Allies tissue forceps,	15cm, 4x5 teeth	Nos.	240	210	50400
2	Artery forceps,	14cm, Curved	Nos.	192	246	47232
3	Artery forceps,	14cm, straight	Nos.	192	230	44160
4	Artery forceps,	18cm, Curved	Nos.	252	246	61992
5	Artery forceps,	18cm, straight	Nos.	252	234	58968
6	Incision Scissors,	14cm, Blunt/Pointed	Nos.	165	264	43560
7	Incision Scissors,	18cm, Blunt/Pointed	Nos.	240	246	59040
8	Mayo's Type Scissors,	14cm, curved	Nos.	198	300	59400
9	Mayo's Type Scissors,	14cm, straight	Nos.	198	323	63954
10	Mayo's Type Scissors,	17cm, Curved	Nos.	222	298	66156

11	Mayo's Type Scissors,	17cm, straight	Nos.	222	314	69708
12	Ovario-hysterectomy Hook for cats,	18 cm	Nos.	119	165	19635
13	Ovario-hysterectomy Hook for dogs,	20 cm	Nos.	147	188	27636
14	Plaster of paris scissors,	SS 18 cm	Nos.	360	373	134280
15	Rat-toothed Forceps,	14 cm	Nos.	98	188	18424
16	Rat-toothed Forceps,	18 cm	Nos.	132	158	20856
17	Thumb Forceps,	6 inch	Nos.	47	163	7661
18	Towel Clamp,	17 cm angular	Nos.	210	536	112560
19	Towel Clamp,	Schadel's type, 9cm	Nos.	65	302	19630
20	Trocar and cannula,	Trocar 4 x 120 mm with metal handle and cannula	Nos.	1287	242	311454
21	BP Blade SS, Sterile	No. 23	Packets	290	300	87000
22	BP Blade SS, Sterile	No. 24	Packets		0	0
23	Cat catheter	3 FG (Foleys catheter)	Piece	370.5	213	78916.5
24	Cat catheter	4 FG (Foleys catheter)	Piece	370.5	228	84474
25	Dog catheter	6 FG (Foleys catheter)	Piece	377	279	105183
26	Dog catheter	8 FG (Foleys catheter)	Piece	377	254	95758
27	Dog catheter	10 FG (Foleys catheter)	Piece	377	217	81809
28	Operation Mask	Disposable, 2 Ply, elastic loop, single polythene packed.	Nos.	1.5	33775	50662.5
29	Splints for dogs and cats	Clear plastic and tarsal splint. Specially designed for easy, accurate fitting. Supplied as a pair.	Nos.	13981.5	50	699075

		Quick splint foreleg M				
30	Splints for dogs and cats	Clear plastic and tarsal splint. Specially designed for easy, accurate fitting. Supplied as a pair. Quick splint foreleg L	Nos.	19890	50	994500
31	Surgical drape	Made of surgical grade textiles, fenestrated drapes feature a moisture proof barrier near the fenestration that repels body fluids so that they do not soak, through and draw up contaminants from beneath the drapes into the surgical field, durable quality, may be safely washed and autoclaved frequently (40X40 opening, 9X1") central opening	Nos.	120	450	54000
32	Surgical gloves	No. 6 sterile (50 pairs/box)	Pairs	10.75	10650	114487.5
33	Surgical gloves	No. 6.5 sterile (50 pairs/box)	Pairs	10.75	12000	129000
34	Surgical gloves	No. 7 sterile (50 pairs/box)	Pairs	10.75	22050	237037.5
35	Surgical gloves	No.7.5 sterile (50 pairs/box)	Pairs	10.75	9400	101050
36	Disposable syringe, with needle	1ml	Nos.	2.3	32500	74750
37	Disposable syringe, with needle	2ml	Nos.	1.34	96700	129578

38	Disposable syringe, with needle	5ml	Nos.	1.59	64500	102555
39	Disposable syringe, with needle	10ml	Nos.	2.68	44800	120064
40	Disposable syringe, with needle	20ml	Nos.	6.22	28600	177892
41	Hypodermic Needle, Disposable	0.8x25 mm 21 Gx1	Packets	85.4	1418	121097.2
42	Hypodermic Needle, Disposable	0.6x25 mm 23 Gx1	Packets	79.3	1440	114192
43	Hypodermic Needle, Disposable	0.8 x 25 mm 20 G	Packets	73.2	1958	143325.6
44	Needle for Automatic Syringe	15 G	Packets	82.5	886	73095
B	Suture Materials					
1	Monofilament Polyamide suture material	Monofilament Polyamide Non absorbable surgical suture U.S.P with swaged 1/2 circle reverse cutting needle 38mm, size 1, 75cm length.	Packets	204	525	107100
2	Monofilament Polyamide suture material	Monofilament Polyamide Non absorbable surgical suture U.S.P with swaged 1/2 circle reverse cutting edge needle 38mm, size 2-0, 75cm length.	Packets	204	415	84660
3	Monoglyde Suture	Poliglecaprone 25 suture, Monofilament synthetic absorbable	Packets	540	485	261900

		surgical suture, USP size 1 with needle, 152 Cm, Violet				
4	Polyglactin suture material	Coated & braided synthetic absorbable sutures, Size 6-0, 45 cm, Violet with needle	Packets	456	338	154128
5	Polyglactin suture material	Coated & braided synthetic absorbable sutures, Size 5-0, 45 cm, Violet with needle	Packets	432	247	106704
6	Polyglycolic acid (PGA) suture material	Coated & braided synthetic absorbable sutures, Size 1, 152 cm, Violet with needle	Packets	551	581	320131
7	Polyglycolic acid (PGA) suture material	Coated & braided synthetic absorbable sutures, Size 2-0, 152 cm, Violet with needle	Packets	492	588	289296
8	Silk thread	No. 3, Black braided non-absorbent, elastic regular and smooth	Packets	420	284	119280
C	Bandages, cotton absorbents					
1	Absorbent Pad	57 cm x 37 cm	Nos.	20.25	2227	45096.75
2	Absorbent Wool/Cotton	250 gm Net	Nos.	138	4965	685170
3	Adhesive tape	7.5 cm	Nos.	52	1442	74984
4	Bandages	Cotton 5 cm 12x1, 28 TPI	Packets	45	2122	95490
5	Bandages	Cotton 10 cm 12x1, 28 TPI	Packets	40	2296	91840
6	Bandages	Cotton 15 cm 12x1, 28 TPI	Packets	45	2192	98640

7	Plaster of paris bandage	5 cmx12x1	Nos.	40	5922	236880
8	Plaster of paris bandage	10 cmx12x1	Nos.	40	1152	46080
9	Surgical guaze sheet	Guaze Than 36 inches x20 yard:100% cotton; Bleached, purified textile, plain weave; Firm edge, no loose thread; Lint free; Type of guaze:17 threads/cm2; Thread count: warp:95 to105 thread/dm; Weft: 66 to 74 thread/dm	Nos.	170	2250	382500
D	Clinical, gynecology & obstertical instruments					
1	Aprons (Plastic, Blue Color)	Plastic washable with elastic liners, Loop for neck hung, one thread tie type at back side, Standard size	Nos.	299	500	149500
2	Autoclave tape	Size 18mm, Clean peel from wrap, accurate indicator changes from white to dark brown/black. 2nos/pkt	Packets	595	200	119000
3	Buhner prolapse suture needle	12" (Prolapse Needles for Cows)	Nos.	374	222	83028
4	Butterfly Scalp Vein Set	Luer slip, Yellow, 20 gauze	Nos.	5	2987	14935
5	Butterfly Scalp Vein Set	Luer slip, Black, 22 gauze	Nos.	5	7942	39710
6	Butterfly Scalp Vein Set	Luer slip, Red, 24 gauze	Nos.	5	5957	29785
7	Dispensing materials	Polyethylene bag with top locking	Kg	309	280	86520

		facility, Size 15cm X 20cm.				
8	Dispensing materials	Polyethylene bag with top locking facility, Size 5 cmX7 cm	Kg	140	350	49000
9	IV canula	Size 24 G, yellow	Piece	13	4700	61100
10	IV canula	Size 20 G, pink	Piece	13	3100	40300
11	IV set	Plastic, disposable, with filter and air inlet, 20 drops, 1ml length 2m inner dia:2mm (with needle).	Nos.	8	9300	74400
12	Nitrile gloves (Blue) 100/pk	powder and latex free, non-sterile, size: large, 100/pk	Packets	210.6	1460	307476
13	Nitrile gloves (Blue) 100/pk	powder and latex free, non-sterile, size: X-large, 100/pk	Packets	210.6	850	179010
14	Ultrasound gel	5 L capacity	Nos.	417	15	6255
15	Biohazard bag (Colour coded)	18ltr biohazard bag with different colour code (Red, Green, Blue and Yellow)	Piece	17.5	14250	249375
E	Animal Management & identification items					
1	Ear Tag Pen	Waterproof, permanent	Nos.	916.11	100	91611
2	AI Gloves,	Full, Plastic, No. 7, Disposable for artificial insemination	Pkt	250	795	198750
		TOTAL				10245842.6

3. Consumables procured

<i>Sl. No.</i>	<i>Particulars</i>	<i>Specification</i>	<i>Unit</i>	<i>Rate (Nu.)</i>	<i>Total Qty</i>	<i>G. total amount (Nu.)</i>
1	Allies tissue forceps,	15cm, 4x5 teeth	Nos.	240	210	50400
2	Artery forceps,	14cm, Curved	Nos.	192	246	47232
3	Artery forceps,	14cm, straight	Nos.	192	230	44160
4	Artery forceps,	18cm, Curved	Nos.	252	246	61992
5	Artery forceps,	18cm, straight	Nos.	252	234	58968
6	Incision Scissors,	14cm, Blunt/Pointed	Nos.	165	264	43560
7	Incision Scissors,	18cm, Blunt/Pointed	Nos.	240	246	59040
8	Mayo's Type Scissors,	14cm, curved	Nos.	198	300	59400
9	Mayo's Type Scissors,	14cm, straight	Nos.	198	323	63954
10	Mayo's Type Scissors,	17cm, Curved	Nos.	222	298	66156
11	Mayo's Type Scissors,	17cm, straight	Nos.	222	314	69708
12	Ovario-hysterectomy Hook for cats,	18 cm	Nos.	119	165	19635
13	Ovario-hysterectomy Hook for dogs,	20 cm	Nos.	147	188	27636
14	Plaster of paris scissors,	SS 18 cm	Nos.	360	373	134280
15	Rat-toothed Forceps,	14 cm	Nos.	98	188	18424
16	Rat-toothed Forceps,	18 cm	Nos.	132	158	20856
17	Thumb Forceps,	6 inch	Nos.	47	163	7661
18	Towel Clamp,	17 cm angular	Nos.	210	536	112560
19	Towel Clamp,	Schadel's type, 9cm	Nos.	65	302	19630
20	Trocar and cannula,	Trocar 4 x 120 mm with metal handle and cannula	Nos.	1287	242	311454
A	Surgical Instruments & Equipment					
21	BP Blade SS, Sterile	No. 23	Packets	290	300	87000
22	BP Blade SS, Sterile	No. 24	Packets		0	0
23	Cat catheter	3 FG (Foleys catheter)	Piece	370.5	213	78916.5

24	Cat catheter	4 FG (Foleys catheter)	Piece	370.5	228	84474
25	Dog catheter	6 FG (Foleys catheter)	Piece	377	279	105183
26	Dog catheter	8 FG (Foleys catheter)	Piece	377	254	95758
27	Dog catheter	10 FG (Foleys catheter)	Piece	377	217	81809
28	Operation Mask	Disposable, 2 Ply, elastic loop, single polythene packed.	Nos.	1.5	33775	50662.5
29	Splints for dogs and cats	Clear plastic and tarsal splint. Specially designed for easy, accurate fitting. Supplied as a pair. Quick splint foreleg M	Nos.	13981.5	50	699075
30	Splints for dogs and cats	Clear plastic and tarsal splint. Specially designed for easy, accurate fitting. Supplied as a pair. Quick splint foreleg L	Nos.	19890	50	994500
31	Splints for dogs and cats	Clear plastic and tarsal splint. Specially designed for easy, accurate fitting. Supplied as a pair. Quick splint hind leg S	Nos.		0	0
32	Splints for dogs and cats	Clear plastic and tarsal splint. Specially designed for easy, accurate fitting. Supplied as a pair. Quick splint hind leg M	Nos.		0	0
33	Surgical cap	Green with rubbered edge, Disposable	Packets		0	0
34	Surgical drape	Made of surgical grade textiles, fenestrated drapes feature a moisture proof barrier near the fenestration that repels body fluids so that they do not soak, through and draw up contaminants from beneath the drapes into the surgical field, durable quality, may be safely washed and autoclaved frequently (40X40 opening, 9X1") central opening	Nos.	120	450	54000
35	Surgical gloves	No. 6 sterile (50 pairs/box)	Pairs	10.75	10650	114487.5
36	Surgical gloves	No. 6.5 sterile (50 pairs/box)	Pairs	10.75	12000	129000
37	Surgical gloves	No. 7 sterile (50 pairs/box)	Pairs	10.75	22050	237037.5
38	Surgical gloves	No.7.5 sterile (50 pairs/box)	Pairs	10.75	9400	101050
39	Disposable syringe, with needle	1ml	Nos.	2.3	32500	74750
40	Disposable syringe, with needle	2ml	Nos.	1.34	96700	129578

41	Disposable syringe, with needle	5ml	Nos.	1.59	64500	102555
42	Disposable syringe, with needle	10ml	Nos.	2.68	44800	120064
43	Disposable syringe, with needle	20ml	Nos.	6.22	28600	177892
44	Hypodermic Needle, Disposable	0.8x25 mm 21 Gx1	Packets	85.4	1418	121097.2
45	Hypodermic Needle, Disposable	0.6x25 mm 23 Gx1	Packets	79.3	1440	114192
46	Hypodermic Needle, Disposable	0.8 x 25 mm 20 G	Packets	73.2	1958	143325.6
47	Hypodermic needle, Reusable, SS, sterilizable, Leuer lock hub	1.8 x 30 mm 15 Gx11/4"	Packets		0	0
48	Hypodermic needle, Reusable, SS, sterilizable, Leuer lock hub	1.6x 30 mm 16 Gx11/4"	Packets		0	0
49	Hypodermic needles, Reusable	1.5x18 G	Packets	97.5	0	0
50	Hypodermic needles, Reusable	1.5x16 G	Packets	110.5	0	0
51	Needle for Automatic Syringe	15 G	Packets	82.5	886	73095
52	Needle for Automatic Syringe	16 G	Packets	110.5	0	0
53	Reusable Stainless steel needle	18 G, 10 cm length	Packets	97.5	0	0
C	Suture Materials					
54	Monofilament Polyamide suture material	Monofilament Polyamide Non absorbable surgical suture U.S.P with swaged 1/2 circle reverse cutting needle 38mm, size 1, 75cm length.	Packets	204	525	107100

55	Monofilament Polyamide suture material	Monofilament Polyamide Non absorbable surgical suture U.S.P with swaged 1/2 circle reverse cutting edge needle 38mm, size 2-0, 75cm length.	Packets	204	415	84660
56	Monoglyde Suture	Poliglecaprone 25 suture, Monofilament synthetic absorbable surgical suture, USP size 1 with needle, 152 Cm, Violet	Packets	540	485	261900
57	Polyglactin suture material	Coated & braided synthetic absorbable sutures, Size 6-0, 45 cm, Violet with needle	Packets	456	338	154128
58	Polyglactin suture material	Coated & braided synthetic absorbable sutures, Size 5-0, 45 cm, Violet with needle	Packets	432	247	106704
59	Polyglycolic acid (PGA) suture material	Coated & braided synthetic absorbable sutures, Size 1, 152 cm, Violet with needle	Packets	551	581	320131
60	Polyglycolic acid (PGA) suture material	Coated & braided synthetic absorbable sutures, Size 2-0, 152 cm, Violet with needle	Packets	492	588	289296
61	Semi-Circle needle SS, regular eye	No. 5 reverse cutting edge	Packets	52	0	0
62	Semi-Circle needle SS, regular eye	No. 8 reverse cutting edge	Packets	52	0	0
63	Semi-Circle needle SS, regular eye	No. 11 reverse cutting edge	Packets	52	0	0
64	Semi-Circle needle SS, regular eye	No. 11 round body	Packets	52	0	0
65	Silk thread	No. 3, Black braided non-absorbent, elastic regular and smooth	Packets	420	284	119280
66	Straight Needle Round bodied, smooth tapering end	No. 11 reverse cutting edge	Packets		0	0
D	Bandages, cotton absorbents					
67	Absorbent Pad	57 cm x 37 cm	Nos.	20.25	2227	45096.75
68	Absorbent Wool/Cotton	250 gm Net	Nos.	138	4965	685170

69	Adhesive tape	7.5 cm	Nos.	52	1442	74984
70	Adhesive tape	15 cm	Nos.	67.6	0	0
71	Bandages	Cotton 5 cm 12x1, 28 TPI	Packets	45	2122	95490
72	Bandages	Cotton 7.5 cm 12x1, 28 TPI	Packets	45	0	0
73	Bandages	Cotton 10 cm 12x1, 28 TPI	Packets	40	2296	91840
74	Bandages	Cotton 15 cm 12x1, 28 TPI	Packets	45	2192	98640
75	Plaster of paris bandage	5 cmx12x1	Nos.	40	5922	236880
76	Plaster of paris bandage	10 cmx12x1	Nos.	40	1152	46080
77	Surgical guaze sheet	Guaze Than 36 inches x20 yard:100% cotton; Bleached, purified textile, plain weave; Firm edge, no loose thread; Lint free; Type of guaze:17 threads/cm2; Thread count: warp:95 to105 thread/dm; Weft: 66 to 74 thread/dm	Nos.	170	2250	382500
E	Clinical, gynecology & obstertical equipment, instruments					
78	Aprons (Cotton, White Color)	100% pure cotton fabric with stitched seams, Loop for neck hung, one thread tie type at back side, Standard size	Nos.		0	0
79	Aprons (Plastic, Blue Color)	Plastic washable with elastic liners, Loop for neck hung, one thread tie type at back side, Standard size	Nos.	299	500	149500
80	Autoclave tape	Size 18mm, Clean peel from wrap, accurate indicator changes from white to dark brown/black. 2nos/pkt	Packets	595	200	119000
81	Buhner prolapse suture needle	12" (Prolapse Needles for Cows)	Nos.	374	222	83028
82	Buhner Vulva suturing tape	5 m length	Piece		0	0
83	Butterfly Scalp Vein Set	Luer slip, Yellow, 20 gauze	Nos.	5	2987	14935
84	Butterfly Scalp Vein Set	Luer slip, Black, 22 gauze	Nos.	5	7942	39710
85	Butterfly Scalp Vein Set	Luer slip, Red, 24 gauze	Nos.	5	5957	29785
86	Dispensing materials	Polyethylene bag with top locking facility, Size 15cm X 20cm.	Kg	309	280	86520
87	Dispensing materials	Polyethylene bag with top locking facility, Size 5 cmX7 cm	Kg	140	350	49000

88	IV canula	Size 24 G, yellow	Piece	13	4700	61100
89	IV canula	Size 22 G, blue	Piece	13	0	0
90	IV canula	Size 20 G, pink	Piece	13	3100	40300
91	IV set	Plastic, disposable, with filter and air inlet, 20 drops, 1ml length 2m inner dia:2mm (with needle).	Nos.	8	9300	74400
92	Nitrile gloves (Blue) 100/pk	powder and latex free, non-sterile, size: small, 100/pk	Packets		0	0
93	Nitrile gloves (Blue) 100/pk	powder and latex free, non-sterile, size: medium, 100/pk	Packets		0	0
94	Nitrile gloves (Blue) 100/pk	powder and latex free, non-sterile, size: large, 100/pk	Packets	210.6	1460	307476
95	Nitrile gloves (Blue) 100/pk	powder and latex free, non-sterile, size: X-large, 100/pk	Packets	210.6	850	179010
96	Ultrasound gel	5 L capacity	Nos.	417	15	6255
97	White Laboratory/Medical Coat	100% pure cotton fabric treated with Advanced Dual Action Teflon®, Full sleeves with non-elasticated coat hand ends, two side pockets with 1 breast pocket, Size Large	Nos.		0	0
98	White Laboratory/Medical Coat	100% pure cotton fabric treated with Advanced Dual Action Teflon®, Full sleeves with non-elasticated coat hand ends, two side pockets with 1 breast pocket, Size Medium	Nos.		0	0
99	White Laboratory/Medical Coat	100% pure cotton fabric treated with Advanced Dual Action Teflon®, Short sleeves with non-elasticated coat hand ends, two side pockets with 1 breast pocket, Size Large	Nos.		0	0
100	White Laboratory/Medical Coat	100% pure cotton fabric treated with Advanced Dual Action Teflon®, Short sleeves with non-elasticated coat hand ends, two side pockets with 1 breast pocket, Size Medium	Nos.		0	0

101	White Laboratory/Medical Coat	100% pure cotton fabric treated with Advanced Dual Action Teflon®, Short sleeves with non-elasticated coat hand ends, two side pockets with 1 breast pocket, Size Small	Nos.		0	0
102	Biohazard bag (Colour coded)	18ltr biohazard bag with different colour code (Red, Green, Blue and Yellow)	Piece	17.5	14250	249375
F	Animal Management & identification Equipment					
103	Ear Tag	Blank, Yellow, Medium, Male and Female (For cattle)	Nos.		0	0
104	Ear Tag	Blank, Yellow, Medium, Male and Female, (For small ruminants/pigs)	Nos.		0	0
105	Ear Tag Pen	Waterproof, permanent	Nos.	916.11	100	91611
106	AI Gloves,	Full, Plastic, No. 7, Disposable for artificial insemination	Pkt	250	795	198750
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