

CENTRE OF ADVANCED FACULTY TRAINING
Veterinary Surgery and Radiology
Guru Angad Dev University of Veterinary and Animal Sciences
Ludhiana-141004, Punjab, India



Report Three Year Action Plan 2017-2020

Brief Introduction about the Department:

The Department of Veterinary Surgery and Radiology, Ludhiana was established in 1969 and was recognized as Centre of Advanced Studies (CAS) by ICAR in 1995 and renamed as Centre of Advanced Faculty Training (CAFT) in 2009. The department has three major units namely Surgery, Anaesthesia and Diagnostic Imaging (Radiology). There is a huge influx of cases at the University hospital and the Department is working round the clock for providing services to the large and small animal patients. About 10,000 X-rays and 4,000 ultrasounds are being performed every year, while about 1500 large animal and 2500 small animal surgeries are being done every year. Department is working from 9 to 5 on routine basis and emergency procedures are conducted 24 hours a day round the year on on-call basis. The department has created excellent facilities for canines, bovines and equine patients. The department caters to the needs of the farmers and pet owners coming from all parts of Punjab and adjoining states such as Chandigarh, Haryana, Himachal, Delhi, Uttarakhand, UP and Rajasthan.

Recently a 1000 mA Digital X-ray machine (DR) for Large Animals has recently been installed and three X ray machines are also available for small animals like dogs, cats, birds and exotic animals. This department has separate units for ultrasonography of large and small animals. Advanced diagnostic facilities like Echocardiography, Doppler sonography, 3D/4D ultrasound, ECG, Endoscopy are also available in the Department. The department has established dedicated state of the art operation theatres for small animals, dairy animals and horses with centralised oxygen and suction facilities. At present, all the surgical procedures in large and small animals are done under inhalation anaesthesia which is safer and leads to quick recovery in animals undergoing major surgeries. All anaesthesia machines are equipped with bed side monitors. The facility of major and minor surgery is provided to the farmers and pet owners at nominal cost and advanced orthopaedic procedures such as bone plating and interlocking nailing are done on routine basis. The C-arm technique is also available for minimally invasive repair of fractures in animals.



The Department has established fully equipped and independent minimally invasive surgery units for diagnosing and treating various disease conditions of gastrointestinal and respiratory tract (Endoscopy), abdominal disorders (Laparoscopy) and joints diseases (Arthroscopy) and teat and udder (Theloresectoscopy). A dedicated facility has also been created for the colic surgery in horses which otherwise if not treated is life threatening. In

veterinary dentistry, the department provides facilities for dental caries, root canal treatment and crown therapy. Ophthalmic surgery unit has been developed with the facilities of cataract surgery with phacoemulsification and Intraocular lens implantation and corneal grafting. Facilities of diode LASER surgery, Ultrasound and LASER therapy are also available in the Department. Under the CAFT, till date the centre has conducted 32 trainings and trained nearly 480 scientists/teachers working in SVU's, SAU's / ICAR institutes. Department has hosted two National congresses of Indian Society for Veterinary Surgery at Ludhiana in years 1991 and 2009.

Objectives of CAFT:

- i) To develop facilities to function as Centre Of Advanced Faculty Training in field of Veterinary Surgery and Radiology.
- ii) To undertake advanced education and training of scientists/faculty members of different universities and ICAR institutes in the country in the field of Veterinary, Anaesthesia, Surgery and Radiology.
- iii) Conduct of workshops, symposia, conferences and summer institutes as and when sanctioned by ICAR and other organizations.

Faculty: Name & Designation (as on 20/01/2020):

- 1. Dr. S.S. Singh, Professor Emeritus, Ex Dean PGS
- 2. Dr. J. Mohindroo, Professor and Head
- 3. Dr. Navdeep Singh, Professor
- 4. Dr. S.K. Mahajan, Professor
- 5. Dr. Arun Anand, Professor
- 6. Dr. Ashwani Kumar, Associate Professor
- 7. Dr. Tarunbir Singh, Scientist
- 8. Dr. Pallavi Verma, Associate Professor
- 9. Dr. Vandana Sangwan, Assistant Professor
- 10. Dr. N Umeshwori Devi, Assistant Professor
- 11. Dr. Jasmeet Singh Khosa, Assistant Professor

Post graduate students of the department

Year	No. of Students pursuing degree (On Rolls)	
	MVSc	PhD
2017	18	5
2018	20	11
2019	21	10

Human Resource Development: (Particulars of short courses /Training Programs for HRD conducted from 2017-2019.

S.NO	Name of training program under CAFT	Period	No. of Participants		
			Internal	External	Total
1	Addressing challenges in Veterinary Surgery and Anaesthesia	30 Aug to 19 Sept 2017	3	22	25
2	Enhancing Core and Advanced Competency Skills in Veterinary	11 Sept to 1 Oct 2018	3	21	24

	Surgery, Diagnostic Imaging and Anesthesia				
3	Diagnostic, Anaesthetic and Surgical Interventions in Emergency and Trauma Patients	11 Sept to 1 Oct 2019	3	21	24

Other trainings organized by the department under HRD

Year	S. No.	Name of training program and other details	Number of participants	Funding agency	Beneficiaries
2017	1	Training on "Radiology" for Veterinary Officers, Rajasthan (10-14 July, 2017)	15	Rajasthan State Govt	Veterinary Officers (Rajasthan)
	2	Training on "Radiology" for Veterinary Officers, Rajasthan (17-21 July, 2017)	11	Rajasthan State Govt	Veterinary Officers (Rajasthan)
	3	Training on "Radiology" for Veterinary Officers, Rajasthan (24-28 July, 2017)	14	Rajasthan State Govt	Veterinary Officers (Rajasthan)
	4	Advanced clinical training on important veterinary procedures (1-31 Aug, 2017)	10	GADVASU	Private Veterinarians
	5	Training course on Small Animal Ultrasonography (30 Jan to 3 Feb, 2017)	15	ICAR (All India Network Program)	Government and Private Veterinarians
	6	Small Animal Orthopaedics (13-17 Feb, 2017)	15	ICAR (All India Network Program)	Government and Private Veterinarians
2018	7	Workshop on Small Animal Soft Tissue Surgery and Ophthalmology (24 Feb, 2018)	55	Small Animal Clinicians Association (Chandigarh)	Private Veterinarians
	8	Training course on small animal radiography and ultrasonography,(5-9 Feb, 2018)	15	ICAR (All India Network Program)	Government and Private Veterinarians
	9	Training course on small animal soft tissue and orthopaedic surgery(12-16 Feb, 2018)	15	ICAR (All India Network Program)	Government and Private Veterinarians
	10	Training programme on Cataract and Corneal Surgery (collaboration with Christian Medical	35	ICAR (Development Grant)	Faculty and Post graduate students

		College, Ludhiana) (6-12 March, 2018)			
	11	Training on Dentistry and orthodontics (collaboration with Dayanand Medical College, Ludhiana) March 2018	35	ICAR (Development Grant)	Faculty and Post graduate students
	12	Spay and neuter surgery workshop to interns of Calgary University (May 14-24, 2018)	20	GADVASU+ Calgary University (Canada)	Interns from India and Canada
	13	Advanced clinical training on important veterinary procedures (1-31 Aug, 2018)	10	GADVASU	Private Veterinarians
2019	14	Training course on Small Animal Ultrasonography, (8-10 Jan, 2019)	15	ICAR (All India Network Program)	Government and Private Veterinarians
	15	Training course on “Long bone fracture management in small animals” (29-31 Jan, 2019)	15	ICAR (All India Network Program)	Government and Private Veterinarians
	16	Training course on “Small animal ophthalmic surgery” (5-7 Feb, 2019)	15	ICAR (All India Network Program)	Government and Private Veterinarians
	17	Training on Doppler ultrasonography in canines, (collaboration with Spectrum Scan and Research Centre, Ludhiana)(5-11 March, 2019)	35	ICAR (Development Grant)	Faculty
	18	Spay and neuter surgery training to internship students from Canada(13-24 May, 2019)	20	GADVASU+ Calgary Univ	Interns from India and Canada
	19	Workshop on “Small animal Anaesthesiology” (16-18 July , 2019)	6	Small Animal Clinicians Association (Chandigarh)	Private Veterinarians
	20	Advanced clinical training on important veterinary procedures (1-31 Aug, 2019)	10	GADVASU	Private Veterinarians
2020	21	Training course on “ Hands on practice in Small animal Anaesthesia” (8-10 Jan, 2020)	15	ICAR (All India Network Program)	Government and Private Veterinarians

	22	Training course on: “Systematic interpretation of radiographs in small animals” (14-16 Jan, 2020)	15	ICAR (All India Network Program)	Government and Private Veterinarians
	23	Training course on “ Small animal Soft Tissue surgery” 15 Participants (scheduled from 21-23 Jan, 2020)	15	ICAR (All India Network Program)	Government and Private Veterinarians

Total persons trained under HRD component (CAFT + other trainings) in 3 years from 2017- till date: 499 Veterinarians (Faculty, Students, Government Veterinarians and Private Practitioners)

Infrastructure development (equipment’s etc.) purchased in 2017-2019:

S. No	Name of the Equipment
2017	Diode LASER surgery equipment
	Endoscope
	Theloresectoscope
	Operation theatre LED lights
	V-Top tables
	Hydraulic lift for equines
	Scrub station for large animals
2018	PACS for Radiography installed and made functional
	Small Animal Arthroscopy
	Centralized Oxygen and vacuum supply in the large animal surgery section
2019	Ethylene oxide sterilizer
	Small Animal Arthroscopic equipment’s
	Dental RVG of different sizes
	Dental workstation
	Large animal X-ray machine and CR/DR system

Renovation of Lecture Room/Laboratories:

Year	Work done
2017	Flooring of the equine operation theatre, recovery
	Placement of equine hydraulic lift
	Renovation of small animal ultrasound room
	Window panelling of large animal operation theatre, C-arm room, equine operation theatre and small animal ultrasound room
	Flooring of the equine operation theatre and recovery room
2018	New Small Animal Multispecialty Hospital building was made functional
2019	Renovation at X-ray unit for installation of the large animal X-ray machine, CR and DR system.
	Renovation of operation theatres

Library upgraded:

The Department has an updated library with about 315 latest books. A number of books have been purchased with CAS/CAFT funding and the year wise break up of purchase with CAS/CAFT funding is given below:

Year	No. Of Books Purchased
2018	8 Books on various aspects of Veterinary Surgery, anesthesia and Diagnostic imaging were purchased
2019	6 Books on various aspects of Veterinary Surgery, anesthesia and Diagnostic imaging were purchased

Awards/Recognitions:

Year	S.no	Awards and recognition
2017	1	Dr J Mohindroo, Prof and Head, Veterinary Surgery and Radiology got ICAR best teacher award of 2016-17
	2	Dr Ashwani Kumar, Associate Professor, Veterinary Surgery and Radiology got Distinguished alumnus award, 2017 (GADVASU Alumni Association)
	4	Dr Verma P, Singh T, Kaur N, Mohindroo J and Udehiya RK, received appreciation award for the paper entitled 'Low grade suction as a viable option for the management of prostatic abscess in dogs' presented at ISVS congress held at Tirupati from 14-16 Dec 2017.
	5	Dr Singh T, Verma P, Mohindroo J, Udheiya R, Devi NU and Singh H received appreciation award for the paper entitled "use of arthroscopy for the diagnosis and treatment of different arthropathies in bovine" presented in the orthopaedic session of ISVS congress held at Tirupati from 14-16 Dec, 2017.
	6	Dr Singh J, Anand A, Sangwan V, Mahajan SK, Mohindroo J and Singh SS, received the Gold medal and best paper award for the paper entitled 'Diagnostic, prognostic indicators and surgical outcome in 20 cases of intestinal colic' presented in the equine session of ISVS congress held at Tirupati from 14-16 Dec, 2017.
	7	The exhibition stall of Veterinary Surgery and Radiology was awarded ' Third Position ' during Pashu Palan Mela, held at GADVASU on 22-23 September, 2017.
	8	Dr Kirandeep Kaur Gill, MVSc student 2 nd year, received the Young scientist award for the presentation of his research paper entitled 'evaluation of end threaded intramedullary pinning for the stabilization of distal metaphyseal and supracindylar femoral fractures in dogs' during the Indian Vetopia held at Guruguan organized by National Veterinary Congress from 7-9 April, 2017.
	9	Dr J Mohindroo, Professor and Head was Felicitated with the ' Fellow of ISVS ', 2017.
	2018	1
2		Dr Priyanka Duggal, MVSc student 2 nd year, received the Young scientist award for the presentation of his research paper entitled 'during the Indian Vetopia held at Guruguan organized by National Veterinary Congress 8-11 Feb, 2018.

	3	T Singh, H Singh, P Verma, J Mohindroo, R Udhehiya, NU Devi won Appreciation award for best paper " <i>Evaluation of Arthroscopic Portals in Bovine Stifle Arthropathies</i> " presented in Orthopaedic Session at 42nd Annual Congress and Symposium of ISVS held at COVS, NAVSARI, Gujarat from 21-24 November, 2018
	4	Kumar D, SK Mahajan, A Anand, J Mohindroo and Singh T got Gold medal for best research paper " <i>Comparison of demedetomidine and xylazine as preanaesthetic for general anaesthesia in horses</i> " in Anaesthesiology Session at 42nd Annual Congress and Symposium of ISVS held at COVS, NAVSARI, Gujarat from 21-24 Nov. 2018
	5	Khosa J, Anand A, Singh SS, Kumar D and Mohindroo J won Appreciation award for best paper, "Right dorsal displacement of the large colon as a cause of surgical colic in six horses", presented in the equine Session at 42nd Annual Congress and Symposium of ISVS held at COVS, NAVSARI, Gujarat from 21-24 Nov. 2018
	6	Dr. A.K. Bhargava Memorial award and Gold Medal for Best research paper published in the Indian Journal of Veterinary Surgery (2018), entitled "Reliability of the ultrasonography for the diagnosis of diaphragmatic hernia in bovine" by Jaiswal AK, Mohindroo J, Kumar A, Sangwan V and Mahajan SK
2019	1	Dr Vandana Sangwan won " Best clinician award " 2019, from GADVASU.
	2	Gold medal Award for Best Research paper presented entitled 'Diagnosis and surgical removal of granulose theca cell tumour in mares' by Anand A, Singh SS, Pathak D, Khosa J, Udehiya R, Mahajan SK and Sangwan V in 43 rd Annual Congress of Indian Society for Veterinary Surgery and National Symposium on 'Recent Advances on Amelioration of Anesthetic and surgical Stress in Farm and Companion Animals', LUVAS, Hisar, Haryana from 14-16 November, 2019
	3	Dr Ashwani Kumar won " Best teacher-clinical sciences " 2019 from GADVASU
	4	Sodhi H, Shukla V and Anand A (2019) won appreciation award in large animal poster session entitled, "Successful surgical management of patellar luxation in a Holstein friesan heifer" in 43 rd Annual Congress of Indian Society for Veterinary Surgery and National Symposium on 'Recent Advances on Amelioration of Anaesthetic and surgical Stress in Farm and Companion Animals', LUVAS, Hisar, Haryana from 14-16 November, 2019.
	5	Sharma D, Mohindroo J, Mahajan SK, Singh T (2019) won appreciation award in radiology and Imaging session for the paper entitled "Elastography of liver in healthy dogs" in 43 rd Annual Congress of Indian Society for Veterinary Surgery and National Symposium on 'Recent Advances on Amelioration of Anaesthetic and surgical Stress in Farm and Companion Animals', LUVAS, Hisar, Haryana from 14-16 November, 2019.

Capacity Building of Faculty:

Year	S. No	Name of the Conferences/ Symposia/ Workshop/ Trainings	Name of the Faculty Members/ students who attended the training
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2017	1	Training on imaging at Massey University, New Zealand from January 15 to April 15, 2017 (International)	Dr Pallavi Verma,	
	2	Centre of Advanced faculty training held at Department of Veterinary Surgery and Radiology, GADVASU, Ludhiana, from 30 Aug to 19 Sept, 2017. (National)	Dr Tarunbir Singh Dr Rahul Udehiya	
	3	Appropriate Extension Methodologies” for Krishi Vigyan Kendra (KVKs) and University Scientists on 18.8.2017. (National)	Dr Rahul Udehiya	
2018	4	Workshop on CT scan at Rajasthan University of Veterinary and Animal Sciences, Bikaner from 12-13 January, 2018. (National)	Dr. J Mohindroo and Dr Pallavi Verma	
	5	Workshop on ‘PACS’ at Madras Veterinary College, TANUVAS, Chennai from 24-25, January, 2018. (National)	Dr. Ashwani Kumar,	
	6	Training programme on Cataract and Corneal Surgery held at GADVASU, Ludhiana 6-12 March, 2018. (National)	All VSR Faculty	
	7	Training programme on Dentistry held at GADVASU, Ludhiana 23-27 March, 2018. (National)	All VSR Faculty	
	8	Workshop on Ophthalmology and soft tissue surgery by VSR +SACA held at GADVASU on 24.2.2018 (National)	All VSR faculty	
	9	Skill development, Govt. of India from 28-31 Jan, 2018. (National)	Dr Rahul Udehiya	
	10	Centre for advanced faculty training held at VSR, GADVASU, Ludhiana from 11 Sept to 1 st Oct, 2018. (National)	Dr Vandana Sangwan Dr N Umeshwori Devi	
	11	Teaching workshop held at GADVASU and University of Calgary, 25-27 Nov, 2018. (International)	Dr Ashwani Kumar	
	12	National workshop on “Development, employment and entrepreneurship: emerging realities by All India Progressive Forum from 23-25 th Nov, 2018. (National)	Dr Jasmeet Singh Khosa	
	2019	13	Workshop on “An approach to diagnosis and treatment of dental disorders in Canines´ held at Rajasthan University of Veterinary and Animal Sciences, Bikaner from 21-22 Feb, 2019. (National)	Dr. Vandana Sangwan Dr N Umeshwori Devi Dr Kartik Sharma (RF)
		14	Workshop on Doppler ultrasonography in canines by Dr Ajay Aggarwal under ICAR-AINP- DIMSCA from 5-11 March, 2019. (National)	All faculty members
		15	Workshop on “Livestock extension vis-à-vis farmers income” Under ICAR on 29.3.2019. (National)	Dr Jasmeet Singh Khosa

	16	One day symposium on “Advances in equine health and management” by ICAR on 27.2.2019. (National)	Dr Jasmeet Singh Khosa
	17	Centre of Advanced faculty training held at Department of Veterinary Surgery and Radiology, GADVASU, Ludhiana, from 11 Sept to 1 st Oct, 2019. (National)	Dr Pallavi Verma Dr Jasmeet S Khosa

Publications 2017-2020:

International / Foreign / Indian Journals:

Year	S. No	Publication	NAAS Rating
2017	1	Singh CK, Sangwan V, Anand A, Gupta K and Mahajan SK. Myxoma in the Nasal Cavity of a Holstein Cross Bred Cow. <i>Israel Journal of Veterinary Medicine</i> , 71(4): 45-48.	6.30
	2	Garcia-Munoz A, Singh N, Leonardi C, Silva-del-Rio N (2017). Effect of hoof trimming intervention in moderately lame cows on lameness progression and milk yield. <i>Journal of Dairy Science</i> .	8.41
	3	Kumar A, Sangwan V, Mohindroo J, Saini NS and Singh SS (2017). Comparison of four ultrasonographic approaches for the diagnosis of acquired reticular diaphragmatic hernia in bovidae. <i>Turkish Journal of Veterinary and Animal Sciences</i> , 41(3): 323-331.	6.51
	4	Sangwan V, Mohindroo J, Kumar A and Mahajan SK (2017). Varicosity and pregnancy induced blood flow changes in the cranial tibial vein: B-mode and Doppler ultrasound study. <i>Buffalo Bulletin</i> , 36(1): 239-249.	6.10
	5	Ahmad R, Saini NS, Mahajan SK, Mohindroo J, Singh SS. 2017. Comparison of rigid polymethyl methacrylate and foldable square edge acrylic lens replacement for management of cataract after phacoemulsification in 22 eyes of dogs. <i>Indian Journal of Animal Research</i> , 51(1): 146-150.	6.44
	6	Singh G, Saini NS, Kumar A, Mahajan SK, Mohindroo J and Sood NK. 2017. Diagnosis and Outcome of Surgical Management of Intestinal Obstruction in Bovine. <i>Indian Veterinary Journal</i> , 94(1): 32-35.	4.42
	7	Sangwan V, Gupta K, Deshkumh S, Verma N and Kumar A (2017). Nasal and Ocular forms of transmissible venereal tumor in dogs. <i>International Journal of Livestock Research</i> , 7(11):292-299.	5.36
	8	Taksande PE, Saini NS, Mohindroo J, Singh T and Kumar A (2017) Ultrasonographic localization and mineral profile of urinary calculi in young and adult bovine. <i>Indian Journal of Animal Research</i> , 51(2): 296-302.	6.44
	9	Dhaliwal AS, Singh T, Verma P, Mohindroo J, Saini NS, Raghunath M and Singh N. (2017). Evaluation of suture hernioraphy and polypropylene mesh hernioplasty techniques for repair of perineal hernia in dogs. <i>Indian Journal of Veterinary Surgery</i> . 37 (1), 14-17.	5.25
	10	Kaur R, Mahajan SK, Mohindroo J and Singh T (2017). Limb Amputation in cattle under general anasthesia with triple drip infusion as an induction agent. <i>Indian Journal of Veterinary Surgery</i> . 37 (1), 74.	5.25

	11	Kumar A and Sangwan V (2017). 'Dry Rumenotomy' technique for the retrieval of sharp metallic objects in bovine. <i>Indian Veterinary Journal</i> , 94 (9): 72-74.	4.42
	12	Sangwan V, Kumar A, Mahajan SK, Anand A (2017). Management of gangrenous mastitis in 48 bovines. <i>Indian Veterinary Journal</i> , 94 (9): 77-79.	4.42
	13	Kumar A, Mahajan SK and Sangwan V. (2017). Surgical management of ventral pericloacal hernia in a duck. <i>Intas Polivet</i> , 18 (1); 231-232.	4.79
	14	Sangwan V, Makhdoomi SM, Kumar A and Mahajan SK (2017). Surgical Repair of deep transverse tongue laceration in a cow. <i>Intas Polivet</i> 18(2): 269-270.	4.79
	15	Kumar A, Sangwan V, Mohindroo J, Saini NS and Singh SS (2017). Comparison of four ultrasonographic approaches for the diagnosis of acquired reticular diaphragmatic hernia in bovidae. <i>Turkish Journal of Veterinary and Animal Sciences</i> , 41(3): 323-331.	6.51
	16	Sangwan V, Mohindroo J, Kumar A and Mahajan SK (2017). Varicosity and pregnancy induced blood flow changes in the cranial tibial vein: B-mode and Doppler ultrasound study. <i>Buffalo Bulletin</i> , 36(1): 239-249.	6.10
	17	Singh G, Saini NS, Kumar A, Mahajan SK, Mohindroo J and Sood NK (2017). Diagnosis and outcome of surgical management of cecal dilatation in bovine. <i>Indian Veterinary Journal</i> , 94 (3):48-50.	4.42
	18	Singh G, Saini NS, Kumar A, Mahajan SK, Mohindroo J and Sood NK (2017). Diagnosis and outcome of surgical management of intestinal obstruction in bovine. <i>Indian Veterinary Journal</i> , 94 (1): 32-35.	4.42
	19	Sangwan V, Mahajan SK, Kumar A, Anand A (2017). Lumbar herniation of right kidney in dog. <i>Indian Veterinary Journal</i> , 92(5): 94(5): 54-55.	4.42
	20	Sangwan V, Sheikh Mohd Yaseen Jani, Surbhi Aggarwal and Satnam Singh. Jan to June 2017. Surgical retrieval of sewing needle from the thoracic wall abscess in murrha buffaloes. <i>Inats polivet.</i> ,18 (1); 52-55.	4.79
	21	Mahajan SK, Singh T, Saini NS., Mohindroo J., Singh N., Anand A., Kumar A., Sangwan V, Verma P., Udehiya RK., and Kaur M. Diagnostic and treatment strategies for ophthalmic affections in farm animals: a study of 152 cases. <i>Indian journal of Veterinary Surgery</i> , 38(2): 95-99.	5.25
	22	Saini SPS, Singh T, Singh SS and Sangwan V. Distribution of multi fragmental diaphyseal fractures of femur and tibia in dogs. 2017. <i>Indian Journal of Veterinary Surgery</i> , 38(2): 111-113.	5.25
2018	23	Makhdoomi SM, Sangwan V and Kumar A (2018). Radiographic prediction of metallic foreign body penetration in the reticulum of cows and buffaloes. <i>Veterinary World</i> , 11(4): 488-496.	5.71
	24	Gill KK, Kumar A, Sangwan V, Anand A, Mahajan SK and Mohindroo J (2018). Comparative functional outcome of supracondylar femoral fractures stabilized with cross and end threaded intramedullary pinning in dogs. <i>Indian Journal of Animal Sciences</i> , 88(2): 25-32.	6.23
	25	A Narang*, Singh T, Simrat S. Singh, Pallavi Verma, Narinder S. Saini, Jitender Mohindroo, Rahul Udehiya. 2018. Surgical Repair of Radial-Ulnar Fracture by Static Intramedullary Interlocking Nailing in a	6.81

	Crossbred Heifer <i>Veterinary Comparative Orthopaedics and Traumatology</i> ; 31:373–378.	
26	Devi N U, Mohindroo J, Verma P and Udehiya R. (Dec 2018). Diagnosis and management of liver abscess in a dog. <i>Intas Polivet</i> ; 19(2):186-188.	4.79
27	Gill K K*, Kumar A, Uppal V and Deshmukh S (2018). Evaluating the impact of duration of supracondylar femoral fracture on the haemato-biochemical and intra operative traits in dogs. <i>Intas Polivet</i> 19(2): 211-213.	4.79
28	Gill KK*, Kumar A, Sangwan V, Anand A, Mahajan SK and Mohindroo J. (2018). Comparative functional outcome of supracondylar femoral fractures stabilized with cross and end threaded intramedullary pinning in dogs. <i>Indian Journal of Animal Sciences</i> , 88(2): 161-169.	6.23
29	Jaiswal AK*, Mohindroo J, Kumar A, Sangwan V and Mahajan SK (Dec 2018). Reliability of ultrasonography for the diagnosis of diaphragmatic hernia in bovine. <i>Indian Journal of Veterinary Surgery</i> 39(2): 79-85.	5.25
30	Kaur A*, Singh N, Udehiya R and Mahajan SK (Dec 2018). Comparison of xylazine-ketamine-isoflurane and xylazine-guafenesin-isoflurane combinations for general anaesthesia in horses. <i>Indian Journal of Veterinary Surgery</i> 39(2): 116-120.	5.25
31	Khosa J., Sangwan V., Singh T. and Kumar A. (June 2018). Caesarean section to relieve fetal dystokia in jennet. <i>Indian Veterinary Journal</i> , 95: 75-76.	4.42
32	Kumar A, Mahajan SK, Sangwan V, Anand A (2018). Diagnosis and surgical retrieval of extra reticular metallic foreign body in a buffalo. <i>Buffalo Bulletin</i> , 37 (2): 273-278.	6.10
33	Makhdoomi SM*, Sangwan V and Kumar A (April 2018). Radiographic prediction of metallic foreign body penetration in the reticulum of cows and buffaloes. <i>Veterinary World</i> , 11(4): 488-496.	5.71
34	Makhdoomi SM*, Sangwan V and Kumar A (Nov. 2018). Effect of Radiographic Positioning on the Morphometry of Cranio-Ventral Abdomen in Cows and Buffaloes. <i>International Journal of Livestock Research</i> , 8(11), 172-181. doi: 10.5455/ijlr.20180326105620	5.36
35	Qureshi B*, Kaur R and Sangwan V. (29 Dec. 2018). Resection of nasal cartilaginous mass in a buffalo: Case report. <i>SKUAST Journal of Research</i> , 20(2): 241-242.	3.81
36	Sangwan V, Duggal P, and Kumar A. (Oct 2018). Surgical retrieval of a migrated sewing needle from thoracic cavity of a dog. <i>Intas Polivet</i> . 19(1): 135-136.	4.79
37	Sangwan V, Kumar A, Mohindroo J and Saini NS (Dec 2018). Ultrasonographic diagnosis of valvular endocarditis in a buffalo. <i>Indian Journal of Veterinary Surgery</i> 39(2): 141.	5.25
38	Sangwan V, Makhdoomi SM and Kumar A. (Nov 2018). Surgical Retrieval of Embedded Metallic Foreign Bodies from the Reticulum in Bovine. <i>Indian Veterinary Journal</i> , 95 (11): 28 – 31.	4.42
39	Sangwan V, Mazumdar H, Kumar A, Dhaliwal AS (June, 2018). Descent of gangrenous udder tissue into the teat cistern of a Murrah buffalo. <i>Buffalo Bulletin</i> , 37(2): 273-278.	6.10

	40	Sangwan V, Mohindroo J, Kumar A and Randhawa CS (May 2018). Clinical, radiographic and ultrasonographic differences in the Cows and Buffaloes suffering from pericarditis. <i>International Journal of Livestock Research</i> , 8(5), 255-263.	5.36
	41	Singh G*, Udehiya RK, Mohindroo J, Kumar A, Singh T, Verma P, Devi NU and Anand A. (Sept 2018). Differential diagnosis and surgical management of cecal dilatation vis-a-vis cecal impaction in bovine. <i>Veterinary World</i> , 11(9): 1244-1249.	5.71
	42	Singh T, Mohindroo J, Verma P, U Devi and Udehiya R. (June 2018). Endoscopic retrieval of tracheal foreign body in a dog. <i>Intas Polivet</i> ; 19:1:131-134.	4.79
	43	Udehiya RK, Qureshi B, Duggal P, Singh T, Umeshwori Devi N and Singh ND (Dec 2018). Use of diode LASER for the management of papillomatosis in two dogs. <i>Indian Journal of Veterinary Surgery</i> 39(2): 136-137.	5.25
	44	Verma P, Singh T, Udehiya RK, Mohindroo J, Devi U and Khosa JS (2018) Siamese teat with double streak canals in a cow-diagnosis and surgical management. <i>Ruminant Science</i> 7(2) 345-348.	5.00
2019	45	Khosa J, Anand A, Singh, SS, Kumar D and Mohindroo J (2019). Surgical management of right dorsal displacement of large colon in six horses. <i>Indian Journal of Veterinary Surgery</i> 40(1): 64-65.	5.25
	46	Sangwan V, Khosa JS, Mahesha C and Kumar A. (2019). Rehabilitation of Electrocuted Rhesus Monkey after Amputation of a Fore and a Hind Limb. <i>Indian Veterinary Journal</i> , 96(3): 73-75.	4.42
	47	Sangwan V, Kumar A, Mahajan SK and Singhal S (2019) Irreducible vaginal prolapsed with concurrent unilateral gravid uterine horn and its successful surgical management in a dog. <i>Indian Veterinary Journal</i> , 96(6): 54-56.	4.42
	48	Sangwan V, Mahajan SK, Kumar A and Anand A (2019). Barbed wire as an oesophageal foreign body in an emu (<i>Dromaius no vaehollandiae</i>). <i>International Journal of Avian and Wildlife Biology</i> 4 (3): 87-88.	-
	49	Sangwan V, Mohindroo J, Kumar A and Gupta A. (2019). B-mode and Doppler ultrasonography of cranial epigastric vein in healthy and diseased cattle and buffaloes. <i>Indian Journal of Animal Sciences</i> , 89(3): 238-245.	6.23
	50	Sangwan, V, Kumar, A. and Singh, N.D. (2019). Rectal stricture due to circumferential fibroma in buffaloes. <i>Buffalo Bulletin</i> , 38(1): 185-191.	6.62
	51	*Yadav GP, Sangwan V and Kumar A (2019). Comparative occurrence pattern of fractures in cattle and buffaloes. <i>Veterinary World</i> 12 (7): 1154-59. Doi 10.14202/vetworld.2019.1154-1159.	5.71
	52	Kumar A, Anand A, Sangwan V and Singh CK (2019) End-threaded intramedullary pinning for the stabilization of supracondylar femoral fracture in goats. <i>Indian Veterinary Journal</i> 96 (8): 66-68.	4.42
	53	Makhdoomi SM, Sangwan V, Kumar A, Mohindroo J and Gupta A (2019). Ultrasonographic morphometry of reticulum in cattle and buffaloes suffering from traumatic reticulo-peritonitis. <i>Buffalo Bulletin</i> , 38(1): 185-191.	6.10

54	Sodhi HS and Sangwan V (2019) Successful horn amputation for the treatment of horn cancer in an 18 yr old humped bullock. <i>International Journal of current microbiology and applied sciences</i> , 8(8): 537-541	5.38
55	Kour A, Anand A, Mahajan SK and Sangwan V (2019) Perineal urethrostomy for the management of urinary incontinence due to hard scrotal swelling in a Tom cat. <i>Indian Veterinary Journal</i> , 96(8): 60-62	4.42
56	Varghese VA, Mahajan SK, Sangwan V and Gupta K (2019) Surgical management of peribulbar abscess in Indian star tortoise (<i>Geochelone elegans</i>)- A case report. <i>Indian Veterinary Journal</i> , 96(10): 67-68	4.42
57	Khosa JS, Anand A, Sangwan V, Mahajan SK, Mohindroo J and Singh SS. (2019) Surgical Management of uterine torsion through ventral celiotomy in eleven mares. <i>Indian Journal of Animal Research</i> .	6.44
58	*Himani, Kumar A, Anand A, Singh N, Uppal V and Mohindroo J. (2019). Clinical occurrence and radiographic diagnosis of distal limb lameness in equine. <i>Indian Journal of Animal Sciences</i> , 89(1): 15-24.	6.23
59	Singh CK, Kumar A and Singh N (2019). An overview on the diagnostic and therapeutic aspects of cardiac diseases in bovine. <i>Journal of Entomology and Zoological Studies</i> , 7(2): 855-863.	5.53
60	Sodhi HS, Mohindroo J, Mahajan Sk, Verma P and Singh O (2019). Comparison of ultrasonographic features of omasum in cattle and buffaloes suffering from various gastro-intestinal tract disorders. <i>Indian Journal of Veterinary Surgery</i> 40(1): 26-29	5.25
61	Umeshwori DN, T Singh, Verma P, Udehiya R (2019) Endoscopic diagnosis and drainage of nasal abscess in a cow. <i>Indian Journal of Veterinary Surgery</i> 40(1): 72	5.25
62	Sharma D, Anand A, Sangwan V, Deshmukh S and Banga HS (2019). Spermatic cord torsion of intra-abdominal testis associated with testicular cavernous hemangioma in a dog. <i>Indian Journal of Veterinary Surgery</i> 40(1): 74	5.25
63	Singh T, Priyanka, Verma P, Udehiya R and Devi NU (2019). Surgical resection of mammary tumour in a female albino rat. <i>Indian Journal of Veterinary Surgery</i> 40(1): 76	5.25

List of manuals / instructional material published:

2017:

1. Singh T., Verma P., Udehiya R, Devi U, Mohindroo J and Singh N. 2017. Compendium of lectures on 30th Advanced training course on “Addressing challenges in veterinary surgery and anesthesia” at Department of surgery and radiology, GADVASU, Ludhiana, 30 August to 19th September, 2017.
2. Singh SS, Mohindroo J, Mahajan SK, Singh N, Kumar A, Sangwan V, Singh T, Verma P and Rahul Kumar, N Umeshwori Devi (2017). Manual of General Surgery, Anesthesiology and diagnostic imaging (VSR-411).
3. Singh SS, Mohindroo J, Mahajan SK, Singh N, Kumar A, Sangwan V, Singh T, Verma P and Rahul Kumar, N Umeshwori Devi and Chandan Singh (2018). Manual of Regional surgery- Veterinary (VSR-421).
4. Singh SS, Mohindroo J, Mahajan SK, Singh N, Kumar A, Sangwan V, Singh T, Verma P and Rahul Kumar and N Umeshwori Devi (2017). Veterinary Orthopedics and Lameness (VSR-511).

5. Sangwan V, Kumar A, Singh N and Mohindroo J (2017). Compendium of training course on “Small Animal Ultrasonography” Jan 30-Feb 03, 2017 under All India Network Prog DIMSCA.
6. Kumar A, Verma P, Singh N, Mohindroo J (2017). Prepared ‘E Book of Lectures’ of training course on “Radiology” July 24-28, 2017.

2018:

7. Udehiya RK, Mohindroo J, Kansal SK, Verma HK (2018). FFP Bulletin / Booklet-6 on First aid and hoof management in dairy animals. Under Farmers First Program (ICAR).
8. Sangwan V, Verma P, Singh N, Devi NU, Mohindroo J, Khosa JK, Anand A, Gill KK. 2018. Edited compendium of training course on “Small animal radiography and ultrasonography” held at Department of Surgery and Radiology GADVASU, from 12-16 Feb, 2018.
9. Singh T., Mahajan SK., Kumar A., Sangwan V., Udehiya R, and Singh CK. 2018. Compendium of lectures on Training course on “Small animal orthopedic and soft tissue surgery” at Department of Surgery and Radiology, GADVASU, Ludhiana 12 to 16 February, 2018.
10. Kumar A, Kumar C, Sangwan V. Mahajan SK and Anand A, Compendium of lectures on 31st Advanced training course on “Enhancing Core and Advanced Competency skills in veterinary surgery, diagnostic imaging and anaesthesia” at Department of surgery and radiology, GADVASU, Ludhiana, 11th September to 1st October, 2018.

2019

11. Verma P, Udehiya RK, Singh T, Mohindroo J and Mann J (2019). E book on lectures on training to Rajasthan veterinary officers on “Radiology” held at department of Veterinary Surgery and Radiology from 25.2.2019 to 1.3.2019.
12. Kumar A, Khosa JS, Singh N and Sharma K. (2019). E book on lectures on training to Rajasthan veterinary officers on “Radiology” held at department of Veterinary Surgery and Radiology from 18.2.2019 to 22.2.2019.
13. Sangwan V, Devi NU, Mahajan SK, Udehiya R and Gill KK. (2019). E book on lectures on training to Rajasthan veterinary officers on “Radiology” held at department of Veterinary Surgery and Radiology from 11.2.2019 to 15.2.2019.
14. Singh N, Kumar A, Sangwan V and Khosa JS. (2019). Compendium of lectures on “long bone fracture management in small animals” held at department of Veterinary Surgery and Radiology under All India Network program on Diagnostic Imaging and Management of Surgical Conditions in Animals” from 29-31 Jan, 2019.
15. Singh T, Verma P, Udehiya R and Devi NU. (2019). Compendium of lectures on “Small Animal Ultrasonography” held at department of Veterinary Surgery and Radiology under All India Network program on Diagnostic Imaging and Management of Surgical Conditions in Animals” from 8-10 Jan, 2019.
16. Mahajan SK, Mann J, Anand A, Devi NU, Mohindroo J and Gill K. (2019). Compendium of lectures on “Small Animal Ophthalmic Surgery ” held at department of Veterinary Surgery and Radiology under All India Network program on Diagnostic Imaging and Management of Surgical Conditions in Animals” from 5-7 Feb, 2019.

Seven videos have been developed by the department of Veterinary Surgery and Radiology and 2 of them are available on You Tube.

- a. Video on “obstructive colic surgery in horses” (link: <https://www.youtube.com/watch?v=cUWknPH1EkM>).
- b. Video on “elective ovario-hysterectomy in cats” (<https://www.youtube.com/watch?v=dItLYr2yPjY>).
- c. Video on “Diaphragmatic hernia in buffalo”

- d. Video on “Tracheoscopic tumor removal in a dog”
- e. Video on “General anaesthesia in colic surgery”
- f. Video on “Application of fiber glass bandage in a calf”
- g. Video on “Central Venous Catheterization in horse”

National and International Linkages:

1. Liaison with Small Animal Clinician Association (SACA) Chandigarh for conducting continuing education programs for small animal clinicians. (1 international training concluded)
2. Liaison with Dayanand Medical College for training on Endodontics and Crown therapy (one training conducted by Dr Vaneet Galhotra, Associate Professor, Department of Endodontics and Conservation, DMC&H, Ludhiana)
3. Liaison with Christian Medical College for training on Cataract and corneal surgery (one training conducted by, Dr Gurwinder Kaur, Professor, Department of ophthalmology, CMC, Ludhiana)
4. Concept of **Veterinary tourism** in which pets are brought from various foreign countries for surgical affections like cranial cruciate rupture, hip dysplasia, pyometra for cost effective surgical treatment at GADAVSU Veterinary Teaching Hospital, Ludhiana. This concept was widely published in national newspapers.
5. Linkages for research with IVRI, Izatnagar, RAJUVAS Bikaner, DUVASU Mathura and TANUVAS Chennai in the All India Network Program on Diagnostic Imaging and Management of Surgical Conditions in Animals.
6. Dr Arun Anand visited Chittagong University of Veterinary and Animal Sciences, Bangladesh from 24-28 Feb 2019 to train veterinarians in surgical, anaesthesia and radiology procedures
7. Liaison with University of Calgary for imparting spay and neuter surgery training to their internship students along with Indian Interns at Department of Surgery and Radiology, GADVASU.
8. Liaison with Rajasthan Govt. for training Veterinarians in the field of Ultrasonography and Diagnostic Imaging
9. Liaison with Spectrum Scan and Research Centre, Ludhiana (One training conducted by Dr Ajay Aggarwal, Chief Sonologist, Spectrum Scan and Research Centre)

Financial Statement

Expenditure under CAFT

Head	2016-17	2017-18	2018-19	2019-20 (Allocated till 20/01/2020)
Operating cost of Training	3,39,205	5,69,227	5,35,597	6,56,500
Recurring Contingency	3,99,998	3,99,999	3,99,953	4,00,000
T.A.	11,242	48,409	42,939	50,000
Library (Books)	-	35,000	34,942	35,000
Machinery and Equipment			5,00,000	-
Works (Minor repairs and Renovation)			2,00,000	-
Total	7,50,445	10,52,635	17,13,431	11,41,500

