2016 CHILDREN'S CAMP WORKSHOP

A presentation by the Westchester County Department of Health
County Executive Robert P. Astorino uses three guideposts (The Three P’s) to manage Westchester County:

- Protect Taxpayers
- Preserve Essential Services
- Promote Economic Growth
Introduction, NYS Injury/Illness Statistics, and 2015 Camp Season Recap
Mario Polvere, Chief Sanitarian, Westchester County Department of Health

Communicable Diseases
Ada Huang, M.D., Deputy Commissioner, Disease Control
Westchester County Department of Health

Current Trends in Concussion
Mark Herceg, PhD, Commissioner, Westchester County Department of Mental Health

7-2 Amendments: Justice Center Regulations
Camp Application: Amusement Devices, Odds & Ends
New and Selected Camps: Overview
Q & A
Mario Polvere, Chief Sanitarian, Westchester County Department of Health
Mt. Kisco District Office
25 Moore Avenue
Mt. Kisco, NY 10549
Phone: (914) 864-7330

24/7 Emergency Telephone Number:
914-813-5000
NYS Injury/Illness Statistics

The following slides provide data from the Children’s Camp Incident Summary Report, 2012
Potential Rabies Exposures by Year
Sport Injuries by Activity - 2012

- Basketball
- Soccer
- Baseball
- Wrestling
- Football
- Other
- Lacrosse
- Hockey
- Volleyball
- Ice Hockey
- Tennis
- Golf
- Frisbee

N=250
Concussion Injuries by Activity - 2012

- Court Sports: 30%
- Field Sports: 16%
- Other: 15%
- Organized Games: 10%
- Swimming: 5%
- Boating/Canoeing: 5%
- Playing: 5%
- Bicycling: 5%
- Walking/Running: 5%
- Transportation: 5%
- Horseback Riding: 5%
- Unknown: 5%
- Free Period: 5%
- Woodcutting/Ch...: 5%
- Dancing/Acting: 5%
- Playground...: 5%
- Travel between...: 5%

N=76
Concussion Injuries by Sport and Game Activity - 2012

- Football
- Volleyball
- Ga Ga
- Baseball
- Lacrosse
- Other
- Soccer
- Basketball

N=44
Fractures by Activity - 2012

- Field Sports
- Organized Games
- Court Sports
- Playground Equipment Activity
- Playing
- Free Period
- Travel between Activities
- Martial Arts
- Arts and Crafts
- Classroom Instruction
- Aquatic Theme Park Rides
- Ropes/Challenge Course
- Boating/Canoeing
- Eating
- Hiking
- Rollerskating/Rollerblading
- Unknown
- Transportation
- Horseback Riding
- Dancing/Acting
- Chores
- Swimming
- Bicycling
- Gymnastics
- Travel between Activities
- Walking/Running
- Other
- Playground Equipment Activity
- Court Sports
- Organized Games
- Field Sports

N= 417
Acute Illness or Disease
Parasitic Eye Infection
Mandated Reportable Respiratory Infection
Other Asthma Attack
Gastrointestinal
Seizure Disorder
Allergic Reaction
Chronic Illness or Disease
Neurological

Individual Illnesses - 2012

N=221
Outbreak Illnesses - 2012

- Gastrointestinal
- Respiratory Infection
- Head Lice
- Conjunctivitis
- Impetigo
- Coxsackie virus
- Influenza like illness
- Other Skin Infections

N=1365 Individuals, 49 Incidents
Preventing outbreaks of communicable disease protects the health of campers and staff and prevents disruption of camp operations.

Increase in vaccine preventable diseases/outbreaks associated with children’s summer camps in past several years.

Norovirus, Tick Borne Diseases, Rabies
Vaccinations are recommended for all staff and attendees

NYSDOH and WCDH strongly recommend all staff and attendees be vaccinated as per age appropriate ACIP Guidelines which are available for your reference at www.westchestergov.com/health.

NYS Children's Camp code does not include vaccine requirements for staff or attendees.
## Vaccine Recommendations

<table>
<thead>
<tr>
<th>Campers (Age Appropriate)</th>
<th>Diphtheria/tetanus/pertussis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Measles/mumps/rubella</td>
</tr>
<tr>
<td></td>
<td>Varicella (Chickenpox)</td>
</tr>
<tr>
<td></td>
<td>Hepatitis A &amp; B</td>
</tr>
<tr>
<td></td>
<td>Haemophilus influenza, type b</td>
</tr>
<tr>
<td></td>
<td>Pneumococcal</td>
</tr>
<tr>
<td></td>
<td>Polio</td>
</tr>
<tr>
<td></td>
<td>Meningococcal*</td>
</tr>
</tbody>
</table>
## Vaccine Recommendations

<table>
<thead>
<tr>
<th>Staff (Age Appropriate)</th>
<th>Tetanus/diphtheria (Td) or tetanus/diphtheria/pertussis (Tdap)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Measles/mumps/rubella</td>
</tr>
<tr>
<td></td>
<td>Varicella*** vaccine if no evidence of immunity</td>
</tr>
<tr>
<td></td>
<td>Meningococcal*</td>
</tr>
<tr>
<td></td>
<td>Hepatitis B (lifeguards, healthcare workers)</td>
</tr>
</tbody>
</table>

**Note:**
Staff hired from abroad may not have as complete immunizations as those from the U.S.
Communicable Disease-Reporting

2015 NYSDOH Children’s Camp Operator Letter
WCDH website

- **Immediate reporting** of suspected vaccine preventable (and other reportable) diseases to WCDH can prevent outbreaks
- Reporting required under NYS Public Health Law
- Reporting required within 24 hours to local health department under subpart 7-2 NYSSC
- WCDH will work with camps to quickly establish diagnosis and prevent further spread
- Staff training – include symptoms of vaccine preventable diseases and immediate notification of the camp director
Vector Borne Diseases

- Ticks transmit diseases such as Lyme, Anaplasmosis, Ehrlichiosis and Babesiosis- all of which are present in Westchester County

- Prevention of tick bites includes daily tick checks, wearing long sleeves/long pants

- Mosquitoes transmit infections such as West Nile disease

- Prevent mosquito breeding by emptying any containers that collect standing water
Zika Virus Epidemiology

- Virus closely related to dengue, yellow fever, Japanese encephalitis and West Nile viruses
- Transmitted to humans primarily by *Aedes* species mosquitoes
- First isolated from a monkey in Uganda in 1947
- Prior to 2007, only sporadic human disease cases reported from African and southeast Asia
- In 2007, first outbreak reported on Yap Island, Federated States of Micronesia
- In 2013-2014, >28,000 suspected cases reported from French Polynesia*

Zika Virus and Microcephaly

- Thousands of babies born with a birth defect (microcephaly) since Zika virus first identified in Brazil in May 2015
- Microcephaly can have many causes, not just Zika virus
- Zika virus recently determined to cause microcephaly
- Possible association with neurologic complications such as Guillain-Barré syndrome
Zika Virus Vectors

Mosquitoes carrying Zika not found in NYS/WC at this time

Aedes Mosquitoes

- *Aedes* species mosquitoes
  - *Aedes aegypti*: more efficient vectors for humans
  - *Aedes albopictus*: found in some parts of NYS
- Also transmit dengue and Chikungunya viruses
- Lay eggs in domestic water-holding containers
- Live in and around households
- Aggressive daytime biters
- No mosquito transmission identified in the 50 U.S. states
Zika Virus Clinical Disease Course and Outcomes

- Clinical illness usually mild

- Most common symptoms are rash, fever, arthralgia, conjunctivitis (pink eye), myalgia, and headache

- Symptoms last several days to a week.

- Severe disease requiring hospitalization and fatalities rare

- Major complications are to unborn children/severe birth defects

- Guillain-Barré syndrome reported in patients following suspected Zika virus infection
Zika Treatment and Prevention

- No specific antiviral therapy

- Treatment is supportive (i.e., rest, fluids, analgesics, antipyretics)

- No vaccine or medication to prevent infection or disease

- Pregnant women should consider postponing travel to areas with ongoing Zika virus outbreaks

- Primary prevention measure is to reduce mosquito exposure
Zoonotic Diseases/Rabies

- Diseases can be transmitted to humans by animals

- Rabies – WCDH Camp Operators website
  - Inspections/Bat proofing
  - Avoid exposures
  - Capture the bat!
  - Notify WCDH!

- Proper hand washing before eating, after using bathroom facilities and after handling animals is an important safeguard

- Proper hand washing facilities must be readily accessible to area where animal contact occurs to ensure effectiveness
ATTACK OF THE NOROVIRUS

* a group of highly contagious viruses that cause “stomach flu” or gastroenteritis (GAS-tro-en-ter-I-tis)

Repel it by frequently:

Symptoms can begin suddenly and may include:

- Nausea

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Robert P. Astorino
Westchester County Executive
Sherlita Amler, MD, Commissioner
Department of Health
What is Norovirus?

- The stomach bug! A group of highly contagious viruses that cause severe stomach upset, vomiting and diarrhea.
- Can lead to severe dehydration, especially among seniors, people with other illnesses and young children.
Quick Facts

The Norovirus

Each Year in the U.S.

1/15 Americans contract the Norovirus

70,000+ Americans are hospitalized

800 Americans die
How Does Norovirus Spread?

- An infected person who doesn’t wash hands properly after vomiting or using the toilet comes in contact with others.

- Norovirus can live on objects and surfaces for days or weeks waiting to strike.

- There’s no vaccine or treatment, so prevention is paramount.
Prevention

#1 - Washing hands correctly is the best way to prevent the spread of disease

#2 - Staying home when you’re sick prevent the spread of disease
MRSA is a skin infection caused by a common skin bacteria called “staph.” Some staph infections have become resistant to some antibiotics.

Skin infections can be prevented by:
- Regular hand washing
- Covering minor scrapes and cuts with a clean bandage
- Avoiding the sharing of personal items - towels, washcloths
- Having anyone with a skin infection evaluated by medical staff
- Proper use of gloves and bandage disposal by those caring for a skin infection

• There is no need to exclude anyone with a minor skin infection from general activity.
Current Trends in Concussion: From Baseline to Post Injury Management

Mark Herceg, PhD

Commissioner, Westchester County Department of Mental Health
Chair, Westchester County Concussion Task Force
Lecturer, Dept of Epidemiology & Community Health, New York Medical College
Asst. Prof of Psychology in Clinical Neurology, Weill-Cornell Medical College
Centers for Disease Control and Prevention (CDC) estimates 300,000 sports-related concussions occur per year
- **100,000 in football alone**

An estimated 1.6-3.8 million sports related brain injuries in 2006

**8 HS football deaths 2013 due to TBI**

An estimated 45 million children & adolescents participate in organized & recreational sports

Sports provide positive physical, intellectual & social development, but unfortunate risks, including TBI or SCI
Epidemiology

- Risk of concussion in football is 4-6 times higher in players with a previous concussion

- Girls more susceptible (neck?)
  - Soccer
  - Basketball

- A concussed athlete 3X more likely to get another

- Genetic predisposition - APOE promoter gene
High School Sports Injury Rates by Sport, 2011-12
NATIONAL HIGH SCHOOL SPORTS-RELATED INJURY SURVEILLANCE STUDY

<table>
<thead>
<tr>
<th>Sport</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boys' football</td>
<td>3.66</td>
</tr>
<tr>
<td>Girls' soccer</td>
<td>2.46</td>
</tr>
<tr>
<td>Boys' Lacrosse</td>
<td>2.31</td>
</tr>
<tr>
<td>Boys' wrestling</td>
<td>2.21</td>
</tr>
<tr>
<td>Boys' Ice Hockey</td>
<td>2.03</td>
</tr>
<tr>
<td>Girls' basketball</td>
<td>1.78</td>
</tr>
<tr>
<td>Girls' Field Hockey</td>
<td>1.77</td>
</tr>
<tr>
<td>Boys' soccer</td>
<td>1.71</td>
</tr>
<tr>
<td>Girls' softball</td>
<td>1.56</td>
</tr>
<tr>
<td>Boys' basketball</td>
<td>1.37</td>
</tr>
<tr>
<td>Girls' Gymnastics</td>
<td>1.23</td>
</tr>
<tr>
<td>Girls' Cricket</td>
<td>1.09</td>
</tr>
<tr>
<td>Girls' volleyball</td>
<td>1.07</td>
</tr>
<tr>
<td>Girls' Track</td>
<td>0.93</td>
</tr>
<tr>
<td>Boys' baseball</td>
<td>0.87</td>
</tr>
<tr>
<td>Boys' Track</td>
<td>0.74</td>
</tr>
<tr>
<td>Cheerleading</td>
<td>0.57</td>
</tr>
<tr>
<td>Girls' Swimming</td>
<td>0.53</td>
</tr>
<tr>
<td>Girls' Swimming</td>
<td>0.38</td>
</tr>
<tr>
<td>Boys' Swimming</td>
<td>0.17</td>
</tr>
</tbody>
</table>

Injury rate is "per 1,000 Athletic Exposures".
Figures include practice and game/competition rates. Full report available at http://www.nationwidechildrens.org/cirp-rio-study-reports
Factors associated with recovery:

- Previous history of concussion
- Early posttraumatic headache
- Fatigue/fogginess
- Early amnesia, alteration in mental status or disorientation
- Age
- Prior history headache
- Dizziness
1. Brain rotates on axis causing stretching/tearing of axons

2. Stretching/tearing of blood vessels results in hematoma

3. Brain strikes skull causing contusion

ROTATIONAL INJURY
3. Rebound (contre-coup) injury to occipital lobe.

1. Brain moves forward in skull.

2. Frontal lobes strike inside of skull (contusion)

DECELERATION INJURY (LINEAR) stretching / tearing or neurons in brain stem and throughout brain
Impact Deceleration
Clinical Symptoms/Presentation

**COGNITIVE**
- Feeling Mentally Foggy
- Difficulty Concentrating
- Difficulty Remembering
- Repeats Questions
- Feeling Mentally Slowed Down
- Forgetful of Recent Information
- Confused About Recent Events
- Answers Questions Slowly

**PHYSICAL**
- Headache
- Nausea/Vomiting
- Balance Problems
- Numbness/Tingling
- Sensitivity to Light/Noise
- Visual Problems
- Dizziness
- Dazed or Stunned

**EMOTIONAL**
- Irritability
- Sadness
- More Emotional
- Nervousness

**SLEEP**
- Drowsiness
- Sleeping Less Than Usual
- Sleeping More Than Usual
- Trouble Falling Asleep

[Westchester.gov.com]
Signs/Symptoms

**Initially:**
- Dazed/confused/stunned
- Answers questions slowly
- Can’t state where they are or most recent event
- LOC
- Moves clumsily/unsteadily/wobbly
- Head “hurts”
- Rolling eyes, unfocused
What to Do If A Concussion Occurs

1. Remove the athlete from play immediately.

2. Ensure that the athlete is evaluated by a health care professional experienced in evaluating for concussion.

3. Inform the athlete’s parents or guardians about the possible concussion. Provide fact sheet.

4. Keep the athlete out of play the day of the injury and until a health care professional, experienced in evaluating for concussion, says they are symptom-free and it’s OK to return to play.
UVA Mild Head Injury in Football (Barth, et al., 1989)

- 10 University Prospective Study (n=2350)
- 195 Concussions
- 107 Student/Red Shirt Athlete Controls

Single Concussion:
- Attention and Complex Problem Solving Deficits
- Inability to Take Advantage of Practice Effect
- 5 to 10 Day Recovery Curve

Virtually every college, high school, and professional study since the UVA study has found similar recovery curves following mild concussion (3 to 10 day recovery times)
Recovery and Gender

- High school and college female athletes report:
  - more post-injury symptoms after concussion
  - perform worse than male athletes on post-concussion tests of visual memory

- A 2007 study found longer recovery times for HS girls than boys

- A 2009 study found that girls with a previous history of concussions reported more and different concussion symptoms (particularly headache)

- Concussions aren't just a concern for high school football players; they can happen to athletes playing all types of sports
Neuroimaging

- Traditional structural neuroimaging
  - CT
  - MRI

- Newer structural neuroimaging
  - DTI

- Functional and metabolic scanning
  - PET
  - SPECT
  - fMRI
  - MRS
fMRI and TBI
Computerized Assessments

- Neurocognitive concussion management starts with a **proper** and **valid** baseline.

- Brief computerized neurocognitive screen has become norm and quite an indu$try.
Computerized Assessments

CNS Vital Signs

ImpACT™

axon SPORTS
IMPACT

- Measures athletes symptoms (mood, sleep, dizziness, HA)
- Verbal/Visual memory, PS and RT
- Assists clinicians and athletic trainers in making RTP decisions- NOT for RTL
- Produces a summary report of test results
- Automatically stores data from repeat testing
- Can be administered online for individuals or groups
- Approximately 20 minutes
Issues with Computerized Assessment

- Many tests now available on-line at home.
- Students misunderstand questions without guidance.
- Assessments do not take into account potential emotional, personality or learning issues.
- Computerized testing ≠ thoroughness yet used for 504/IEP.
- Rarely do schools/programs/clinics consult with NP for baseline or post injury interpretation.
- Test setting/supervision.
The Relation Between Testing Environment and Baseline Performance in Child and Adolescent Concussion Assessment

Christopher G. Vaughan,*† PsyD, Elyssa H. Gerst,‡ BS, Maegan D. Sady,† PhD, Julie B. Newman,† PhD, and Gerard A. Gioia,† PhD
Investigation performed at Children’s National Health System, Rockville, Maryland, USA

Study Design: Cohort study; Level of evidence, 3.

Methods: A total of 939 participants (aged 5-18 years), including 313 tested individually and 626 tested in a group setting, matched on age, sex, and attention-deficit/hyperactivity disorder status, were administered concussion baseline assessment using the desktop version of the Immediate Post-Concussion Assessment and Cognitive Testing and a new pediatric measure, the Multimodal Assessment of Cognition & Symptoms for Children. Cognitive performance, symptom reports, and rates of invalid performance were compared between settings.

Children given a baseline assessment in a group setting performed no differently than children tested individually when standardized administration procedures were used by trained test administrators
Recommended Test Conditions

- Make every effort to minimize distractions.

- The use of cardboard privacy carrels (3-sided, 17 inches high) placed around each computer is recommended in order to create a more private, distraction-free environment.

- Staff must be trained in standardized test administration.

- The examiners must be present throughout the entirety of the test sessions.
Recommended Testing Conditions

- Instructions should be scripted and consistent.

- **Group size**: No greater than 15 individuals, with smaller group sizes depending on age.

- The child-to-examiner ratio in group testing environments should be capped at 6-to-1, often with 2 or more proctors for 8 to 12 kids.

- Younger children ages 5 or 6 should receive 1-to-1 or 2-to-1 instruction.

- Instructions should be quietly read to younger children, or those who exhibit any difficulty understanding task instructions.
Pre-Existing Personality & Emotional Factors
Effect of LD & ADHD on Baseline Testing

Herceg, Wojtowicz, Iverson, (2015) submitted manuscript
International Neuropsychology Society, Annual Meeting  Boston 2016

- LD and ADHD are considered to be important risk factors or modifiers for concussion assessment and management.

- These days, many involved in concussion management are not aware of the implications these risk factors have on assessment results.
Post Concussion Syndrome: What is This?

ICD-10 Criteria for Postconcussional Syndrome:

- Must endorse symptoms in at least 3 domains
  - Physical
  - Emotional
  - Cognitive
  - Insomnia

- Other domains not considered: Excessive worry over symptoms and intolerance for alcohol.
Post-Concussion Syndrome

- More common in females than males.
- Pre-injury mental health problems are a major risk factor.
- It is associated with or influenced by traumatic stress.
- Persistent symptoms at 1 or 3 months are a risk factor for persistent symptoms at 1 year.
- Easy to misdiagnose in people with depression, anxiety, PTSD, and chronic pain.

The Database:

- 32,855 student athletes from the state of Maine
- Age range: 13-18
- No athlete reported sustaining a concussion in the past 6 months.
- What percentage of boys and girls meet ICD-10 Criteria for a Post-Concussion Syndrome During Baseline Preseason Testing?

Boys = 19.7%   Girls = 28.2%
<table>
<thead>
<tr>
<th>Rehabilitation stage</th>
<th>Functional exercise at each stage of rehabilitation</th>
<th>Objective of each stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. No Activity</td>
<td>Complete physical and Cognitive Rest.</td>
<td>Recovery</td>
</tr>
<tr>
<td>2. Light aerobic exercise</td>
<td>Walking, Swimming, Stationary Bike, HR&lt;70% Maximum</td>
<td>Increased heart rate</td>
</tr>
<tr>
<td>3. Sport Specific Exercise</td>
<td>Skating or Running Drills without contact.</td>
<td>Add Movement</td>
</tr>
<tr>
<td>4. Non Contact training</td>
<td>More complex Drills without contact.</td>
<td>Exercise, coordination and cognitive load.</td>
</tr>
<tr>
<td>5. Full Contact</td>
<td>Normal Training</td>
<td>Restore confidence</td>
</tr>
<tr>
<td>6. Return to Play</td>
<td>Game Play</td>
<td></td>
</tr>
</tbody>
</table>
Rest Following Injury - How Much and for How Long?

Critical Questions

- How do we define “rest”?
- How long should an athlete rest?
- How do we define gradual resumption of activities?
- How much rest is too much rest?
- When should we begin active rehabilitation?
What Is The Rationale For Rest?

- The injured brain might be in a state of neurometabolic crisis.

- Assuming that neurometabolic crisis involves an “energy crisis,” then vigorous activity might compound or magnify the energy crisis.

- Passing another mechanical force through the injured brain, while it is in a state of neurometabolic crisis, might result in magnified pathophysiology.
Silverberg and Iverson concluded that bed rest exceeding **three days** is not recommended and gradual resumption of pre-injury activities should begin as soon as tolerated.

Journal of Head Trauma Rehabilitation 2012
Possible Harm of Prolonged Rest

- Falling behind in school with increased associated stress
- Physical de-conditioning and evolving exercise intolerance
- Nocebo effects (expectation of sickness as a cause of sickness)
- Somatic preoccupation and Cognitive Hypochondriasis
- Depression
Initial Weeks Following Injury (and sometimes months following injury)

Focused, Evidence-Based Treatment for Specific Symptoms and Problems

- Medications
- Neuro-ophthalmologic evaluation/treatment
- Physical Therapy
- Vestibular Rehabilitation
- Exercise
- Psychological Treatment
CTE

- Today, the neuropathology of CTE is more well described

- Postmortem description of CTE has had great impact on public policy and awareness

- Misinformation and mis-reporting by media continues to fuel fear.


- The public thinks that the science of CTE is far more advanced than it really is.
CTE: What We **Do** Know

- NOT prolonged-post concussion exposure
- NOT the cumulative effect of concussions
- NOT a brain injury “per se”... it is a **neurodegenerative disease**- Dr. Stern, BU Brain Bank
CTE: What We Need To Know

- Is it common? We just don’t know yet.
  - 90 of 94 FB players in BU-VA-CLF brain bank had CTE.
  - Biased?
    - Mayo (2015) less biased but........

- Why do some get it and others not?
  - Not everyone who hits their head will get it.
Westchester County
Concussion Task Force
Why Safer Sports and Task Force

- Evaluate how districts and youth programs manage/address concussions.

- **NOT** about singling out districts/programs/clinics that do this poorly, but also identifying ones that do it well.

- Despite every state having a concussion law, loop holes remain.

CIC? CBIS? CPR?
Task Force Members

- Pediatrists
- Pediatric Neurologist
- Pediatric Neurosurgeon
- Psychologists
- Athletic Trainers
- Athletic Directors
- Parks & Recreation

- Orthopedic Surgeon
- Physical Therapists
- Vestibular Therapists
- School Nurse
- Section 1 Safety
- BOCES staff
- Superintendents
- County Departments
Steve Schainman – THANK YOU!
For More Information

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