

Equine Postmortem Program

California horse racing experienced yet another reduction in racing and training catastrophic injuries in FY 2020-21, recording the lowest number of total catastrophic injuries since 1990. There was greater than a 50-percent reduction in catastrophic injuries from the previous two years, resulting in the lowest recorded number since comprehensive and reliable records of all catastrophic injuries were first recorded through the CHRB Postmortem Program. Under the guidance and leadership of the CHRB, the reduction in racing and training catastrophic injuries was the culmination of years of effort by horsemen, veterinarians, and all horse-racing industry stakeholders.

The State of California monitors all equine catastrophic injuries within CHRB racing and authorized training facilities. This is accomplished through the efforts of Official Veterinarians, safety stewards, the Equine Medical Director, and the California Animal Health and Food Safety (CAHFS) diagnostic laboratories. CAHFS is part of the School of Veterinary Medicine at University of California, Davis, with laboratories at UC Davis, Tulare, and San Bernardino. The immediate goal of the Postmortem Program is to determine the causes and reasons for horse injuries and catastrophic injuries to reduce serious non-fatal injuries and prevent catastrophic injuries on the track. The overarching focus of the program is to study the nature of injuries occurring in racehorses, to determine the reasons for these injuries, and to develop strategies to improve the health, safety, and welfare of racehorses.

All horses that die within a CHRB facility undergo a comprehensive necropsy at a CAHFS lab as required by CHRB rule. CAHFS veterinary pathologists perform the necropsy and prepare a report for the CHRB. Additional testing, such as toxicology, microbiology, histology, and virology, may be necessary before a final report is issued. The program is world-renowned and considered an international model. The CHRB funds the postmortem examinations; racing associations provide transportation to the CAHFS laboratories; specific studies are funded by research grants from private and public sources, including the Center for Equine Health at UC Davis. Dr. Monika Samol is a post-doctoral fellow under the supervision of Dr. Francisco Uzal, a professor of pathology and head of the program for CAHFS. Dr. Samol's work focuses primarily on musculoskeletal breakdowns, elucidating more information on cause and prevention.

Musculoskeletal injuries in racing and training are the most common cause of catastrophic injuries at CHRB facilities. Musculoskeletal specimens of special interest or for research studies are forwarded to the J.D. Wheat Veterinary Orthopedic Research Laboratory (VORL) at the School of Veterinary Medicine at UC Davis for in-depth analysis. The

uniquely equipped VORL is under the direction of Dr. Sue Stover. In-depth analysis of necropsy specimens at VORL has shown the role of undiagnosed stress fractures contributing to catastrophic fractures of the pelvis, femur, humerus, scapula, tibia, third metacarpal (shin), and other bones. Dr. Stover, her research team, and CAHFS/UC Davis pathologists have focused on proximal sesamoid bone fractures for several years. Proximal sesamoid bone fractures and associated fetlock (ankle) injuries are the single major cause of fatal racehorse injuries, both racing and training, accounting for nearly 50 percent of all musculoskeletal catastrophic injuries.

Pre-existing pathology at the site of the fatal injury is a re-occurring finding at enhanced necropsy. Much of the pre-existing pathology is not clinically apparent and only detectable using specialized laboratory instrumentation on bench-top specimens. Nevertheless, these pre-existing changes suggest there is an opportunity to incorporate early clinical detection techniques to prevent serious injury. Proximal sesamoid bone fractures frequently have pre-existing changes in the bone that are undetectable in standard diagnostic imaging. Working with Santa Anita and the Southern California Equine Foundation, UC Davis veterinary radiologist Dr. Mathieu Spriet developed an innovative, first-of-its-kind, standing positron emission tomography (PET) for horses. The PET and a standing magnetic resonance imaging (MRI) unit at Santa Anita have advanced diagnostic capabilities by veterinarians. These diagnostic imaging modalities, in addition to the nuclear scintigraphy unit, have advanced injury detection, prevention, and management, thereby enhancing racehorse safety. The PET is also currently available to horsemen at Golden Gate Fields.

Sudden deaths continue to be a frustrating cause of catastrophic injuries, accounting for approximately 15 percent of all catastrophic injuries in FY 2020-21. The CAHFS lab is working earnestly, in collaboration with other investigators, to identify the causes of these catastrophic injuries. Morbidity related to cardiovascular failure is often suspected, but it is difficult to determine an actual cause.

The Postmortem Examination Review (CHRB 1846.6) began in July of 2020 with a focus on education and prevention of catastrophic injuries. Trainer participation is mandatory, and the review is conducted by an Official CHRB Veterinarian, a member of the board of stewards, a safety steward, and the Equine Medical Director. Other licensees may be requested to participate in these reviews. The purpose is to maximize the educational opportunity from each equine necropsy, consistent with the overriding goal of the CHRB and the racing industry to reduce catastrophic injuries. This process, in conjunction with recently implemented CHRB Rule 1503.5 requiring trainers to fulfill continuing education requirements, will further support