

Concussion; Beyond the Injury

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JABSOM

Treatment of concussions

- Concussion recovery is highly individualized.
- No grading of concussions in sports
- **Rest** initially and careful management of physical and cognitive exertion are the keys to recovery
- Middle school vs. high school vs. college
- Return to learn
- Return to play



Every Brain is different

- No set protocol for management
- Pieces of the puzzle
 - Symptomatology
 - Initial symptoms
 - Symptoms first 72 hours
 - Predisposing factors
 - Physical Exam
 - Neuro
 - VOMS
 - Neurocognitive testing
 - Balance testing



Tips

- Relative rest for 48-72 hours is crucial
- School notification
 - Middle school (PE)
 - Club sports/non school sports
 - Open communication
- School accommodations
- Dizziness at time of injury or being in a “fog” the first 72 after injury are not good
- Testing with ImPACT in the first 72 hours may be helpful
- Should be turning the corner after 3-4 weeks
- Medications may be beneficial for prolonged recovery



What about prevention

- Protective gear; must fit properly and be maintained and worn the right way at all times.
- Helmets are NOT designed to prevent concussions.
- Rules must be enforced for helmet contact in football.
- Proper technique in sports is important in concussion prevention.
- Playing smart with discipline and control goes a long way.



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More on prevention

- Helmet (VT helmet rating)
- Helmet covers
- Mouthguards
- Soccer headgear (goalie)
- Rule changes (kick off rule)
- Behavior modification
- Visual performance
- Cervical strengthening



Beyond concussions



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Additional injuries

- Seizures
- Head bleeds
- Skull fractures



Worsening of Symptoms

- Majority have symptoms on impact/at the time of injury.
- Small percentage are delayed
 - especially if they continue play.
- After rest, symptoms usually improve.
- Worsening of symptoms after improvement (minutes to hours) should be a red flag
 - epidural hematoma.
- More likely if there is skull fracture



Skull fracture

- May be subtle or obvious
- Otorrhea
- Rhinorrhea
- Battle sign
- Raccoon eyes
- Mechanism of injury; severity of the impact



Any change to level of consciousness should have emergent hospital evaluation

Worsening of Symptoms

- Close observation especially 1-2 hours of injury.
- If going home,
 - Athletic trainer or coach is to counsel caregiver
 - Ensure someone will be with the athlete.
- If worrisome for hemorrhage
 - Immediate referral to emergency room.
- RTP for worsening symptoms without epidural hematoma/skull fracture is the same protocol.

Seizures



- Uncommon
 - in Rugby 1/70 concussion had seizure at the time of impact.
- Seizures that occur minutes to hours after the event is worrisome
- No increased risk in developing epilepsy after having seizure at the time of concussion.
- RTP
 - no change in protocol if convulsions occur at the time of the impact
 - if occurs later, neurological consult to clear.

Multiple Concussions

- No rule for # of concussions and retiring from sport.
- Longer recovery time
- Short intervals between concussions
- Less impact to cause symptoms
- Not returning to normal/baseline



It's been 3 weeks...still not
better...now what?!?!

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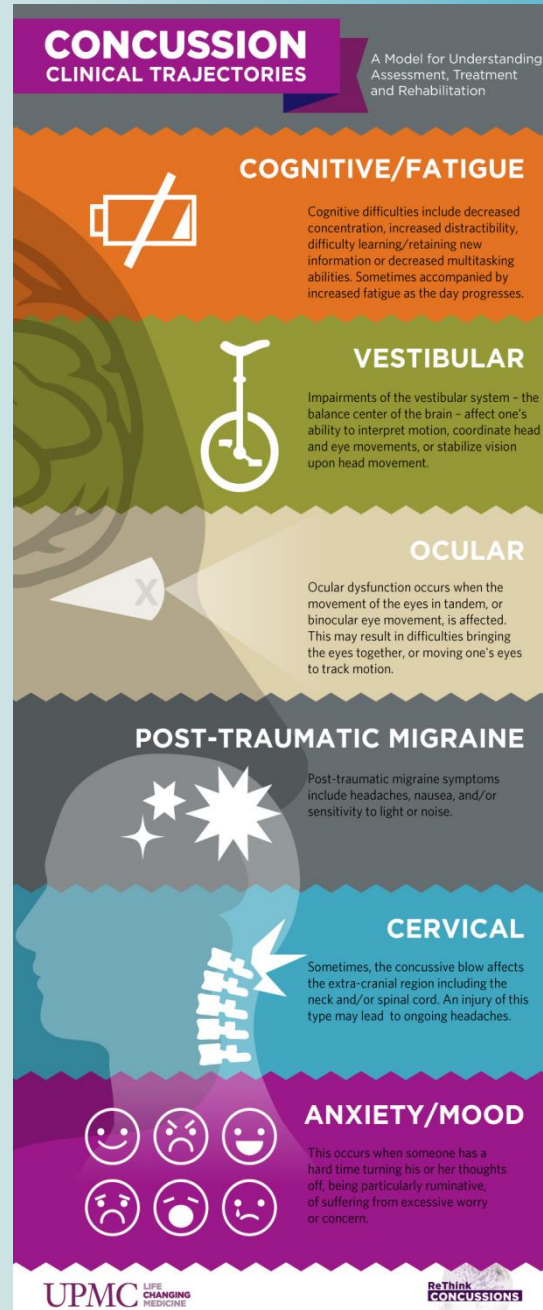
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Prolonged symptoms

- After 2-3 weeks, must determine if symptoms are from concussion or outlying factors.
 - Mood changes
 - Sleeping problems **
 - Psychological problems
 - Depression
 - Chronic fatigue and pain
 - Neck injury
 - Vestibular problems
 - Visual problems



UPMC model



CREATING A HEALTHIER HAWAII

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Cognitive/fatigue

- Grandma/Toddler therapy
- Sleep hygiene +/- melatonin
- Academic adjustments



Get Schooled on Concussions



getschooledonconcussions.com

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Vestibular

- Vestibular therapy
- Gradual exposure to busy environments



Ocular

- Ocular therapy-controversial
- Prism glasses
- Guided reading
- Increasing font
- Thorough eye exam



Post-traumatic migraine

- Family history puts them at higher risk
- Treat the same as migraine without history of concussion
- If daily consider prophylactic medication



Cervical

- Whiplash mechanism common
- Occipital headaches
- Neck pain/tightness
- Therapeutic exercises



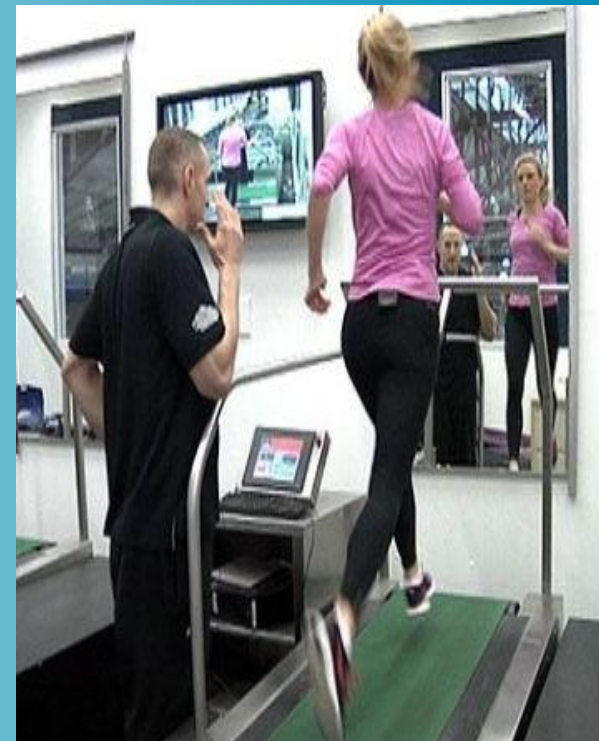
Anxiety/Mood

- Support system
- May need psych
- Academic adjustments



Concussion verses life

- Symptoms worse with exertion and made better with rest, then likely to be related to the initial concussion
 - ?visual system
 - ?balance system
- If symptoms are exacerbated by minimal activity and not improved by rest, likely a secondary reason for symptoms.



Who is at risk for PCS?

- History of prior concussions
 - Female sex
 - Younger age
 - History of cognitive dysfunction
 - History of affective disorders
-
- There has been no association thus far with severity of injury and post concussion syndrome.



Prolonged rest

- Physical deconditioning
 - Metabolic disturbance
 - Fatigue
 - Reactive depression
-
- No evidence that rest beyond several weeks is beneficial



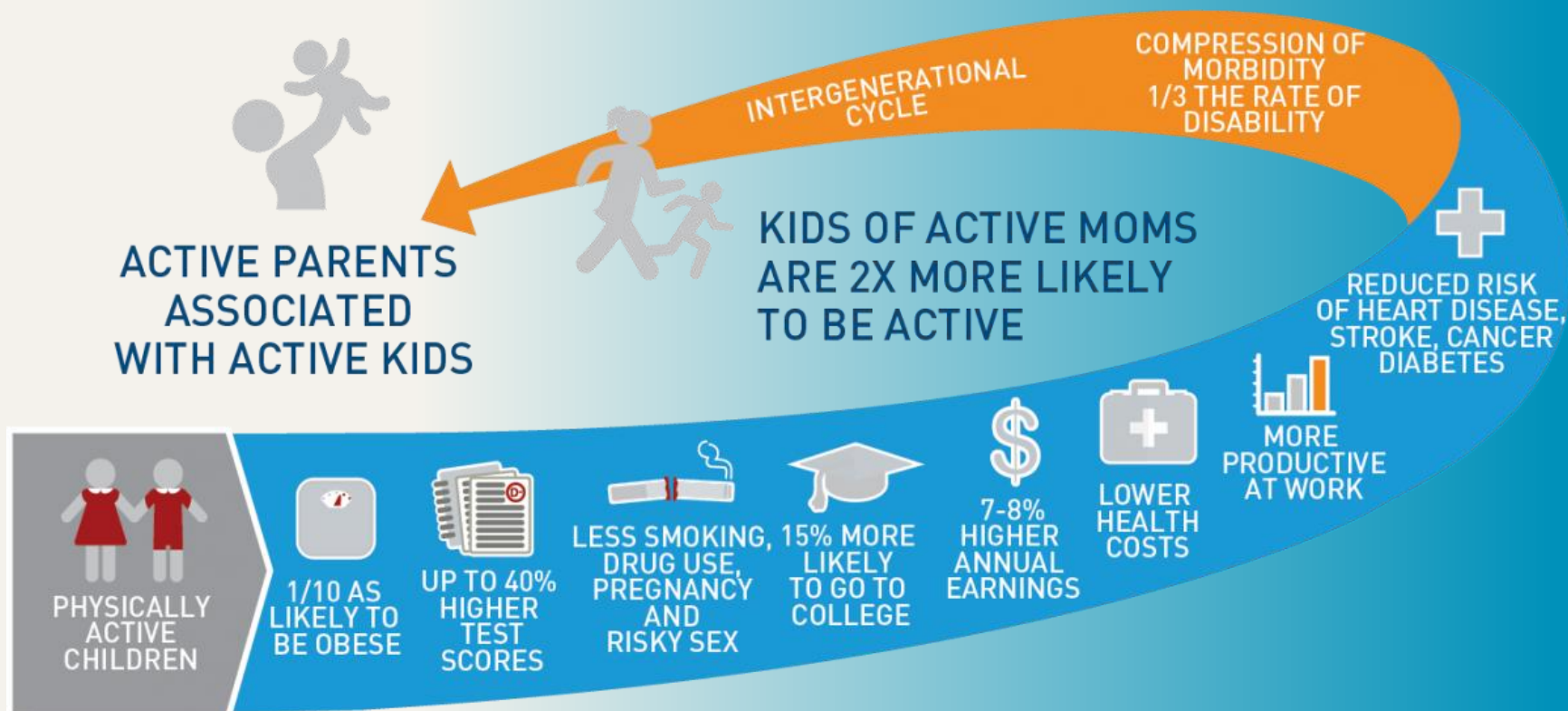
Road to recovery

- Once each portion addressed, full recovery anticipated
- If still symptomatic at 4 weeks, time to push the envelope
- Many benefits to sports/activity participation



ACTIVE KIDS DO BETTER IN LIFE

WHAT THE RESEARCH SHOWS ON THE COMPOUNDING BENEFITS



EARLY CHILDHOOD

ADOLESCENCE

ADULTHOOD

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CREATING A

healthier

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Thank you

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Resources

- Hawai'i Concussion Awareness and Management Program: <http://www.hawaiiconcussion.com/>
- UPMC Rethink Concussions: <http://rethinkconcussions.com/>
- Brain 101: Concussion Handbook: <http://brain101.orcasinc.com/1000>
- REAP (Reduce/Educate/Accommodate/Pace) Program: a community-based concussion management program: <http://www.rockymountainhospital-forchildren.com/sports-medicine/concussion-management/reap-guidelines.htm>
- CDC Foundation Online Training for Clinicians: <http://preventingconcussions.org/>
- Centers for Disease Control and Prevention: Fact Sheet for School Professionals on Returning to School after a Concussion: http://www.cdc.gov/concussion/pdf/TBI_Returningto_School-a
- Centers for Disease Control and Prevention: Heads Up for Schools: <http://www.cdc.gov/concussion/HeadsUp/schools.html>
- Centers for Disease Control and Prevention: Online Coaches Training: http://www.cdc.gov/concussion/HeadsUp/online_training.html
- Dr. Mike Evans Concussions 101 Video: <http://www.myfavouritemedicine.com/concussions-101/>
- Frequently Asked Questions about 504 Plans: <http://www2.ed.gov/about/offices/list/ocr/504faq.html>
- Sample Return to Learning Note for Physicians: <http://www.aap.org/en-us/about-the-aap/Committees-Councils-Sections/Council-on-sports-medicine-and-fitness/Documents/returntoschool.pdf>