



Collecting and Translating Incident and Injury Data in the Horseracing Industry

Karin J. Opacich, Ph.D., MHPE, OTR/L, FAOTA


University of Illinois

Rockford, IL

Statement of the Problem



There are no uniform mechanisms or systems to capture the underlying causes of incidents and injuries in the horse racing industry for either human or equine participants.



Only two jockey injury studies pertaining to US horse racing appear in the literature. (Press et al, 1995; Waller et al, 2000) Although both have scientific limitations, both teams of investigators recommended the establishment of a nationalized surveillance system.



According to Powell (2000) regarding sports injury surveillance, "The quality of the available data and its utility in decision-making is based on the breadth and depth of the data collection process."

Background

Factors Affecting Surveillance

- Each racing corporation is autonomous
- There is skepticism within the industry about collaborating and sharing this information
- State Racing Boards oversee the industry in their respective jurisdictions
- There is no national jurisdiction, e.g. Canadian system, with authority to impose standard practices



- Existing national databases, e.g. Bureau of Labor Statistics and state EMT data are insufficient to capture incident and injury data and to develop relevant interventions for either humans or horses
- Racing industry injuries are generally excluded from state agricultural injury databases
- Data currently collected by individual racetracks is not uniform, may be inconsistent, and is not amenable to statistical analysis and modeling



Accidents and injuries are multi-factorial....

Equine



Human
attributes

Training

Infrastructure

There is a relationship between the well-being of human and horse ...

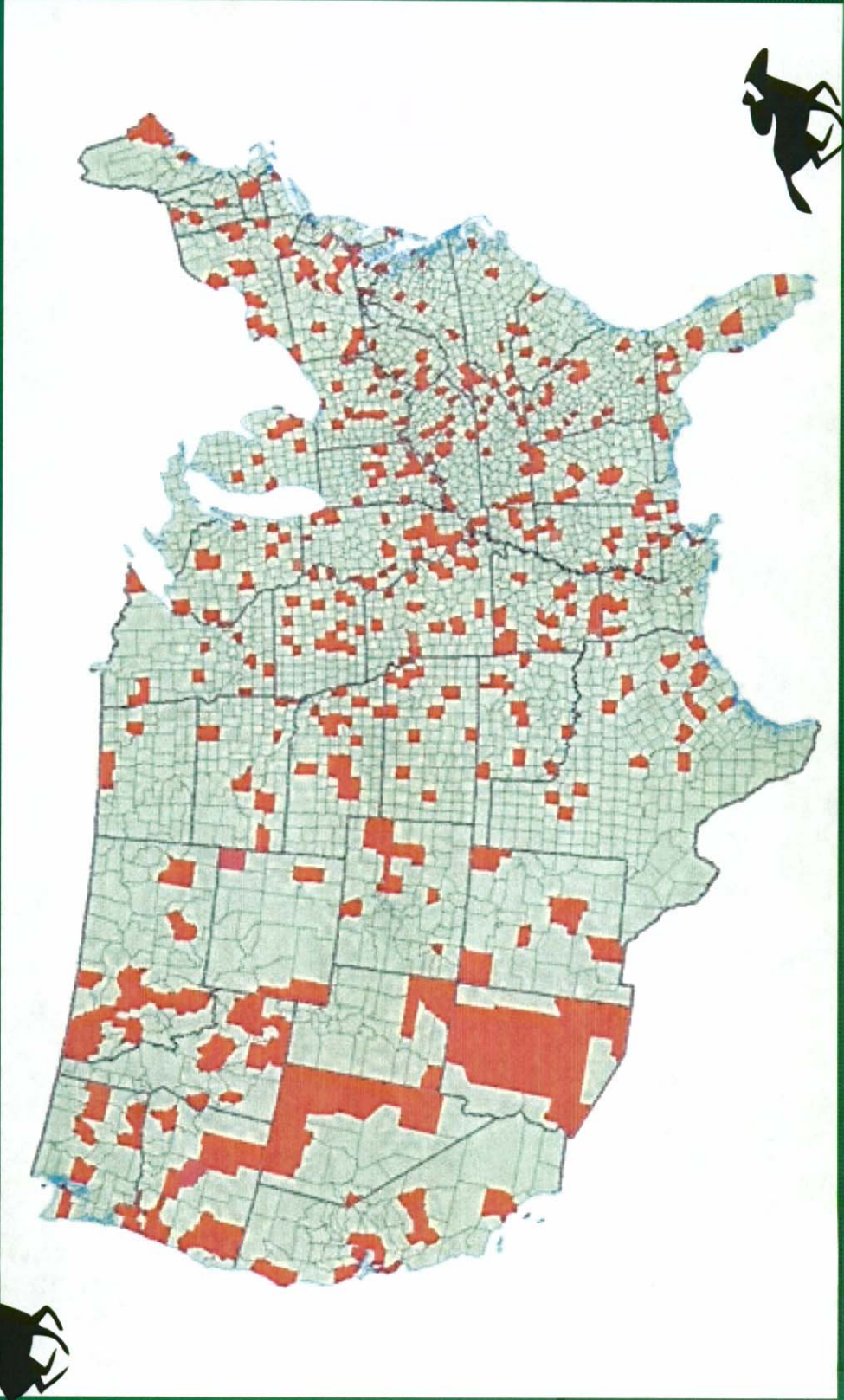
Since the relationship between horse and human is symbiotic, actions and conditions of one species affects the other...



For a full understanding of accidents and injuries, collection and analysis of both horse and human data is expected to contribute to insights and improved safety.



U.S. Counties with Horse Racing Facilities



Recent Work Pertaining to Human Health and Safety in Horse Racing



indicates specific to Incident and Injury Surveillance

Grants:

Determining *Health Status and Health Disparities for an Embedded Rural Workforce*, 2005-7, PI-Opacich, KJ, Co-PI-Lizer, S.
Project EXPORT/National Center for Rural Health Professions
Grant No. 5 P20 MD000524-03, NCMHD-NIH

Publications:

Opacich, K.J., Lizer, S., Goetsch, P. (in press) Forging an academic partnership to address health related needs: Targeting embedded rural communities in the horseracing industry, In N. Pollard, F. Kronenberg, & D. Sakellariou (Eds.), Political Practice in Occupational Therapy, Elsevier.

Publications continued...

Opacich, KJ, Kaste, L, Lizer, S. (In process) An occupational perspective of health disparities among children of an embedded rural workforce.

Kaste, L, and Opacich, KJ (in process) Oral health status of children of an embedded rural workforce.

Presentations:

Health Disparities and Social Justice: Empowering Clients to Facilitate Participation (AOTF plenary session), Presenters: Bass-Haugen, J., Braveman, B., Kronenberg, F., and Opacich, KJ. American Occupational Therapy Association Annual Conference, April 30, 2006.

Building Enthusiasm for an Accident and Injury Surveillance System in Horseracing, (Panel on Jockey Injuries) Association of Racing International Racing Commissioners [ARCI], April 2006

Health Disparities: Professional and Institutional Models for Community Partnership for Social Change, (Panel presentations), Presenters: Gupta, J., Padilla, R., Opacich, K., Society for the Study of Occupation: USA, Oct. 7, 2006.



Presentations continued...

Building Illinois Oral Health Surveillance: Moving Beyond the Norm, (live webcast) Panel: Clancy, A., Kaste, L. Opacich, K., Paul Q. Peterson Grand Rounds Lecture Series sponsored by IL Dept. of Public Health and UIC School of Public Health, Chicago, IL, Oct. 25, 2006.

Oral Health Experience Differences of Racetrack Adults and Children, (Paper) Kaste LM, Opacich KJ, Lizer S, Dhake R, Colovos N, Goetsch P. Panel on Disparities in Oral Disease, International/American Association for Dental Research, Mar. 22, 2007.

When is a Health Fair a Useful Epidemiological Tool?, (Paper) Kaste, L.M., Opacich, K.J., 2007 Epi Forum, International/American Association for Dental Research, Mar. 20, 2007.

Health Status and Health Disparities of an Embedded Rural Workforce in Illinois, (Poster) Opacich, K.J., Kaste, L.M., Goetsch, P., Lizer, S., 2007 Illinois Public Health Association Annual Meeting,, Apr. 11, 2007.



Presentations continued...



Report of the On-Track Form Committee, Welfare and Safety of the Racehorse Summit, Lexington, KY, October 17, 2006
Presenters: Mary Scollay, DVM and Karin Opacich, PhD

What indications are there that state level health policies are reaching children of an embedded rural workforce in Illinois? (Poster)
Kaste, L.M., Opacich, K.J., Goetsch, P. Illinois Public Health Association Annual Meeting, April 11, 2007.

Health Status and Health Disparities of an Embedded Rural Workforce: Implications for Occupation, (Paper) Opacich, K.J., Lizer, S., Kaste, L.M., Petrea, R.E., Goetsch, P., Schikore, M., Belman, S., Schumacher, S., Mistretta, M., 2007 American Occupational Therapy Association Conference & Expo, Apr. 21, 2007.



Translating Scientific Data to Policy and Practices in the Horse Racing Industry (Panel presentation on Health and Welfare of participants and fans), Opacich, K. J. with Goetsch, P., Jones, G.W., Annual meeting of the Association of Racing Commissioners International, Apr. 24, 2007.



Formulation of Research Advisory Board

Dan Fick, Executive Director & Executive Vice-President, Jockey Club

Peggy Goetsch, MS, Executive Director, Racing Industry Charitable Foundation, Inc. & President, Winners Federation, Inc.

Wayne MacIlwraith, BVSc, PhD, DSc, FRCVS
Diplomate ACVS, Director of Orthopaedic Research, Colorado State University



Michael (Mick) Peterson, PhD, Professor and
Graduate Coordinator, Mechanical
Engineering, University of Maine

Richard (Chip) Petrea, PhD, University of Illinois-
Champaign-Urbana, Illinois Network for
Agricultural Safety and Health

Mary Scollay, DVM, Regulatory Veterinarian at
Calder Racecourse, FL, and author of the
equine injury report form



Specific Objectives:

1. To access and compare epidemiological data for human injury for a comparable time period before and after installation of synthetic track surface.
2. To field test and refine the utility of an on-track injury surveillance system for capturing human and equine data that can potentially be applied nationally throughout the industry.
3. To explore relationships among human attributes, track infrastructure, equine attributes, and industry practices and their relative contributions to incidents and human injuries.



4. To determine if using the on-track recording system for humans and horses yields information superior to existing methods for the purpose of injury prevention.
5. To use resultant scientific data to inform decision-making and risk management to improve health and safety of human participants in horseracing.





Proposed Research Strategies



- For tracks with synthetic surfaces, compare pre and post installation injury data in whatever form that exists for comparable meets/racing days
- Code the on-track forms for analysis
- Identify and train a cadre of human injury data collectors
- Field test the utility of the human on-track injury report form
- Link human data with equine data generated from the on-track equine report via data managers
- De-identify and forward data to PI
- Perform statistical analysis, e.g. frequencies, correlations, factor analysis, step-wise regression analysis
- Interpret data with assistance from the Advisory Committee; proposed additional analyses toward generating a logistical regression model
- Compare the information yielded from the On-Track reports to the nature and quality of existing data

Development of Surveillance Tool Design informed by...

Biddle and Marsh (2002)

- ┆ Nature of injury/illness
- ┆ Part of the body affected
- ┆ Source of injury/illness
- ┆ Event or exposure
- ┆ Secondary source of injury/illness

▪ *Injury Surveillance Guide*, McGee, Peden, Waxweiler & Sleet (2003)

- ┆ Core minimum data
- ┆ Core optional data
- ┆ Supplementary data





Equine Injury Report Form

developed by Mary Scollay, DVM

Tracks Currently Committed to Equine Pilot

- **Albuquerque Downs**
- **Arlington Park**
- **Aqueduct**
- **Belmont Park**
- **Beulah Park**
- **Calder Race Course**
- **Canterbury Park**
- **Charlestown Races**
- **Delaware Park**
- **Emerald Downs**
- **The Fairgrounds**
- **Gulfstream Park**
- **Indiana Downs**
- **Hawthorne Racecourse**
- **Hoosier Park**
- **Lone Star Park**
- **The Meadowlands**
- **Monmouth Park**
- **Penn National**
- **Philadelphia Park**
- **Prairie Meadows**
- **Saratoga**
- **Suffolk Downs**
- **Woodbine**
- **Yavapai**
- **Potentially 10 additional**

Process for completing equine form...

- Regulatory veterinarian will complete data for any horse deemed to be observably injured upon post-race examination (average projected to be one/day/track)
- Background data available from daily racing form and/or Jockey Club Information Systems
- Additional instructions accompany form
- Another form being developed for equine injuries during training
- Data will be entered by designated data input specialist
- Unique identifiers, e.g. horse's name, will be removed and only aggregate data reported

Date: _____ / _____ / _____ Track: _____ Race: _____
 Horse: _____ Trainer: _____
 Reporting Veterinarian: _____ Attending Veterinarian: _____

CASE #: _____

Surface: Dirt Synthetic Turf Condition: Fast Good Sloppy Wet/Past Firm Good Yielding Soft Off Turf	Race Claiming Price \$ Maiden Beaten Open Allowance MSW NDX NWS STR Stake Purse \$ Overnight Non-graded Grade 3 Grade 2 Grade 1 Handicap: Y N	Distance Dash: < 5 f 5 1/4 f 6 f 7 f 7 1/4 f 1 Mile Trot: 6 f 7 f 7 1/4 f 1 mile 1 mile 70 yd 1 mile 110 1 mile 116 1 mile 124 1 mile 130 > 1 mile 24	Field Size Final Time Placing by _____ DNF Jockey Apprentice Jockeyman Injured v. N	Age* (Month) Sex Colt Filly Gelding Rig Life Starts Wins Claim History—previous 6 months 0 1 2 3 >3	Weight carried Post Position Class No change NA Speed Figs Life Earnings	Resident Status Days >1 <18 days Track break Previous Start by _____ DNF NA Last Pub Work Date Distance/Cond Time Rank	Pre-Race Inspection Findings Equipment Blinkers Scoop blinker Cornell collar Ring bit Run-out bit Blunt Other Shoeling Plain Curens Plate CXT Rim shoe Reg / OH Toe grab Bar shoe Mud nails Jar cauks Glue on shoes Blocked heels Stickers Bent shoes Rim Pads Full Pad Spider plate Hoof wall reconstruction N crack patch Other

Link	Category	Anatomic Region	Site	Injury Description
A				
B				
C				
D				

INCIDENT DATA

RACING	INCIDENT RELATED INFORMATION	TRIAGE SCORE	INJURY MANAGEMENT	EMERGENCY MEDICATIONS
XX—Gate Location observed NON-RACING	Lost race: non-toxic equipment failure Clipped heels Ducked Contact w/ other horse Contact with rail / gate / vehicle	NA Jockey—low claim Stewards—inquiry DO Y N	Kinzeby splint Compassion boot Robert Jones Edg Ext. stabilization other Sling Rescue Sled Ambulance Other	Asepomazine Butorphanol Detomidine Domosedan Xylazine Pred acid Succinate
Pre-race: Official Veterinarian Scratch All Pedstock / Post Parade / Gate Post-race: Feet wet / Returning After unloading Detention Barn Other	Prognosis for return to racing soundness: Excellent / Good / Fair / Poor / Career-Ending Injury / Not applicable / Unknown Outcome: Non-fatal Anticipated return to training racing: < 30 days / 31-60 days / 61-180 days / 181-365 days / >365 days / Not applicable Fetally Euthanized (<72 hrs post injury) Died Unknown			

Limb	Injury Category	Anatomic Region	Site	Injury Modifiers
LF RF LH RH BF BH All 4 Unknown NA	UNKNOWN	Distal limb	Scapulo-med Scapulo-lat Scapulo-biart MC/MT, Carpal bones P ₁ /P ₂ P ₃ Splenio-med Splenio-lat Tarsal bones	Chap Condylox Cortical Oblique Slab Spiral Transverse Closed Compound Degloved
	FRACTURE NON-FRACTURE	Long bone	Humerus Femur Radius/Ulna Tibia	Dorsal Palmar Plantar
		Amal skeleton	Skull / Spine Pelvis	Apical Basilar Pentostatus
		Suspensory	Medial branch Lateral branch Body / Origin Check ligament Distal Ses. Lig	Pronmal 1/3 Middle 1/3 Distal 1/3 Dist to fetlock Avulsion Failure / Rupture Lacerated/Severed
	SOFT TISSUE	Tendon Tendon Sheath	SDF DDF CDEsT	Straun Myalgia/Myositis
		Muscle		Resinjury
		Others		
	JOINT	Fetlock Carpus Interphalangeal Sesle Hoek Other		DJD / OA Subluxation / luxation Disarticulation Open / Closed D/P instability M/L instability Mild Moderate Severe
	OTHER-MS			Laceration Puncture Grabbed Other
	NON-MS			Run down sore Hematomas Foot bruise Post exertional distress / Heat Stroke Synchondrosis da. Flutter Cardiac arrhythmias RIPH-external hemorrhage Sudden Death Other

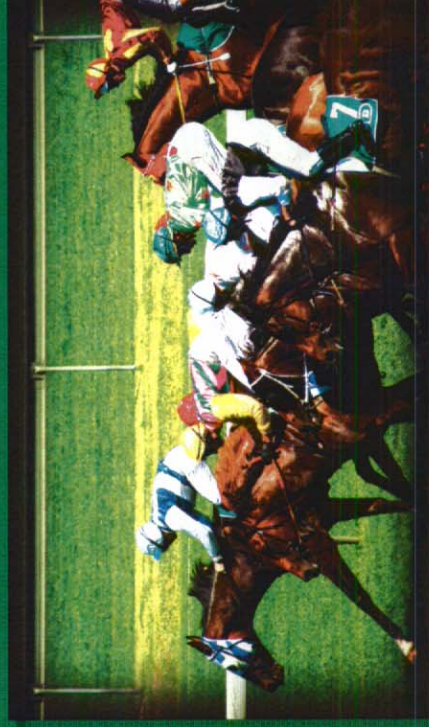
Triage Scoring

- 0 No lameness observed on track
- I Grade III or lower lameness; no obvious limb deformity
- II >Grade III lameness; no obvious limb deformity
- III Mild to moderate limb instability in 1 plane; closed injury
- IV Severe instability in 1 plane; closed injury
- V Limb instability in 2 or more planes / loss of column of support (open or closed); open: fx/joint capsule/tendon sheath

Definition of an on-track human incident or injury.....


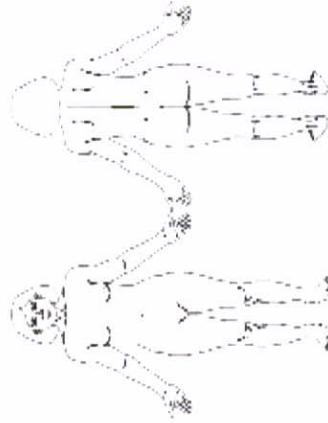


- Any event or condition occurring in the paddock area or on the racetrack that results in harm to a licensed horseman performing a job preceding, during, or after a race



Process for completing human form...

- Paramedics (?) engaged to attend to injuries during racing will be trained to complete the form during the pilot period
- Forms will be completed for both minor and major incidents and injuries
- A neutral third party will obtain follow-up information and link the equine data to the human data
- Unique identifiers will be removed before the data set is forwarded to the researcher for input
- Data will be analyzed and only aggregate data will be reported

Human Accident and Injury Data											
Indicate Job Category for each person involved in the accident/injury. [Jockey, Apprentice Jockeyman, Cowbird, Pony Rider, Green, Valet, Gatekeeper, Other]		#1		#2		#3		#4		#5	
Indicate age and gender for each person.		Age	M/F	Age	M/F	Age	M/F	Age	M/F	Age	M/F
If Job Category is Jockey, indicate weight in pounds.		Weight		Weight		Weight		Weight		Weight	
Engaged in pre-race reducing behavior? Briefly describe maneuver leading to incident.		Yes No		Yes No		Yes No		Yes No		Yes No	
Was there an objection filed? Rule violation? If yes, cite rule.		Yes No		Yes No		Yes No		Yes No		Yes No	
Disqualification?		Yes No		Yes No		Yes No		Yes No		Yes No	
Circle Point(s) of Impact and Notate		Circle Point(s) of Impact and Notate		Circle Point(s) of Impact and Notate		Circle Point(s) of Impact and Notate		Circle Point(s) of Impact and Notate		Circle Point(s) of Impact and Notate	
											
Ambulatory?		Yes No		Yes No		Yes No		Yes No		Yes No	
Suspected musculoskeletal injury?		Yes No		Yes No		Yes No		Yes No		Yes No	
Suspected head trauma?		Yes No		Yes No		Yes No		Yes No		Yes No	
Suspected spinal cord trauma?		Yes No		Yes No		Yes No		Yes No		Yes No	
Visible laceration(s)? Indicate on figure with L.		Yes No		Yes No		Yes No		Yes No		Yes No	
Visible fracture(s)? Indicate on figure with FX.		Yes No		Yes No		Yes No		Yes No		Yes No	
Wearing/using person protective equipment?		helmet		vest		goggles		safety reins		other	
Equipment/tack failure?		reins		girth		stirrup		saddle		bridle	
Known pre-existing medical condition(s)? e.g. diabetes, visual impairment		Yes No		Yes No		Yes No		Yes No		Yes No	
Status at site of accident/injury: (circle all that apply)		conscious		alert, lucid		numbness		non-verbal, uncommunicative, shaking or clonin		disoriented, not conscious, decreased	
Neurological Indicators		nausea or vomiting									

	Respiratory Status	breathing normally	labored breathing	not breathing	rapid breathing	obstructed breathing
Intensity of Pain (1=lowest, 10=highest)						
Immediate Action		CPR	Spinal Cord Precautions	Immobilization of one or more extremities		
Dispensation at Site of Accident/Injury		Resumed work	Ambulatory Care	Urgent Care	Emergency Transport	Morgue
Suspicion of use of restricted or illegal substance		Yes	No			
Admission of restricted or illegal substance		Yes	No			
Diagnosed Injuries:	Follow-Up Care	Treated and released	Hospitalized	Out-patient rehab	In-patient rehab	Other
Significant laboratory findings?						
Total number of hospital days						
Total number of bed days						
Total number of lost work days						
Estimated lost wages						
Permanently disability?		Yes	No			
Nature of permanent damage, e.g. impaired vision, spinal cord injury						

Challenges and Issues remaining to be addressed...

- **Clarification of HIPPA and IRB requirements**
 - Analysis of accessible de-identified data?
 - Expedited IRB review
 - Accumulating data on vulnerable populations?
 - Informed consent and full review required?
 - Accessing existing de-identified equine data?
 - Animal subjects review required?
- **Ethical and Legal issues**
 - Confidentiality
 - Discoverability



■ Designating and Training Data Collectors and Managers

- ┌ Who are the most logical and capable data collectors?
- ┌ What is the incentive for collecting accurate data?
- ┌ Assuring confidentiality
- ┌ What information and education/training should be provided to data collectors and managers?
- ┌ What perceived or real harms could accrue to participants (individuals, racetracks)?



- **Developing a collaborative cohort of human and equine scientists**

- Collaboration preferable to competition for limited resources
- Need a mechanism for identifying and communicating with scientists with interests in this industry

- **Getting buy-in from horsemen and racetracks**

- Cultural shift from competition to collaboration
- Valuing what collaboration with agencies and scientists can bring to the industry
- Understanding that a healthy workforce contributes to a robust industry



Details, details, details... Timing, Timelines, Costs and Funding

- ASAP especially in light of expectations for synthetic surfaces
- Two-year pilot for development of a surveillance system (based upon 20-25 pilot sites)
- Estimated cost over 2 yrs. - \$500,000
- Funding sources?
- Potential for an R01?





For questions about this presentation, contact:

Karin J. Opacich, PhD, MHPE, OTR/L, FAOTA

email: kopacich@uic.edu or KJOThinking1@aol.com