Equine Dentistry Curriculum
Center for Veterinary Health Sciences
Oklahoma State University

The professional veterinary curriculum in the Center for Veterinary Health Sciences provides comprehensive and extensive education and training over a four year period. This program is fully accredited by the Council on Education of the American Veterinary Medical Association. Upon completion of the core and elective courses, graduates receive a Doctor of Veterinary Medicine degree (DVM).

Although this document emphasizes specific training related to equine dentistry, it is imperative that the reader understand that veterinarians are educated in many topics that apply to the treatment and care of animals with medical and surgical needs, including horses that require dental care. These topics include anatomy, histology, physiology, pharmacology, pathology, infectious diseases, diagnostic imaging, anesthesiology, internal medicine, and surgery. A total of 162-semester credit hours are required for the DVM degree and many of these courses directly or indirectly relate to preparing veterinarians to correctly diagnosis and treat diseases including diseases of the equine oral cavity.

Training in the DVM Curriculum Specifically related to Equine Dentistry

First Year Curriculum

VMED 7110, 7120 & 7230 - Veterinary Physiology: Lecture courses required of all veterinary students. These three courses establish a broad base of knowledge and understanding of molecular, cellular and organ system physiology. Lectures include the digestive system which begins with the mouth, teeth, mastication and salivary secretions.

VMED 7123 – Histology: Lecture and laboratory course required for all veterinary students. The course covers the organization and structure of cells and tissues of domestic animals including teeth and other structures in the oral cavity.

VMED 7152 – Zootechnology: Lecture and laboratory course required for all veterinary students. It includes sections on equine physical examination, teeth and aging and restraint. Equine dental examination, use of oral speculum, teeth floating instrumentation and technique are included.

VMED 7243 - Comparative Anatomy: Lecture and laboratory course required of all veterinary students. This is an intensive course focused primarily on equine anatomy. It includes sections on equine teeth, dental formula and aging, tongue and oral cavity, sinuses, blood and nerve supply to the teeth, tooth wear and eruption, sinus trephination and tooth repulsion.

VMED 7264 - General Pathology: Lecture and laboratory course required for all veterinary students. It covers the pathological changes resulting from tissue injury and neoplasia.

Second Year Curriculum

VMED 7311 - Introduction to Clinics I: Laboratory course required for all veterinary students. Student groups are assigned to clinical services in the veterinary teaching hospital including services in equine internal medicine and equine surgery. Students are assigned a clinical case to examine and learn all aspects of the animal's condition. At the end of the semester each student group is required to present the case to their peers and faculty members. Faculty then question the group on all aspects of the case they were assigned.

VMED 7333 and 7432 - Pharmacology: Students learn the principals of pharmacodynamics, drug disposition and pharmacokinetics, pharmacologic effects, mechanisms of action, metabolism, clinical indications and toxic effects of drugs acting on the autonomic and central nervous system, cardiovascular, respiratory and renal systems. This basic understanding of pharmacology is essential to safely prescribe and use pharmaceutical products in horses.

VMED 7342 - Clinical Anatomy: Lecture and laboratory course required for all veterinary students. Taught by clinical faculty to emphasize anatomy that is important for clinical practice. A section on equine teeth and introduction to basic equine dentistry is included.

VMED 7350 and 7450 - Infectious Diseases: Lecture and laboratory courses required for all veterinary students. Important animal diseases caused by bacteria, fungi and viruses are taught on an organ systems basis. Mechanisms of infectious disease processes and the relationship of such processes to disease development, diagnosis, treatment and control are emphasized. The relationship of zoonotic diseases to community and environmental health as well as important zoonoses is also covered. Some of these important infectious and zoonotic diseases may appear to be associated with conditions of the mouth and teeth and should be recognized prior to conducting dental work.

Two especially important infectious conditions would be rabies and vesicular stomatitis. Rabies is deadly to horses and potentially for humans that come in contact with saliva from an affected animal. Vesicular stomatitis is an important disease and must be reported to the Oklahoma State Veterinarian. This disease carries a high risk of being transmitted to other horses by mouth speculum, teeth floating and other instruments used in the mouth and could prove economically devastating to the Oklahoma livestock industry.

VMED 7412 – Anesthesiology: Lecture and laboratory course required for all veterinary students. Course covers the principals of veterinary anesthesiology and it incorporates fundamental aspects of physiology and pharmacology in the anesthetic management of important domestic species. Sedatives, tranquilizers and local anesthetics utilized for equine dental procedures are covered in this course.

VMED 7443 - Diagnostic Imaging: Lecture and Laboratory course required for all veterinary students. The course covers radiographic theory, techniques and interpretation with an

introduction to alternate imaging methods, including ultrasonography. It includes normal radiographic appearance of teeth and associated structures and radiographic signs of periodontal and dental diseases.

Third Year Curriculum

VMED 7533-Toxicology: Lecture course required for all veterinary students. Diagnosis and management of intoxications involving plant, chemical and biological toxins. Course teaches the veterinary student to recognize toxicities that may appear to be associated with sharp teeth. For instance excessive salivation is associated with slaframine and many other toxins, dysphagia is associated with botulism and lead poisoning, and fluoride toxicosis causes dental lesions.

VMED 7564-Alimentary System: Lecture and laboratory course required for all veterinary students. Course covers conditions of the equine alimentary system, including abnormal conditions affecting teeth, equine oral examination and basic equine teeth care and floating. Pathologists in this course cover anatomy of teeth, dental development, nutritional, infectious and toxic conditions that can affect enamel and dentine, neoplasia associated with teeth and gingival, dental caries, plaque, and dentigerous cysts.

VMED 7771 and 7811 - Advanced Equine Elective: Third year students interested in equine practice take these courses. They include the basic equine dental exam including aging and normal mouth structure and function and teeth floating. Students in this course have an optional wet lab that is offered outside of class time. It is a 4 hour wet lab where they are instructed on proper oral exam, restraint and use of hand floats. Each student performs these procedures under the supervision of equine faculty.

VMED 7821 - Equine Radiology Elective: Specifically designed for third year students interested in equine practice. Includes the normal radiographic appearance of equine teeth and associated paranasal sinuses, radiographic recognition of equine dental abnormalities such as periapical abscesses, dental fractures, tooth overgrowth and malocclusion, sinusitis and osteomyelitis. Advanced equine dental and sinus imaging with CT and sinus aspiration are also covered.

Fourth Year Curriculum

The fourth year is comprised of 17 separate three week clinical rotations. Nine of these rotations are considered core and all veterinary students are required to take them. These include rotations in Equine Internal Medicine, Equine Surgery, Anesthesia, Diagnostic Imaging and Diagnostics. Therefore, all students spend at least 6-weeks in strictly equine clinical training. These rotations would include the management of equine dental cases ranging from routine teeth floating to complicated dental cases referred by veterinarians in the region. Students are allowed to float teeth on horses presented to the VMTH and our rotation maintains dental care for the CVHS Equine Research Park and Ranch horses providing further equine dentistry opportunities. During their required anesthesia rotations, students will learn to provide anesthesia for equine dentistry patients requiring general anesthesia. The Diagnostic

Imaging Rotation provides training on clinical cases presented to the Veterinary Teaching Hospital, including equine dentistry cases. Students on the Diagnostics Rotation will conduct necropsies on all horses presented to the Oklahoma Animal Disease Diagnostic Laboratory.

Preceptorship: All veterinary students are required to do six weeks of preceptorship in a veterinary practice of their choice. Students with an interest in equine practice can choose those practices that meet their educational interests and needs. These students are frequently involved with equine dentistry.

Off Campus Electives: Fourth year students are allowed to spend 6 weeks at the practice(s) of their choice as an elective. This opportunity provides an additional six weeks that students may choose to be in an equine practice that provides dentistry and to further their education in equine dentistry.

Field Services Elective: Fourth year students may choose to spend three weeks working with the Veterinary Teaching Hospital field services veterinarians providing veterinary services for local equine and other livestock owners. These services include routine equine dentistry.

Additional Learning Opportunities

Through the Student Chapter of the American Association of Equine Practitioners, a dentistry wet lab is taught by clinical faculty. Cadaver heads are used to instruct students on proper oral exam as well as proper dental floating. Each student has the opportunity to float teeth on a cadaver head during this laboratory. This lab is open to all students 1st through 4th year but is mostly attended by 2nd and 3rd year students. Once students are proficient with the hand floats they are taught to use the power float.

During the 2007 Center for Veterinary Health Sciences Fall Conference for Veterinarians, five hours of lecture and two hours of wet lab were presented on equine dentistry. CVHS fourth year students are released from class for this conference and those interested in equine dentistry attended the lectures.

In addition to the above formal curriculum and other learning opportunities, veterinarians are taught to be lifetime learners. All disciplines in veterinary medicine, including equine dentistry are rapidly expanding and require frequent review of the scientific literature and attendance at continuing education conferences, short-courses, seminars and hands on wet labs. In Oklahoma, the Board of Veterinary Medical Examiners requires all licensed veterinarians to participate in a minimum of 22 hours of continuing education every year. Many veterinarians exceed that requirement.