



Improvements to Racing Safety

School of Veterinary Medicine faculty have developed integrated programs to enhance equine, jockey and industry welfare by working with horse owners and trainers to reduce debilitating and fatal injuries on racetracks. The principal faculty liaison to the California Horse Racing Board, veterinarians, horse owners and trainers is the equine medical director, Dr. Rick Arthur, an expert on racehorse care, regulation and drug testing. Working with the school's researchers, he advises the California Horse Racing Board on equine medical issues, research priorities and service goals affecting racehorse welfare, drug testing and related industry policies.

Several school centers contribute to this effort:

- The Kenneth L. Maddy Equine Analytical Chemistry Laboratory is the official equine drug-testing laboratory for California horseracing
- The Equine Necropsy (Postmortem) Program monitors fatal injuries at California racetracks and training facilities through the California Animal Health and Food Safety Laboratory System and the J.D. Wheat Veterinary Orthopedic Research Laboratory
- The California Animal Health and Food Safety Laboratory System, the state's early warning system to protect animals from infectious diseases, provides diagnostic testing services for horses and other animals
- The Racing Injury Prevention Program involves multiple units, particularly the J.D. Wheat Veterinary Orthopedic Research Laboratory, to investigate musculoskeletal injuries that place horses — and riders — at risk of catastrophic breakdowns
- The Track Safety Standards project is measuring some of the main factors of track composition that influence equine health

The cumulative efforts of these faculty members have identified several manageable factors associated with racing injuries created significant impacts on equine health:

What causes catastrophic breakdowns – Faculty in the Equine Necropsy (Postmortem) Program discovered that over 85 percent of catastrophic bone fractures in racehorses are due to pre-existing injuries – and are preventable. Fetlock breakdown is the most common cause of death in Thoroughbred and Quarter Horse racehorses. The program has analyzed nearly 6,000 horses since its inception in 1990, and the J.D. Wheat Veterinary Orthopedic Research Laboratory has characterized the nature of pre-existing pathologic changes at sites of stress fractures.

Jockeys are also at risk – The California Animal Health and Food Safety Laboratory System in 2011 began the first analysis of human injuries related to catastrophic horse breakdowns and found that over 33 percent of jockey falls and 39 percent of jockey injuries are due to racehorse injuries. In a novel contribution to the field, UC Davis epidemiologists identified factors associated with falls and injuries to Thoroughbred racing jockeys in both flat and jumps racing. These findings have influenced changes in industry policy and practice.

Injury prevention through early detection – Researchers have developed sophisticated methods to detect early signs of impending injury so that owners and trainers can address problems immediately and prevent more severe injuries. The orthopedic group developed new bone scanning techniques and recommendations for early detection of stress fractures, which is helping horsemen protect their animals. This team has also improved techniques for sampling and treating the fetlock and pastern joints and has increased our understanding of joint cartilage inflammation and function.

Findings on osteoarthritis—Veterinary researchers have discovered osteoarthritis of the back and pelvis in over 25 percent of racehorses.

Reducing danger from toe grabs – Information developed at UC Davis about the effects of “toe grab” horseshoes on racehorse injuries has led to restrictions on “toe grab” height on horseshoes and reduced the rate of injury from this practice.

Training and layoffs affect risk of harm – Investigators demonstrated that differences in training schedules and layup periods may affect the risk of bone fracture.

Preventing infectious disease—The response of the California Animal Health and Food Safety Laboratory System helped to halt an epidemic of equine herpes virus (EHV-1) among California racehorses that had traveled to locations where EHV-1 was present. UC Davis veterinarians also confirmed the specific strain of the illness that poses a high risk of damage to the equine nervous system. Clinicians provided timely, accurate information for horse owners, quelling rumors, giving guidance and educating the public about the risks of this disease.

More accurate drug testing for the racing industry – In addition to testing more than 36,000 samples each year for 45 anabolic steroids and more than 800 other prohibited drugs, the Kenneth L. Maddy Equine Analytical Chemistry Laboratory develops and validates new analytical techniques.

Therapeutic thresholds and support of fair race practices – Veterinary researchers investigate the distribution and elimination of drugs in equines to establish therapeutic thresholds and withdrawal guidelines for California and other US jurisdictions. These analyses enable the industry to enforce regulations and maintain fairness at the racetrack.

National leadership – The Kenneth L. Maddy Analytical Chemistry Laboratory has achieved the highest levels of accreditation and international standards; the facility also serves as a designated reference laboratory for other racing jurisdictions.

Biomedical engineering and safe racecourses – A fruitful collaboration with biomedical engineers and racetrack personnel has enabled the J.D. Wheat Laboratory to develop novel methods for controlled testing of the behavior of dirt, turf and synthetic racetrack surfaces. Observations in the field and the laboratory are helping the industry build the safest racecourses and better protect the health and welfare of horses.

Improved methods for fracture repair – Based on laboratory and clinical observations as well as retrospective studies of horses with broken limbs, faculty veterinarians have made recommendations regarding the types of screws, plates and nail systems used in surgical fracture repair, and they have contributed advances in anesthesia, support and recovery in equine patients.

Gathering key data from collaborators – UC Davis veterinarians have developed a voluntary system for equine practitioners to simplify online reporting of key medical history information on patients with catastrophic injuries. The information will contribute to a robust research program by providing the most comprehensive and accurate data possible in a timely way.

Influencing change within the industry – The School of Veterinary Medicine is pioneering education tailored to trainers, veterinarians and other horsemen so that they can play the most active and informed role in improving equine safety and welfare. Tutorials walk viewers through the process of understanding, detecting and treating mild injuries at specific sites before problems can turn into fatal fractures.

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