

Essentials for Equine Diagnostic Imaging (EDI) Residency Training Programs

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INTRODUCTION:

This document is intended to describe in detail the structure, content, training standards and requirements for all approved residency programs of the American College of Veterinary Radiology Recognized Veterinary Specialty of Equine Diagnostic Imaging (ACVR-EDI).

Objectives:

1. To provide detailed and advanced resident training in equine diagnostic imaging, including radiology, ultrasound, magnetic resonance imaging (MRI), computed tomography (CT) and diagnostic nuclear medicine (NM) studies.
2. To integrate understanding of equine disease processes and sports and discipline related injuries/abnormalities with imaging analysis.
3. To promote research and development in the field of equine imaging by board-certified equine radiologists.
4. To promote the highest level of acquisition and interpretation of equine diagnostic imaging and provide high quality imaging support to equine practitioners and clients.

Successful completion of the residency will provide the trainee with opportunities to pursue a career in private practice, both within a clinic setting or as an independent consultant and/or to enter academia for clinical service, teaching and research of equine diagnostic imaging. The scope of the program will allow for residents to be able to integrate an understanding of equine disease processes and treatment of the disease with the imaging findings to incorporate as a valuable member of the equine veterinary team.

TERMINOLOGY:

1. Founding Members: Members of the ACVR-EDI organizing committee who have not passed the examination, but have contributed to the specialty through their work on the committee. Membership will only be available for three years from the date of inception of ACVR-EDI.
2. ACVR-EDI Diplomate: A veterinarian in good standing who has satisfactorily complied with the training and experience requirements, successfully completed the ACVR-EDI certifying examinations, and has been approved for membership in the ACVR by a majority of the Executive Council.

3. ACVR-EDI Resident Member-in-Training: Veterinarians who are actively engaged in an approved formal or alternative ACVR-EDI training program, approved by the ACVR Executive Council. Resident members in training must pass both the ACVR-EDI preliminary and certifying examinations to become an ACVR-EDI Diplomate.
4. Post-Trainee: Veterinarian who has completed an EDI-approved training program, but who has not yet satisfactorily passed the preliminary and/or certifying examinations to become an ACVR-EDI Diplomate.

REQUIREMENTS FOR ADMISSION INTO AN EDI TRAINING PROGRAM:

1. The applicant must be of high ethical, moral and professional standing.
2. The applicant must be a veterinarian who has graduated from an accredited school of veterinary medicine, or be a graduate of an equivalent higher educational body recognized by the country of residence.
3. The applicant must be licensed or qualified to become licensed to practice veterinary medicine and surgery in his/her country of residence.
4. The applicant shall have spent a minimum of 1 year in an equine rotating internship in academia or private practice or as an associated in general practice.

Individual programs shall determine admission.

TYPES OF RESIDENCY PROGRAMS:

Traditional Residency Program

A residency program that satisfactorily meets all of the residency program requirements as set forth by ACVR-EDI. The program meets all the requirements for training, equipment, faculty and case requirements. In a traditional residency program, residents may be accepted into the program at the discretion of the program, not to exceed the maximum number of residents per faculty as outlined in the residency requirements.

Alternative or Amended Residency Program

A program designed for one specific individual /resident, submitted by the proposed Residency Director and approved prior to the start of training by the RSEC-EDI and ACVR Executive Council. Similar to a traditional residency program, the Alternative Training Program must meet requirements equivalent to those outlined in the EDI Residency Training Program Essentials, the Board Certification Examination Eligibility Requirements, and the ACVR-EDI Constitution. This program may be a new program or a modified/amended traditional program, such as a traditional program that will be completed in an extended timeline. The residents in this program may spend time at one institution, or training may be a collaborative effort between multiple institutions; however, the number of collaborating institutions must not be too large to deter from the resident's experience. The Residency Director in an alternative residency program must still participate in at least 50% of the resident's training.

TRAINING PERIOD:

The program shall offer a minimum of 3 years (36 months) of postdoctoral medical education in equine diagnostic imaging, of which at least 30 months of the training must be supervised clinical experience (based on full-time employment/work week). The training period will start after written approval of the program is granted by the Executive Council and no amount of resident training can be retroactive.

QUALIFICATIONS OF TRAINING SUPERVISION:

Residents must receive training by at least 2 Mentors, including Founding Members or ACVR-EDI Diplomates. One of these 2 mentors could be fulfilled by an ECVDI-LA Diplomate.

Residency Director/Primary Mentor

The Residency Director, in addition to supervising and administering the training program in equine diagnostic imaging, must also be actively involved in the training and instruction of residents.

The Director must be a Founding Member or active ACVR-EDI Diplomate in good standing and must contribute sufficient time (supervising the residents on clinical duty at least 50% of the year) to the training program to ensure adequate direction.

The Residency Director will be the ACVR-EDI's contact for the residency training program. Communication between the Residency Director and

RSEC-EDI will be primarily via email; therefore, the email address of the program director should be updated as needed with the ACVR.

The Residency Director is responsible for:

- a. Submitting the residency program initial application, and renewal applications every 3 years.
- b. Submitting annual program reviews.
- c. Submitting online semi-annual resident reviews.
- d. Notifying RSEC-EDI of any changes to the program (including changes in Residency Director) in advance of planned changes, and within 30 days of unplanned changes.
- e. Notifying RSEC-EDI within 30 days if a resident has an extended leave of absence during the residency, needs to discontinue the residency for any reason, or is terminated from a residency program.
- f. Ensuring all residents are registered with the ACVR.
- g. Approving the resident's preliminary and certifying examination applications.

Non-Primary Residency Mentors/Diplomates

- h. A Founding Member or ACVR-EDI Diplomate with a minimum clinical commitment of 4 months per year.
- i. The non-primary mentor can provide at least 50% of the 4 month minimum training via electronic means such as virtual rounds and digital conferencing.

Non-Diplomate Mentors/Other Specialists

- j. Residents may also receive training from approved non-radiologists with expertise in equine imaging, to comprise no more than 25% of the total training in the program.
- k. The supporting faculty of the program must also include one diplomate from the American College of Veterinary Pathology, American College of Veterinary Internal Medicine, and the American College of Veterinary Surgery (Large Animal). Alternatively, if only one American boarded diplomate in each of these specialties is present, a European boarded specialist is acceptable. The diplomates of the American College of Veterinary Pathology do not have to be on-site.
- l. Inclusion of at least one diplomate of the American College of Veterinary Sports Medicine and Rehabilitation in the faculty is strongly encouraged but not required.

RESIDENT NUMBERS:

The number of residents in the program cannot exceed twice the number of mentors (i.e. Founding Members, ACVR-EDI Diplomates, ECVDI-LA Diplomates) in the program.

EQUIPMENT/FACULTY REQUIREMENTS:

The program must provide adequate space, equipment, and other pertinent facilities to ensure an effective educational experience for residents in veterinary radiology. The program must have on-site access to modern radiographic equipment, including digital or computed radiography, modern B-mode ultrasound, nuclear medicine, MRI and CT, with director involvement of image acquisition. A minimum of 3 months is required for on-site experience with CT, MRI and nuclear medicine. Veterinary patients in the training facility(-ies) must have regular on-site access to these modalities where residents can be expected to be involved in the acquisition and interpretation of such studies.

Additional case exposure to the other core areas need not be on-site, but sufficient case interpretation of these modalities must be available to meet the requirements of the program.

CLINICAL RESOURCES:

The program in veterinary radiology must provide a sufficient volume and variety of equine patients for instruction. If caseload is low, organized teaching files in under-represented breeds or disciplines may be substituted. The imaging caseload of the program **must be greater than 2,000 imaging studies annually**, if the program is to be completed within the minimum 36 month period.

An imaging study is defined as a study of an anatomical area (e.g. thorax, abdomen, fetlock, stifle, etc.). Multiple examinations may be performed on a single patient. A heavy caseload cannot reduce the minimum time commitment within a residency program; however, a low caseload may extend the actual time commitment beyond the minimum.

TRAINING CONTENT:

The program must provide an adequate depth and breadth of clinical

experience.

1. Clinical rotations must be a directed educational process. Unsupervised clinical responsibility alone does not constitute a suitable educational experience.
2. The resident must dictate or type timely reports from the imaging caseload.
3. The program must have sufficient infrastructure to have all imaging studies available in printed or electronic form in a timely fashion (<48 hours).
4. At least 90% of written reports generated by a resident must be reviewed and approved by at least one faculty member of the program.
5. The clinical training must provide for supervised, progressive responsibility for interpretation and progressive responsibility for quality control of diagnostic studies, and must ensure that the supervised resident performs those procedures commonly accepted in all aspects of diagnostic imaging offered by the program.
6. At a minimum, the time commitment for the core clinical training shall consist of at least **12 months in diagnostic radiology, at least 8 months in diagnostic ultrasound, and at least 6 months in nuclear medicine, computed tomography and MRI**, regardless of the caseload of the institution. These are expected to be distributed throughout the 36-month training program.
7. The program must provide residents meaningful experience in MRI, CT, and nuclear medicine, even if one of these modalities is not available at the primary training site.
8. Clinical rotations may be scheduled concurrently, when facilities and caseload permit. If residents are assigned to multiple services simultaneously, the time credit is not additive. In other words, a resident involved in all of the radiology, CT, and ultrasound cases for one month receives only a total of one month credit distributed between the service areas. In these situations, the appropriateness of the distribution is the discretion of the institution, but should reflect the relative time commitment of the resident.
9. Thus of the 30 months of required clinical training, 26 are prescribed (12 months radiology, 8 months ultrasound, 6 months nuclear medicine, CT and MRI). The unprescribed 4 months of required clinical training are to allow residents to gain either greater depth of clinical training in the prescribed areas or in unprescribed areas such as echocardiography.

10. During the 30 months of required clinical training, the full time equivalent commitment to clinical service is calculated based on the assumption the resident is involved in the interpretation of a minimum of 75% of all examinations presented to the service(s) to which they are assigned. A greater than 75% commitment still only counts as full time (not more than 100%).
11. Time spent away from the clinic on research projects, study time, CE courses/ conferences and vacation is not considered clinical training and should be performed during the 6 months of off-clinics time.
12. Each resident must have supervised experience in basic interventional procedures, such as image guided biopsies or fine-needle aspirates, or ultrasound guided injections.
13. Formal didactic classes, tutorials or other study material must be available in the areas outlined in the ACVR Board Certification Content Outline and Study Guide.
14. The radiologic education in different organ systems should provide the opportunity for residents to develop adequate knowledge regarding normal and pathologic anatomy and physiology, including the biologic and pharmacologic actions of materials administered to patients in diagnostic studies.
15. Pathology is considered the basis for radiologic and ultrasound diagnosis, and the resident must be given the opportunity to attend pathology rounds or have access to written pathology reports generated from the imaging case load. The resident should also have access to surgical findings and results.
16. If an optional graduate degree is available in the program, the impact of the degree option must be explicitly stated. If the optional degree program dilutes the clinical experience below the 75% clinical commitment, during the first 36 months of the program it must be submitted as a separate alternative program.

CASELOAD REQUIREMENTS:

1. During the 30 months of clinical training, a resident must be involved in the interpretation of a minimum of approximately **4,000 radiographic studies in radiology, a minimum of 1,000 studies in diagnostic ultrasounds, and a minimum of 150 nuclear medicine, 150 CT and 150 MRI imaging studies on equine patients** during the course of the entire program.
 - a. More than one resident can be involved with a single study

but case reporting will only apply to a single resident. Being involved in the interpretation means the resident must be present at the time the study is initially interpreted. Merely attending rounds or reviewing cases is not considered being involved with interpretation.

2. Documentation of total number of cases dictated in each modality in order to ensure the total number meets or exceeds the amount described in the training program and submitted yearly to the ACVR-EDI RSEC.

TRAINING IN SURGERY, SPORTS MEDICINE AND LAMENESS, AND INTERNAL MEDICINE:

The ACVR-EDI will require residents to acquire 40 hours each of post-graduate training under the supervision of a board certified specialist in three separate rotations of 1) Equine Surgery and Lameness 2) Equine Sports Medicine and 3) Equine Internal Medicine and/or Cardiology. This time will be part of the 6 months that are available for off-clinic and elective time and can occur at an academic institution or private practice.

The resident must log activities related to Specialty Practice requirements. When a resident trains with a mentor that is board certified in two or more specialties, they may log a training week in only one of those specialties. During periods of mentoring for which the resident is logging immersion time, they may also log experience requirements or skills requirements when appropriate.

RESEARCH ENVIRONMENT:

The program should provide an environment in which a resident is encouraged to engage in investigative work with appropriate faculty supervision. These projects may take the form of basic research in research laboratories or an assimilation of well-analyzed clinical material or even the reporting of individual cases. Documentation of this environment should be made in the institution's application and indicated by published papers or scientific presentations by residents and/or clinical faculty.

PUBLICATION REQUIREMENTS:

The candidate must have at least one manuscript published or accepted for publication in the field of equine diagnostic imaging in order to be eligible

for diplomate status of ACVR-EDI.

The following criteria must be fulfilled:

- a. The research must be the result of the resident's work.
- b. The resident must be the primary investigator (first author)
- c. The manuscript must follow a scientific approach, including a clearly stated hypothesis, material and methods, results and discussion. Review papers, case reports, book chapters, etc. do not meet the criteria.
- d. The date of publication cannot be more than five years old by the deadline for credentials submission.
- e. The manuscript must be published in a peer-reviewed journal

EDUCATIONAL ENVIRONMENT:

The education in diagnostic radiology should occur in an environment, which encourages the interchange of knowledge and experience among residents and staff in the program, as well as with residents in other major clinical specialties located in those institutions participating in the program.

- a. At least 12 Known Case Conferences must be provided annually. In Known Case Conferences, the faculty mentors select cases that the resident has never seen, and where the diagnosis/outcome has been unequivocally confirmed. These cases are then presented to the residents as unknown. These conferences may take different forms, but they must be designed to test the progress of the resident's pattern recognition and medical decision-making skills.
- b. Residents should be provided ample opportunity to present formal lectures. It is expected that each resident will prepare and present a minimum of 3 lectures or scientific presentations during the course of the residency-training program.

TEACHING FILE:

A teaching file of images referable to all aspects of equine diagnostic imaging must be available for use by residents. This file should be indexed, coded, and currently maintained.

LITERATURE RESOURCES:

The program shall provide a sufficient variety of journals, references, and

resource materials pertinent to progressive levels of education in diagnostic radiology and associated fields, all of which should be immediately accessible for resident study. In addition, residents should have access to a general medical library.

EDUCATIONAL EVENTS:

Conferences and teaching rounds must be correlated and provide for progressive resident participation. These should be not only intradepartmental conferences, but should involve each major clinical department. They should be of sufficient frequency and include both residents and staff participation on a regular basis.

AFFILIATION AGREEMENT:

When the resources of two or more institutions are to be utilized for the clinical education of a radiology resident, standardized letters of agreement must be provided.

RESIDENT REGISTRATION:

All new residents must register with the ACVR within 90 days of the residency program start date.

RESIDENT EVALUATION:

The in-training evaluation of resident performance and progress must be documented every six months through appropriate techniques, including faculty appraisal, oral or written tests, or a combination of these. The Residency Directors will confirm every 6 months that their listed residents have satisfactorily completed the previous 6 months of the residency program based on an internal review.

If the resident has policy-based concerns, he / she should contact the Executive Director of the ACVR. All interpersonal conflicts need to be moderated by the Institution's and Human Resources Department.

Each resident must submit credentials to RSEC prior to being accepted as being qualified to take the board examination.

A survey will be given to each resident following completion of their program, and 3 years later. The findings of this survey will be provided to

the ACVR Executive Council and RSEC-EDI committee members.

RESIDENCY PROGRAM REVIEW AND APPROVAL:

The Residency Standards and Evaluation Committee (RSEC) receives and approves all new program applications. The review is performed to ensure the program meets all the requirements set forth by the ACVR, including faculty, educational environment, facilities and program content. The Chair of RSEC may contact the program director for additional information or clarification on the residency program application, typically within 2 weeks of receiving an application. The Residency Directors must respond to these inquiries within 2 weeks to ensure timely review. After initial screening by the Chair, the program is evaluated by the entire RSEC. If the program is deficient in one or more areas, the application will be returned to the Residency Director, who will then be given 2 weeks to amend the application or define a plan to correct the deficiencies. All communications will occur via email.

Once the program is satisfactory to RSEC, the program will be presented to the ACVR Executive Council (EC) for approval by majority vote. This process usually takes 2-3 months; however, can be longer depending on the modifications that may be needed to satisfactorily meet the requirements. New program applications should be submitted at least 6 months before the expected start date of any residents, and are reviewed throughout the year. All programs must be recognized and approved by the Executive Council of the ACVR PRIOR to training residents, or the start of a resident's program.

Applications for new program registration (traditional or alternative) can be submitted to RSEC throughout the year; however, the program should be approved at least 2 years prior to the anticipated preliminary examination date (and 3 years prior to the anticipated certifying examination date) to ensure the resident has completed the required training time prior to the examination. A deadline of by January 31 of each year is in place for renewal of all currently registered programs, whose registration expires in the same year.

The Residency Director will be notified via email of the outcome of the program's application or renewal within two weeks of Executive Council's vote.

All traditional and alternative programs will be approved for a period of 3 years, from July of the year of approval to July 3 years later. For example, if a program submitted an application in January 2018 and was approved in April 2018, the program will be approved until July 2021; the Residency Director will need to submit a renewal application by January 31, 2021. If a program is approved in October, but will not begin training residents until July of the following year, the program will be approved for 3 years following the start of the residents. For example, if a program submitted an application in July 2017 and was approved in October 2017, the program will be approved until July 2021, if the residents did not start in the program until July 2018. However, if the program starts training residents prior to July, the approval date would be considered 3 years following the residency start date.

Of note, even if a program is satisfactory to RSEC-EDI and the Executive Council, the ACVR does not accredit, certify, promise, or guarantee the results or satisfaction with any traditional or alternative residency program. Additionally, ACVR has no liability for the conduct or actions of the faculty/diplomates or residents within a program.

ANNUAL UPDATE OF THE RESIDENCY PROGRAM:

The Residency Directors of all programs must submit an online annual update form by January 31 of each year to maintain status as an approved program.

MONITORING PROGRAM COMPLIANCE:

RSEC-EDI will be monitoring program compliance using the following methods:

1. Annual reviews and renewal applications.
2. Resident survey at the completion of the residency program and 3 years later.
3. If RSEC receives complaints or concerns about a residency program's compliance with residency requirements, additional information may be requested by the RSEC Chair from the Residency Program Director as needed.
4. One measure of the quality of the program is the performance of its graduates on examinations for certification by the ACVR. Repeated failure of the exam may warrant re-evaluation of a program.

RESIDENT TRANSFERS:

A resident may need to transfer to another approved residency program for the following reasons:

1. The original program was placed on probation or suspension.
2. Personnel disputes.
3. Personal issues, location, etc.
4. The resident is terminated from a program.

Requirements for transfers:

1. A letter from the original institution must be written and submitted to RSEC-EDI at least 4 weeks prior to a scheduled transfer. This letter must contain: name of the resident, year of resident training, date of departure, amount (weeks) of clinical time and nonclinical time completed at the original institution, plan for continued financial support of resident, and signature of the resident and Resident Director.
 - a. If the resident was terminated from a program, the residency director must send a letter (via mail, fax or email) to the RSEC-EDI Chair. This letter must contain the resident's name, year of training, date of termination, amount (weeks) of clinical time and nonclinical time completed at the institution, reason for termination and signature of the Residency Director. This letter must be received within 2 weeks of the date of termination.
2. A letter from the receiving institution must be written and submitted to RSEC-EDI at least 4 weeks prior to the scheduled transfer. This letter must contain name of the resident, start date, plan for continued financial support of resident, estimated date of residency completion, and signature of the receiving Residency Director.
3. Both letters need to be submitted via email to the RSEC-EDI Chair at least 4 weeks prior to the scheduled transfer. RSEC-EDI will review all transfer requests within 2 weeks of submission of both letters. RSEC-EDI will provide the Executive Council with a recommendation on approval or refusal of the transfer. The initial and receiving residency directors and the transferring resident will receive notification of the decision by the RSEC-EDI and Executive Council.

RESIDENCY PROGRAM QUESTIONS OR CONCERNS:

Anyone (i.e. Residency Director, Diplomates, mentors and / or residents) with any concerns or questions regarding residency program approval,

requirements, the application process or compliance should contact the RSEC-EDI Chair. Issues that cannot be resolved by RSEC-EDI will be forwarded to the ACVR Executive Director, ACVR President and/or ACVR Executive Council for further assistance. The contact information for these offices can be found on the ACVR website at <https://www.acvr.org/page/administration>