

Advancements in Hospital Care

Equine specialists at the UC Davis veterinary hospital are continually utilizing advancements in medical disciplines and technology to improve the outcome for racehorses injured on the track.

Improved Joint Repairs

Degenerative joint disease and traumatic joint injury are common in racehorses, but effective therapies have historically been lacking. Collaborations between veterinarians and biomedical engineers have resulted in biological treatment options for joint health, such as the development of “neocartilage” to function like native articular cartilage. This research may dramatically improve athletic outcomes for horses and humans alike.

Improving Fracture Repair Outcomes

Surgeons are exploring the effectiveness of stem cell therapies to expedite bone healing following surgical repair. In addition, the use of three dimensional imaging prior to surgery facilitates optimal repair and stabilization. This work will likely reduce fracture-associated complications such as infection, delayed healing and support limb laminitis.

Imaging Helps Advance Stem Cell Treatments

Stem cells derived from equine bone marrow and fat direct the immune response to tissue damage and help to organize healing. Radiologists are pioneering the use of imaging technology to track the activity

and influence of stem cells in acute tendon lesions in horses. Nuclear medicine (scintigraphy and PET) and MRI are used to determine distribution and persistence of stem cells, and also illustrate their exact location after administration.

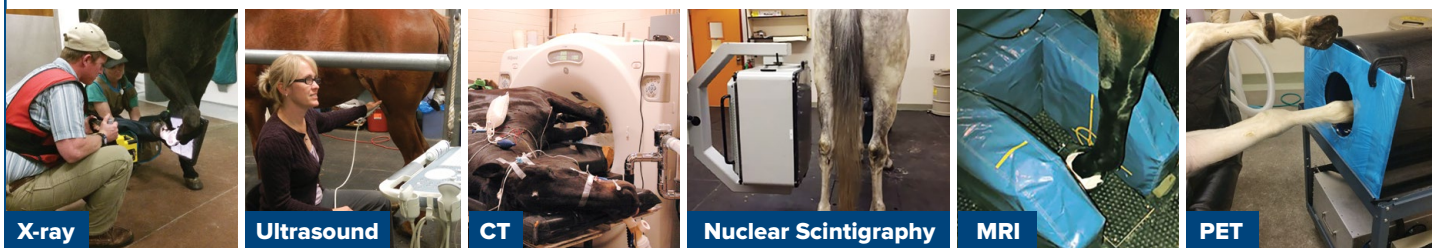
Imaging Modalities Help Translate Research to Clinical Care

With some of the most advanced and exclusive imaging capabilities, UC Davis is at the cutting edge of detecting, diagnosing and treating racing injuries. By utilizing information learned through research, radiologists and clinicians at the veterinary hospital can advance the care and rehabilitation of racehorses.

Imaging procedures for horses include:

- Radiography (X-ray)
- Ultrasound
- Computed Tomography (CT)
- Nuclear Scintigraphy
- Magnetic Resonance Imaging (MRI)
 - Allows clinicians to see early changes in tissues around tendons and ligaments, potentially before a tear occurs—researchers are working on translating this finding into a clinical tool for earlier detection of soft tissue overload
- Positron Emission Tomography (PET)
 - Indicates what is active in the image—similar to nuclear scintigraphy but in three dimensions with anatomical accuracy

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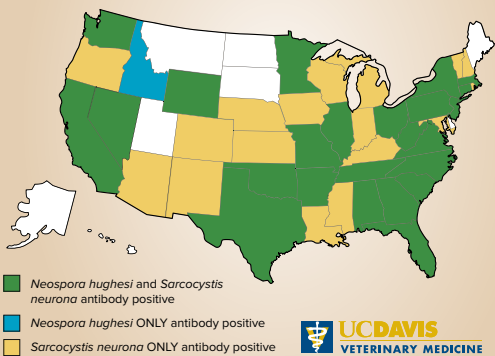
Advancements in Hospital Care (continued)

Neonatal Care

The Lucy G. Whittier Neonatal Intensive Care Unit is led by a board-certified critical care specialist and can handle the most complicated cases including: prematurity, colic, maladjusted foal syndrome, angular limb deformities and sepsis. Research has demonstrated that compromised foals have gone on to have successful racing careers and that early, active intervention is key to a positive outcome.



Geographic Distribution of Horses with Antibodies Against EPM-causing Parasites



Infectious Disease Research and Control

UC Davis leads infectious disease research in equine medicine. Researchers have developed tools to prevent, diagnose and treat infectious diseases before they shut down a racing barn.

- Biosecurity protocols for EHV-1 and other transmissible diseases are being implemented nationwide and promoted by leading pharmaceutical companies.
- Development of a rapid turnaround PCR diagnostic testing panel for respiratory and gastrointestinal pathogens that are utilized nationally in the face of outbreaks.
- Research discovered the prevalence of EPM throughout the country, and clinicians developed educational tools for veterinarians to accurately diagnose and treat EPM cases.
- Research has shaped recommendations for shipping and hauling to reduce transportation-associated infections and complications.

Advancing the Art of Lameness Detection

Sports medicine specialists are utilizing the latest technological advances to improve lameness detection and objective assessment (measurement). The key to successful resolution of unsoundness is accurate diagnosis and determination of primary versus secondary sources of pain. Early detection of problems—before the horse is sidelined—improves return to athletic function and reduces the likelihood of re-injury. Clinicians integrate complementary medicine (acupuncture and chiropractic evaluation) to enhance diagnostic and therapeutic capabilities. These modalities provide additional information about axial skeletal issues and compensatory pain.

Research teams are utilizing force plate and inertial sensing technology to quantify limb load changes and distribution of force across the hoof. This technology reveals compensatory loading that the naked eye cannot detect.

