

A SURVEILLANCE SYSTEM FOR EQUINE RACING INJURIES IN THE UNITED STATES

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Injuries suffered during racing by horses and subsequently their jockeys extract a significant economic toll from the racing industry worldwide as well as generate adverse publicity for the sport. Fatal injuries evoke reaction from animal rights groups who seek to improve the welfare of the race horse. In contrast to Europe's grass race courses, most races in the United States (U.S.) are held on oval dirt tracks. The primary horse breeds are thoroughbreds, standardbreds (trotters and pacers) and quarter horses. Until recently, no broad based estimates of the number of racing-related equine deaths or injuries in the U.S. were known, nor information as to whether these numbers had changed over time. Local estimates from a few racing regions were available. Although many racing jurisdictions maintain records for annual summaries of race meetings that include statistics on death rates, these are seldom published. In 1990, the California Horse Racing Board established a mandatory necropsy system for all horses that died at racetracks so as to characterize and quantitate the definitive pathologic diagnoses for race horses that died or were euthanized (Johnson, 1993). This growing data base provides an estimate of one death per 765 starts in California (Jack, 1993). In a recently published study on injuries in thoroughbreds in Kentucky, one fatal injury/696 starts was reported along with a rate of one non-fatal injury/ 538 starts (Peloso et al., 1994).

A central data base has been established at the University of Minnesota (UMN) to collect, enumerate and characterize equine injuries sustained during racing throughout the U.S. The objective of the reporting system is to provide statistics on racing injuries for the industry as a first step towards designing measures to reduce injuries. The system was started as a pilot project by the American Association of Equine Practitioners (AAEP) and the Association of Racing Commissioners International (RCI) in 1991. A simple one page form was devised and circulated to racing regulatory veterinarians. The 'injury' case definition was 'any horse brought to the attention of the veterinarian on the racing surface'. This definition is loosely based on the fact that at most racetracks a veterinarian inspects each horse for unsoundness as it enters the paddock before the race, and observes all starters together as they warm up before the race, during the race and after the race when horses exit the track surface. For this project, a report was to be filed for any horse that was noticed to be lame or to have medical difficulties during or immediately after the race.

Data collection began in January of 1992. Reports were initially filed with the RCI and data entry began. However, following a change in personnel, the quality of data entry declined and a number of reports were lost. This caused considerable delay in the analysis of the 1992 reports. Subsequently, all project materials were moved to the analysis center at the UMN. Over 2,300 reports from 48 different racetracks have been filed for 1992-1993 and, to date, 203 for 1994. The majority are from thoroughbred races on dirt surfaces at the predominant racing venues in the U.S.

Preliminary analysis of the 1992 reports offers the following information: 1267 reports were received from a total of 35 racetracks and 38 different regulatory veterinarians. Of these, a complete set of reports (i.e. spanning the entire race meetings for 1992) were available for analysis from 27 racetracks with thoroughbred racing. Rates were calculated for fatal injuries at these tracks (fatal = died on racetrack or was euthanized due to severity of injury). This rate ranged from one death/209 starters at a small fair meeting to one death/2357 starters at an elite short meeting; the median rate was one death/589 starters. Differences were also seen in the patterns of injury at each racetrack. For instance, with two exceptions, rear limb injuries were quite rare at most racetracks. The ratio of right forelimb to left forelimb injury was also variable. Most

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racetracks had approximately equal numbers of each, whereas a few had predominately left forelimb injuries, suggesting that the design of the turns may be important. The patterns of injuries were also different for racetrack surface condition (eg. fast versus muddy) as well as for site of occurrence on the racetrack, race class, age, gender and surface type (dirt versus turf) (Wilson et al., 1993).

The injury reporting form for data collection has been revised after reviewing records in the pilot year and prototype testing in 1993. The two page reporting form addresses race, horse and track surface characteristics as well as the type and location of injury. Most participating veterinarians fill up the form the day of the injury, but may wait to complete the diagnosis section until ancillary tests such as radiography are performed. The veterinarian also clips the past performance chart for the entire race from the daily racing newspaper and the published summary of the race from the same source a few days later. Completed reports are mailed on a monthly basis, or at the end of a race meeting, to the data collection center at the University of Minnesota. Upon arrival, the reports are reviewed for completeness. The regulatory veterinarian is then sent a letter acknowledging receipt of the reports and requesting any missing information. Information on the horse's past performance (equivalent to production records) is obtained from the daily racing newspapers. Data on the numbers and types of horses at risk for injury is provided by racing organizations such as the Jockey Club and American Quarter Horse Association. The data are entered into a computerized spreadsheet. Quarterly summaries are provided to participating racetracks. These summaries show the injuries reported at that track and patterns of distribution for each type of injury by age, gender, leg, class of race, site on the track and track condition. For comparative purposes, the range, mean and median for all participating racetracks are also provided, as well as previous year(s)' injury rates for that track if available. For some tracks, analysis is now being done for a third consecutive year.

Estimates of racing injuries provided by this system are likely to be conservative. The system only captures a subset of the injuries that occur during racing as some are not evident until after the horse returns to the stable. Under reporting is believed to occur at most racetracks. Disparities exist in the interpretation of the case definition as some regulatory veterinarians opt to only report the most severe and fatal injuries, while others report any horse that is brought to their attention. These disparities make intertrack comparisons difficult for all but the most severe injuries. The tracks with sufficient staff to participate are among the most safety conscious in the country, so inferences regarding injury rates for the whole country must account for this participation bias. Concerns regarding the confidentiality of the data have also limited participation by some racing jurisdictions. Some regulatory veterinarians and racetrack managers believe the results of data analysis could be misused by the animal rights movement and attorneys, particularly those representing injured jockeys. The issue of doctor-patient relationship and confidentiality of the diagnosis has also been raised. A coding system was offered to address this concern but has yet to be requested.

The database has multiple functions. It provides a starting point for the racing industry in its efforts to reduce injuries as well as an estimate of the magnitude of the losses of life and money. The latter will be used to justify further funding for research into means of reducing injuries. At the individual racetrack level, a racetrack's manager may initiate efforts to improve the racing surface if its injury rates are relatively or seasonally high. Further epidemiologic analyses are underway on the data provided by the surveillance system. Case-control studies of risk factors for severe injuries are based on the comparison of each injured horse with two other non-injured horses entered in the same race. These serve as matched controls as they are likely to be of similar age, gender, experience and calibre, and will have been exposed to the same racing surface. Tracks with low injury rates may be scrutinized to identify injury-protective factors or practices. As specific injury types are more common at certain racetracks, veterinary researchers can target their investigations at those racetracks. Funding agencies can better prioritize research support according to the frequency of injury types.

Further development of the system has been proposed and submitted for funding consideration. A component of this proposal is validation of the injury diagnoses. A random subset of participating racetracks will be selected, as well as a period of time during each track's race meeting to independently ascertain the clinical diagnosis of the reported injury through the horse's private veterinarian. For the California racetracks, a list will be compiled from the surveillance project data of race horses that died or were euthanized. This list, along with the regulatory veterinarian's diagnosis, will be compared to the database of the California Horse Racing Board's necropsy program. This will provide both an estimate of completeness of reporting

for fatal injuries as well as the accuracy of the regulatory veterinarian's diagnosis for California tracks. Inferences from these estimates may be optimistic as this racing jurisdiction provides some of the best quality data for the project.

The reporting system is currently partially funded by organizations within the racing industry. Three organizations are also donating additional racing data. Efforts are underway to broaden participation by non-thoroughbred racing venues and Canadian racetracks. Support has also been solicited from all state racing commissions, many of whom have strongly endorsed the system.

The racing industry and media have been quick to recognize the potential of this surveillance system. Many regulatory veterinarians have volunteered countless hours to its inception and implementation without monetary recompense or additional staff support. This project bridges many racing factions and may provide a convincing illustration of the value of this type of national collaborative data collection and analysis. This will hopefully aid efforts to establish a national electronic racing database information system which could be used by track management and regulatory veterinarians on a daily basis.

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