Equine Health & Safety Briefing – Saratoga Race Course 2023 – Remarks
NYS Gaming Commission Meeting – October 3, 2023
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Any equine fatality at New York racetracks – while racing, training or otherwise – is investigated to identify any risk factors that may have contributed to the deaths. Each horse is sent to Cornell University's College of Veterinary Medicine for necropsy. Necropsy findings, exercise history, medical records, weather, racing surface conditions and any other factors that are likely to have contributed to the fatality are reviewed. At this time all 17 of the equine fatalities that occurred at the Saratoga Race Course in 2023 are under review.

Each year, there are approximately 1,800 horses on the grounds or in private stables adjacent to the Saratoga Race Course during the late July-Labor Day meet. Several hundred more horses reside on the grounds for training purposes, generally between April and November.

In 2023, a total of 17 horses – or 1% of the approximately 2,000 horses stabled at Saratoga died on Saratoga Race Course property. This number is consistent with 2012, 2016 and 2019 figures. For reference, in 2017 and 2020: 21 horses died on the grounds of Saratoga Race Course.

Of note, the U.S. Department of Agriculture's National Animal Health Monitoring System surveys private farm owners across the country as to how many horses, mules and donkeys are on their grounds. To be clear: these are not racehorses. They are equids that are living and/or working on farms across the US. The survey asks farm or stable owners how many of their horses, mules or donkeys died during the past year. The most recent survey listed a mortality rate of 1.4% - statistically higher, if not comparable with the mortality rate of racehorses at Saratoga. These statistics indicate that horses that race in New York are as safe if not more so than those that live on farms in non-racing capacities.

Racing Injuries:
Most exercise-associated equine fatalities are the result of musculo-skeletal injury. These tragic incidents rarely have a single cause. Numerous individual horse and environmental risk factors are currently under review.

Although the total number of equine fatalities at Saratoga in 2023 was statistically similar to previous years, the number of racing fatalities in 2023 was 3 times higher than that seen in 2021 and 2022. Of note: they were "clustered" around the Whitney and Travers weekends. When investigating factors that may have contributed to an unusual increase in injuries, it is appropriate to determine what risk factors or circumstances were common to previous years of experience and what risk factors were unique to the period in which the injuries occurred.

Many of the individual horse risk factors common to the horses that experienced exercise-associated fatalities during the 2023 Saratoga Race Meet were similar to those of previous years.

Type of Injury - Fetlock
For those horses that suffered exercise-associated fatalities: one commonality has been the type of injury. The fetlock joint is the most common site of fatal musculoskeletal injury in racehorses across the United States. Published research studies of racehorse injury in both New York and California over the past 10 years found that fetlock injuries represented 48% and 50% of fatal musculoskeletal injuries respectively.

However, during the 2023 Saratoga race meet, fetlock joint injuries represented 92% of all the exercise-associated fatal musculoskeletal injuries during the meet. This is a significant finding.

Location of Incident – Fatigue

Another commonality: 12 of the 13 exercise-associated injures occurred in the final furlongs of the race or as horses were galloping out after the race. This finding suggests that fatigue was likely a factor that contributed to these injuries.

Weather – Surface Changes

In terms of environmental risk factors, the most significant finding was the unprecedented amount of rainfall (11 inches) that occurred during the 2023 Saratoga race meet, compared with 9 inches in 2021 and 8 inches in 2022.

"Surface change" is the term used to describe a situation where the amount of moisture in the turf courses is determined by racing officials to represent an unacceptable risk to the safety of horse and rider and would likely result in irreparable damage to the turf course itself. For that reason, the number of "surface changes" is a useful metric to quantify inclement weather. During the 2023 Saratoga Meet there were 65 surface changes (16% of the races were moved off the turf onto the dirt), compared with 17 surface changes (4% of the races) during the 2022 Saratoga Race Meet. Given these dramatic and unique findings, moisture content of the racing surfaces at Saratoga has become a primary focus of the investigation.

Existing research has found no correlation between the surface condition of the racetrack and exercise-associated catastrophic injury. In one recent study, the incidence of catastrophic injury was compared among racetracks classified as "fast," "sloppy" and "muddy." No significant difference was found. However, it is important to understand that these classifications are assessments by racing officials and are not based upon actual measurement of the amount of moisture in the racing surface.

Consistency of the racing surface is the primary goal of racetrack maintenance. A consistent surface is considered a safe surface. The variables that contribute to consistency and safety of the racetrack include composition of the surface material, design of the oval, and moisture content. Only one of these variables can change within a short time frame: moisture content.

Analysis of variance (ANOVA) is a statistical test is used to measure variation (inconsistency) in a data set. In addition to comparing the average value of multiple data points, ANOVA tests compare the range and distribution of data points within minimum and maximum values in a group of numbers. The moisture content of the main dirt racetrack was evaluated using this type of analysis.

During the 2023 Saratoga Race Meet multiple measurements of the percent volume moisture content (VMC) were made twice daily at 15 points around the dirt main track and 12 points around the Mellon and Inner Turf Courses.

There were 2 exercise-associated racing fatalities on the dirt main track during the 2022 Saratoga Race Meet when the spatial and temporal distribution of moisture in the racetrack was relatively consistent.

Conversely, there were 4 exercise associated racing fatalities on the dirt main track the during the 2023 Saratoga Race Meet, when the spatial and temporal distribution of the moisture content of the racetrack was significantly less consistent.

This finding suggests that increased moisture in the Saratoga main dirt track and spatial and temporal variation of the moisture content of the track during the meet were likely contributing factors to the increase in the number of racing fatalities during the 2023 Saratoga Race Meet.

Summary:
In sum, the comprehensive investigation of the 2023 Saratoga Race Meet fatalities by HISA, NYRA and NYSGC veterinarians is ongoing and has thus far identified the following preliminary findings:

- Fetlock hyper-extension injuries comprised 92% of the musculoskeletal injuries that occurred during the 2023 Saratoga Race Meet.
- Fatigue was a factor in all but one of the exercise-associated injures, as they occurred in the final furlongs of the race or as horses were galloping out after the race.
- The unprecedented amount of rainfall (11 inches) that occurred during the 2023 Saratoga Race Meet impacted the consistency of the racing surfaces.

A comprehensive report of this investigation will be made available to the public as soon as the investigation is complete.

PET Scan Not Appropriate as Initial Screening Tool:
Recently, there have been conversations about possibly scanning all horses prior to racing with a Positron Emission Tomography (PET) scan.

(PET) scan is a form of "advanced" imaging that involves injecting a radioactive isotope into the body and then using a sensor to image the localization of that isotope in areas of the body with increased metabolic activity, such as bone modeling or bone remodeling. Because of its ability to detect active metabolic processes, it can often detect abnormalities in bone or soft tissue before those abnormalities can be detected with other imaging modalities, such as radiography, MRI or Computed Tomography (CT). As such, PET is a fantastic diagnostic tool. However, it is not the best initial screening tool to detect horses at risk for catastrophic injury.

Identification of horses at risk for catastrophic injury must begin with a screening protocol that can be scalable, practical, affordable, and can be used by every horse while training or racing without regard to any clinical indication of injury. Wearable biometric sensors are best suited to accomplish this first level of screening. These sensors detect subtle abnormalities in a horse's gait that are not detectable with the human eye. They serve as a "check engine" light that alerts us to the possibility that there is something wrong with the horse and that the horse should be examined by a veterinarian.

The veterinary examination is the second level of screening for an abnormality that might predispose a horse to injury. The goal is to reach a diagnosis of musculoskeletal abnormalities and typically will include use of diagnostic nerve blocks and digital radiography. If lameness is detected in a limb during this examination and digital radiographs are inconclusive, then advanced imaging such as PET can be employed as a final screening step in this process.

The NYS Gaming Commission has been doing pioneering research with wearable biometric sensors to identify horses at increased risk for injury at NYRA racetracks for the past 3 years. The results are promising. Sensors were placed in the saddlecloths of racehorses racing at Saratoga, Belmont Park and Aqueduct in 2021 and 2022. These sensors measure acceleration in 3 dimensions during high-speed exercise. Thus far, this technology can identify horses at risk for injury, but wearable biometric sensors are not quite ready for "prime time" use at this time. Stay tuned for further developments.

In summary, PET can play a very important role in the diagnosis of subtle musculoskeletal injuries in horses, but it is not useful at the initial screening level.