

Reuss, Vicki A. (CDC/NIOSH/EID)

From: David Seftel [dseftel@gmail.com]
Sent: Friday, June 22, 2007 5:14 PM
To: NIOSH Docket Office (CDC)
Subject: Submission for Docket 104
Attachments: David Seftel NIOSH Presentation Final May 22_2007 Color.ppt

Herewith please find additional materials for NIOSH Docket 104

Thank You,

David Seftel, M.D.

Examining Environmental Health and Safety Factors at Equestrian Racecourses Nationwide: Rationale, Approach and Preliminary Focus

David Seftel, M.D., M.B.A

Medical Advisor

The Jockey's Guild, Inc.

Medical Director and Track Physician

Bay Meadows and Golden Gate Fields Racecourses

Northern California

Presentation to NIOSH

Hyatt Regency Hotel, Washington, D.C.

May 22, 2007

Improved Jockey Care Benefits All

- Accidents are related to a combination of:
 - Human error
 - Horse health and behavior
 - Track conditions
 - Trainer practices
- Fewer accidents save money and lives
 - Workers comp premiums
 - Track liability premiums

Improved On-Track and Off
Track Medical Services Need
to be Guided by an Objective
Picture of Needs

State and National Momentum
for a Comprehensive Study of
Jockey Health and Welfare to
Guide Sensible Legislation

*We can't solve a problem
unless we know its size,
shape and scope*

National Jockeys Health Initiative (JHI)

- First comprehensive look at the health and fitness of the jockey population
- On and off the track

For Usable Results Studies Must be Properly Structured

Modeled on the NIH study process such
as that used for the landmark Women's
Health Initiative study



We know many jockeys are physically fit but at the same time have serious medical maladies

- Own Clinic data
 - 20 % have kidney stones
 - 40 % have hematuria and proteinuria in the urine – an early sign of nephritis
 - 25 % have immune compromise with persistent and repeated infections
- National Health Claims Data
 - P5e – Head and neck cancers, leukemia's and lymphomas
 - Kidney stones
 - Pancreatitis
 - Kidney failure requiring transplantation
 - Heart failure due to pulmonary hypertension

What Ails Jockeys?

- Medical
Conditions
- Occupational
Trauma

Medical Maladies

- **Throat:** Recurrent upper respiratory tract infections
- **Bowel:** Gastro-esophageal reflux disease (GERD) peptic ulcer disease
- **Kidney:** Stones, malfunction and failure
- **Lungs:** Asthma and COPD – smoking, dust, dirt
- **Skin infections** - viral, bacterial and fungal (herpes, warts, acne, abscesses, athletes foot, ringworm)
- **Complicating Conditions**
 - Dehydration
 - Malnutrition
 - Weakened immunity

Top Ten Traumas

1. Tendon and muscle strains
 - Wrist – flexor and extensor tendons, ganglion cysts, metacarpal injuries
 - Neck – trapezius muscles
 - Ankle – crush, twisting (inversion, eversion)
 - Knee – twisting (inversion, eversion)
2. Concussion
3. Nerve stretching / bruising: Neuropraxias
4. Collar bone: Clavicular fractures
5. Chest: Rib fractures
6. Shoulder: Rotator cuff syndrome
7. Ankle fracture
8. Foot: Metatarsal fractures
9. Lumbar spine injuries
10. Long bone and joint injuries

Recognizing and Responding to Trauma

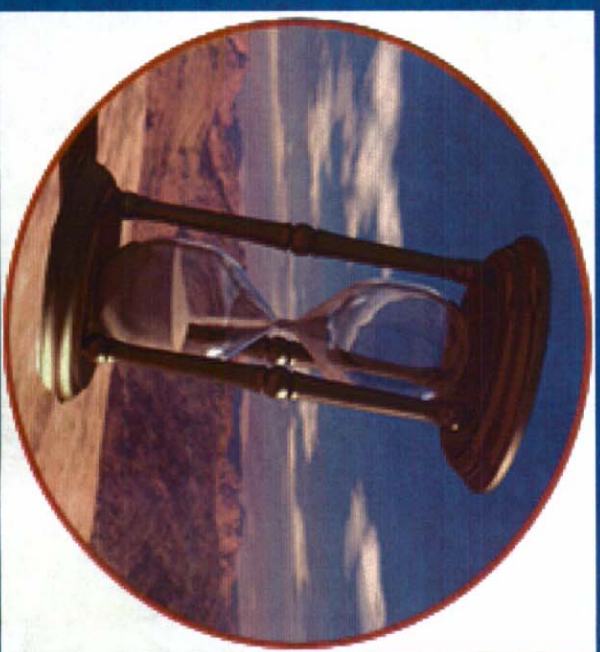
- Riding is very high torsion profession
 - Every muscle, tendon and nerve is stressed to max
- Rest is Medicine and must be taken seriously
- Large number of injuries are related to repetitive stress and strain of soft tissues.

Collar bone Protection

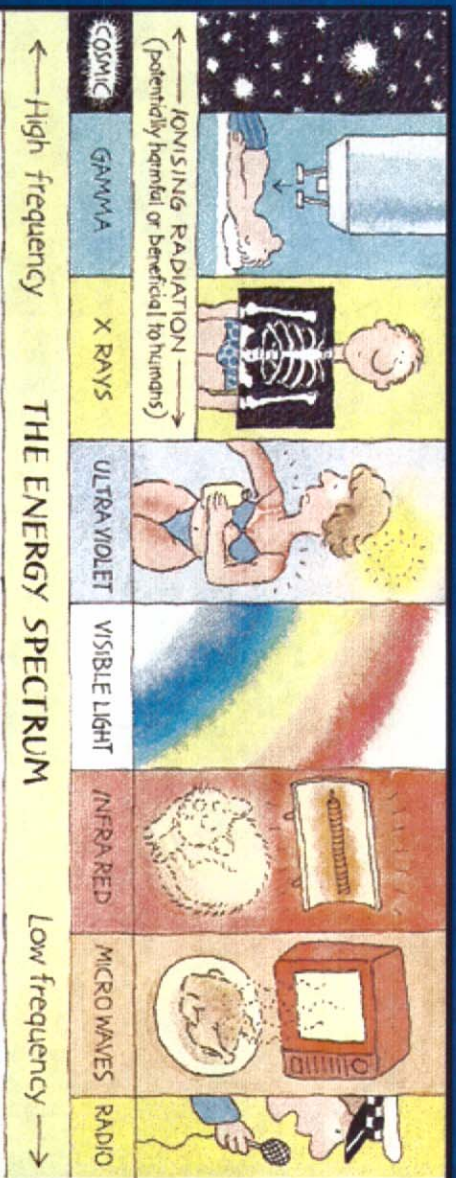
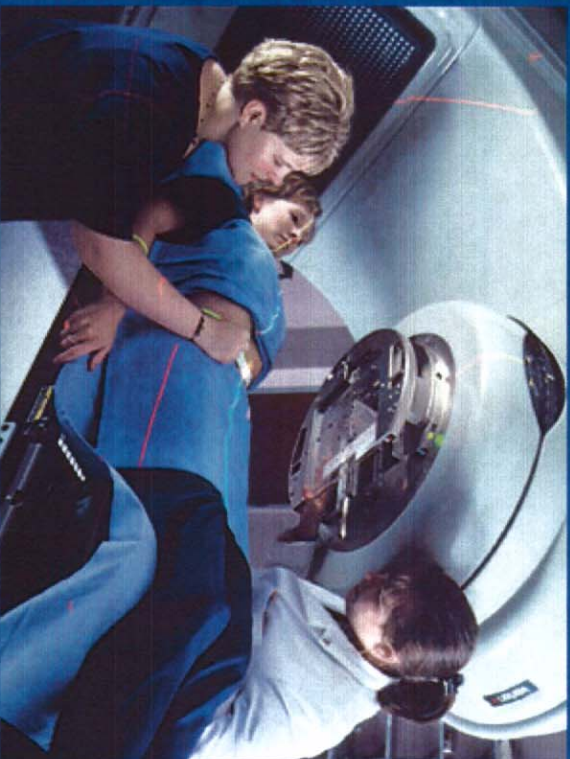
- Collar bone fractures
 - Very common
 - Collar bone is intrinsically fragile, requires modest force to break
 - Take 4-6 weeks to heal
 - Significant loss of professional income while off work
 - Flack jackets do not protect against them

But...there is another threat that has been borne out by the latest jockey health claims data

- Its invisible
- Its indispensable
- Radiation is a silent killer
 - Every X-ray adds to the risk
 - Jockeys are subject to 10-15 times the radiation as the general public



Radiation from excess X-rays



To Avoid X-Cess Cancer we
need

Low dose X-ray systems at all
tracks or facilities that treat
jockeys

Lack of standardization of quality of medical care across all race tracks

- Riders migrate frequently
- No communication about medical issues among providers
- Discontinuity of care leads to poor care
- Need for secure common electronic medical record to enable doctors to provide best care

Improved Race Track Care Benefits All Players

- Jockey's get rapid evaluation of injury status
- Worker's Comp Carriers enjoy lower claim costs due to avoidance of unnecessary ER visits
- Lowered claim costs reduce premiums paid by trainers and track operators

Ultimately We All Believe that
Jockey Health and Safety and
Operator Profitability are
Inseparable

- So let the renewal begin:
 - Driven by objective measures and impartial research

Tracking the Process Flow at the Track

Racing is a highly time sensitive industry

Tight time constraints amplify the effect of environmental pathogens and stresses

- Grooms up at 4 a.m. prepare the horses for exercise riders and jockeys on the track between 4 a.m. and 5 a.m.
 - Exercise riders and jockeys exercise between five and 14 horses until approximately 10 AM.
Dangers: visibility is frequently suboptimal untrained, often undisciplined horses are engaging in asynchronous behavior on various parts of the surface
- The ambulance crew on the sidelines
- Basic Life Support trained (BLS) EMT vs Advanced Cardiac Life Support trained (ACLS) paramedics
- Exercise riders weigh 140 and 150 pounds exercise same horses in the as jockeys who race ride them in the afternoon.
- No excess of horse injuries associated with higher weight exercise riders.

Reduce to Ride

- Jockeys go to hot box or sauna to reduce weight
- Spend anywhere from one to five hours in a state of induced hyperthermia.
- Many take laxatives diuretics and practice self-induced vomiting

Dress for Success not Safety

- Jockeys don featherweight boots, silks, protective helmets, flack jackets and goggles for each race.
- Still a high rate of serious head, chest and extremity injuries

Vigilant Weight Watchers

Oversee Equalization Process

- Jockeys weighed in and out of each race by the clerk of scales
- To equalize the amount of weight born by different horses in the same race a combination of saddle pads and lead weights are used
- Titrating weight done by the jockeys, their valets and the Clerk of Scales
- Multiple individuals handle weights

Variable Protection Risks Lead Toxicity

- Lead weights often unprotected with friable edges and visibly shed lead dust
- Some sewn into leather pockets while others are covered in a minimally protective paint
- Heavy rubber mats placed under the saddle are supposed to be the primary weight equalizing units - lead weights are almost always still needed to top the weight up
- Mats originally designed to save horses from lead related pathology, but no concern was raised about valets and jockeys

A Day At The Races

Video Presentation

Dust and Debris Disposal Spreads Disease

- In between races jockeys clean track debris from faces with standing water and sponges located next to their cubicles
- Dedicated sinks for each jockey cubicle rare
- Frequent re-use of contaminated water and sponges leads to self inoculation with bacterial fungal and viral pathogens and exacerbates underlying allergic dermatoses. The second bucket serves as a heaving bowl or spittoon

Crowded Cubicles Contribute to Communicable Conditions

- Cubicle upholstery rarely cleaned - serves as a poly pathological culture medium.
- Other professional athletes spend few hours in their locker rooms
- Jockeys spend anywhere between seven to 10 hours a day
- Many antiquated and cramped with poor ventilation
 - Contributes to the rapid spread on airborne and contact mediated communicable diseases
 - More persistent and severe than those in comparable general population cohorts.
 - Possibly due to coexistent malnutrition that contributes to immunosuppressant and immuno incompetence.

Track Grooming Can Generate Biohazardous Plumes

- In between races track surfaces groomed and irrigated with water often recycled from barnyard effluent bio remediation ponds
- Pond water high in coliforms at certain stages in the remediation process.
- Coliform counts are required but regulatory oversight rare
- Large volumes of this water is aerosolized while being reticulated behind tanker trucks
- Depending on ambient wind, humidity and temperature a proportionate amount can be carried into the workspace of jockeys, outriders and the breathing air of thousands of fans who line up close to the track side.
- Remediation requires installation of airborne sensors to monitor, measure and report excessive coliforms, airborne particulate and gaseous pathogens released from the dirt and synthetic surfaces as a result of grooming and horse riding activities

Synthetic Surfaces a Solution ?

- Movement largely driven by anecdotal evidence of less trauma to horses and therefore fewer breakdowns and soft tissue injuries.
 - No good independent peer-reviewed studies to document safety of the plume produced by horses hooves or tractors
 - Jockeys Health Initiative survey revealed significant concerns regarding respiratory compromise that warrant closer investigation
- Synthetic Surfaces:
- Both individually and in concert with each other contain pulmonary, cardiac, kidney, bone marrow and skin poisons with and without carcinogenic potential
 - No Federal or State regulations regarding the composition of synthetic surfaces, maintenance and toxicity.
 - Need for independent peer-reviewed studies done to show safe and healthy for horses and humans

Weight Limits and the States

- Jockeys are the only professional athletes in America that are subject to State mandated malnutrition.
- Archaic regulations tantamount to state-sponsored starvation.
- American are getting bigger, but jockeys must remain the same.
- Rational science based approach is needed to illuminate this issue and provide genuine guidance to operators, trainers, owners, jockeys and regulators

Medical Challenges Closely Linked to Environmental and Occupational Factors

- Thoroughbred horse racing is most dangerous professional sports, with more severe head injuries, clavicular fracture and spinal fractures and ankle in the and wrist injuries than any other
- What are the factors that contribute to this high accident rate?
 - No comprehensive peer-reviewed studies
 - Critical to examine interactions between horse, human environmental and occupational factors. Accidents and injuries to horses, that affect both them and their human charges, linked to
 - steroid abuse
 - poor training,
 - poor breeding,
 - inconsistent and unforgiving running surfaces
 - inadequate diagnosis and treatment of stress fractures
 - over running (excessively racing an exhausted and deconditioned horse)

Human Factors Contributing

- Jockey inexperience
- incoordination, cognitive compromise,
- myopathy,
- hypoglycemia,
- hypertension, hypernatremia, hypoxia,
- hypokalemia due to diuretic abuse,
- hypomagnesemia, hyper and hypocalcemia,
- cardiomyopathy,
- acute and chronic renal failure, arrhythmia,
- alcoholic intoxication and pulmonary hypertension secondary to stimulant abuse.

The Environmental Factors

- Variable track conditions, consistency and shock absorbing capability
- Toxic dust plumes affect the health of both horses and humans adversely.
- Presence of excessive coliforms can contribute to a panoply of pathology.
- Poor ventilation in the jockey's rooms contributes to the rapid spread of infectious disease and the concentration of airborne toxins.

The Occupational Factors

- Include contra-physiological weight limits with cascading immunocompromise due malnutrition

The Cascade of Causation - A Framework for Study

- Horse, human, environmental and occupational factors contribute to a cascade of causation
- Weight limits promote anorexia, bulimia, stimulant abuse, laxative abuse alcohol abuse and narcotic abuse
- Conditions may acutely and chronically precipitate electrolyte abnormalities and cognitive and muscular compromise
- Impaired coordination concentration, balance and judgment in a sport that has absolutely no room for error
- These physical and mental challenges may well contribute to risky jockey behavior and poor responsiveness to dangerous riding situations and conditions and account at least in part for the record high rate of accidents with concomitant morbidity and mortality.

The Jockeys Health Initiative

- Unprecedented coalition of the horse racing industry, California state regulators, horse owners, trainers and jockeys - search for science base solutions
- We welcome the guidance, support and leadership of NIOSH and the CDC in helping us to conduct the required research and implement the best solutions.
- We look forward to the opportunity to partner with NIOSH to supplant mythology with methodology and replace fiction with fact

Remediation Avenues to Explore 1

- Comprehensive study needed to develop composite physiological criteria to judge jockey fitness to ride
- May include elements of weight, body mass index, body fat state of hydration, coordination competency and glycemic normalcy
- Introduce mandatory nutritional education and counseling for all jockeys as part of the qualification process
- Develop and implement comprehensive and consistent trackside emergency care standards to avoid unnecessarily poor outcomes after injury

Remediation Avenues 2

- Develop and implement solid standards for track side medical care staffing and facilities to bring horse racing in line with the medical standards and facilities provided by other professional athletic sports
- Include low dose x-ray and ultrasound to reduce the currently high cumulative radiation exposure suffered by jockeys
- Mandate use of strong but flexible safety reins

Remediation Avenues 3

- Eliminate all lead from the workplace
- Improve horse running surface consistency and shock absorbing capability
- Verify the safety and efficacy of synthetic versus dirt surfaces
- Develop and implement a comprehensive nationwide injury and illness tracking system to be able to prospectively detect trends to drive effective and expeditious corrective intervention.

Lead in the Racing Workplace

- All steps must be taken to reduce both aerosol and particulate exposure to this potent toxin
- Lead causes both acute and chronic toxicity, with both ingestion and inhalational route significant
- Poor ventilation and cramped quarters amplify ingestion and inhalation of lead

The Lead-ing Facts

- Human body has 120 mg of lead, daily intake should not exceed 500 mcg
- Lead has a half-life of approximately 62 years. Lead and calcium are used interchangeably by bone
- Lead has an affinity for bone and acts by replacing calcium
- Lead affects every system of the body
- Acute exposure to high levels of lead can result in death or significant damage to the brain or other organs
- Lead affects children at lower levels than those in adults. In children, the effects on brain are worse, especially at higher levels (lead encephalopathy)
- In adults, the peripheral nervous system is commonly affected (peripheral motor neuropathy). - irritability, behavioral disorders, low intelligence quotient (IQ), ataxia convulsions, and coma in children and to wrist drop, foot drop, or lead colic in adults

Studies so far confirm that exposure to lead causes renal damage, encephalopathy, and impaired cognitive function in children and in adults

Recent evidence indicates children with levels less than 10 mcg/dL may have compromised development and intellectual performance later in life

Low Level Lead Exacerbates Major Medical Morbidities

- Low-level lead exposure linked to age-related kidney decline in renal function.
- Link between renal disease, hypertension, and gout with lead poisoning
- Recent studies show that exposure to even low levels of lead may have potentially hazardous effects on the kidneys and on the speed of progression of kidney failure
- Lead causes a characteristic typical pattern of iron-deficiency anemia with hypochromia and microcytosis. Iron deficiency frequently coexists

Reproductive and Carcinogenic Effects

- Lead reduces sperm count in males and increases abnormal sperm frequencies as well
- Cancer
- Lead has been classified as group 2B carcinogen in animals

Who Handles The Lead?

- Daily basis by valets jockeys, the clerk of scales, cleaners, children of jockeys, grooms and exercise riders.

How Often Do They Handle Lead?

- Valets handle lead up to 14 times per day
- Jockeys handle lead up to five to eight times per day
- Clerk of scales may handle lead from two to four times per day
- Cleaners may handle lead once or twice a day

How Do They Handle Lead?

- Observationally, most handle it with bare hands which are rarely washed after contact

How is Lead Stored?

- Mostly in open air which aids aerosolization
- Storage box often contains much visible particulate lead
- Lead weights are frequently dropped or thrown on to one another causing further fracturing, particulate generation and aerosolization
- Coating is frail and friable
- No designated lead safety officer is available to provide continuous supervision
- Lead weights are very difficult to encase robustly and even the leather-satcheted weights continually lead leak particulate material from the seams

What Should Be Done?

- Issue an immediate and binding directive to remove all lead from the workplace
- Lead weights can be inexpensively replaced with cast iron
- Jockeys who have their own personal lead weights must surrender them and ensure that household contacts, especially children, are tested that their household environment is detoxified
- No cooking should be performed with lead weights
- All potentially exposed persons should be submitted to hematological testing for lead levels - this is relatively inexpensive - we are doing it for \$4.19 per person
- Bone lead studies using techniques like x-ray fluorescence analysis should be performed in select high exposure populations such as valets and jockeys to assess cumulative exposure

This is not one of those sit back and think about
it decisions.

We must act now to prevent a legacy of disease
and disability

Let's Put Lead to Bed

Thank You