CONCUSSION MANAGEMENT PROTOCOLS

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INTRODUCTION:

Mild traumatic brain injury (MTBI), commonly known as concussion, is one of the most common neurologic disorders. Schools can improve patient outcomes when MTBI is suspected or diagnosed by encouraging early treatment and appropriate referral and limiting cognitive demands on a newly injured child until they have been symptom free for at least 24 hours. Once symptom free, they may need a gradual re-entry to academic demands.

Early MTBI symptoms may appear mild, but they can lead to significant, life-long impairment in an individual's ability to function physically, cognitively, and psychologically. Although currently there are no standards for treatment and management of MTBI, appropriate diagnosis by a physician, referral to a specialist for serious injury, and patient and family education to avoid further damage with re-injury are critical for helping MTBI patients achieve optimal recovery and to reduce or avoid significant sequelae.

Each year in the United States approximately 1.5 million Americans sustain traumatic brain injuries, ranging from mild to severe, and, of those, 50,000 people die from TBIs.

Because MTBI symptoms may evolve over days, it is important that educational teams are aware of the impact head injury has on a student. Cognitive symptoms may include: difficulty focusing, problems attending, diminished concentrating, memory deficits, especially short and medium term memory problems, slow response time, or word retrieval issues.

The student may experience physical and behavioral symptoms while in school, such as emotional lability, irritability, mood swings, depression, or anxiety. The student may be sleepy if he/she is having sleep disturbances at home. They may not remember things they already learned and may demonstrate a loss of initiative or motivation. They may complain of headaches, dizziness, fatigue, nausea, or blurred vision.

Concussion in sports is a term that seems less significant than what actually happens in an head injury: traumatic brain injury. The severity of the trauma depends on the degree of injury, and happily, most sport related concussions result in mild traumatic brain injury. However, mild traumatic brain injury in sport is a significant condition that affects 1.6 to 3.8 million student athletes. Symptoms may last from several minutes or hours to days, weeks, or months. Severe injury can result in permanent disability and even death. Yet, with most sport related head injury, proper diagnosis and management can see full recovery in most patients.

In 2004, the Prague International Conference on Concussion reviewed concussion and established new guidelines for proper diagnosis and treatment. This current document is based on the Prague guidelines and is designed for schools to use to implement the best practices currently

available in the proper recognition, management, and return to play following concussion.

Sample forms and letters are available at the end. As this is a relatively new approach to mild traumatic brain injury, the expectation is that each district should attempt to work toward educating parents, coaches, students, athletic trainers, and even community physicians and in implementing basic common sense approaches to decrease the risk of further injury to student athletes and to have the best possible outcomes following injury. If costs will not allow full implementation of the protocols, efforts should be made to develop a three to five year plan to ensure there is a positive trajectory established in the proper management of mild traumatic brain injury associated with sports.

Each district is encouraged to involve and work closely with the school physician and school nurse who can alleviate the burdens of responsibilities that coaches often feel when they are left alone to make what amount to medical decisions. Until there is widespread education of the community physicians, there may be times when what the private physician recommends may differ from current practice suggestions, because old standards of care may still be in use. However, a team approach can go a long way in assuring that all children across NYS receive the best possible care that is available to them following head injury.

PRAGUE CONCUSSION GRADING DEFINITIONS

Simple:
An athlete suffers an injury that progressively resolves without complication over 7 to 10 days. In such cases, the athlete must restrict cognitive and physical activity while symptomatic in any way, and in general no further intervention is required during recovery. After rest until all symptoms resolve and IMPACT testing is back to baseline can be followed by a graded program of exertion outlined below. All concussions must be managed by a medical doctor.

Complex:
An athlete suffers persistent symptoms, including persistent symptoms on exertion, has specific neurological symptoms in the actual injury (such as loss of consciousness for > 1 min; amnesia, seizure), or has prolonged cognitive impairment or post concussive symptoms. This group also includes athletes who suffer multiple concussions over time. These athletes must be followed by medical specialists in concussion management and cleared by them as symptom free; must return to baseline in the IMPACT testing; and must be completely symptom free on exertion for a minimum of one week and as much as three months or more for significant injury, brain surgery, post-concussive syndrome.

Graduated Return to Physical Exertion and Activity:
There is a six phase or step gradual return to activity. The return to play (RTP) protocol may not start until an athlete is completely symptom-free for a full 24 hours, and must remain symptom-free following each stage before progressing further. At any time symptoms return after a stage completion, the athlete must rest again until a full 24

hours symptom-free has elapsed, at which time the progression can restart at stage 1. No steps may be skipped or combined to speed up the process. The steps are:

1. The graduated re-conditioning program is as follows:

   STEP 1 low impact non-strenuous light aerobic activity for short intervals, such as easy walking, biking, swimming in three ten minute intervals; no resistance training

   STEP 2 higher impact, higher exertion activity in two 15 minute intervals, such as running/jumping rope, skating, or other cardio exercise; may be sports specific if available (e.g. skating without collision meaning suited up, but skating when the team is not doing drills; running without impact in soccer or football, suited up), no resistance training

   STEP 3 repeat day Day 2 progressing with shorter breaks, and add 10 to 15 min. stationary skill work, such as dribbling, serving, tossing a ball (balls should not be thrown or kicked in the direction of the student); low resistance training if available with spotting

   STEP 4. repeat Day 3 without breaks in cardio, but add skill work with movement (allowing balls to be thrown/kicked in the direction of student); non-contact training drills

   STEP 5. repeat Day 4 as a warm up; weight lifting with spotting; full contact training drills

   STEP 6 warm up followed by full participation in game play as tolerated

SAMPLE BOARD OF EDUCATION POLICY
CONCUSSION

The Board of Education recognizes the seriousness of head trauma of any sort, in and out of school, and the potentially progressive nature of an impact to the head especially during the first week following injury where re-injury can result in second impact syndrome, more severe injury, and long term disability and even death to the student.

The Board further recognizes the evolving research that has demonstrated the importance to provide all students with any degree of concussion appropriate safeguards and educational accommodations during the healing phase of their recovery. Because of the short-term nature of concussion, a student may require significant short-term program modifications without the benefit of an IEP or 504 Plan already in place.

The Board finally recognizes that well-informed parents, athletes, and

staff are the greatest prevention measures to avoid those instances of preventable head injury and to minimize risks with unavoidable injury through early recognition and management.

Accordingly, the_____ School District will adhere to all state and federal laws governing the rights of students with special medical needs and will take reasonable measures to work with both the health care provider and the family to ensure the health and safety of all students including children with concussion. This policy encompasses any physician documented traumatic brain injury. Reasonable measures may include, but are not limited to:

- providing training for educational teams, athletic staff, parents, and students about prevention strategies, the risks of head injury associated with sports, proper use of personal protective equipment and devices, and importance of reporting injuries promptly to an adult who can help them. Education will also address the aftermath of any injury to the head, inside or outside of school, and the importance of cognitive and physical rest during healing.
- having standing emergency medical protocols for athletic staff and club supervisors created by the district physician;
- maintaining a concussion management team in the district as selected by the superintendent (or designate) to include key personnel in academics, physical education, athletics, and health services to oversee and implement concussion management protocols at each building level.
- assuring appropriate and reasonable building accommodations are in place within a reasonable degree of medical certainty as a student is healing which may include testing accommodations not previously specified, homework and project extensions, incompletes without typical penalties, and other short term academic accommodations that will not last long enough to warrant an IEP or 504 Plan.

Furthermore, the district will implement in its concussion management protocol standardized measures of assessment of injured students and adherence to a return to mental and physical exertion on a progressive program consistent with guidelines from the New York State Public High School Athletic Association and in accordance with any laws governing the State of New York.

CONCUSSION MANAGEMENT PLAN

ACADEMIC RE-ENTRY

ACADEMIC RE-ENTRY PLAN

Once a student has been diagnosed with concussion by a health care provider, the student should remain at home until he/she has been cleared to return to school. While tutoring may be provided with medical justification, it should only be done based on a student's ability to participate safely and without symptoms.

Once the student returns to school, the school nurse and/or AT will do the same daily monitoring of the student that is done for re-entry to physical activity including physical education and interscholastic sports, using a standardized assessment tool, like ACE or SCAT among others. The nurse and/or AT will share his information with the counseling office. The school nurse and/or athletic trainer will monitor the student for any persistent symptoms as the student progresses in academic and physical demands.

If cognitive testing is available, such as, but not limited to ImPACT, the school nurse and/or AT will review test results in collaboration with the district physician/NP. The school nurse will share pertinent information with the counseling office when the student is symptom free for 24 hours.

Once a student is symptom free for 24 hours or is only mildly symptomatic and is able to return to class and learn, the student may begin a full or graduated return to academics as tolerated and in coordination of the parents, physicians, teachers, and counselors. Based on the student's stamina level his/her return initially may require a shortened school day, such as a later start or earlier dismissal. All intellectually demanding activities should be assigned "as tolerated" meaning that the student is instructed to alert the nurse, counselor, AT if and when he develops any difficulties suggestive of a return of symptoms.

Initially and depending on the severity of the injury and the amount of time the student has been out of school, based on a team decision including the counselors, the teachers, the parents, and the medical team, the student may be allowed only to attend core courses, or only specials. If the student participates in physical education, the graduated re-entry plan shall be followed. Homework should be withheld in the first few days of re-entry until it is clear that the student is tolerating the return to academic demands by remaining symptom free. Similarly, testing, including standardized tests, and long-term projects that require strategic planning and time management while a student is still symptomatic should be reduced, eliminated, or postponed.

Over the course of a five to six day period, with close monitoring by the counselor, the student should plan to add more courses, lengthen their day, participate more fully in class discussion, and begin to accept reasonable amounts of homework lasting no longer than an hour in the evening to start. If there is a re-emergence of symptoms, the

student may need to drop back to the last level of symptom-free activity. Efforts are important not to penalize a student for time or work missed secondary to a bona fide head injury.

CONCUSSION MANAGEMENT: SPORTS AND PHYSICAL EDUCATION

INTERSCHOLASTIC SPORTS: PRE-SEASON PROTOCOLS

Parents and Athletes
All parents and athletes will view the CDC *Heads Up* program film clip and/or the New York State Public High School Information Video and will receive a printed copy of the *Heads UP* fact sheets for parents and athletes and a written explanation of district protocols for return to activity and play at the preseason mandatory meeting.

If available, all players in all levels of athletics in contact or collision sports will take a pre-test of cognitive skills such as but not limited to IMPACT to establish a cognitive baseline.

Coaches, Athletic Trainers, School Nurses
All coaches, athletic trainers, and school nurses will familiarize themselves with the *Heads Up* concussion guide for coaches as the basis for understanding and recognizing signs and symptoms of head injury. A concussion assessment tool such as, but not limited to, SCAT, ACE, SAC, or another acceptable version of a standardized assessment tool cleared in advance by the district physician will be used by athletic trainers, coaches, and medical personnel both at the sidelines and later by the school nurse in follow-up assessments. For best results, all staff should use and record their findings with the same assessment tool. All injuries that required a referral for medical care will be followed up by the coach with at least a phone call to the parent that day.
All head injuries with suspected concussions will be reported by the coach to the nurse on the next school day, so h/she can follow up with the family and private health care providers and family as indicated. The school nurse is not involved in pre-season testing. However, in a child with a known head injury in the prior season, it is the nurse's responsibility to obtain medical clearance from the primary physician and/or the treating physician, and she would go through the usual clearance process with the district physician or NP if there are any questions regarding the need for graduated re-entry.

A printable version of Sport Concussion Assessment Tool (SCAT) is available at:
http://www.physsportsmed.com/issues/2005/graphics/0405/concussion.pdf

The Standardized Assessment of Concussion (SAC) can be ordered at:
http://www.csmisolutions.com/cmt/uploads/sac_informational_kit_001.pdf

The Acute Concussion Evaluation (ACE) can be found at:
http://www.cdc.gov/ncipc/tbi/Physicians_Tool_Kit.htm

Athletic Directors
All athletic directors will ensure that all coaches and athletic trainers have and are using both serious injury protocols (see sample) and head injury assessment tools (SCAT, ACE, SAC, or other standard assessment tool). They will also enforce a policy of notification of the school nurse for follow-up following an injury.

ACUTE INJURY PROTOCOLS:

Staff Roles

Coach or Club Supervisor
If a physician, school nurse, or Athletic Trainer is available to do an assessment, the coach or club supervisor will turn the matter over to the medical person. If a medical person is not available, the coach will determine whether the player sustained a head injury, by observation, interview, or collaborative stories from teammates. If so, when a player describes ANY symptoms or demonstrates any signs of a concussion via the standardized assessment tool:

- The player is not allowed to return to play in the current game or practice even if symptoms seem to resolve or if the player denies injury after he admitted to injury. The player should try to complete the SCAT, SAC, or ACE created for athletes ideally under the oversight of the team physician, athletic trainer, athletic director, or school nurse. If none is available, the coach should ask the student to sit at the sidelines and complete the written survey without assistance from anyone. Initial incorrect responses will be considered failure even if later corrected by the athlete. Correct responses following a witnessed significant blow or jolt to the head are recorded for future comparison, but the player should still not be allowed to return to play that day. If the student cannot provide details of the injury, collaborating information from teammates may be useful. However, failure to provide details suggests amnesia for the event, and that should be documented for future use as a sign of concussion.
- The player is not left alone; the coach or club supervisor will do regular monitoring using SCAT, SAC, or ACE entitled "medical evaluation" for signs of deterioration; this should be done in half hour intervals, or sooner for obvious deterioration. Close monitoring should be done for three hours following injury either by the athletic trainer, the coach, or the parent at the bench or at home. At any sign of deterioration, medical help must be immediately sought by calling 911 and parent notification
- The parent must be notified and given a head injury information sheet (see sample), and the player must be medically evaluated by the private physician following a head injury if there are any symptoms, even those that have resolved or were fleeting
- A head injury with symptoms of any sort meant that without exception return to play may not occur on the same day of injury, as the coach should not be making a medical determination for return to play.

School Nurse

The school nurse will contact the athlete and/or parents following a head injury to discuss the severity of the injury. The school nurse will also determine whether the parent sought medical care and/or notified the private provider of the injury. If it appears the parent did not seek proper care, the nurse will advise the parent to have the student evaluated as soon as possible and explain why.

The school nurse will counsel the parent and athlete that the player will profit from both physical and cognitive rest to speed recovery. She will advise the parent to contact the student's counselor if learning problems seem to develop with during the healing phase. For parents that are aggressive in wanting their child to return to play sooner than district protocols, a copy of the written protocols will be given, and if necessary the parents may watch again the *Heads Up* video. The school nurse will be in contact with the athletic trainer and/or coach to advise them of student medical process. The school nurse will contact the athletic trainer and/or the coach to tell them when the child has been released by the private physician.

When the private physician releases the child for "return to play" (RTP), the school staff shall interpret that as the child's having had 24 hours free from all symptoms and, therefore, has been cleared to begin the six day graduated re-conditioning program. The private physician clearance does not mean that the child is free to return to play in practice or competition that day. If there is any question about the private physician's release, the school nurse and/or athletic trainer will involve the school physician in the decision making. **The private physician's clearance "without restriction" is not an absolute determination for the student to return to drills, practice, and competition. It is only a clearance for the student to begin re-entry. The final determination is between the school health team (the school physician and/or nurse practitioner, the school nurse, and the athletic trainer).**

Athletic Trainer:

INTRODUCTION

When a certified Athletic Trainer (AT) is available, the AT will assess all head injuries and complete a standardized assessment form for review by the AT supervising physician and consultation with the district physician and/or nurse practitioner, as needed, and eventual sharing with the school nurse.

The AT oversees all Return to Play (RTP) activity. The AT should note that Phase 1 is not the first day of injury, but rather the first phase whereby the athlete has been symptom free for 24 hours. Any time symptoms recur following progression of the stages of exertion, the athlete must return to Phase 1 after being symptom free for 24 hours. The phases may progress consecutively if the athlete has no return of symptoms, or may require discontinuation, regression, holding, or progressing based on the AT ongoing assessment and collaboration with

supervising physicians, and/or Nurse Practitioner. A "six-phase" RTP protocol could, in essence, take many more days, weeks or months before an athlete has regained full access to contact. During vacations or long weekends, the six-phase RTP may be interrupted by not seeing an athlete daily. After any breaks in tracking an athlete, the AT should reassess the athlete and in most cases stay at the prior level of exertion if there is any concern over the accuracy of the student's self-reporting, especially if it is in conflict with the AT assessment.

Remember, the first seven days are the most critical days to avoid re-injury. 92% of all second concussions occur during this critical period. Phases 1-4 involve gradually increasingly exertion that will cause symptoms to re-emerge if the concussion is still actively evolving. As long as activity is discontinued until the athlete is symptom-free again for 24 hours, the risk is low. Phase 5, contact drills, is the phase that warrants the most careful scrutiny including medical clearance from an appropriate physician.*

HEAD INJURY MANAGEMENT

EMERGENCY

In the event of an **emergency** while the athlete is still under the immediate care of the AT, the AT will stay with, reassure, and stabilize the athlete as best as possible and arrange to have the athlete transported via ambulance to the Emergency Department (ED). The AT will notify the parents, and will follow the **Post-Injury Protocol** upon the athlete's return. If parents cannot be located and their emergency contact may not be located, the child's transportation to the ED should not be delayed, and a school staff member or the AT should accompany the child.

NON-EMERGENCY

For **non-emergencies**, athletes with head injuries may not drive themselves home. Instead, the AT will release the athlete to the care of the parent/parent designate and will provide the parent with district's Parent Head Injury Letter and the Physician Medical Clearance Form (see attachments) for the appropriate physician* to complete. The AT will educate the parents, and will follow the **Post-Injury Protocol** upon the athlete's return. In the event the parent or parent designate cannot be reached and the student is not ill enough to send to the emergency room, the AT should contact the building principal for guidance, if an action plan has not been given to the AT in advance.

Ideally, all athletes who sustained a head injury with symptoms should see their primary care physician prior to any return to play, even Step 1. This may not always happen immediately following an injury, especially if symptoms have not worsened, or if recess, school holidays, or Sundays are involved.

Therefore, at the time of injury, regardless of severity, based on the circumstances, the AT will attempt to educate parents that:

- the return to play process and the adherence to the required six phases of progression, as per the Prague Zurich International Guidelines for Head Injuries. Increased exertion advances are sequentially based upon the athlete's general neuro-cognitive and physical condition after each advance. A parent may only oversee Step 1, even if several days have elapsed in-between the time of injury and the time when the AT assesses the student.
- no steps will be skipped, and the AT will monitor each phase of the process with collaboration of the Supervising Physician, the District Physician, and/or the district Nurse Practitioner in cooperation with the appropriate private physician*.
- the RTP protocol has steps or phases not days, because a "six-step" return to play protocol could, in essence, take many more days, weeks or months before an athlete has regained full access to contact. The duration of each phase length varies with the degree of injury and the child's medical responses to increased exertion. A six step RTP could take as short as six days, but could extend longer for the child's individualized healing response.
- if an athlete is having any evolving symptoms, the parent should take the athlete to the ED, not UC, to avoid needless delays in treatment.
- at most, the parent may assist the athlete to begin step 1 following 24 hours of being symptom free. They should not advance beyond light aerobic, non-impact activity and should stop any activity if symptoms return and seek immediate medical evaluation through an appropriate physician* or the ED.

BORDERLINE CALLS

If the athlete's symptoms are mild, do not include a change in mental status, and completely clear within 5 minutes of impact, the AT should hold the athlete out of play for at least 20 minutes. At that time, if the AT reassesses the AT and feels the athlete may not have sustained as serious an injury as previously thought, the AT may conduct provocative testing and SCAT, SAC or ACE and, if still symptom free, use professional discretion to consider returning the athlete to the game for one play or natural break. After the one play or natural break, the AT will reassess the athlete for symptoms and may base further participation in that game upon those newer findings. If the athlete returns to play again, at the end of the game, the AT should do a final reassessment and record findings.

POST INJURY PROTOCOL

There are two types of clearances needed for advancement to the next RTP phase. The first is by the AT, which is done at each stage, Phases 1-6. The AT will always conduct his/her own assessment/reassessment whether present at the time of injury or not, and will determine, with assistance as indicated from the Supervising Physician, District Physician or Nurse Practitioner, the athlete's progression through the Phases 1-4 of re-entry. The second type of clearance needed is by the appropriate physician* for two instances. The first is whenever there is a return of symptoms in which case immediate care by the appropriate physician* or ED is indicated, and the second is before the athlete progresses to contact activities in Phase 5. Before Phase 5, the athlete also requires re-assessment by the AT. Without both Phase 5 medical clearance and AT reassessment, the AT will hold the athlete at Phase 4 activities without contact drills until further discussion with the Supervising Physician, the District Physician, and/or the district Nurse Practitioner in cooperation with the appropriate private physician*.

Of note, even if the appropriate physician* has given the parent a clearance letter to advance phases, but AT reassessment has been delayed by a day or two, because of unavoidable circumstances, such as limited staffing, an athlete may not progress to the next phase without AT reassessment,. Similarly, if the AT has done a favorable reassessment, but the appropriate physician* has not evaluated and cleared the athlete, the athlete may not progress to the next phase without the appropriate physician* written clearance. In either instance, the AT will advise the athlete to hold at the last approved phase of symptom-free activity while the athlete is awaiting AT and/or appropriate physician * reassessment to advance phases,

If the AT made a clinical decision that concussion/head injury occurred, the AT will put the concussion management RTP protocol into operation, even if the appropriate private physician* writes a subsequent diagnosis that concussion did not occur. The AT also will not accept full medical clearance to RTP without gradual exertion written by anyone who asserts a head injury documented by the AT did not occur.

- the physician form must be completed by a private appropriate physician* only.
- all medical clearances to return to play are simply clearance to begin the phases of the RTP process following a head injury, not full resumption of the sport as if an injury had not occurred.
- the athlete might miss practices or games for their child's safety based on the child's progress.

If the AT has made a determination that head injury occurred the AT will use the following guidelines when dealing with RTP:

- The district certified AT may begin the initial Phases 1-4 of participation in the RTP progression following a thorough daily AT evaluation before each advancement. Such assessments should be in consultation with the supervising physician and/or district physician/nurse practitioner as indicated. This may occasionally occur without ED or appropriate physician* clearance as stated above.
- A private appropriate physician* must also assess the athlete prior to advancement to contact drills in Phase 5.
- The AT may not accept a letter to "RTP without restrictions" from any physician
  following the AT assessment of a head injury without prior approval and collaboration by supervising physicians or the District Nurse Practitioner.
- Without exception, the AT will interpret all RTP clearances as clearance only to begin the six-phase re-entry protocol. Clearance to RTP never implies a resumption of full unrestricted activity following the medical assessment of a head injury by the AT. If there is any confusion by the AT, coach, parent, or athlete concerning this, or if the AT disagrees with the written assessment of the student by the appropriate physician*, the AT will hold the athlete from further advancement and discuss the matter with Supervising Physician, District Physician, or the District Nurse Practitioner.
- The AT may not accept medical clearances written by parent/friend/relative physicians or by those whose scope of current practice is not directly related to concussion evaluation and management.
- The AT will withhold a student from contact activity until the child's appropriate physician* has given clearance to do so following the usual symptom-free progression of exertion and consultation as needed with AT supervisors. .
- The AT will use whatever means are available to do a convincingly accurate assessment to assist in determining the athlete's physical and neuro-cognitive status, such as, but not limited to provocative testing, serial SCAT assessment, interview, observation, neuro-cognitive testing, etc. The AT may make an independent decision to withhold an athlete from further progression any time the AT has a concern of an athlete's recurrence of symptoms, questions, or if the AT cannot reach the Supervising Physician, the District Physician, and/or the district Nurse Practitioner in cooperation with the appropriate private physician* in a timely fashion. The exceptions are during Phases 1-4 when the risk of head re-injury is low, or if the AT discussed a contingency plan with the supervisors in advance of this circumstance.
- If an injury occurs, and the AT has not assessed the athlete for several days due to lack of opportunity, the AT shall first do or re-do the assessment of the athlete as stated in the above point. to determine the

athlete's current neuro-cognitive and physical status, and to gather baseline information on types of activities that occurred during the intervening days. A child who rested for three days post-injury compared to a child who was doing light aerobic activity will require individualized management geared to their level of exertion and presence of symptoms.

- At any time there is a question, disagreement, or borderline call, the AT will confer with supervising physicians or nurse practitioner to determine whether to regress, hold steady, or progress to the next phase of exertion.
- The AT will refer parents, coaches, or athletes who pressure them to circumvent the RTP process directly to the Director of Athletics, to discuss the administrative aspects of the head injury program.
- The AT will keep medical releases and letters in a secure confidential location and give them to the school nurse when school resumes. The AT should plan to meet with the school nurse for any cases that are still in progress, so she may be integrated into the process as the student progresses through the RTP procedure.

**** For the purposes of the head injury RTP protocol, an appropriate physician evaluation is completed by a practicing MD or DO within the following specialties: family medicine, pediatrics, sports medicine, neurology, or neurosurgery, with preference given to the individuals' primary care physician. Family members and friends of the family who are medical providers may not serve as an appropriate physician. The physician completing the physician's evaluation form should document name, degree, specialty, practice name (if applicable), address, and phone number.***

RETURN TO PLAY PROTOCOLS FOR INTERSCHOLASTIC SPORTS:

All athletes with any grade of concussion diagnosed by a physician require a structured, gradual exertion protocol that is individualized based on the student's skills and degree of injury in cooperation with the health care provider. No athlete with any grade of a diagnosed concussion with any symptoms, even fleeting, may return to play on the same day of the injury. Once diagnosed with a concussion, either simple or complex, the student must be symptom free for 24 hours. Following a concussion, the return to play means return to graduated re-conditioning leading back up to drills, practice games and competition. Students may not return even to the graduated re-conditioning program until the following components are in place:

2. They have been cleared as being completely without symptoms by their private provider and/or school physician for simple concussion and by a specialist in concussion management for complex concussion and have been symptom-free for a full 24 hours, AND
3. If cognitive testing is available, they have taken the post-test for cognition after 24 hours of being symptom-free after day 4 of return to play before contact. Any questions as to interpretation of the testing should be directed to the school physician and/or the physicians covering the program being used for testing. The

student's cognitive testing ideally should be completely returned to baseline before beginning contact/collision; however, they may be determined ready to return to a carefully monitored graduated re-entry to play upon discussion with the testing physicians and/or the school physician, even without a 100% return to baseline. Of note, memory and reaction times appear to be of most importance in making the assessment of RTP, AND

4. If cognitive testing is not available, they have been reviewed by the school physician, school nurse, and/or athletic trainer with the SCAT, SAC, or ACE criteria and been found to be completely at baseline and symptom-free for 24 hours, AND
5. All activity for resumption of play must be in a step-wise fashion with a drop to the previous level if any post-concussive symptoms emerge at any time of advancement. **NO STEP MAY BE SKIPPED**. If the coach or AT doubts the truthfulness of the athlete in reporting symptoms, cognitive testing may be used as a guide before allowing return to activity. If cognitive testing is not available, all staff must err on the side of caution and hold the student back.
6. The graduated re-conditioning program is as follows:

   STEP 1 low impact non-strenuous light aerobic activity for short intervals, such as easy walking, biking, swimming in three ten minute intervals; no resistance training

   STEP 2 higher impact, higher exertion activity in two 15 minute intervals, such as running/jumping rope, skating, or other cardio exercise; may be sports specific if available (e.g. skating without collision meaning suited up, but skating when the team is not doing drills; running without impact in soccer or football, suited up), no resistance training

   STEP 3 repeat day Day 2 progressing with shorter breaks, and add 10 to 15 min. stationary skill work, such as dribbling, serving, tossing a ball (balls should not be thrown or kicked in the direction of the student); low resistance training if available with spotting

   STEP 4. repeat Day 3 without breaks in cardio, but add skill work with movement (allowing balls to be thrown/kicked in the direction of student); non-contact training drills

   STEP 5. repeat Day 4 as a warm up; weight lifting with spotting; full contact training drills

   STEP 6 warm up followed by full participation in game play as tolerated

7. At any time symptoms return during the graduated re-conditioning, the student must stop the training, be referred back to the private health care provider, have a full day of rest, and may not start over with Day 1 until symptom free again for 24 hours.

"WHEN IN DOUBT, SIT THEM OUT!"

OTHER NON-SPORT RELATED INJURIES: RETURN TO PHYSICAL EDUCATION

While concussion is most often associated with interscholastic sports, concussion/minimal traumatic brain injury (MTBI) can also occur in or out of school, during physical education, on the playground, during travel-sport team activities, during school theater programs, or chorus, or just "horsing around".

Whatever the cause, once a physician diagnoses a child with a concussion, caution is needed. The school nurse, the AT if available, and the physical education instructors, all in coordination with the primary care and specialist physicians must work together to ensure that there is an action plan for graduated physical conditioning before re-entry to full participation and monitoring of symptoms as the student progresses. This will vary based on school district staffing and programming ability to adapt physical education to a child. The key element is to allow a graduated increase in exertion to be able to monitor the impact it is having on the injured brain. Therefore, academic work is not a suitable alternative.

Accordingly, whenever a student has a diagnosis of concussion, the student must be symptom-free for 24 hours as determined by the school nurse and/or AT assessment using a standardized monitoring tool such as but not limited to SCAT, SAC, or ACE. This assessment must be done before the student may resume modified physical education participation.

Then, symptom-free and with the physician clearance, a modified re-entry is required. Given that each school district has a different way to handle adaptive physical education, the action plan below may require further modifications. What should be included as part of a re-entry to physical education, however, is a graduated increase in physical activity. The student should not be asked merely to do academic paperwork. Instead, a plan for increased activity is important to the overall well-being of the individual with concussion. This modification to physical education should be viewed the way any adaptive physical education program is created. It needs creativity, flexibility, supervision, and the ability to back off if symptoms return at any level of play. When the student is symptom free per the school nurse/AT for 24 hours, resumption of the re-entry plan should occur, beginning with Day 1.

If adequate supervision is not available during regularly scheduled physical education class to implement adaptive physical education, the student may need to work at a different time and place as arranged by staff in cooperation with the building administrators and counselors.

Sample Physical Education Re-Entry Action Plan

All activity for resumption of play must be in a step-wise fashion with a drop to the previous level if any post-concussive symptoms emerge at any time of advancement. NO STEP MAY BE SKIPPED, understanding that some programs only offer physical education on a several day a week schedule. The student may need an opportunity to use the weight or fitness room to begin physical

exertion, document their progress and continue monitoring with the school nurse and/or AT. **After being symptom-free on a six step program, as opposed to a six "class" program, that student, then, would be cleared to participate fully in physical education.**

1. The physician clears the student to resume play.

2. The school nurse/AT conducts a standardized assessment, such as SCAT or ACE, and clears the student as being symptom free for 24 hours and so notifies the physical education staff.

3. The physical-education teacher develops an adaptive physical education re-entry plan for the student:

Step 1 low impact non-strenuous light aerobic activity for short intervals, such as easy walking, biking, swimming in three ten minute intervals; no resistance training

Step 2 higher impact, higher exertion activity in two 15 minute intervals, such as running/jumping rope, skating, or other cardio exercise; may be sports specific if available (e.g. skating without collision meaning suited up, but skating when the team is not doing drills; running without impact in soccer or football, suited up), no resistance training

Step 3 repeat day Step 2 progressing with shorter breaks, and add 10 to 15 min. stationary skill work, such as dribbling, serving, tossing a ball (balls should not be thrown or kicked in the direction of the student); low resistance training if available with spotting

Step 4. repeat Step 3 without breaks in cardio, but add skill work with movement (allowing balls to be thrown/kicked in the direction of student); non-contact training drills

Step 5. repeat Step 4 as a warm up; weight lifting with spotting; full contact training drills

Step 6 warm up followed by full participation as tolerated

In those instances where physical education is not held daily, or when the physical education teacher is unable to create an adaptive physical education program, the physical education teacher will assist the parent in understanding how to put together a graduated physical exertion program, and the school nurse will advise the parent how to monitor their child's progress including use of a standardized measuring tool like the SCAT.

EMERGENCY PROTOCOLS
FOR COACHES, ATHLETIC TRAINERS, CLUB SUPERVISORS
FOR MANAGING SERIOUS INJURIES OR CONDITIONS ON THE FIELD

The following list includes any injury during practices, scrimmages, activities, or competition where athletes require special attention by their adult supervisors.

Any student experiencing any of the following should be believed and evaluated by a private medical provider before being allowed to return to play.

Additionally, each of the following conditions warrants direct notification of the parent by the supervising adult the same day as the injury. Each of the following is potentially dangerous, may evolve over time, even days or weeks, and all require careful medical follow-up. If the parent cannot be reached, the student should remain with a supervising adult until the parent or emergency contact can be advised of the need to monitor their child or the child is placed in the care of a medical provider or EMT. Complete the parent notification form to provide critical details for medical evaluation.

The school nurse should be advised of all accidents or injuries requiring first aid, intervention, or parent notification, so she may follow up on the next school day. Careful documentation by the adult of what happened is critical. Remove from play, refer to private healthcare provider, and notify parent for:

1. Any suspicion of concussion including loss of consciousness; memory problems for any length of time (can't recall events prior to or after blow); inability or slow to answer a question; can't remember a play or doesn't know score; memory problems; confusion; disorientation; clumsy; headache; nausea; vomiting; change in vision; noise or light sensitivity; sluggishness, dazed appearance; behavior or personality change; any of these, even if only fleeting;
2. Persistent or recurrent chest pain, dizziness, tightness in the chest, complaints of palpitations or a "racing heart" or fainting on exertion.
3. Shortness of breath that is out of proportion to others doing the same activity, or that is persistent, or that does not resolve with a reasonable amount of rest. This is especially true of any sudden onset of shortness of breath, especially when accompanied by chest pain or if associated with hives/insect bite.
4. Any injury or blow to the head, face, neck, or spine. This is especially true if accompanied by a loss of consciousness, any loss of sensation or strength in

any limb, even if it seems to resolve on its own, or perception of or an actual inability to get up and walk after an injury. Even if the situation seems to improve after rest, if a student says he does not think he can walk, do not try to help him up. In this event, tell him to stay put and call 911. Whenever a student is injured in a way that may have significantly involved the neck or spine, the student must not be moved nor helmets removed under any circumstances except risk of further injury if left in that spot until the neck has been secured and immobilized by trained medical personnel. Less severe injuries may be released to the parent after discussion with the parent and private physician or team physician. All head injuries with symptoms must be considered high risk.

5. Suspected dehydration and/or heat exhaustion, even if the student seems to have recovered, especially during extreme heat, or suspected frostbite or complaints of loss of feeling of a body part during extremely cold weather, especially on the tip of the nose, the ears, or extremities.
7. Any injury, illness, or condition where there is a serious question of concern that "something does not seem right" on the part of the adult evaluating the student or any injury where symptoms persist. Use the concept "When in doubt, sit him out" and contact the parent.

All coaches must have ready access to a phone system to secure rapid assistance in the above circumstances. If anyone has any questions, comments, concerns about these instructions or about a particular student, please call Dr. Cindy Devore at 585-721-1918 or Dr. Carl Devore at 585-721-9811, or call us at home at 585-381-8191.

(To be printed on hot pink paper if possible)
MEDICAL ALERT
PARENT INSTRUCTIONS AFTER HEAD/FACE/NECK/SPINE INJURY

Your child has had an injury of the head/face/neck/spine and needs to be carefully monitored by an adult for the next 24 to 48 hours. Do not give your child medicine without consulting your healthcare provider. You may send your child to school as long as he/she is alert, feeling well off pain medicine, is symptom-free, and is able to remain in class and learn. Please contact your private physician or take your child directly to the Emergency Department for any questions or concerns at any time, especially if symptoms return or worsen over the next day. Observe your child carefully for 48 hours and seek immediate care for any concerns. All head injuries require rest from mental and physical activity until free of symptoms for 24 hours. Then a six step gradual re-entry program is required, no exceptions. CONTACT YOUR PHYSICIAN OR EMERGENCY DEPARTMENT IMMEDIATELY FOR:

MENTAL STATUS CHANGES: trouble thinking or remembering; acting strange; "not him/herself"

PERSONALITY CHANGES: child is combative or "not him/herself"; does not recognize you; acts as in a trance; or is confused; doesn't know what happened

LETHARGY OR DROWSINESS: cannot awaken child; child cannot stay awake; sleepier than usual; does not easily arouse in response to being called by name or being gently nudged

SPEECH CHANGES: slurred or garbled speech; not making sense; confusion

VOMITING: vomiting, persistent nausea, or "dry heaves"

HEADACHE: severe, worsening or pain lasting longer than a few hours

GAIT OR BALANCE CHANGES: trouble standing unassisted; difficulty walking; loss of balance; light headedness; dizziness; stumbling; walking or bumping into things

SEIZURES OR CONVULSIONS: generalized shaking, starring episodes you cannot interrupt or that keep occurring

SENSATION OR STRENGTH CHANGES: paralysis (inability to move), loss of feeling or any unusual sensation ("my feet feel funny"), numbness, or tingling in any part of the body

INCONTINENCE: of urine or feces (inability to control urination or defecation)

EAR OR NOSE: ringing in the ears; bloody, clear or runny fluid from nose or ears

EYE CHANGES: drooping eyelid/s; crossed eye(s); pupils unequal in size; seeing bright lights; or having blurred vision

INCREASED SWELLING, BLEEDING, OR PAIN: at the injury site

Private Physician Evaluation of Student Athlete Following Head Injury

PARENT TO GIVE TO PRIMARY PHYSICIAN
(May Not be Completed by Emergency Department of Urgent Care Clinic)

Child's Name _____ School _____ Sport _____ Date _____

Date of head injury _____ Date of surgery _____ ☐N/A Date last evaluated _____

<u>Diagnosis</u> [complete only if other than concussion; otherwise check boxes below]:_____

☐ **Simple Concussion:** Injury that resolves without complication in 7-10 days
In such cases, the athlete must restrict cognitive and physical activity while symptomatic in any way, and in general no further intervention is required during recovery. 24 hours after all symptoms resolve and student is back to cognitive baseline, a student can return to play (RTP) and complete a graduated program of exertion as outlined on back page. All concussions must be managed by a *medical doctor.

☐ **Complex Concussion:** Injury followed by persistent symptoms, including symptoms on exertion;
specific neurological symptoms observed in the actual injury (such as loss of consciousness for > 1 min; amnesia, seizure); or prolonged cognitive impairment or post-concussive symptoms. This group also includes athletes who suffer multiple concussions over time. *Medical specialists in concussion management must follow these athletes and clear them as symptom free and at cognitive baseline before the RTP process may begin. (See back for RTP process) All athletes with complex concussion must be completely symptom free on exertion for a minimum of one week and as much as three months to one year for significant injury, brain surgery, or post-concussive syndrome.

<u>Plan:</u>
Note to physician: No athlete with any grade of concussion with symptoms, even fleeting, may return to play (RTP) until medically assessed as symptom-free for 24 hours along with a normal neurological and mental status exam for this athlete. All RTP for team sports activity must be in a six-day graduated fashion with a drop to the prior level if any concussive symptoms emerge at any time of advancement. See back of document for outline of these steps. No steps may be skipped if a diagnosis of head injury or concussion is made. The school nurse and/or AT will contact the physician if symptoms return during activity. Based on this information, please complete the RTP plan below. Please check one below:

<u>INITIAL VISIT</u>

☐ Persistent symptoms. Complete rest; no physical activity or stressful cognitive activity until further evaluation.
Date of next visit:_____

☐ Medically cleared as symptom-free for 24 hr. May advance to non-contact *Phase* 1, 2, 3 & 4 in progressive fashio
of graduated RTP to team sports at discretion of Athletic Trainer depending on student's symptom profile during
after performance of prescribed activity. Please note no steps will be skipped, a return of symptoms will require

and persistent symptoms on exertion will resut in a re-referral to your office.)

FOLLOW UP VISIT

☐ If cleared by district as having successfully completed *Phase* 1-4 without symptoms, may advance to Phase 5 -6 progressively.

Comments _____

*Physician_____ Phone _____

Signature/Stamp _____ (see back of page)

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Prague and Zurich International Guidelines for Return to Play Following Head Injury/Concussion

NOTE: The District and the NYS Public High School Athletic Association follow the Prague and Zurich International Guidelines for Return to Play (RTP) to team sports in a monitored and graduated progression of activity over six *phases* once medically cleared by you. The process is detailed below.

***Phase* 1** low impact non-strenuous light aerobic activity for short intervals, such as easy walking, biking, swimming in three ten minute intervals; no resistance training

***Phase* 2** higher impact, higher exertion activity in two 15 minute intervals, such as running/jumping rope, skating, or other cardio exercise; may be sports specific if available (e.g. skating without collision meaning suited up, but skating when the team is not doing drills; running without impact in soccer or football, suited up), no resistance training

***Phase* 3** repeat phase 2 progressing with shorter breaks, and add 10 to 15 min. stationary skill work, such as dribbling, serving, tossing a ball (balls should not be thrown or kicked in the direction of the student); low resistance training if available with spotting

***Phase* 4** completion of the SCAT by the school nurse with collaboration of the school nurse practitioner and/or physician. Then, repeat phase 3 without breaks in cardio, but add skill work with movement (allowing balls to be thrown/kicked in the direction of student); non-contact training drills

***Phase* 5** repeat phase 4 as a warm up; weight lifting with spotting; full contact training drills

***Phase* 6** warm up followed by full participation as tolerated

**** For purposes of the head injury RTP protocol, an appropriate physician evaluation is completed by a practicing MD or DO within the following specialties: family medicine, pediatrics, sports medicine, neurology, or neurosurgery, with preference given to the individual's primary care physician. Family members and friends of the family who are medical providers may not serve as an appropriate physician. The physician completing the physician's evaluation form should document name, degree, specialty, practice name (if applicable), address, and phone number.***

CENTRAL SCHOOL DISTRICT
ACCIDENT/INCIDENT PARENT NOTIFICATION FORM

_____ was injured on
____/____/_____at____:____☐ AM ☐ PM. Please be advised of the following:

Place Where Injury Occurred:

☐ Home School ☐ Locker Area
☐ Away School ☐ Field/Court/ Gym/Pool
☐ Bus/Bus stop ☐ Classroom/Hall
☐ Playground ☐ Cafeteria
☐ Other (*specify*): _____

Activity **Game/Practice/Conditioning**
Sport: _____ ☐Non-sport

☐ Varsity ☐ Girls☐Boys☐ Coed
☐ JV ☐ Interscholastic
☐ Modified ☐ Intramural

Type of Injury:

☐ Fall ☐ Altercation
☐ Collision ☐ Human Bite
☐ Other (*specify*): _____

Observations:

☐ Headache ☐ Memory problems
☐ Confusion Nausea Vomiting Imbalance Dizziness ☐ Loss of consciousness Vision double/fuzzy Light/noise sensitivity
☐ Deformity ☐ Point of tenderness
☐ Swelling ☐ Discoloration
☐ Weakness ☐ Loss of sensation
☐ Slow speech ☐ Laceration

Body Injury Site:

☐ Head ☐ Ear ☐ Eye ☐ Nose
☐ Mouth ☐ Tooth ☐ Jaw ☐ Neck
☐ Chest/Rib ☐ Face ☐ Back ☐ Abdom
☐ Genitals ☐ Extremity (*specify below*): ☐ Left ☐ Right

Upper:

☐ Shoulder
☐ Arm
☐ Elbow
☐ Hand
☐ Wrist
☐ Finger # ___ (Thumb = #1) (Pinky = #5)

Lower:

☐ Hip
☐ Thigh
☐ Knee
☐ Shin
☐ Ankle
☐ Foot
☐ Toe # ___ (Bigtoe= #1) (Babytoe=#5

WHAT HAPPENED?

Were Any Special Tests Done?

Was injury ☐acute ☐chronic ☐re-injury ☐unknown

Did all symptoms resolve?
☐ **YES after____ min./hr.** ☐ **NO**

WAS THERE A TRANSFER OF BLOOD OR BODY FLUID BETWEEN PEOPLE? ☐ **YES** ☐ **NO**
(*IMPORTANT*: IF YES, PARENTS *MUST* CONTACT THE PRIVATE PHYSICIAN TODAY TO DISCU
NEED FOR FURTHER CARE. ALL HEAD, NECK FACE, EYE, SPINE INJURIES OR OTHER INJUR
WITH PERSISTENT SYMPTOMS WARRANT DISCUSSION/EVALUATION BY OWN MD DAY
INJURY. PARENTS MUST REVIEW HEAD INJURY INSTRUCTIONS INCLUDED WITH THIS REPOR

FirstAid Rendered: **By:**

☐ None ☐ Cleaned and Bandaged ☐ Rest and return to play/activity

☐ Ice ☐ Elastic Bandage ☐ Rest and restricted from further play/activity (MANDATORY FOR ALL INJURIES WITH ANY SYMPTOMS UNTIL CLEARED BY OWN MD)

☐ Other (*specify*): _____

Student Was Discharged:

☐ Home on regular bus/car ☐ Transported by ambulance to hospital

☐ Picked up by parent/guardian ☐ Other (*specify*): _____

Recommendation

☐ Please call me as needed at _____

☐ Please call the School Nurse on next school day at to advise of child's condition.

☐ Comments _____

Even minor injuries need to be watched carefully. Please observe your child for further problems and call your own doctor as necessary. This form has been completed by a non-physician or non-nurse who has not diagnosed nor treated your child.

Signature _____ Date _____

Title

SCHOOL NURSE FOLLOW-UP (use same SCAT, SAC, ACE or other assessment tool for concussion)

Comments:

_____

_____

_____

_____

_____

_____

Signature: _____ Date: _____

Copies to: School Nurse (original), Parents Yellow, Athletic Director Pink