

**CALIFORNIA HORSE RACING BOARD**

1010 Hurley Way, Suite 300  
Sacramento, CA 95825  
[www.chrb.ca.gov](http://www.chrb.ca.gov)  
(916) 263-6000 Fax (916) 263-6042



## **MEDICATION, SAFETY AND WELFARE COMMITTEE MEETING**

of the **California Horse Racing Board** will be held **Wednesday, October 24, 2018**, commencing at **11:00 a.m.**, in the **Baldwin Terrace Room** at the **Santa Anita Park Race Track, 285 West Huntington Drive, Arcadia, California**. Non-committee Board members attending the committee meeting may not participate in the public discussion, official committee vote, or committee closed session.

### **AGENDA**

#### **Action Items:**

1. Report and discussion on **California's medication violations for fiscal year 2017-18.**
2. Report and discussion on **CHRB/CAHFS Postmortem Program, Fatality Review Program for fiscal year 2016-2017.**
3. Discussion and action regarding the **proposed amendment to CHRB Rule 1588, Horse Ineligible to Start in a Race**, to provide that a horse that 1) has not started in a race for 12 months or more from its previous start or 2) a first-time starter, four (4) years of age or older, is ineligible to start in a race until such horse has performed satisfactorily in a workout or qualifying race as described in CHRB Rule 1866(e) and (f).
4. Discussion and action regarding the **proposed amendment to CHRB Rule 1844, Authorized Medication, and proposed amendment to CHRB Rule 1866.1, Presence of Clenbuterol in Quarter Horses**, to prohibit the presence of clenbuterol in a horse test sample and to change the change the title of CHRB Rule 1866.1 to Presence of Clenbuterol in Horses
5. Discussion regarding the **report on the Positron Emission Tomography (PET) scan seminar held at Santa Anita.**
6. **General Business:** Communications, reports, requests for future actions of the Committee.

Additional information regarding this meeting may be obtained from Jacqueline Wagner at the CHRB Administrative Office, 1010 Hurley Way, Suite 300, Sacramento, CA 95825; telephone (916) 263-6000; fax (916) 263-6042. A copy of this notice can be located on the CHRB website at [www.chrb.ca.gov](http://www.chrb.ca.gov). \*Information for requesting disability related accommodation for persons with a disability who require aids or services in order to participate in this public meeting, should contact Jacqueline Wagner.

**MEDICATION, SAFETY AND WELFARE**

**COMMITTEE**

Madeline Auerbach, Chairman

Alex Solis, Member

Rick Baedeker, Executive Director

Jacqueline Wagner, Assistant Executive Director

STAFF ANALYSIS  
REPORT AND DISCUSSION ON CALIFORNIA'S MEDICATION VIOLATIONS FOR  
FISCAL YEAR 2017-2018

Medication, Safety and Welfare Committee Meeting  
October 24, 2018

#### BACKGROUND

Business and Professions Code section 19580 provides that the Board shall adopt regulations to establish policies, guidelines and penalties relating to equine medication in order to preserve and enhance the integrity of horse racing in the state. Business and Professions Code section 19581 states no substance of any kind shall be administered by any means to a horse after it has been entered to race in a horse race, unless the Board has, by regulation, specifically authorized the use of the substance and the quantity and composition thereof. Board Rule 1843, Medication, drugs and Other Substances, provides that no horse participating in a race shall carry in its body any drug substance or its metabolites or analogues, foreign to the horse except as hereinafter expressly provided. No drug substance shall be administered to a horse which is entered to compete in a race to be run in this state except for approved and authorized drug substances as provided in these rules.

Urine and blood samples are obtained post-race from the winner of every race, the horses finishing second and third in certain stakes races, and from any other horses selected at random from each program, as well as other horses designated by the stewards. Post-race testing includes in-depth testing for anabolic steroids, narcotics, tranquilizers, depressants and potent stimulants. A positive post-race test sample will result in the Board taking action against the license of the responsible party. Any licensee found to be responsible for the presence or administration of any drug substance resulting in a positive test may be subject to penalties as set forth in the Board's rules and regulations.

#### RECOMMENDATION

This item is presented for Committee discussion. The Board's Equine Medical Director is prepared to make a presentation to the Committee.

# CHRB Medication Violations

## FY2017-2018.

There were 110 medication or drug violations in FY17-18 including 6 Class 1, 2 or 3 violative samples and 104 Class 4 or 5 violative samples from 41,125\* samples analyzed.

	Class 1, 2 or 3	Class 4 or 5
Post-race paired blood and urine (9,838) plus post-race blood only (904)	6 (0.06%)	90 (0.94%)
Work Bloods (512)	0	9 (1.76%)
TCO2 (20,033)	1 (0.005%)	0
Out-of-Competition (1,521)	0	0

- Post-race samples include 9,839 paired blood and urine samples plus 903 blood only samples for a total of 20,671 post-race samples.
- 498 Work Bloods are post-work blood samples required for removal from the Veterinarian's List
- 20,033 TCO2 samples were drawn on Thoroughbreds pre-race and harness primarily pre-race.
- 1,521 Out-of-Competition(OOCT) samples are obtained from horses at times other than race day.

\* 1,521 OOCT and 592 hair samples not included

## Class 1, 2 or 3 Violations

FY 17-18

Drug	SoCal TB's	NorCal TB's	Fairs	Cal Expo	Los AI	Total
Caffeine				1		1
Clenbuterol					2	2
Diphylline		1				1
Levamisole					1	1
TCO2	1					1
	1	1	0	1	3	6

# Class IV & V Violations FY 17-18

Betamethasone	6
Betamethasone & Triamcinolone Acetonide	1
Cobalt (<50ng/ml)	4
Dantrolene	2
Dexamethasone	15
Dexamethasone & Trichlormethiazide	3
Dipyrrone	1
Flumethasone	2
Flunixin	9
Methocarbamol	8
Methylprednisolone	1
Phenylbutazone	29
Phenylbutazone & Flunixin	16
Phenylbutazone & Ketoprofen	3
Phenylbutazone, Flunixin & Dexamethasone	1
Triamcinolone Acetonide	3

There were **104** Class IV or V violative samples from **78** trainers and **102** different horses. **95** of the violations were during racing ( **9** violations were working for removal from the Veterinarian's List under 1866: **8** excess Phenylbutazone; **1** phenylbutazone/flunixin). **Nine** phenylbutazone violations were over 5 ug/ml.

## Class 4 Corticosteroid Violations

### FY 17-18

Drug	SoCal TB's	NorCal TB's	Fairs	Cal Expo	Los Al	Total
Betamethasone	1				5	6
Betamethasone & Triamcinolone					1	1
Dexamethasone	1	2	1		11	15
Dexamethasone & Trichlormethiazide		1			2	3
Flumethasone	1	1				2
Methylprednisolone					1	1
Triamcinolone	2				1	3
	4	4	1	0	21	31

## Class IV & V Violations

### FY 14-15 through FY 17-18

	14-15	15-16	16-17	17-18
Betamethasone	0	1	2	6
Cobalt (<50ng/ml)	0	2	1	4
Dantrolene	0	0	0	2
Dexamethasone	5	2	4	15
DMSO	0	0	4	0
Dipyrrone	0	0	0	1
Flumethasone	0	4	0	2
Flunixin	8	8	9	9
Guaifenesin	1	1	0	0
Isoflupredone	2	0	1	0
Ketoprofen	1	0	0	0
Methocarbamol	6	4	5	8
Methylprednisolone	2	3	4	1
Phenylbutazone	58	27	29	29
Phenylbutazone & Flunixin	1	4	12	17
PBZ + Flunixin + Dex	0	0	0	1
Phenylbutazone & Ketoprofen	1	1	0	3
Triamcinolone	0	3	0	3
Triamcinolone + Betameth	0	0	0	1

STAFF ANALYSIS  
REPORT AND DISCUSSION ON CALIFORNIA'S MEDICATION VIOLATIONS FOR  
FISCAL YEAR 2017-2018

Medication, Safety and Welfare Committee Meeting  
October 24, 2018

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Work Bloods (512)	<b>0</b>	<b>9 (1.76%)</b>
TCO2 (20,033)	<b>1 (0.005%)</b>	<b>0</b>
Out-of-Competition (1,521)	<b>0</b>	<b>0</b>

- Post-race samples include 9,839 paired blood and urine samples plus 903 blood only samples for a total of 20,671 post-race samples.
- 498 Work Bloods are post-work blood samples required for removal from the Veterinarian's List
- 20,033 TCO2 samples were drawn on Thoroughbreds pre-race and harness primarily pre-race.
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Drug	SoCal TB's	NorCal TB's	Fairs	Cal Expo	Los AI	Total
Caffeine				1		1
Clenbuterol					2	2
Diphylline		1				1
Levamisole					1	1
TCO2	1					1
	1	1	0	1	3	6

# Class IV & V Violations FY 17-18

Betamethasone	6
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## Class 4 Corticosteroid Violations

FY 17-18

Drug	SoCal TB's	NorCal TB's	Fairs	Cal Expo	Los Al	Total
Betamethasone	1				5	6
Betamethasone & Triamcinolone					1	1
Dexamethasone	1	2	1		11	15
Dexamethasone & Trichlormethiazide		1			2	3
Flumethasone	1	1				2
Methylprednisolone					1	1
Triamcinolone	2				1	3
	4	4	1	0	21	31

## Class IV & V Violations

### FY 14-15 through FY 17-18

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Cobalt (<50ng/ml)	0	2	1	4
Dantrolene	0	0	0	2
Dexamethasone	5	2	4	15
DMSO	0	0	4	0
Dipyrrone	0	0	0	1
Flumethasone	0	4	0	2
Flunixin	8	8	9	9
Guaifenesin	1	1	0	0
Isoflupredone	2	0	1	0
Ketoprofen	1	0	0	0
Methocarbamol	6	4	5	8
Methylprednisolone	2	3	4	1
Phenylbutazone	58	27	29	29
Phenylbutazone & Flunixin	1	4	12	17
PBZ + Flunixin + Dex	0	0	0	1
Phenylbutazone & Ketoprofen	1	1	0	3
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Flumethasone	1	1				2
Methylprednisolone					1	1
Triamcinolone	2				1	3
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Isoflupredone	2	0	1	0
Ketoprofen	1	0	0	0
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STAFF ANALYSIS  
REPORT AND DISCUSSION ON  
CHRB/CAHFS POSTMORTEM PROGRAM,  
FATALITY REVIEW PROGRAM FOR  
FISCAL YEAR 2016-2017

Medication, Safety and Welfare Committee Meeting  
October 24, 2018

## BACKGROUND

The Postmortem Examination Program has been in operation since February 1990, and has performed examinations on 6,924 horses, as of June 30, 2017. Initiated by the California Horse Racing Board (CHRB), the program is a partnership with the California Animal Health and Food Safety Laboratory System (CAHFS) to meet three primary objectives: 1) to determine the nature of injuries occurring in racehorses, 2) to determine the reasons for these injuries, and 3) to develop injury prevention strategies. To accomplish this, a broad, cooperative approach was organized involving the development of a contract with the CAHFS to perform a necropsy on every horse that died spontaneously, or was euthanized on racetracks or at training facilities under the jurisdiction of the CHRB. This visionary partnership has become a national and international model for the racing industry in an effort to improve the safety and welfare of racehorses.

Dr. Francisco Uzal is prepared to make a presentation on the CHRB/CAHFS Postmortem Program, Fatality Review Program for fiscal year 2016-2017.

# POSTMORTEM EXAMINATION PROGRAM

Conducted for the California Horse Racing Board  
July 1, 2016–June 30, 2017

California Animal Health and Food Safety  
Laboratory System

J.D. Wheat Veterinary Orthopedic  
Research Laboratory

School of Veterinary Medicine  
University of California, Davis  
October 2018



## POSTMORTEM EXAMINATION PROGRAM

### Introduction

The Postmortem Examination Program has been in operation since February 1990, and has performed examinations on 6,924 horses, as of June 30, 2017. Initiated by the California Horse Racing Board (CHRB), the program is a partnership with the California Animal Health and Food Safety Laboratory System (CAHFS) to meet three primary objectives: 1) to determine the nature of injuries occurring in racehorses, 2) to determine the reasons for these injuries, and 3) to develop injury prevention strategies. To accomplish this, a broad, cooperative approach was organized involving the development of a contract with the CAHFS to perform a necropsy on every horse that died spontaneously, or was euthanized on racetracks or at training facilities under the jurisdiction of the CHRB. This visionary partnership has become a national and international model for the racing industry in an effort to improve the safety and welfare of racehorses.

Pathologists at the CAHFS' Davis, Tulare and San Bernardino laboratories conduct postmortem examinations and compile detailed information on each horse, which is then reported to the CHRB. A broad range of specimens are collected and shared with veterinary scientists in other departments of the School of Veterinary Medicine at the University of California, Davis (UC Davis). Specimens from selected cases from CHRB horses necropsied at CAHFS laboratories are frequently shipped to the J.D. Wheat Veterinary Orthopedic Research Laboratory at UC Davis for in-depth analyses. This helps to more precisely determine the causes and risk factors that led up to catastrophic injuries in racehorses resulting in their death or euthanasia. Funding for postmortem

examinations and ancillary testing was provided by the CHRB. Racing associations provide transportation of the horses to the nearest laboratory facility, and additional studies are frequently funded by the Center for Equine Health at UC Davis, and by private sources.

Information from the tests and data gathered from the postmortem examinations are analyzed in efforts to elucidate the specific cause of catastrophic injuries. In addition to musculoskeletal injuries, medical causes of disease and/or death of racehorses (colic, pneumonia, etc.), which comprise between 70 and 80 percent of the submissions, are also studied.



# UC DAVIS

## VETERINARY MEDICINE

California Animal Health and  
Food Safety Laboratory System



## SUBMISSIONS • continued

The vast majority of catastrophic injuries (80 percent), occurred during or immediately following training or racing. This is in agreement with previous years, in which most fatalities were exercise-related. The third category of fatalities, accounting for ~20 percent of submissions, included horses in the non-exercise group. These were horses suffering primarily from medical conditions, such as colic, infectious diseases or other conditions, although a few musculoskeletal injuries occurred in the non-exercise group of horses.

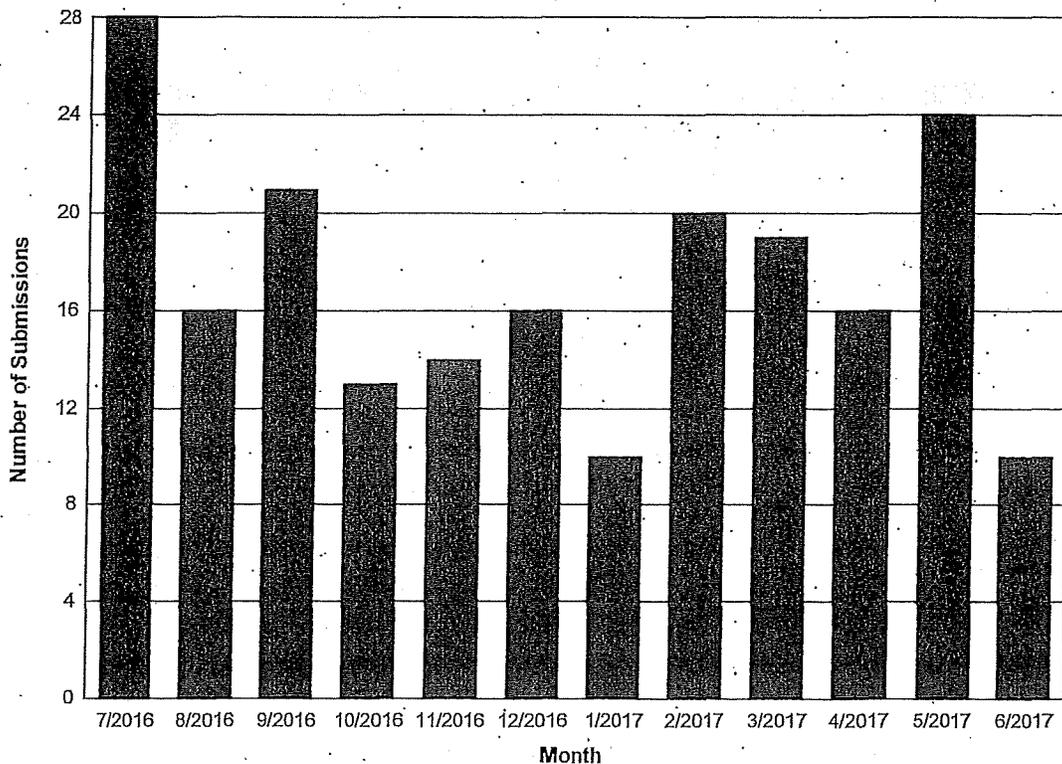
As in the past, the vast majority of submissions (176; ~85 percent) during FY 2016-17 were Thoroughbreds (Table 2). Twenty-nine of the horses submitted in 2016-17 (~14 percent) were Quarter Horses. This is a slight increase over the prior fiscal year (13 percent). With very small numbers of the other breeds, not enough data exists to allow comparison of injury rates among breeds for any predisposition to any particular type of injury.

*Continued*

**Table 2. Submissions by Breed and Month**

Breed	Jul 16	Aug 16	Sep 16	Oct 16	Nov 16	Dec 16	Jan 17	Feb 17	Mar 17	Apr 17	May 17	Jun 17	Total
Quarter Horse	2	3	4	3	2	3	1	1	4	0	4	2	29
Standardbred	0	0	0	0	0	0	1	1	0	0	0	0	2
Thoroughbred	26	13	17	10	12	13	8	18	15	16	20	8	176
Grand Total	28	16	21	13	14	16	10	20	19	16	24	10	207

**Figure 2. Number of Horses Examined by Month**



## SUBMISSIONS • continued

### Submissions By Gender

The gender distribution of the horses submitted during 2016-17 is shown in Table 4 below. Males represented ~62 percent of the total group, with 43 percent of males being intact (stallions) and 57 percent geldings. Females comprised ~38 percent of the group, with the majority of them being intact, but one animal being neutered.

**Table 4. Distribution of Horses by Gender and Category**

Gender	Non-Exercise	Racing	Training	Total
Female	17	28	32	77 (37%)
Neutered Female	0	1	0	1 (1%)
Male	9	23	23	55 (26%)
Neutered Males	16	30	28	74 (36%)
<b>Total</b>	<b>42</b>	<b>82</b>	<b>83</b>	<b>207 (100%)</b>

### Injuries

As previously mentioned, the categories of injury represent the activity of the horse or circumstances at the time of the fatal or catastrophic injury. The largest cluster of fatal injuries, ~72 percent, occurred in 2-, 3- and 4-year-old racehorses (Table 5). The age of the horses submitted for non-exercise-related fatalities was also concentrated between 2 and 4 years of age.

**Table 5. Category of Injury/Fatality by Age**

Category/Age	<=2	3	4	5	6	7	8	>=9	NR*	Total
Non-Exercise	10	7	8	2	5	2	1	6	1	42
Racing	11	27	16	10	10	4	0	4	0	82
Training	18	32	20	5	4	0	2	2	0	83
<b>Total</b>	<b>39</b>	<b>66</b>	<b>44</b>	<b>17</b>	<b>19</b>	<b>6</b>	<b>3</b>	<b>12</b>	<b>1</b>	<b>207</b>

\*NR: Age not reported (pony horses)

During this fiscal year, Thoroughbred horses suffered almost the same number of racing and training catastrophic injuries (~40 for both; Table 6). This is different from last year, when racing injuries were higher than training injuries, but similar to previous years when the percentage of racing fatalities was very similar to that of training catastrophic injuries.

Quarter Horses suffered only five (17 percent) catastrophic injuries during training in this period. This is very similar to the previous two years (17 and 18 percent, respectively), but higher than the years before in which catastrophic injuries of Quarter Horses during a training session were infrequent. Quarter Horse submissions during 2016-17 were only slightly higher than the previous year (29 in

*Continued*



## INJURIES • continued

number of reported injury types exceeds the number of horses submitted. This is especially true in severe injuries involving multiple bones in the limbs. In these cases, multiple related injuries, such as tendon and ligament ruptures are identified concomitantly.

Musculoskeletal injuries are most likely to occur during racing or training. Because these injuries are by far the most common, most of the investigative efforts at the University of California, Davis, have focused on causes and prevention of limb injuries.

**Table 7. Organ Systems Affected**

Breed	GI	MS	Nerv	Resp	Inte	Uro	WB	Total
Quarter Horse	3	20	1	2	0	0	3	29
Standardbred	0	0	0	0	0	1	1	2
Thoroughbred	9	141	1	6	2	0	17	176
<b>Total</b>	<b>12</b>	<b>161</b>	<b>2</b>	<b>8</b>	<b>2</b>	<b>1</b>	<b>21</b>	<b>207</b>

(GI= Gastrointestinal; MS= Musculoskeletal; Nerv= Nervous; Resp= Respiratory; Inte= Integumentary; Uro= Urogenital; WB= Whole body).

Table 8 lists catastrophic injuries by limb and other axial locations. The number of front limb injuries sustained during racing (75) was higher than those injuries sustained during training (71). There were variable numbers of right and left rear limb injuries, but equal numbers of right and left front limb injuries.

**Table 8. Musculoskeletal Structures Affected**

Structure Affected	Non-Exercise	Racing	Training	Total
Left Front	0	32	35	67
Left Rear	1	0	2	3
Right Front	0	41	26	67
Right Rear	3	2	6	11
Pelvis	1	2	4	7
Skull	4	0	0	4
Vertebra	1	1	3	5
Various Structures*	6	0	0	6
<b>Total</b>	<b>16</b>	<b>78</b>	<b>76</b>	<b>170</b>

\* Includes laminitis and/or tendinitis of one or more legs



## INJURIES • continued

### Track Surface and Musculoskeletal Injuries in Thoroughbreds

The distribution of musculoskeletal injuries in Thoroughbreds was evaluated when comparing the three types of track surfaces in which these horses performed. Table 10 shows the limb distribution of injuries in horses running on different surfaces. As before, these data show that for the current fiscal year the absolute number of injuries on dirt surfaces was higher than on other surfaces. Because the total number of horses racing on each surface is not known to CAHFS, it cannot be determined from this data whether the injury rates differ by track surface.

**Table 10. Musculoskeletal Injury: Affected Limb by Track Type**

Structure Affected	Dirt	Synthetic	Turf	N/A	Total
Left Front	53	7	7	0	67
Left Rear	1	1	0	1	3
Pelvis	4	1	1	1	7
Right Front	53	8	6	0	67
Right Rear	5	1	2	3	11
Skull	0	0	0	4	4
Vertebra	2	2	0	1	5
Various Structures**	0	0	0	6	6
<b>Total</b>	<b>118</b>	<b>20</b>	<b>16</b>	<b>16</b>	<b>170</b>

\*Injuries that did not occur on a racing/training surface. \*\*Includes laminitis and/or tendinopathies of one or more legs.

### Other Organ Systems Affected by Injuries

#### Gastrointestinal:

Of the gastrointestinal system diagnoses, colitis and enteritis/enteropathies were the most frequently observed. Causes of most cases of colitis during this period were bacterial, with *Clostridium difficile* being the most prevalent species identified.

Diagnosis	Total
Cecal Rupture	1
Colitis	5
Enteritis/Enteropathy	3
Gastric Rupture	2
Gastrointestinal Neoplasm	1
<b>Total</b>	<b>12</b>

#### Integumentary:

As usual, diseases of the integumentary system were rare during this reporting period.

Diagnosis	Total
Cellulitis	1
Hoof Avulsion	1
<b>Total</b>	<b>2</b>



## RESEARCH SUPPORT

- Research Sponsors**
- Center for Equine Health, with funds provided by:
    - State of California Satellite Wagering Fund
    - Southern California Equine Foundation
    - Private donors
  - Dolly Green Foundation
  - Grayson-Jockey Club Research Foundation, Inc.
  - Pacific Coast Quarter Horse Racing Association

**Researchers and Collaborators**

Mark Anderson	Janet Moore
Rick Arthur	Akinyi Nyaoke
Francisco Carvallo	Sarah Puchalski
Peter Chu	Meredith Rhea
Vanessa Dahl	Kanako Sakaguchi
Karina Fresneda	Tiffany Sarrafian
David Fyhrie	Susan Stover
Tanya Garcia	Jennifer Symons
Lucy Gomez	Shrini Upadhyaya
Dave Hawkins	Francisco Uzal
Ashley Hill	Leslie Woods

## OUTREACH AND PRESENTATIONS TO SCIENTIFIC MEETINGS

- 1) Racehorse pathology/Diagnostic special session. 59<sup>th</sup> Annual meeting of the American Association of Veterinary Diagnostic Laboratories. Greensboro, NC, October 16, 2016. Chair: F Uzal, L. Kennedy
- 2) Racehorse pathology special session. Annual meeting of the American College Pathologists. New Orleans, LA, December 7, 2016. Chair: F Uzal, L. Kennedy
- 3) Workshop: Examination of the musculoskeletal system and heart of race horses and the CHRB necropsy program. Tulare, CA, 16 November 2016.
- 4) The CHRB Postmortem program. F Uzal. Workshop: Examination of the musculoskeletal system and heart of racehorses and the CHRB necropsy program. Tulare, CA, 16 November 2016.
- 5) Importance of the postmortem program for CHRB and the racing industry in California. R. Arthur. Workshop: Examination of the musculoskeletal system and heart of race horses and the CHRB necropsy program. Tulare, CA, 16 November 2016.
- 6) Anatomy, anatomic nomenclature, fracture nomenclature and general fracture mechanics. S. Stover. Workshop: Examination of the musculoskeletal system and heart of race horses and the CHRB necropsy program. Tulare, CA, 16 November 2016.
- 7) Postmortem protocol for musculoskeletal lesions of racehorses. S. Diab. Workshop: Examination of the musculoskeletal system and heart of race horses and the CHRB necropsy program. Tulare, CA, 16 November 2016.
- 8) Specific examples of lesions and nomenclature. S. Stover. Workshop: Examination of the musculoskeletal system and heart of race horses and the CHRB necropsy program. Tulare, CA, 16 November 2016.

*Continued*



## OUTREACH AND PRESENTATIONS TO SCIENTIFIC MEETINGS

- 26) Diagnostic workup of upper limb stress fractures and proximal sesamoid bone remodeling; Training for Injury Prevention. S. Stover. Bouthieb Endurance Village, Abu Dhabi, UAE. 2016.
- 27) Epidemiology of racehorse fractures. S. Stover. Dubai Equine Hospital, Dubai, UAE. 2016.
- 28) Research findings relevant to implementation of the fatality review program for official veterinarians. S. Stover. California Horse Racing Board – Official Veterinarian Meeting University of California, Davis, CA. 2016.
- 29) Surface management: Fetlock and hoof motion. S. Stover. American College of Veterinary Surgeons Symposium, Seattle, WA. 2016.
- 30) Basic anatomic and pathological nomenclature of the musculoskeletal system in race horses. Approach to finding pre-existing lesions. S. Stover. Greensboro, North Carolina; American Association of Veterinary Laboratory Diagnosticians meeting. 2016.

## SCIENTIFIC PUBLICATIONS

- 1) Introduction to special issue on racehorse pathology: in the service of human and equine welfare. Uzal FA, Kennedy LA, Maxie G. *Journal of Veterinary Diagnostic Investigation*. 2017 29: 381-382.
- 2) Sudden death in racehorses: postmortem examination protocol. Diab SS, Poppenga R, Uzal FA. *Journal of Veterinary Diagnostic Investigation*. 2017 29:442-449.
- 3) Diab SS, Stover SM, Carvallo F, Nyaoke AC, Moore J, Hill A, Arthur R, Uzal FA. Preexisting lesions associated with complete diaphyseal fractures of the third metacarpal bone in 12 Thoroughbred racehorses. Gray SN, Spriet M, Garcia TC, Uzal FA, Stover SM. *Journal of Veterinary Diagnostic Investigation*. 2017 29:437-441.
- 4) Nomenclature, classification, and documentation of catastrophic fractures and associated preexisting injuries in racehorses. Stover SM. *Journal of Veterinary Diagnostic Investigation*. 2017 29:396-404.
- 5) Retrospective study of fatal pneumonia in racehorses. Carvallo FR, Uzal FA, Diab SS, Hill AE, Arthur RM. *Journal of Veterinary Diagnostic Investigation*. 2017 29:450-456.
- 6) Diagnostic approach to catastrophic musculoskeletal injuries in racehorses. Diab SS, Stover SM, Carvallo F, Nyaoke AC, Moore J, Hill A, Arthur R, Uzal FA. *Journal of Veterinary Diagnostic Investigation*. 2017 29:405-413.



## STAFF ANALYSIS

DISCUSSION AND ACTION REGARDING THE PROPOSED AMENDMENT TO CHRB RULE 1588, HORSE INELIGIBLE TO START IN A RACE, TO PROVIDE THAT A HORSE THAT 1) HAS NOT STARTED IN A RACE FOR 12 MONTHS OR MORE FROM ITS PREVIOUS START OR 2) A FIRST-TIME STARTER, FOUR (4) YEARS OF AGE OR OLDER, IS INELIGIBLE TO START IN A RACE UNTIL SUCH HORSE HAS PERFORMED SATISFACTORILY IN A WORKOUT OR QUALIFYING RACE AS DESCRIBED IN CHRB RULE 1866(e) AND (f).

Medication, Safety and Welfare Committee Meeting  
October 24, 2018

### ISSUE

During fiscal year 2015-2016, California's horseracing industry experienced an increase in horse fatalities when compared to fiscal year 2014-2015. This resulted in the Board initiating a series of informal reviews of equine fatalities to determine if there might be a common trait or link to the fatalities. Findings for the reviews, which covered approximately three calendar years between 2013 and 2016, concluded that a significant number of racing related equine fatalities were of horses that had not raced for a period of two months or longer. In addition, half of the horses with a sizeable gap in activity had been on the Veterinarian's List prior to returning to racing. Furthermore, horses four years or older that have never started were at greater risk of catastrophic injury.

### BACKGROUND

At the February, 2017 CHRB Medication, Safety and Welfare Committee meeting, staff reported that a survey of racehorse fatalities due to musculoskeletal injury occurring 2013 through 2017, revealed that 21 percent of the losses were horses that raced after being laid up for 120 days or more. The fatalities generally occurred within five starts after the horse returned to the track to either race or train. (There were a few exceptions involving the 6<sup>th</sup> or 7<sup>th</sup> start after layoff). At the recommendation of the Board's Equine Medical Director, the Committee determined it would put forward a proposal to amend Rule 1588. The proposed amendment intended to aid in the reduction of race horse injuries and fatalities provided that a horse not be allowed to start in a race after a 120-day layoff until such horse had been examined prior to entry by the Official Veterinarian or Racing Veterinarian and declared raceably sound and in fit physical condition to exert its best effort in a race.

Subsequent to the February Committee meeting, staff was directed to notice the proposal to amend Rule 1588 to provide: (1) that a horse that has not raced at a recognized race meeting in 120 or more consecutive days, and has not raced in California since the conclusion of that absence in any race, be ineligible to start in a race until such horse, prior to entry, has undergone an examination by the official veterinarian or the racing veterinarian, and declared raceably sound and in fit physical condition to exert its best effort in a race and (2) that a horse that receives an intra-articular injection (glucocorticosteroid/cortisone) is ineligible to race for five days (120 hours) after the treatment.

At the May 2018 CHRB Regular Board hearing on the proposal, the proposed amendment to 1588 was discussed. There were concerns from stakeholders regarding the proposed requirement that all horses coming off a 120-day layoff be examined by a veterinarian prior to starting. During the 45-day public comment period, one comment was received from the Thoroughbred Owners of California (TOC). The TOC stated it opposed the proposed amendment to Rule 1588 in its current form. The TOC estimated that requiring an examination prior to entry of any horse that has not run for 120 days could affect over 1,700 horses a year. In addition, the veterinary examinations could include blood and urine testing. The TOC asserted the proposed amendment would result in a significant expansion of the number of horses examined and tested, which would result in increased costs for owners and fewer horses being eligible to run. In response, the CHRB Equine Medical Director, Dr. Rick Arthur, submitted that the CHRB has been examining a large percentage of horses that fall into the 120 day layoff period. The examinations were conducted at Santa Anita Park Race Track, Del Mar Thoroughbred Club, and Los Alamitos Race Course. Dr. Arthur added the industry was experiencing the lowest total fatalities in FY 2017-2018 since the necropsy program started. Very few of the horses subject to the 120-day criteria were placed on the Veterinarian's List, (VL) and testing of the horses would not affect the CHRB drug testing budget. Dr. Arthur stated horses required to work to get off the VL were seldom required to provide urine samples for testing.

As a result of this discussion, the Board directed the proposed amendment be reexamined by staff to address the concern of the TOC. The amendment regarding intra-articular injections was adopted by the Board. (CHRB 1588(m))

To alleviate the concern of stakeholders while still seeking to promote equine welfare and safety, the Equine Medical Director is now proposing that the CHRB adopt an amendment similar to the Association of Racing Commissioners International (ARCI) model rule 010-030 which governs horses returning from lay-offs and previously unstarted horses four (4) years old and older.

The proposed amendment to Rule 1588 adds a new subsection (n) which provides that a horse is ineligible to start in a race when such horse has not raced in 12 months since its previous start, until such horse has performed satisfactorily in a workout or qualifying race as described in Rule 1866(e) and (f); and adds a new subsection (o) which requires that a first-time starter four years of age or older, in order to be eligible to race, perform satisfactorily in a workout or qualifying race as defined in Rule 1866(e) and (f).

## ANALYSIS

Business and Professions Code section 19440 provides the Board shall have all powers necessary and proper to enable it to carry out fully and effectually the purposes of this chapter. Responsibilities of the Board shall include adopting rules and regulations for the protection of the public and the control of horse racing and pari-mutuel wagering. Business and Professions Code section 19562 states the Board may prescribe rules, regulations and conditions under which all horse races with wagering on their results shall be conducted in California. Business and Professions Code section 19580 provides that the Board shall adopt regulations to establish

policies, guidelines, and penalties relating to equine medication in order to preserve and enhance the integrity of horse racing in the state.

#### RECOMMENDATION

This item is presented for Committee discussion and action.

CALIFORNIA HORSE RACING BOARD  
TITLE 4. CALIFORNIA CODE OF REGULATIONS  
ARTICLE 6. ENTRIES AND DECLARATIONS  
PROPOSED AMENDMENT OF  
RULE 1588, HORSE INELIGIBLE TO START IN A RACE

1588. Horse Ineligible to Start in a Race.

In addition to any other valid ground or reason, a horse is ineligible to start in any race:

- (a) if such horse is not registered by the Jockey Club if a thoroughbred, the United States Trotting Association if a standardbred, the American Quarter Horse Association if a quarter horse, the Appaloosa Horse Club if an appaloosa horse, the Arabian Horse Registry of America if an Arabian horse, or the American Paint Horse Association if a paint horse;
- (b) if the parentage verification to both the sire and the dam of all horses foaled in 1992 and thereafter has not been certified by the Jockey Club if a thoroughbred, the United States Trotting Association if a standardbred, the American Quarter Horse Association if a quarter horse, the Appaloosa Horse Club if an appaloosa horse, the Arabian Horse Registry of America if an Arabian horse, or the American Paint Horse Association if a paint horse;
- (c) if, unless the stewards permit otherwise, the certificate of foal registration, eligibility papers, or other registration issued by the official registry for such horse is not on file with the racing secretary at the time of entry;
- (d) if such horse has been entered or raced at any recognized race meeting under any name or designation other than the name or designation duly assigned by and registered with the official registry;
- (e) if the certificate of foal registration, eligibility papers or other registration issued by the official registry has been altered, erased, or forged;

(f) if the identification markings of the horse do not agree with the identification markings as set forth in the registration of such horse;

(g) unless he is eligible to enter said race and is duly entered for such race;

(h) when such horse is owned in whole or in part by an unlicensed person or is in the care of an unlicensed trainer;

(i) when such horse is on the Steward's List, the Starter's List or the Veterinarian's List;

(j) when, except with prior approval of the stewards for good cause, such horse is on the Veterinarian's List in another racing jurisdiction. Good cause includes:

(1) unforeseen administrative issues in removing the horse from the Veterinarian's List of another racing jurisdiction;

(2) the location of the horse prevents it from being evaluated by the official veterinarian of another racing jurisdiction and cleared from that jurisdiction's Veterinarian's List, and the horse is approved to race by a California official veterinarian; or

(3) any other unforeseen event or reason that would prevent a horse that would otherwise not be on a Veterinarian's List from being cleared from the Veterinarian's List of another racing jurisdiction.

(k) when, except with prior approval of the stewards, such horse has not been on the grounds of the association or its approved auxiliary stable area for at least 24 hours prior to the time the race is to be run.

(l)...(This subparagraph will be effective 12/26/18) *when such horse does not carry a microchip or has not received a waiver from the stewards in accordance with Rule 1597.5.*

(m) ... (This subparagraph was adopted by the Board on September 27, 2018 and was sent to the Office of Administrative Law for final review) *when such horse has received an intra-articular*

*injection within the previous five days (120 hours) prior to the scheduled post-time for the race in which it is entered.*

(n) when such horse has not raced in 12 months since its previous start, until the horse has performed satisfactorily in a workout or qualifying race as described in 1866(e) and (f).

(o) when such horse is a first-time starter four (4) years of age or older, until the horse has performed satisfactorily in a workout or qualifying race as described in 1866(e) and (f).

Authority: Sections 19440 and 19562,  
Business and Professions Code.

Reference: Sections 19440 and 19562,  
Business and Professions Code.

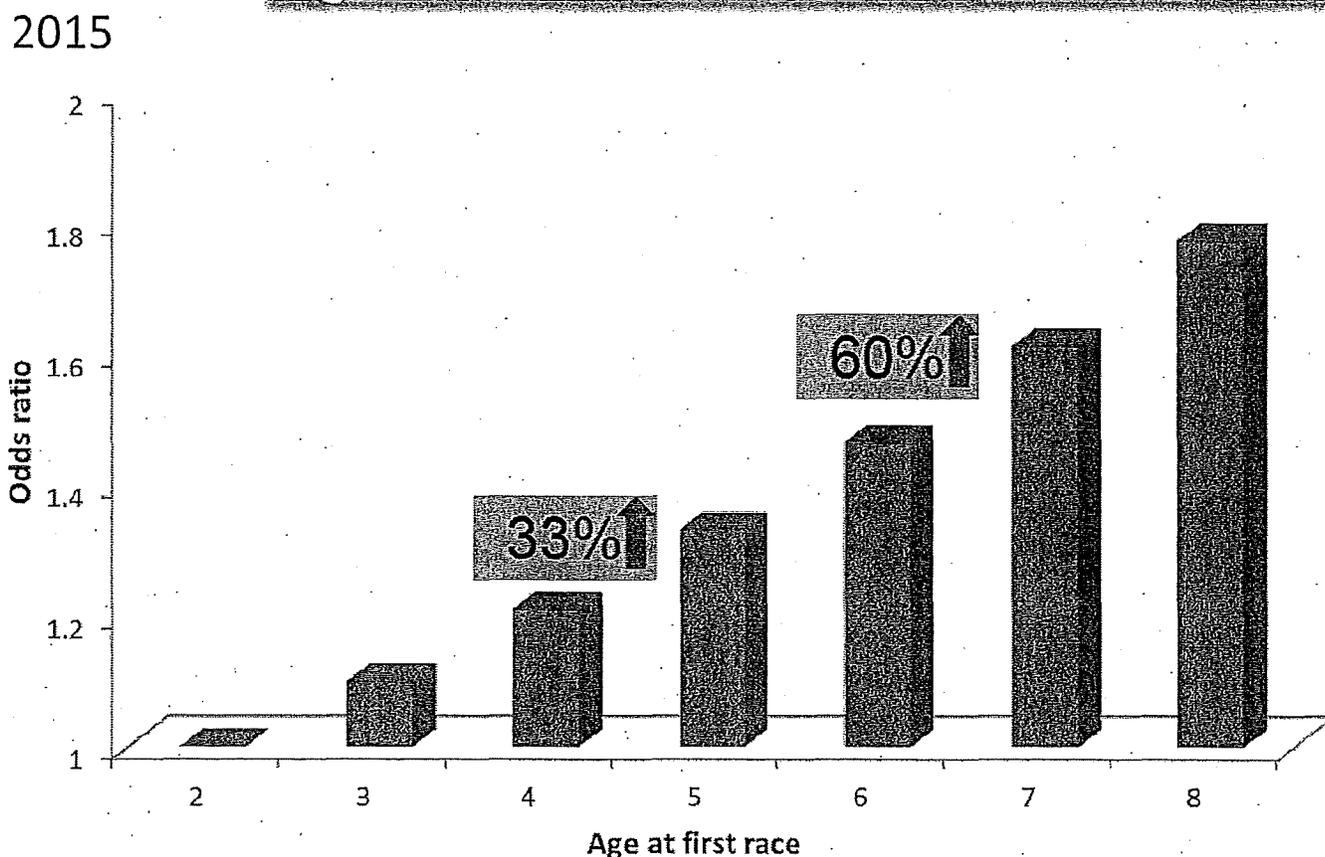
First start as 4 Year old and up as a risk of catastrophic injury:



## TD Parkin: Equine Injury Database –models, risk factors and prediction

[https://courses.grayson-jockeyclub.org/courses/WSS/WSS\\_VI/story.html](https://courses.grayson-jockeyclub.org/courses/WSS/WSS_VI/story.html)

### Age at first race



These data are for racing fatalities only. It does not include training fatalities

Lay-off as a risk of catastrophic injury:

Lay-off as a risk factor has been presented at numerous racing and veterinary meetings and is published in Georgopoulos, Stamatis Panagiotis, and Tim DH Parkin. "Risk factors for equine fractures in Thoroughbred flat racing in North America." *Preventive veterinary medicine* 139 (2017): 99-104.

## STAFF ANALYSIS

## DISCUSSION AND ACTION BY THE BOARD REGARDING THE PROPOSED AMENDMENT TO CHRB RULE 1844, AUTHORIZED MEDICATION, AND PROPOSED AMENDMENT TO CHRB RULE 1866.1, PRESENCE OF CLENBUTEROL IN QUARTER HORSES, TO PROHIBIT THE PRESENCE OF CLENBUTEROL IN A HORSE TEST SAMPLE AND TO CHANGE THE TITLE OF CHRB RULE 1866.1 TO PRESENCE OF CLENBUTEROL IN HORSES

Medication, Safety and Welfare Committee Meeting  
October 24, 2018

## ISSUE

The CHRB regularly conducts out-of-competition testing on thoroughbred horses. Within the last year, the CHRB has observed a significant increase in the presence of clenbuterol in out-of-competition test samples of thoroughbred horses. The samples that were analyzed do not show a random distribution among horses which would be consistent with a therapeutic administration of clenbuterol. Rather, the out-of-competition test samples show multiple horses in the same barn use clenbuterol which is more consistent with a training management regiment instead of therapeutic administration.

## BACKGROUND

Clenbuterol is a beta-2 agonist approved for use as a bronchodilator in horses. Beta-2 agonists also have an anabolic-type effect through their muscle partitioning side effects. Clenbuterol is banned in human sport by the World Anti-doping Association for this reason. The drug is also abused in horses because of its anabolic effects. Clenbuterol became a problem in horse racing—especially quarter horse racing—when the CHRB and other racing authorities in the United States restricted the use of anabolic steroids. Furthermore, side-effects associated with clenbuterol administration have been scientifically documented to include a repartitioning effect and major alterations in cardiac and skeletal muscle function, as well as affects on bone, immune, endocrine, and reproductive systems.<sup>1</sup> To address the abuse of clenbuterol in Quarter Horses, the Board in 2015, amended Rule 1844 Authorized Medication, prohibiting the presence of clenbuterol in Quarter Horse post race test samples. Additionally in 2015, the Board adopted Rule 1866.1 Presence of Clenbuterol in Quarter Horses, which requires Quarter Horses prescribed clenbuterol to be placed on the Veterinarian's list until an official test sample fails to detect the presence of clenbuterol in the blood or urine of the horse. Recently, the CHRB has observed a rise in out-of-competition test samples of thoroughbreds that contain the presence of clenbuterol.

## ANALYSIS

The proposed amendment to Rule 1866.1, Presence of clenbuterol in Quarter Horses, changes the title of Rule 1866.1 to Presence of Clenbuterol in Horses. The amendment provides that a horse prescribed clenbuterol will be placed on the Veterinarian's List until an official test sample

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<sup>1</sup> Charles F. Kearns & Kenneth H. McKeever, *Clenbuterol and the horse revisited*, 182 THE VETERINARY JOURNAL 384-391(2009).

shows there is no clenbuterol in the blood or urine of the horse after a workout to demonstrate its physical fitness. A horse placed on the Veterinarian's List for clenbuterol will not be allowed to start in a race until the horse is removed from the Veterinarian's List. Veterinarians prescribing clenbuterol must fill out and submit form CHRB-24 (Rev. 01/16) (Veterinarian Report) and dispensed clenbuterol prescriptions must be in compliance with Rule 1864, Labeling of Medication. Administration of clenbuterol must also be reported by the trainer using form CHRB-60 (Rev. 7/15) (Trainer Medication Report). The broad objective of the proposed amendment is to protect all horses from the unregulated and potentially harmful administration of clenbuterol, as well as to protect the wagering public from unfair advantages gained by trainers and owners who illegitimately enhance the performance of their horses using clenbuterol.

The proposed amendment to Rule 1844(e)(6) will deauthorize any detectable level of clenbuterol in an official urine test sample. Deauthorizing any detectable level of clenbuterol in official horse samples is necessary to protect horses from the unregulated and potentially harmful administration of clenbuterol, as well as to protect the wagering public from unfair advantages gained by trainers and owners who illegitimately enhance the performance of their horses using clenbuterol.

#### RECOMMENDATION

This item is presented to the Committee for discussion and action.

CALIFORNIA HORSE RACING BOARD  
TITLE 4. CALIFORNIA CODE OF REGULATIONS  
ARTICLE 15. VETERINARIAN PRACTICES  
PROPOSED AMENDMENT OF  
RULE 1844. AUTHORIZED MEDICATION

1844. Authorized Medication.

Consistent with the intent of these rules, drug substances and medications authorized by the Board for use may be administered to safeguard the health of the horse entered to race provided that:

(a) No person shall administer a drug substance to any horse entered to race except upon authorization of the official veterinarian in conformance with these rules.

(b) No drug substance, other than authorized bleeder medication, shall be administered to a horse entered to race within 24 hours of the race in which entered.

(c) Not more than one approved non-steroidal anti-inflammatory drug substance (NSAID) may be administered to a horse that is entered to race and shall be only one of the following authorized drug substances:

(1) Phenylbutazone in a dosage amount that the test sample shall contain not more than 2 micrograms of the drug substance per milliliter of blood plasma or serum.

(2) Flunixin in a dosage amount that the test sample shall contain not more than 20 nanograms of the drug substance per milliliter of blood plasma or serum.

(3) Ketoprofen in a dosage amount that the test sample shall contain not more than 2 nanograms of the drug substance per milliliter of blood plasma or serum.

(4) Metabolites or analogues of approved NSAIDs may be present in post race test samples.

(d) If the official chemist reports that a blood test sample contains an authorized NSAID in excess of the limit for that drug substance under this rule, the official veterinarian shall, in conjunction with the veterinarian who administered or prescribed the authorized drug substance,

establish a dosage amount or time of administration of the drug substance that will comply with the limits under this rule; or the official veterinarian may, if in his/her judgment no such reduced dosage amount or amendment to time of administration will result in a test sample level within the limits of this rule, withdraw authorization for the use of any one NSAID.

(e) Official urine test samples may contain one of the following drug substances, their metabolites and analogs, in an amount that does not exceed the specified levels:

(1) Acepromazine; 10 nanograms per milliliter

(2) Mepivacaine; 10 nanograms per milliliter

(3) Albuterol; 1 nanograms per milliliter

(4) Procaine; 25 nanograms per milliliter

(5) Salicylates; 750 micrograms per milliliter

~~(6) Clenbuterol; 140 picograms per milliliter, except for any horse participating in a quarter horse race for which no level of clenbuterol is authorized.~~

~~(67) Detomidine; 2 nanograms per milliliter~~

~~(78) Nandrolone; 1 nanograms per milliliter for geldings, fillies and mares; 45 nanograms for males other than geldings.~~

~~(89) Boldenone; 15 nanograms per milliliter in males other than geldings.~~

~~(910) Testosterone; 20 nanograms per milliliter in geldings.~~

~~(A) Testosterone at any level in males other than geldings is not a violation of this regulation.~~

~~(1011) Testosterone; 55 nanograms per milliliter in fillies or mares (unless in foal)~~

~~(1112) Butorphanol 300 nanograms per milliliter~~

(f) Official blood test samples may contain the following drug substances, their metabolites and analogs, in an amount that does not exceed the specified levels in serum or plasma:

- (1) Bethamethasone; 10 picograms per milliliter
  - (2) Dantrolene; 100 picograms per milliliter
  - (3) Detomidine; 1 nanogram per milliliter
  - (4) Dexamethasone; 5 picograms per milliliter
  - (5) Diclofenac; 5 nanograms per milliliter
  - (6) Dimethylsulfoxide (DMSO); 10 micrograms per milliliter
  - (7) Firocoxib; 20 nanograms per milliliter
  - (8) Lidocaine; 20 picograms per milliliter
  - (9) Methocarbamol; 1 nanogram per milliliter
  - (10) Methylprednisolone; 100 picograms per milliliter
  - (11) Glycopyrrolate; 3 picograms per milliliter
  - (12) Prednisolone; 1 nanogram per milliliter
  - (13) Triamcinolone Acetonide; 100 picograms per milliliter
  - (14) Xylazine; 200 picograms per milliliter
  - (15) Butorphanol; 2 nanograms per milliliter
  - (16) Isoflupredone; 100 picograms per milliliter
  - (17) Cetirizine; 6 nanograms per milliliter
  - (18) Cimetidine; 400 nanograms per milliliter
  - (19) Guaifenesin; 12 nanograms per milliliter
  - (20) Omeprazole; 10 nanograms per milliliter
  - (21) Ranitidine; 40 nanograms per milliliter
- (g) Official blood test samples shall not contain any of the drug substances, or their metabolites or analogs listed in subsection (e)(1) to (6) and (e)(8) to (11).

(h) Procaine, following administration of procaine penicillin, is an authorized medication provided:

(1) Official blood test samples shall not contain any procaine, or its metabolites or analogs in excess of 25 nanograms per milliliter.

(2) all procaine penicillin administrations have been reported pursuant to Rule 1842 of this division,

(3) procaine penicillin was not administered after entry to race,

(4) the horse was under surveillance for a minimum of six hours prior to racing.

(i) All expenses related to surveillance and testing for procaine under subsection (h) of this regulation shall be paid by the owner of the horse.

Authority: Sections 19440 and 19562  
Business and Professions Code

Reference: Sections 19580 and 19581  
Business and Professions Code

CALIFORNIA HORSE RACING BOARD  
TITLE 4. CALIFORNIA CODE OF REGULATIONS  
ARTICLE 15. VETERINARY PRACTICES  
PROPOSED AMENDMENT OF  
RULE 1866.1. PRESENCE OF CLENBUTEROL IN QUARTER HORSES

1866.1. Presence of Clenbuterol in Quarter Horses

(a) A ~~quarter~~ horse prescribed clenbuterol will be placed on the Veterinarian's List for veterinary treatment until an official test sample shows that there is no clenbuterol in the blood or urine of the horse after a workout to demonstrate its physical fitness, pursuant to Rule 1866.

~~Quarter h~~ Horses on the Veterinarian's List for clenbuterol administration will not be allowed to start in a race until the horse is removed from the Veterinarian's List.

(1) Clenbuterol shall only be prescribed to an individual ~~quarter~~ horse for a specific diagnosis to last for a period of not more than 30 days for each prescription. The ~~quarter~~ horse's name, the specific diagnosis, dosage and duration of treatment most recent date of clenbuterol administration must be reported by the prescribing veterinarian to the Official Veterinarian on form CHRB-24 (Rev. 01/16) (Veterinarian Report), which is hereby incorporated by reference.

(2) Clenbuterol prescribed to an individual ~~quarter~~ horse for a specific diagnosis shall not last for more than 30 days for any prescription. Dispensed clenbuterol prescriptions must be labeled in compliance with Rule 1864, Labeling of Medication, and all other laws, including California Veterinary Medical Board regulations.

(3) Administration of clenbuterol to a ~~quarter~~ horse must be reported by the trainer of the horse to the Official Veterinarian on form CHRB-60 (Rev. 07/15) (Trainer Medication Report), which is here by incorporated by reference.

(b) A ~~quarter~~ horse that, pursuant to Rules 1858 or 1859, is reported to have clenbuterol detected in blood, urine, or any other official test sample by the CHRB official laboratory will be

placed on the Veterinarian's List until an investigation has been conducted to determine the circumstances of the presence of clenbuterol in the official test sample, and until a subsequent official test sample fails to detect clenbuterol in the blood or urine of the horse after a workout to demonstrate its physical fitness, pursuant to Rule 1866.

(c) A ~~quarter~~ horse shall not be removed from the Veterinarian's List and allowed to start in a race until an official test sample fails to detect clenbuterol in the blood or urine of the horse after a workout to demonstrate its physical fitness pursuant to Rule 1866.

Authority: Sections 19440, 19562, and 19580  
Business and Professions Code

Reference: Sections 19440, 19562, and 19580  
Business and Professions Code



## TRAINER MEDICATION REPORT

HORSE: \_\_\_\_\_

DATE OF RACE: \_\_\_\_\_ RACE NO.: \_\_\_\_\_

MEDICATION: \_\_\_\_\_  
\_\_\_\_\_

DATE TREATED: \_\_\_\_\_ TIME: A.M.   
P.M.

TRAINER: \_\_\_\_\_  
(SIGNATURE)

\_\_\_\_\_  
(PLEASE PRINT NAME)

COMMENTS: \_\_\_\_\_

STAFF ANALYSIS  
DISCUSSION REGARDING THE REPORT ON POSITRON  
EMISSION TOMOGRAPHY (PET) SCAN SEMINAR HELD AT SANTA ANITA

Medication, Safety and Welfare Committee Meeting  
October 24, 2018

BACKGROUND

The Southern California Equine Foundation (SCEF) sponsored a seminar by Dr. Mathieu Spriet, a radiologist at the UC Davis School of Veterinary Medicine on Positron Emission Tomography (PET) diagnostic imaging which is a nuclear medicine imaging technique. This agenda item will be a brief report on that presentation.

RECOMMENDATION

This item is presented for Committee discussion.

Report on :

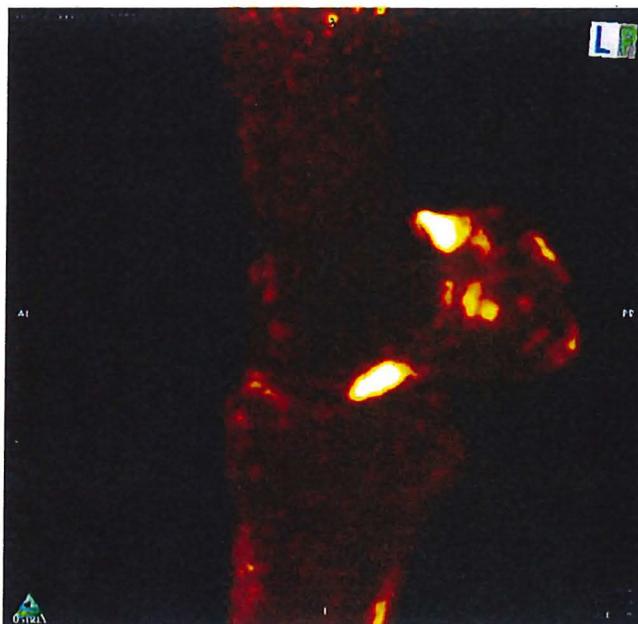
## ***PET scan diagnostic imaging in the Thoroughbred Racehorse***

The Southern California Equine Foundation (SCEF) is sponsoring a seminar by Dr. Mathieu Spriet, a radiologist at the UC Davis School of Veterinary Medicine on PET diagnostic imaging on Friday, October 12<sup>th</sup> at Santa Anita. This agenda item will be a brief report on that presentation.

The PET scan is Positron Emission Tomography, a nuclear medicine imaging technique, similar to scintigraphy, but that has the advantage to offer cross-sectional imaging and higher spatial resolution. PET is to nuclear scintigraphy what CT scan is to radiography (x-rays). Dr. Spriet is applying for a Grayson /Jockey Club Research Foundation grant that includes a clinical trial at Santa Anita. SCEF operates a nuclear scintigraphy unit at Santa Anita with the space and nuclear medicine permits.

Dr. Stover is collaborating with Dr. Spriet and will show examples of pre-existing lesions in proximal sesamoid bones that are not detectable with standard imaging techniques, but are visible with the PET. Proximal sesamoid bone fractures are the number one cause of fatal injuries in racehorses.

The abstract from Dr. Spriet's recent publication in Equine Veterinary Journal of a pilot PET study funded by Grayson/ Jockey Club Research Foundation is attached.



## **<sup>18</sup>F-sodium fluoride positron emission tomography of the racing Thoroughbred fetlock: Validation and comparison with other imaging modalities in nine horses**

M. SPRIET<sup>†\*</sup>, P. ESPINOSA-MUR<sup>†</sup>, D. D. CISELL<sup>†</sup>, K. L. PHILLIPS<sup>†</sup>, G. ARINO-ESTRADA<sup>†</sup>, D. BEYLIN<sup>‡</sup>, P. STEPANOV<sup>‡</sup>, S. A. KATZMAN<sup>†</sup>, L. D. GALUPPO<sup>†</sup>, T. GARCIA-NOLEN<sup>†</sup>, B. MURPHY<sup>†</sup> and S. M. STOVER<sup>†</sup>

<sup>†</sup>School of Veterinary Medicine, University of California, Davis, California, USA

<sup>‡</sup>Brain Biosciences, Inc., Rockville, Maryland, USA.

\*Correspondence email: mspriet@ucdavis.edu; Received: 06.06.18; Accepted: 06.09.18

### **Summary**

**Background:** Early and accurate detection of stress remodelling in racehorses is of utmost importance to prevent catastrophic injuries. Current imaging techniques have limitations in assessing early changes predisposing to catastrophic breakdowns. Positron emission tomography (PET) using <sup>18</sup>F-sodium fluoride (<sup>18</sup>F-NaF) is a sensitive method for the detection of early bone turnover and may improve early recognition of subtle injuries.

**Objectives:** To validate the clinical use of <sup>18</sup>F-NaF PET in Thoroughbred racehorses, to assess the value of PET in the detection of bone lesions and to compare PET results with findings of other advanced imaging modalities, clinical examination and pathology.

**Study design:** Experimental exploratory study.

**Methods:** Twenty fetlocks from nine Thoroughbred racehorses were imaged using <sup>18</sup>F-NaF PET, computed tomography (CT) and scintigraphy. Five fetlocks were also imaged with magnetic resonance imaging and four fetlocks were also examined histologically. Imaging findings were independently reviewed by three board certified radiologists. Imaging, clinical and histopathological findings were correlated.

**Results:** PET imaging was well-tolerated by all horses. PET detected focal areas of <sup>18</sup>F-NaF uptake in instances where other imaging modalities did not identify abnormalities, in particular in the proximal sesamoid bones. Maximal standardised uptake values could be measured to quantify the activity of lesions. Areas of <sup>18</sup>F-NaF uptake corresponded to regions of increased vascularity and increased osteoblastic activity.

**Main limitations:** Limited number of cases.

**Conclusions:** <sup>18</sup>F-NaF PET imaging of the Thoroughbred fetlock is feasible and compares favourably with other imaging modalities in detecting stress remodelling in Thoroughbred racehorses. PET appears to be a beneficial imaging modality when used for early detection of stress remodelling in an effort to prevent catastrophic musculoskeletal injuries in this population of horses.

**CALIFORNIA HORSE RACING BOARD**

**OCTOBER 24, 2018**  
**COMMITTEE MEETING**

**There is no material for Item 6**