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TO: Members of the State Board of Education
FROM: Lillian M. Lowery, Ed.D. *Lillian M. Lowery*
DATE: January 22, 2013
SUBJECT: Traumatic Brain Injury/Sports Related Concussions Task Force Report and COMAR 13A.06.08: School Athletics Safety Program

PURPOSE:

The purpose of this item is to share with the State Board the report of the Traumatic Brain Injury/Sports Related Concussions Task Force, as well as to request permission to publish proposed revised concussion management regulations.

HISTORICAL BACKGROUND:

On July 24, 2012 the Maryland State Board of Education directed the Maryland State Department of Education (MSDE) to study concussion-related issues in interscholastic sports and athletics including prevention strategies and make recommendations to the Board. The Task Force, comprised of 21 members including physicians, school health administrators, athletic trainers, school administrators, and athletic administrators, met throughout the fall of 2012. A report summarizing their findings and recommendations is attached. As part of that report, the Task Force has offered revised regulations to replace the emergency regulations enacted by the State Board on July 24, 2012 and scheduled to expire February 4, 2013. The proposed regulations are recommended by the Task Force as the Task Force moves forward to further define concussion safeguards.

EXECUTIVE SUMMARY:

The Task Force, in pursuit of its charge, reviewed practices in other states as well as practices of local Maryland school systems along with an extensive review of research literature. The report provides noteworthy findings and offers specific recommendations for both action and further study and subsequent action.

The primary recommendation of the Task Force is that a permanent adoption of the emergency regulations with suggested amendments would be an essential component in any comprehensive concussion strategy. The amendments to the original regulations incorporate by reference the MSDE Policies and Programs on Concussions and provide for several important additions to current practice. The amendments mandate:

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- Coach refresher concussion training biannually;
- Physical education teachers to complete concussion training;
- Local school systems to implement policies to ensure appropriate academic accommodations, documented oral and written notification to parents/guardians and notification to athletic directors and school nurses of student-athletes who have sustained a suspected concussion;
- Health Care Providers authorized to return a student-athlete to play after sustaining a suspected concussion; and
- The Maryland State Department of Education in collaboration with an appropriate medical, academic and athletic advisory team to identify collision, contact and non-contact sports and recommend limitations of full contact athletic experiences to reduce concussion risk.

ACTION:

I am recommending that the Board accept the report of the Task Force as submitted and grant permission to publish the Task Forces' proposed amendments to COMAR 13A.06.08 School Athletics Safety Program.

Attachment



Report of the Traumatic Brain Injury/ Sports-Related Concussions Task Force

Submitted to the Maryland State Board of Education
January 22, 2013

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EXECUTIVE SUMMARY

The Traumatic Brain Injury/Sports-Related Concussion Task Force (Task Force) was established by Dr. Lillian Lowery, Maryland State Superintendent of Schools, at the request of the Maryland State Board of Education in July 2012, in order to review Maryland's policies, research best practices related to the prevention and treatment of traumatic brain injuries in school sports and athletics, and submit a report of findings and recommendations on the prevention, recognition, and management of such injuries in Maryland Schools.

According to the Centers for Disease Control and Prevention (2012), a concussion is “a type of traumatic brain injury, or TBI, caused by a bump, blow, or jolt to the head, that can change the way your brain normally works. Concussions can also occur from a fall or a blow to the body that causes the head and brain to move quickly back and forth.”

Maryland's *Policies and Programs on Concussions for Public Schools and Youth Sport Programs* were implemented during the 2011-2012 school year in each of the 24 local school systems. In July 2012, the Maryland State Board of Education enacted emergency regulations to codify the policy established by MSDE.

The Task Force reviewed policies, practices, research, and statistics on TBI/concussions, frequency of concussions, continuing education programs, contact limitations, notification protocols, communication strategies, levels of prevention, and management protocols, including academic accommodations, activity restrictions, and return to play authorization.

While Maryland has developed policies to ensure appropriate concussion education, management, and return to play protocols, findings from research and review of best practices suggest additional measures. Therefore, the Task Force presents the following recommendations for consideration by the Maryland State Board of Education:

Recommendation 1: Permanently enact the 2012 emergency COMAR regulation with the following enhancements:

- Require biennial refresher concussion training of coaches.
- Require physical education teachers to complete concussion training.
- Require local school systems to implement policies to ensure appropriate academic accommodations, documented oral and written notification to parents/guardians, and timely notification to athletic directors and school nurses of student-athletes who have sustained a suspected concussion.
- Identify health care providers authorized to return a student-athlete to play after he or she has sustained a suspected concussion.
- Require MSDE in collaboration with an appropriate medical, academic, and athletic advisory team to identify collision, contact, and non-contact sports and recommend limitations of contact athletic exposures to reduce concussion risk.

Recommendation 2: Use the public health model of prevention (Levels of Prevention Model) to implement primary, secondary, and tertiary prevention strategies.

Recommendation 3: Revise recommended state forms used for notification of injury, procedures for return to play, appropriate accommodations, and gradual resumption of physical activities.

Recommendation 4: Use the Centers for Disease Control and Prevention (CDC) *Heads Up* initiative or other comparable programs as education tools for health care providers, coaches, athletic trainers, school nurses, teachers, counselors, parents, and student athletes.

Recommendation 5: Promote educational opportunities related to concussion evaluation and management for physicians and other health care providers.

Recommendation 6: Improve communication with student-athletes, families, schools, athletic departments, and health care providers.

Recommendation 7: Convene annual meetings of the Task Force to review current standards and practices and recommend changes as needed.

INTRODUCTION

At the request of the Maryland State Board of Education, Dr. Lillian Lowery, State Superintendent of Schools, established an interagency/interdisciplinary committee to study the prevention and treatment of traumatic brain injuries/concussions among youth in public school sports and athletic programs. Chaired by Mrs. Alicia Mezu, Health Services Specialist, MSDE, and Mr. Edward (Ned) Sparks, Executive Director, Maryland Public Secondary Schools Athletic Association (MPSSAA), the 21-member Task Force included and expanded upon the membership of the 2011 MSDE Concussion Workgroup and was composed of physicians, school health administrators, athletic trainers, school administrators, and athletic administrators. The charge to the Task Force was as follows:

- Review best practices in the prevention and treatment of traumatic brain injuries/concussions in youth sports and athletics.
- Submit a report of findings and recommendations to the State Board of Education for review and consideration at the January 22, 2013 board meeting.

The Task Force convened a series of meetings from August 2012 through January 2013. In order to focus the study of research and best practices, the Task Force was divided into two subcommittees:

- Education/Notification/Prevention
- Removal/Return to Play

In addition, the Task Force facilitated a public hearing on November 5, 2012 to obtain comments and input from the public and interested constituents. Minutes of Task Force meetings and the public hearing are included in Appendix A. This report contains a summary of key findings of the subcommittees that guided the final recommendations of the Task Force.

Traumatic Brain Injury (TBI)/Concussions

Traumatic brain injury (TBI) is caused by an external traumatic force applied to the head, disrupting the normal function of the brain. The severity of TBI ranges from mild to moderate to severe. A mild TBI is defined as a brief change in consciousness or cognitive function without radiographic evidence of brain injury. According to the CDC (2012), the vast majority of TBIs that occur each year are in the form of mild TBI, more commonly known as a concussion. In addition, the American Medical Society for Sports Medicine (AMSSM) defines concussion as “a subset of mild traumatic brain injury which is generally self-limited and at the less severe end of the brain injury spectrum” (Harmon, et. al., 2013). Concussions result in a constellation of physical, cognitive, emotional and/or sleep-related symptoms and may or may not involve a loss of consciousness. These injuries are usually not life-threatening; however, the effects of a concussion can be serious, with occasional delayed onset. Moderate and severe TBIs are associated with progressively longer periods of unconsciousness and varying degrees of

neurological impairment, either with or without structural impairment on radiographic imaging (McCrory, et. al., 2009).

Medical evidence confirms that adolescents react differently to concussions than adults and are more susceptible to serious complications. Allowing time for the brain to heal by providing physical and cognitive rest and protecting the youth from a second injury is particularly important (Valovich-McLeod & Gioia, 2010). Youth who sustain a second head injury before the brain has healed from an initial concussion are in danger of causing prolonged concussion symptoms (Vagnozzi, et. al., 2010). They are also vulnerable to a rare, life-threatening condition called Second-Impact Syndrome. In Second Impact Syndrome, even a mild blow to the head of a person still recovering from a concussion results in changes to the blood vessels in the brain that results in increased blood flow to the brain and often irreversible, life-threatening swelling of the brain (Cantu, 1998). While rare, Second Impact Syndrome is of particular concern because of its devastating outcomes.

According to the CDC, traumatic brain injury contributes to a substantial number of deaths and cases of permanent disability each year (Coronado, et.al, 2011). On average, and according to recent data, approximately 1.7 million people sustain a traumatic brain injury annually (Faul, et. al., 2010). The National High School Sports-Related Injury Surveillance Study (RIO Study) for school year 2011-2012 found that concussions were the highest occurrence of reported injuries at 22.2% (Comstock, et. al., 2012). Further, the RIO Study shows that boys' football and lacrosse and girls' soccer and lacrosse produce the highest concussion injury rates per 100,000 athletic exposures (Comstock, et. al., 2012). This is noteworthy given the number of high-school student-athletes is increasing significantly; the National Federation of State High School Associations (NFHS) showed a growth from 4.0 million participants in 1971-72 to an estimated 7.6 million participants in 2011-12 (2012).

MARYLAND PERSPECTIVE

Maryland took steps to study and address the complicated and evolving issue of concussion awareness in 2011. MSDE, in collaboration with the Department of Health and Mental Hygiene (DHMH), local school systems, MPSSAA, the Maryland Athletic Trainers Association (MATA), the Brain Injury Association of Maryland (BIAM), and health care providers to high school athletes, convened a committee to develop *Policies and Programs on Concussions for Public Schools and Youth Sport Programs* (August 2011). These policies and procedures were in compliance with requirements of 2011 amendments to the Education Article, §7-433 and the Health General Article, §14-501, Annotated Code of Maryland.

The new policy was implemented during the 2011-2012 school year in each of the 24 local school systems. In July 2012, the Maryland State Board of Education enacted emergency regulations to codify the policy established by MSDE.

In addition to statewide education efforts aimed at students, parents/guardians, and coaches, there have been other significant initiatives to minimize the effects of traumatic brain injuries and sports-related concussions among youth. The MPSSAA has been proactive by

adopting changes in playing rules for all sports, implementing the coach-education program established by the NFHS, and with representation on different national committees. The MPSSAA also launched a health and safety page on their website with numerous resources devoted to mild TBI/concussion information, handed out 50,000 concussion education magnets to parents of football, boys' and girls' soccer, wrestling, boys' and girls' basketball, and boys' and girls' lacrosse student-athletes, updated the required care and prevention course for high-school coaches to include a section on concussion awareness, and supplied each public high school with a CDC *Heads Up: Concussion* kit.

Local school systems have implemented programs to improve concussion awareness and management. Most notable among these programs are the development of notification protocols based on the administrative structure of the local school system, increased efforts to provide athletic training services, baseline testing programs for student-athletes, partnering with community medical organizations to provide appropriate management and treatment of suspected concussions, and limiting the amount of contact exposures in football.

TASK FORCE FINDINGS

The Task Force and subcommittees researched notable practices for concussion awareness and reviewed materials from over 100 different resources, including policies from numerous state and national high school athletic associations, state and national health agency policies; resources from the CDC, American Academy of Neurology (AAN), American Academy of Pediatrics (AAP), American Academy of Family Physicians (AAFP), data and surveys on sports-related injuries, as well as various journal, newspaper and scholarly articles on concussions and traumatic brain injury. (Appendix B)

Continuing Education

The Task Force found numerous references in publications and policies regarding the need to educate all stakeholders associated with the health and safety of student-athletes. The sport coach was mentioned most often with focus on raising their individual education level regarding concussions; the majority of state policies required coach education training. In addition, policies on local and state levels required a variety of others, including teachers, school nurses, and parents to take an online course for concussion education. Several states required periodic refresher training for coaches either on an annual or biennial basis.

Numerous organizations provide online concussion education training. The most notable course is the *NFHS Concussion in Sports – What You Need to Know*, which has delivered over 570,000 courses since January 1, 2007, and is recognized by the CDC as the official course for high-school coaches regarding concussion training. Maryland is ranked 8th in the nation in the number of delivered courses. (Appendix C)

The education of health care professionals was another focus of the Task Force. Over the past year, the CDC has developed numerous materials for health care providers, including the *Heads Up: Brain Injury in Your Practice* physicians' booklet (2011) and the online course *Heads*

Up to Clinicians: Addressing Concussion in Sports Among Kids and Teens (2011). The online course for health care professionals was developed with support from the CDC Foundation and the National Football League. This course addresses the appropriate diagnosis, management, referral, and education about TBI. The online course offers free continuing education credits.

Limitations on Contact Exposures

Some education and athletic organizations are experimenting with limiting the number of contact exposures. Several policies attempt to limit contact exposures by either limiting padded practices or limiting the types of drills and amount of contact in a padded practice for football, limiting checking in boys' and girls' lacrosse, and limiting the use of the head in soccer. Appendix D provides examples of policies developed by organizations who are limiting contact exposures.

The Task Force also examined differences in sports in trying to determine which sports may need contact restrictions. The Task Force referenced the AAP definition of collision and contact sports. The AAP defines collision sports as those in which "athletes purposely hit or collide with each other or inanimate objects, including the ground, with great force," and defines contact sports as those in which "athletes routinely make contact with each other or inanimate objects but usually with less force than in collision sports." (2001, p. 1205) However, the AAP listed contact and collision sports together because "there is no clear dividing line between them." (2001, p. 1205)

Awareness and Education

Most state athletic associations have notification protocols for concussion awareness. State notification protocols involve similar versions of written and verbal acknowledgement from students and parents/guardians on awareness of concussion information prior to participation, education fact sheets, and documented incident report forms specifically designed for students sustaining a suspected concussion. The CDC fact sheet for parents/guardians (2010) and students (2010) is the most commonly used form and is typically accompanied with a signed form acknowledging that the student and parent/guardian has received education about the signs, symptoms, and risks of sport-related concussion prior to participation.

Medical Notification

While the majority of states require written pre-participation notification, some states require additional forms. The Task Force noted the pre-participation physical evaluation form designed by the AAFP and the AAP provides a history section for concussions. Some states required additional forms to extract the medical history of concussions because of the higher risk students with previous concussions have of sustaining a second concussion.

Communication Strategies

Communication is key to managing sports-related concussions. The Task Force noted many Maryland school systems created flow charts and notification diagrams to enhance

communication and foster a structured, collaborative approach for notification and treatment of concussions. The Code of Maryland Regulations (COMAR) 13A.05.05.01 establishes a Pupil Services team in each local school system which provides a structure that can form the foundation for a communication system within the school for students suffering from TBI/concussions.

The Task Force found the New York State Department of Education's *Guidelines for Managing Concussions in the School setting* (2012) detailed a concussion management team with roles and responsibilities of the student, parent/guardian, school administrator, medical director, private medical provider, school nurse, director of physical education, athletic director, certified athletic trainer, physical education teachers, coaches and school teachers. The Task Force also found similar detailed recommendations from the Massachusetts Department of Public Health (Code of Massachusetts Regulations) and the CDC (2012).

Levels of Prevention Model – Strategies for Prevention and Health Promotion

Public health programs have focused on prevention and curative care of communities and populations since ancient times. The Levels of Prevention Model was advocated by Leavell and Clark in 1965 (Kozier, et. al., 1991) and influenced public health practice worldwide. The model delineates three levels of prevention measures—i.e., primary, secondary, and tertiary—which are used to promote health along a continuum. The goal of the Levels of Prevention Model is to maintain health and prevent disease or injury.

In the context of TBI/concussion, primary, secondary, and tertiary prevention strategies may be useful in the development and implementation of a plan to minimize the risk. Primary prevention focuses on strategies to prevent a sports-related injury. Secondary prevention focuses on early detection of a sports-related injury. Tertiary prevention focuses on the rehabilitation and management for sports-related injuries (Park, 2008). Examples of primary prevention strategies for TBI/concussion may include use of protective equipment appropriate for the activity, appropriate sport-specific coaching skills emphasizing safe practices and proper techniques, adhering to rules of play promoting good sportsmanship and strict officiating, and attention to strength and conditioning. (CDC, 2011) Examples of secondary prevention strategies may include increased awareness of the signs and symptoms of TBI/concussion, recognition of TBI/concussion, and quick, appropriate response to suspected TBI/concussion. Tertiary prevention strategies for TBI/concussion may include rehabilitation efforts for suspected or diagnosed TBI/concussion, removal from play, supporting the student athlete with necessary classroom accommodations (McGrath, 2010), and return to play decisions.

Appropriate Accommodations

The Task Force found appropriate accommodations are necessary both academically and athletically for students sustaining a concussion. According to the CDC (2012), cognitive exertion, such as studying for exams, drains energy from the brain and can lead to worsening of symptoms and prolonged recovery. Among the state policies the Task Force reviewed, the New York State Department of Education (2012) provided the most definitive communication plan for

providing appropriate accommodations. The Task Force concurs that a more comprehensive educational accommodation approach provides a better opportunity for complete recovery.

To date, return to play generally has meant resumption of athletic endeavors following a concussion. Physicians serving on the Task Force provided anecdotal evidence where students were not cleared for resumptions of interscholastic athletic activities yet resumed physical education classes and other physically active school activities. While reviewed state policies differ, a notable practice found by the Task Force suggests concussion training include physical education teachers in order to provide greater safeguards for students.

Return to Play Authorization

A significant emphasis of the Return to Play protocol is the gradual resumption of activities in a sequential mode. The Task Force's review of return to play protocols suggests a six-step progression recommended by the CDC (2011) and is outlined in the 2011 MSDE Concussion Plan.

Unfortunately, to date there is no certification for health care providers regarding the management and care of concussed athletes. As a result, determining those qualified to authorize return to play is neither definitive nor consistent nationwide. The Utah High School State Athletic Association's policies (2011) require medical providers approving return to play to complete a continuing medical education course on concussion management within three years, and concussion treatment must be within the scope of practice of the provider. The licensing regulations of each state provide the parameters for those authorized to approve return to play.

TASK FORCE RECOMMENDATIONS

While Maryland has developed policies to ensure appropriate concussion education, management, and return to play protocols, findings from research and review of best practices suggest additional measures. Therefore, the Task Force presents the following recommendations for consideration by the Maryland State Board of Education:

Recommendation 1:

Permanently enact the 2012 emergency COMAR regulation with the following enhancements:

- Require biennial refresher concussion training of coaches.
- Require physical education teachers to complete concussion training.
- Require local school systems to implement policies to ensure appropriate academic accommodations, documented oral and written notification to parents/guardians, and timely notification to athletic directors and school nurses of student-athletes who have sustained a suspected concussion.
- Identify health care providers authorized to return a student-athlete to play after he or she has sustained a suspected concussion.

- Require MSDE in collaboration with an appropriate medical, academic, and athletic advisory team to identify collision, contact, and non-contact sports and recommend limitations of contact athletic exposures to reduce concussion risk.

Possible Lead Agencies: Maryland State Board of Education and Maryland State Department of Education

Rationale

The *Policies and Programs on Concussions for Public Schools and Youth Sports Programs* (2011) set forth by MSDE meets all the provisions of Maryland law and favorably compares to national and other state recommendations and policies. The Task Force identified several practices to further enhance the current COMAR emergency regulations, including emphasis on education, notification, treatment, and prevention strategies.

Education is a primary prevention strategy to raise awareness and level of understanding for TBI/concussions. However, the AMSSM references studies demonstrating a lack of knowledge by stakeholders to make informed decisions about TBI/concussion (Harmon, et. al., 2013). The Task Force believes biannual refresher training for coaches and training of physical education teachers ensure that students participating in athletic activities will be instructed by individuals knowledgeable in making informed decisions about suspected concussions.

The Task Force also emphasized the necessity to strengthen notification and treatment regarding suspected concussions. Based upon research and public comments, communication concerns regarding notification and treatment protocols were evident. Therefore, the Task Force recommends requiring local school systems to implement policies for both written and oral notification to parents/guardians as well as notification of athletic directors and school nurses by the start of the next school day. Furthermore, the Task Force relied on members with medical expertise in identifying specific health care providers authorized to return a student-athlete to play after he or she has sustained a suspected concussion.

The Task Force deliberated at length on the primary prevention strategy of limiting the number of contact exposures. The Task Force, unable to reference a specific standard of care, debated how to quantify the amount of time for proper instruction in order to teach safe playing techniques and sport-specific skills while placing limitations on the number of contact exposures. The AMSSM noted this conundrum in their position statement on concussion. The AMSSM stated that limiting the number of contact practices would reduce exposures and ultimately the number of concussions; however, player behavior and properly taught techniques constitute an integral part in injury reduction (Harmon, et. al., 2013).

Some athletic and educational organizations have made administrative decisions to limit the number of live contact exposures during practices and are studying the effects. The studies, if proven effective, may be beneficial to other sports and produce a standard.

Due to a lack of sufficient medical evidence and data to quantify a standard of care, the Task Force recognizes the need for further comprehensive study to make definitive recommendations. Therefore, the Task Force recommends that MSDE, in collaboration with an

appropriate medical, academic, and athletic advisory team, identify collision, contact, and non-contact sports and recommend limitations of contact athletic exposures to reduce concussion risk. The adoption of the proposed amendments to COMAR would make Maryland the first state to commit through regulations to place limitation on contact athletic exposures in interscholastic athletics. (Appendix D: Proposed COMAR 13A.06.08)

Recommendation 2:

Use the public health model of prevention (Levels of Prevention Model) to implement primary, secondary, and tertiary prevention strategies.

Possible Lead Agencies: Maryland State Department of Education and Department of Health and Mental Hygiene

Rationale

The Task Force acknowledges the risk of TBIs/concussions is inherent to physical activity and can occur at any age and during any activity. As public health programs promote the benefits of physical activity (e.g., sports and recreation activities), there is also risk of injury associated with the benefits. Risk reduction of TBI/concussion is a primary concern and goal of the Task Force. The Task Force believes the public health model of prevention is the foundation for prevention strategies to implement appropriate treatment measures and provide a continuum of care for youth with suspected and diagnosed TBIs/concussions resulting from sports-related activities. (Appendix F: Levels of Prevention Model)

Recommendation 3:

Revise recommended state forms used for notification of injury, procedures for return to play, appropriate accommodations, and gradual resumption of physical activities.

Possible Lead Agency: Maryland State Department of Education

Rationale

In the course of reviewing current recommended concussion procedures, several Maryland local school systems reported difficulty utilizing the forms for injury notification, medical evaluation, and return to play. Specifically, the paperwork for tracking students from initial injury to diagnosis to clearance and return to play, while comprehensive, proved not to be practical. The users of the original forms suggested a more practical solution be explored.

The Task Force thus offers a revised single student concussion injury form. This form provides school personnel with a more streamlined documentation of concussion injury and recovery progression.

Medical research shows students have a greater risk of sustaining a concussion if they have a previous history. Therefore, the Task Force has added a new form for sport pre-participation notification of any history of concussions. While this information is available on a student's sport pre-participation physical exam form, placing additional emphasis for students with a previous history of concussions provides additional prevention information for schools.

The revised forms and appropriate accommodations can be found in Appendices G and H. The forms, along with other provided resource material, should be considered as the minimum standard for each school system to employ with its concussion policy.

Recommendation 4:

Use the Centers for Disease Control and Prevention (CDC) *Heads Up* initiative or other comparable programs as education tools for health care providers, coaches, athletic trainers, school nurses, teachers, counselors, parents, and student athletes.

Possible Lead Agencies: Maryland Department of Education, Local School Systems, Department of Health and Mental Hygiene

Rationale

The Task Force recommends education of all stakeholders involved in the management of concussions. The CDC is one of the leading and most cost-effective providers of educational information. The CDC's *Heads Up* initiative (2011) is designed to provide prevention recognition and appropriate responses for TBI/concussions. This educational information is tailored for specific audiences including health care providers, coaches, athletic trainers, school nurses, teachers, counselors, parents, and student-athletes. This free, comprehensive information can be used for professional development and education on the awareness, prevention, treatment, and management of TBI/concussions.

Recommendation 5:

Promote educational opportunities related to concussion evaluation and management for physicians and other health care providers.

Possible Lead Agency: Department of Health and Mental Hygiene

Rationale

The Task Force understands the importance of timely recognition and appropriate response in the treatment of TBIs/concussions among youth. The Task Force believes physicians and other health care providers are key partners in the prevention of sports-related concussions among youth and can improve the health outcomes through early diagnosis, management, and appropriate referrals. The CDC (2011) recently updated the toolkit for physicians and provides a full range of resources and information on the diagnosis, management, and care plan for recovery from TBIs/concussions. The Task Force understands there is an expressed need among physicians and other health care providers statewide for professional development and education related to concussion management and evaluation. Therefore, the Task Force recommends the Department of Health and Mental Hygiene, along with other key stakeholders, as the appropriate entity to facilitate continuing education requirements, professional development, and other educational opportunities related to concussion evaluation, treatment, and management for Maryland physicians and other health care providers.

Recommendation 6:

Improve communication with student-athletes, families, schools, athletic departments, and health care providers.

Possible Lead Agencies: Maryland Department of Education, Local School Systems, Department of Health and Mental Hygiene

Rationale

The Task Force identified the importance of communication, coordination, and collaboration of key stakeholders in the management of TBIs/concussions in the school setting. The Task Force developed a flow chart to guide local school system protocols for probable head injury (Appendix I). The Task Force defined the roles and responsibilities of key stakeholders to facilitate successful management of sports-related TBIs/concussions in the school setting (Appendix J).

Recommendation 7:

Convene annual meetings of the Task Force to review current standards and practices and recommend changes as needed.

Possible Lead Agency: Maryland State Department of Education

Rationale

The Task Force believes an annual meeting is necessary to remain current with the most up-to-date information and prevention strategies on mild TBI/concussions. Evolving information and medical research continues to produce new thoughts on notification, prevention, treatment, and management of mild TBI/concussions. According to the AMSSM, legislation and policies should be working documents to be modified with the latest strategies as more knowledge about sports concussions develops (Harmon, et. al., 2013). The Task Force recommends reconvening annually to review the latest medical evidence and information on mild TBI/concussion and if necessary recommend agencies to take the lead on changing policy and procedures related to the notification, prevention, treatment, and management of mild TBI/concussions.

REFERENCES

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ACRONYMS

AAFP – American Academy of Family Physicians

AAN – American Academy of Neurology

AAP – American Academy of Pediatrics

AMSSM – American Medical Society for Sports Medicine

BIAM - Brain Injury Association of Maryland

CDC – Centers for Disease Control and Prevention

DHMH - Department of Health and Mental Hygiene

MATA - Maryland Athletic Trainers Association

MPSSAA – Maryland Public Secondary Schools Athletic Association

MSDE – Maryland State Department of Education

NFHS - National Federation of State High School Associations

TBI – Traumatic Brain Injury

Appendix A

Traumatic Brain Injury/Sports Related Concussions – Task Force Meeting August 23, 2012 Minutes

1. The Task Force Meeting was convened at 6:15 p.m. and was co-chaired by Ned Sparks and Alicia Mezu.
2. All invited task force members (with the exception of two members who were absent) were in attendance for the meeting at Arlington Echo in Millersville, Maryland (Anne Arundel County).
3. Co-chairs discussed the purpose of the meeting, goals/objectives, and charge of the task force.
4. Charge of the task force listed as follows:
 - Review best practices in the prevention and treatment of traumatic brain injuries in youth sports and athletics. The Task Force will augment an understanding and knowledge base with the assistance of resource experts.
 - Develop recommendations for action by the State Board of Education.
 - Issue a report of findings and recommendations for action by December 31, 2012 for consideration by the State Board of Education at the January 2013 meeting.
5. Group discussion about the legislation passed in 2011 and current policies and procedures document. Policies and Procedures on Concussions for Public Schools and Youth Sports Programs document address minimum requirements of the law and include four components:
 - Coaches education
 - Student/Parent awareness and criteria for removal from play
 - Removal and return to play
 - Youth Sports
6. Additional group discussion among task force members included the following comments:
 - Need for systems of communication especially related to removal and return to play, e.g. coach vs. athletic trainer; coach vs. doctor; school nurse vs. coach; school nurse vs. doctor, etc.
 - Develop a flow chart for stages of accountability of care to increase education/awareness and increase accountability and chain of command.
 - Prevention is necessary and is tied into education
 - What are the high frequency issues for various sports?
 - Training of coaches
 - Techniques – “teach techniques for safe play in all sports”
 - Coach skills/student skills/sportsmanship

- Sports to consider include football, soccer, lacrosse (head gear needed for ball to head concerns), ice hockey
- Prevention efforts – discussion about primary, secondary, and tertiary prevention (public health model for prevention)
- USA football focusing efforts on 7 and 8 year olds
- NCAA figured out how to do it best
- Teaching proper techniques is important.
- Who is actually coaching in the high schools?/What are the concerns?
 - Teachers, volunteers/non-teachers
 - Technical knowledge vs education knowledge is a concern/issue
 - Qualification of coaches is important (National Federation Certification)
 - Emergency coaches must be credentialed coaches before they start the 4th year of coaching.
 - 9,000 coaches statewide and 3,000 (33%) are emergency coaches.
 - Need to increase and provide organized education for the coaches
 - Coaches take care and prevention and CPR courses right away.
 - Instructional videos
 - Varsity coach has responsibilities
 - Newer training methods are needed; USA football has pilot program for tackling.
- NFHS has meeting coming up in October
 - Other agencies partner with NFHS to make instructional comprehensive videos;
 - Techniques for collision sports; and
 - Safety efforts.
- Epidemiology of Concussions discussed
 - Example: One percent of youth with injuries 10 years ago did not realize concussion symptoms.
 - Concerns with fear, trim the boundaries and now we have “nutty notes syndromes”
 - We are now “finding the ones” that would have been missed years ago

7. Collection of Data Discussions/Questions from the Group

- Can schools share data?
- What are other states doing around the collection of data?
- Who are the experts?
- Plans for medical doctors? Why is it good?

8. Sources for Data include:

- United States Centers for Disease Control and Prevention (CDC) – Heads Up Program

- Other States
 - Corey Stringer Institute
 - Injury Surveillance Study (Ohio State) – RIO Studies
 - Zürich Protocols
 - American Academy of Neurology
 - Fairfax County, Virginia – validate parent participation
 - Accountability Issues – Safe at Schools online education (online program can be built for schools to meet program needs)
9. Timeline for Task Force
- August 23rd – initial meeting
 - September meeting – Date to be determined
 - October meeting – Public Hearing/Open session, date to be determined
 - November meeting - Date to be determined
 - December meeting and draft report - Date to be determined
10. Additional comments and information
- Research other states policies/programs/statutes and regulations (Connecticut, Massachusetts, and Ohio)
 - Recommend best practices for Maryland
 - How can we improve on this?
 - Prevention recommendations (cross cutting prevention recommendations)
 - Heat acclimatization guidelines law: consider merging information with this law for sports related concussions.
11. Subcommittee assignments discussed and include two subgroups as follows:
- Education, Notification, and Prevention Subcommittee
 - Removal, Return, and Prevention Subcommittee
 - Note: each subcommittee has equal representation of content experts who will
 - review current policies;
 - research other states/locals/governing entities/or interest groups; and
 - recommend best practices for Maryland
 - Prevention issues overlap with both subcommittees
12. Next steps
- Alicia will conduct a Doodle Poll to assess available meeting dates for the Task Force members in September and October
13. Meeting adjourned at 8:15 p.m.

Traumatic Brain Injury/Sports Related Concussions Task Force Meeting
October 3, 2012
Arlington Echo
975 Indian Landing Road
Millersville, MD 21108
6 p.m. to 8 p.m.

General Meeting Minutes for October 3, 2012

- Meeting convened at 6 p.m.
 - Welcome and Introductions
 - Review of agenda items by Ned Sparks and Alicia Mezu

- Minutes from August 23, 2012 meeting reviewed by Task Force
 - Correction to item #2, two task force members were absent on 8/23/12.
 - Motion to accept minutes with corrections approved by Task Force.

- Members Present include: Ned Sparks (Task Force co-chair), Alicia Mezu (Task Force co-chair), Joyce Dantzler, Cheryl De Pinto, Greg LeGrand, John Lopez, Mike Mason, Wendell McKay, TJ Morgan, Mary Nasuta, Greg Penczek, Bryan Pugh, Andy Roper, Deborah Somerville, Gaby Von Nordheim, and Andy Warner

- Members Absent include: Kevin Crutchfield, Gary Dix, Gerry Gioia, Kathleen Heck, and Mike Williams.

- Meeting open to the public and three visitors present for the meeting including Mr. Thomas Hearn – Montgomery County; Mr. Joe Burris – Baltimore Sun; and Dr. William Beattie – Montgomery County.

- All Task Force members received a flash drive with resources relevant to traumatic brain injury and sports related concussions. Ned Sparks reviewed all materials and resources on the flash drive.

- Draft outline for report and recommendations reviewed with the Task Force members.
 - Subcommittee assignments reviewed.
 - Additional assignments include the following:
 - Input from medical doctors/nurses regarding definition of traumatic brain injury;
 - Input from public health experts/practitioners for prevention efforts; and
 - Input from local school system members on structure of local policies, roles and responsibilities.

- Changes made to subcommittee – Dr. Wendell McKay requested to be on the Removal, Return to Play, and Prevention Subcommittee and Mr. Mike Williams will now be on the Education, Notification, and Prevention Subcommittee. Mr. Williams is absent and will be notified of the change in subcommittee assignments.
- Subcommittee members convene in small groups for discussion, planning, and future meetings.
- Task Force members reconvened in large group to report out summary of subcommittee discussions.
 - Next Steps include meeting dates for November and December.
 - Public Hearing scheduled for October 29, 2012 from 1 p.m. to 3 p.m. at the Maryland State Department of Education, 200 West Baltimore Street, 7th floor (Board Room), Baltimore Maryland, 21201.
 - A separate notice will be sent out for public input to gather information and testimony from interested citizens on Traumatic Brain Injury and Concussions in interscholastic athletes in Maryland Public Schools.
 - Topics of interest may include best practices for recognizing concussion signs and symptoms, removal and return to play, parent, coach and student awareness, protective equipment and prevention strategies.
- Meeting adjourned at 8 p.m.
 - Minutes of meeting transcribed by Alicia Mezu (Task Force Co-Chair).

Education Subcommittee Minutes/Notes

- Bryan Pugh – Subcommittee Chairperson
- Alicia Mezu – Recorder (note taker)

Subcommittee Members:

- Present: Bryan Pugh, Alicia Mezu, John Lopez, Gabriele von Nordheim, Andy Warner, Mary Nasuta, and Andy Roper.
- Absent: Kathleen Heck, and Gary Dix

Subcommittee Discussion:

Develop white paper?

Education and Awareness

- What is the purpose of the education?
- Identify the individuals in the school community/spectrum;
 - Including education for the medical community(e.g. Medical Grand Rounds, involve Med Chi, possible online education)
- Identify the roles and responsibilities of the individuals within the school community
 - Who is the point person? Principal/school nurse
 - What is the role and responsibility of the coaches, athletic trainers,
- If it happens to your child, this is what is in place to protect your child.
- Communicating the signs and symptoms to parents and good information is handed to the provider.

Available Forms for Documentation

- Easy to use check off form for the nurse, athletic trainer, etc.
- See current form – how can we modify?

Education Subcommittee Minutes/Notes (continued...)

Notification

- What do we currently have in place?
 - Search other states and upgrade our forms (Gabriele von Nordheim)
- Map out communication process for schools
 - What is the process for notification?
 - What are the current communication pathways for notification?
 - What is the communication and documentation that needs to happen when a sports related concussion occurs in the public school setting/school sponsored event?

Roles and responsibilities of school staff (Bryan Pugh/Mary Nasuta)

Provide prevention education - (Alicia Mezu/Andy Warner)

- Who are we educating?
- See CDC info for primary education
- What are best practices for prevention?
- Strategies to reduce injury in collision sports vs. contact sports (high, medium, and low impact sports)

Assignments of subcommittee members

- Assignments listed to topics above

Next meeting dates for subcommittee

- Poll of subcommittee members availability to determine next meeting dates via teleconference or central location.

Removal and Return to Play Subcommittee - Minutes

- Deborah Somerville (chairperson/recorder)

Subcommittee Members:

- Present: Deborah Somerville, Cheryl De Pinto, Joyce Danzler, Greg LeGrand, TJ Morgan, Greg Penczek, Mike Mason, Ned Sparks, and Wendell McKay
- Absent: Kevin Crutchfield, Gerry Gioia, and Mike Williams

What is Good in Current System

- All coaches take course – identification, risk of TBI, return to play protocols
- Care and Prevention course required for coaches in COMAR will increase time dedicated to head injury/concussion
- Parent notification of injury
- Medical clearance to return to play
- Removing students from play if head injury is suspected
- Return to play progression
- Compliance with program across the state

Questions and Concerns with Current System

Global

- Need consistency – adherence to the process
- Need a flow chart/graphic display of the process
- Where does SCAT fit?

Training

- How often do coaches need to refresh training
- Coach training – does it occur before first practice?
- Training for physical educators is needed

Removal and Return to Play Subcommittee – Minutes (continued...)

Communication

- Information “sheet” for parents is needed
- Communication system for parents about return to play process is needed
- Notification system for parents is not always timely
- Return to play for is confusing for some physicians and parents
- Counties with Certified Athletic trainers – 100% notification
- Howard County – collaboration between physician and athletic trainers and specific form for return to school/play
- Communication within the school house

Accommodations

- More is needed on educational accommodations

Medical Evaluation

- Medical clearance – standard for qualifications of health care provider need to be clear
- Role of the athletic trainer in clearing students

Return to Play

- Need a return to learn
- Role of coach to clear an athlete at end of return to play progression
- Ensuring return to play is implemented with fidelity and documented
- Where does PE fit in graduated return to play?

Next Subcommittee meeting - Wednesday, October 17 from 5:30 – 7:00 p.m. ,
Howard High School, Seminar Room, 8700 Old Annapolis Road, Ellicott City, 21043.

Traumatic Brain Injury/Sports Related Concussion Task Force

Public Hearing November 5, 2012

The following members of the Task Force were in attendance:

Alicia Mezu, Co-Chair
Ned Sparks – Co-Chair
Joyce Dantzler
Dr. Kathy Heck
Bryan Thomas Pugh
Dr. Andy Roper
Gaby Von Nordheim

Mr. Sparks welcomed everyone and introduced the members of the Task Force. He provided a historical background reporting on the enactment of legislation in 2011 which required school systems to create criteria for removal and return to play of students who suffer traumatic brain injury (TBI) as well as the provision of academic support to those students. He reported that the legislation also mandated that youth sports activities using school facilities have coaches that are trained in TBI management. He explained that the mandates were included in Board regulations and that the Board asked staff to examine the current practices.

Ms. Mezu reported that the Task Force has met twice and noted the Charge directed by the Board – to identify a panel of health care providers knowledgeable about concussions to provide testimony and recommendations for the Board to consider in addressing issues surrounding concussions in sports, including prevention issues. Ms. Mezu reported that the Task Force broke into two subgroups, one to study removal and return to play and another to look at best practices. She reported that there will be two more meetings and that the group will provide a Report to the State Board at their January meeting.

Mr. Sparks explained the ground rules for testifying at this hearing which will provide up to three minutes per speaker. He said that Task Force members are encouraged to ask questions.

Public Comments

Ed Soth and Bert Straus

Mr. Soth said that their goal is to cover every child in play in Maryland with a ProCapIII – a soft-shell covering for a football helmet. He said he has asked Congress to mandate this technology but that it could take several years to go into effect. He said, “I want to get this done now. We will make it affordable.”

Mr. Straus discussed the technology of the ProCapIII and said “This is very strong on the prevention side of the equation.” He discussed the various studies done and their conclusions which reflect the reduction of the probability of concussion in school athletics.

In response to questions, Mr. Straus said that the ProCapIII is molded to fit particular helmets and that the composite is urethane foam with a tough outer skin similar to a car bumper and that they are guaranteed for five years. Mr. Straus said that a helmet combining these two technologies is on the horizon but not yet available. He explained that a helmet created more than fifty years ago with a soft padding on the outside did not take hold because the technology was not up to the task. He reported that this new material is a highly refined formula that is protected by Trademark. He noted the cost of the Cap at \$79.

Tom Hearn

Mr. Hearn discussed his son’s experience with concussion after a football injury last year. He said, “There was a weak atmosphere with compliance” with the concussion policies put in place last year. He explained that his son suffered a head trauma and he was never notified by the coaching staff. Mr. Hearn explained that his son then engaged in a practice session on the field and that’s when his son’s condition deteriorated. He reported on his recommendations to the State Board to adopt regulations addressing this issue. He said, “At the system level there is no understanding of what is at stake here.” He stressed the importance that the school nurse be apprised of any injury and urged that athletic trainers have more training in TBI. He said, “If you can’t afford athletic trainers, you can’t afford athletic programs.”

Dr. Harry Kerasidis

Dr. Kerasidis explained that he is Board Certified Neurologist and discussed a program aimed at prevention and management of concussions. He said that education and awareness is the cornerstone of the program which provides an online educational series on how to perform sideline assessments, and pre-season and post concussion testing. He said that once a report is filed electronically on a player, a report is made which will track concussion symptoms. Dr. Kerasidis said that a pilot program is being conducted in Calvert County schools in which ten concussion injuries have been successfully managed through baseline testing and impact testing. He noted that the program subscription costs \$20 per student per year for those students who participate in contact sports. He said it would be necessary for every student athlete to get a subscription every year of play. Dr. Kerasidis said that Calvert County school personnel are very pleased with the program but that there are some technology issues that must be addressed. In response to a question by Ms. Mezu, Dr. Kerasidis said that the program was vetted by the Maryland Attorney General’s Office regarding privacy issues.

Matt Lilly

Mr. Lilly explained that he is representing LifeBridge Health and urged the need for appropriate identification of students with brain trauma. He said that children and adolescents who experience a moderate to severe TBI would be more likely to need an Individualized Education Plan (IEP) under IDEA to receive special education services. He said based on statistics of those injured vs. those receiving services, there is a significant service gap and that each jurisdiction approaches it differently. He urged the need for clearer guidelines for schools in Maryland. Mr. Lilly said that LifeBridge Health is looking at identifying injuries and collecting data in order to

provide resources to those students who need them. He said, “Just as there are now standards for returning an athlete to play after a mild brain injury, there needs to be clear guidelines for re-integrating students back into the classroom dependent upon their level of trauma.” He also said that there should be required content for educating coaches and trainers and qualitative requirements on agencies to be an educational provider. He also urged the requirement of appropriate head gear for female sports programs. He said concussion awareness and the provision of training related to TBI needs to be a statewide initiative and requirement.

Dr. Yemisi Koya

Dr. Koya reported that she is representing the Maryland Board of Physicians (The Board) noting her concern that a representative of this organization was not included on the Task Force. She said the organization has invaluable resources to contribute to this discussion. She explained that the Board is the State Agency charged with responsibility of oversight and licensure of health care providers. Dr. Koya reported they have an Athletic Trainer Advisory Panel and that they are very concerned about the recommendations being put forward. Dr. Koya reported that the Board is exploring provision of training for physicians in identifying TBI. She stated that a student faced with a TBI should be referred to a physician trained in Neurology. In response to a request by Ms. Mezu, Dr. Koya agreed to provide the Task Force with a list of Specialty Boards that would deal with head trauma injuries. Dr. Koya expressed concern that very often athletic trainers are not working under the supervision of a licensed physician which is a requirement.

Ms. Mezu asked Dr. Koya to communicate this discrepancy to their members and asked her to send information for the Task Force to distribute to the schools as well.

Mr. Pugh stated that athletic trainers generally work under the supervision of Sports Medicine Physicians who are trained to work on bone and tissue injuries rather than brain trauma.

With no further speakers, the public hearing concluded at 11:30 a.m.

Alicia Mezu, Co-Chair

Ned Sparks, Co-Chair

Traumatic Brain Injury/Sports Related Concussions Task Force Meeting
November 8, 2012
Howard High School
8700 Old Annapolis Road
Ellicott City, MD 21043
6 p.m. to 8 p.m.

General Meeting Minutes for November 8, 2012

- Meeting convened at 6 p.m.
 - Welcome and Introductions
 - Review of agenda items by Ned Sparks and Alicia Mezu
- Minutes from October 3, 2012 meeting and November 5, 2012 Public Hearing reviewed by Task Force
 - Minutes approved by the Task Force
- Members Present include: Ned Sparks (Task Force co-chair), Alicia Mezu (Task Force co-chair), Joyce Dantzler, Cheryl De Pinto, Greg LeGrand, Mike Mason, TJ Morgan, Mary Nasuta, Greg Penczek, Bryan Pugh, Deborah Somerville, Gaby von Nordheim, Andy Warner, Gary Dix, Gerry Gioia, Kathleen Heck, and Mike Williams
- Members Absent include: Kevin Crutchfield, John Lopez, Wendell McKay, Andy Roper.
- Meeting open to the public and one visitor present for the meeting including Mr. Thomas Hearn – Montgomery County.
- Subcommittee members convened in small groups for continued discussions and completion of assignments for Task Force draft report.
- Task Force members reconvened in large group to report out summary of subcommittee discussions.
 - Next Steps include meeting dates December.
- Meeting adjourned at 8 p.m.
 - Minutes of meeting transcribed by Alicia Mezu (Task Force Co-Chair).

Traumatic Brain Injury/Sports Related Concussions Task Force Meeting
December 4, 2012
Howard High School
8700 Old Annapolis Road
Ellicott City, MD 21043
6 p.m. to 8 p.m.

General Meeting Minutes for December 4, 2012

- Meeting convened at 6 p.m.
 - Welcome and Introductions
 - Review of agenda items by Ned Sparks and Alicia Mezu
- Minutes from November 8, 2012 meeting reviewed by Task Force
 - Minutes approved by the Task Force
- Members Present include: Ned Sparks (Task Force co-chair), Alicia Mezu (Task Force co-chair), Joyce Dantzler, Cheryl De Pinto, Mike Mason, TJ Morgan, Mary Nasuta, Greg Penczek, Bryan Pugh, Deborah Somerville, Gaby von Nordheim, Andy Warner, Gary Dix, Gerry Gioia, Kathleen Heck, John Lopez, Wendell McKay, Andy Roper, and Mike Williams
- Members Absent include: Kevin Crutchfield, and Greg LeGrand.
- Meeting open to the public and one visitor present for the meeting including Mr. Thomas Hearn – Montgomery County.
- Task Force members reviewed draft report and provided feedback and input.
 - Next Steps include revisions and updates for draft report.
 - Task Force members will communicate via email and possible teleconference to be scheduled if needed to finalized report.
- Meeting adjourned at 8:20 p.m.
 - Minutes of meeting transcribed by Alicia Mezu (Task Force Co-Chair).

Traumatic Brain Injury/Sports Related Concussions Task Force Meeting
January 9, 2013
Teleconference Meeting
6 p.m. to 8 p.m.

General Meeting Minutes for January 9, 2013

- Meeting convened at 6 p.m. via teleconference
 - Welcome and Introductions
 - Roll Call of Members
 - Review of agenda items by Ned Sparks and Alicia Mezu

- Members Present include: Ned Sparks (Task Force co-chair), Alicia Mezu (Task Force co-chair), Joyce Dantzler, Cheryl De Pinto, Mike Mason, TJ Morgan, Mary Nasuta, Greg Penczek, Bryan Pugh, Deborah Somerville, Gaby von Nordheim, Andy Warner, Gary Dix, Gerry Gioia, Kathleen Heck, Andy Roper, and Mike Williams

- Members Absent include: Greg LeGrand, John Lopez, and Wendell McKay.

- Task Force members reviewed final draft report and provided feedback and input.
 - Next Steps include presentation of Task Force Report to the State Board of Education on January 22, 2013.
 - Task Force Members invited to attend meeting.

- Meeting adjourned at 8:20 p.m.
 - Minutes of meeting transcribed by Alicia Mezu (Task Force Co-Chair).

Appendix B

Resources Reviewed by the Task Force

1. Alaska School Activities Association (<http://asaa.org/asaa/sports-medicine/>)
2. American Academy of Neurology – *A New Game Plan*
3. American Academy of Neurology – *Position Statement on Sport Concussions*
4. American Academy of Pediatrics - *Medical Conditions Affecting Sports Participation*
5. American Medical Society for Sports Medicine position statement: *Concussion in Sport*
6. Annotate Code of Maryland, Health General Article §14-501
7. Annotated Code of Maryland, Education Article §7-433
8. Arkansas Activities Association (<http://www.ahsaa.org/activity/73/sports-medicine>)
9. Article – Canadian Medical Association - *Traumatic brain injury: Can the consequences be stopped?*
10. Article – Communique: *Concussion Awareness: Getting School Psychologists into the Game*
11. Article – ESPN.com: *Concussion Test may not be Panacea*
12. Article – Indiana International & Comparative Law Review: *WARNING! CHILDREN'S BRAINS IN DANGER: LEGISLATIVE APPROACHES TO CREATING UNIFORM RETURN-TO-PLAY STANDARDS FOR CONCUSSIONS IN YOUTH ATHLETICS*
13. Article – Injury Prevention: Concussion research: a public health priority
14. Article – Journal of Rehabilitation Medicine: *INCIDENCE, RISK FACTORS AND PREVENTION OF MILD TRAUMATIC BRAIN INJURY: RESULTS OF THE WHO COLLABORATING CENTRE TASK FORCE ON MILD TRAUMATIC BRAIN INJURY*
15. Article – New Hampshire Bar Journal: *Concussions and Student-Athletes: Medical-Legal Issues in Concussion Care & Physician and School System Risks*
16. Article – New York Times: *Dying to Play*
17. Article: Acta Paediatrica Promotion Child Health: *Returning to Play after Concussion*
18. Article: American Family Physician - *Assessment and Management of Concussions in Sports.*
19. Article: Athletic Therapy Today - *Cognitive Rest: the often neglected aspect of concussion management.*
20. Article: Brain - *Assessment of metabolic brain damage and recovery following mild traumatic brain injury: a multicentre, proton magnetic resonance spectroscopic study in concussed patients.*
21. Article: Centers for Disease Control and Prevention - *Traumatic brain injury in the United States: emergency department visits, hospitalizations, and deaths*
22. Article: Clinical Pediatrics - *High School Soccer Players With Concussion Education Are More Likely to Notify Their Coach of a Suspected Concussion*

23. Article: Journal of Athletic Training: *Supporting the Student-Athlete's Return to the Classroom After a Sport-Related Concussion.*
24. Article: Journal of Rehabilitation Research & Development: *Review of sports-related concussion: Potential for application in military settings.*
25. Article: Morbidity and Mortality Weekly Report – *Surveillance for Traumatic Brain Injury – Related Deaths*
26. Article: School and the Concussed Youth: Recommendations for Concussion Education and Management. *Physical Medicine and Rehabilitation Clinics of North America.*
27. California Interscholastic Federation
(http://www.cifstate.org/index.php?option=com_content&view=article&id=53&Itemid=61)
28. Carroll County Public Schools – Probable Head Injury Flow Chart
29. Center for Disease Control and Prevention – “*Heads Up*” on Managing Return to Play.
30. Center for Disease Control and Prevention – *Heads Up to Schools: Know Your Concussion ABCs*
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Appendix C

State Statistics for Free Courses from NFHSLearn.com								
January 1, 2007 - August 31, 2012								
State	A Guide to Heat Acclimatization and Heat Illness Prevention	Concussion in Sports - What You Need to Know	Creating a Safe and Respectful Environment	NCAA Eligibility Coaching Education	Sportsmanship	Role of the Parent in Sports	Total FREE Courses	Top 25 State Rankings
*AA	-	7	1	-	-	1	9	
*AE	18	339	53	3	87	79	579	
AK	16	1,516	10	6	190	523	2,261	
AL	140	17,446	46	8	678	309	18,627	11
*AP	2	34	2	5	16	8	67	
AR	346	4,411	35	12	194	250	5,248	
AZ	590	27,318	78	32	1,270	1,645	30,933	7
CA	1,401	15,906	201	39	1,669	3,266	22,482	9
CO	138	30,178	36	4	433	481	31,270	6
CT	31	1,945	6	5	46	46	2,079	
*DC	82	633	6	21	32	22	796	
*DD	1	8	1	-	3	1	14	
DE	92	2,240	19	1	275	91	2,718	
FL	790	38,953	73	28	2,553	1,620	44,017	3
GA	221	6,718	34	4	488	295	7,760	24
HI	69	1,593	34	7	224	277	2,204	
IA	230	2,104	84	3	672	360	3,453	
ID	177	9,448	14	11	208	402	10,260	17
IL	330	3,125	13	10	1,096	326	4,900	
IN	428	5,830	204	40	407	1,338	8,247	21
KS	1,651	7,853	99	3	484	324	10,414	16
KY	103	2,289	20	13	211	258	2,894	
LA	116	3,650	141	7	342	300	4,556	
MA	472	91,906	92	25	794	1,307	94,596	1
MD	4,070	18,589	70	33	699	828	24,289	8
ME	73	4,610	15	4	133	74	4,909	
MI	71	1,007	44	1	252	254	1,629	
MN	966	13,650	16	2	194	389	15,217	13
MO	206	12,654	64	10	138	278	13,350	15
MS	95	2,917	48	2	143	64	3,269	
MT	4	105	3	-	25	12	149	
NC	384	4,439	127	20	2,522	403	7,895	22
ND	236	7,204	29	3	139	192	7,803	23
NE	4,268	18	1	110	134	305	4,836	
NH	305	5,261	147	3	258	229	6,203	
NJ	10,436	42,877	562	31	976	510	55,392	2
NM	288	8,691	37	5	339	204	9,564	19
NV	51	910	14	1	115	67	1,158	
NY	429	5,435	156	10	334	327	6,691	
OH	531	6,303	215	38	1,089	1,465	9,641	18
OK	1,321	13,302	79	4	215	117	15,038	14
OR	125	16,768	75	15	654	487	18,124	12
PA	1,253	32,448	155	28	596	378	34,858	4
RI	244	5,771	56	5	281	307	6,664	
SC	3,834	16,065	80	6	420	384	20,789	10
SD	206	6,224	47	1	124	105	6,707	
TN	64	1,929	10	3	91	76	2,173	
TX	518	7,538	50	12	445	361	8,924	20
UT	71	6,789	18	1	130	84	7,093	25
VA	306	31,933	32	18	475	601	33,365	5
VT	104	4,965	26	5	218	250	5,568	
WA	187	3,171	41	10	378	514	4,301	
WI	184	5,305	28	13	369	398	6,297	
WV	415	3,887	82	8	363	255	5,010	
WY	62	2,423	10	6	40	314	2,855	
*XX	31	1,570	9	4	166	134	1,914	
Total	38,782	570,208	3,648	699	24,827	23,895	662,059	

Source: Provided by NFHS (October 2012)

•state Codes:

AA - Armed Forces of Americas

AE - Armed Forces of Europe

AP - Armed Forces of Pacific

DC - District of Columbia

DD - Department of Defense Education Activity

XX - Outside of U.S.

Appendix D

Organizations with Contact Exposure Limitations

National Football League (NFL)

- Offseason workouts will be limited to nine weeks, with two weeks of strength and conditioning, three weeks of instruction with no offense-versus-defense drills and four weeks of organized team activities -- a maximum of three in the first two weeks and maximum of four in the last two weeks.
- In the preseason, veterans can report no earlier than 15 days before their team's first game. A first day is limited to physicals and meetings, and no pads or contact are allowed in the second and third day of camp. As has been outlined elsewhere, there will be only one padded practice per day. Including walkthroughs, players cannot be on the field more than four hours per day.
- During the regular season, there can be just 14 padded practices for the entirety of the season, 11 of those sessions must be held in the first 11 weeks, and teams can hold no more than two padded practices per week. One padded practice per week is allowed during the playoffs, and all padded practices are limited to three hours max. Also, a bye week must include at least four consecutive days off, including Saturday.

Source: NFL.com

IVY League

Football

- In-season practice limitations permit no more than two full-contact days per week, a 60-percent reduction from the NCAA maximum.
- Spring practice will see the number of allowable full-contact practices cut by one, a 12-percent reduction from current Ivy League limits and a 42-percent reduction from the NCAA maximum.
- The number of days that pads can be worn during both sessions of preseason two-a-days has been limited to one.

Men's Lacrosse

- Coaches will designate 11 combined days in the fall and spring seasons in which body checking will not be permitted in practices.
- Only one full-contact practice per day will be permitted.
- Coaches will place a greater emphasis on teaching proper hitting techniques in practice.
- The Ivy League office will work with the NCAA on specific issues that could potentially lower the incidence of concussion, including examining the possibility of more stringent consequences for penalties involving targeting the head as well as considering possible rules changes surrounding face-offs.

Women's Lacrosse

- Coaches will modify 10 spring practices to exclude stick-checking.
- Coaches will dedicate time during the beginning of fall practice and skill instruction season on teaching proper stick-checking technique.
- Each student-athlete will be required to attend at least one skill instruction session that focuses on proper stick-checking technique prior to the first fall practice.
- Other adopted recommendations centered on suggestions for minimizing accidental hits to the head during practices and continued assessment of officiating to address fouls involving hits (i.e., stick-checking) to the head and other dangerous play.
- Certified officials will attend one fall practice to emphasize adherence to safety rules and cardable fouls.

Men's and Women's Soccer

- Education regarding the NCAA substitution rule will be emphasized to student-athletes, coaches and officials. The rule allows for substitution and re-entry for players with concussion-like symptoms so that they can be properly evaluated on the sideline but substituted back into the game (not counting against team's substitution total) if they are cleared to play by a team trainer or physician.
- Three hours of countable preseason practice will be used by coaches to teach and review proper techniques for heading duels.

Source: Report regarding the Ivy League Review of Concussions In Football (Released July 2011); Report of the Ivy League Multi--Sport Concussion Review Committee Review of Concussions in Men's Lacrosse, Women's Lacrosse, Soccer (Released May 2012)

Pop Warner Football

The New Football Rules:

- No full speed head-on blocking or tackling drills in which the players line up more than 3 yards apart are permitted. (Having two linemen in stances immediately across the line of scrimmage from each other and having full-speed drills where the players approach each other at an angle, but not straight ahead in to each other are both permitted.) However, there should be no intentional head-to-head contact!
- The amount of contact at each practice will be reduced to a maximum of 1/3 of practice time (either 40 minutes total of each practice or 1/3 of total weekly practice time). In this context, "contact" means any drill or scrimmage in which drills; down line vs. down line full-speed drills; and scrimmages.

Source: <http://www.popwarner.com/football>

Howard County School System Contact Practice Guidelines for Football

Pre-season:

- No live hitting until day 6 of practice (Heat Acclimation Rules)
- Live hitting (full speed, go to ground contact) period limited to full pads practice days

In-season:

- Live hitting limited to two of the three Full Pads Practice Days.

Varsity Weekly Practice Schedule:

- Monday: Full Pads Practice Day
- Tuesday: Full Pads Practice Day
- Wednesday: Full Pads Practice Day
- Thursday: Helmets and Shoulder Pads only
- Friday: Game Day
- Saturday: Film/Strength Training/Running – No football Gear.

JV Weekly Practice Schedule:

- Friday: Film/Strength Training/Running – No football Gear.
- Saturday: Full Pads Practice Day
- Monday: Full Pads Practice Day
- Tuesday: Full Pads Practice Day
- Wednesday: Helmets and Shoulder Pads only
- Thursday: Game Day

Source: Howard County Department of Education Office of Athletics

Appendix E

Title 13A STATE BOARD OF EDUCATION

Subtitle 06 SUPPORTING PROGRAMS

Chapter 08 Head Injuries and Concussions in Extracurricular Athletic Events.

Authority: Education Article, §7-433, Annotated Code of Maryland

.01 Scope

This chapter implements Education Article §§7-432 and 14-501, Annotated Code of Maryland, to establish a program of concussion awareness and prevention throughout the state of Maryland for student-athletes, their parents or guardians, and their coaches.

.02 Definitions

A. In this chapter, the following terms have the meanings indicated.

B. Terms Defined.

- (1) "Concussion" means a type of traumatic brain injury (TBI) causing an immediate and, usually short-lived change in mental status or an alteration of normal consciousness resulting from ~~caused by~~ a bump, blow, jolt, shaking or spinning of the head or body ~~to the head that can alter the way the brain works.~~
- (2) ~~"Licensed health care provider" means a licensed physician or physician assistant, a licensed psychologist with specialty training in neuropsychology, (Neuropsychologist), or a licensed nurse practitioner, practicing consistent with State law.~~
- (2) "Graduated return to play protocols" means the progressive return to play stages included in the Policies and Programs on Concussions for Public Schools and Youth Sport Programs (Maryland State Department of Education, updated through December 2012).
- (3) "Return to play" means participation in a non-medically supervised practice or athletic competition after a period of exclusion.
- (4) "Student-athlete" means a student participating in any try-out, practice or contest of a school team.
- (5) "School personnel" means those directly responsible for administering or coaching interscholastic athletic program within a school or county and those employees of the school or school system with overall responsibility for student-athletes' academic performance and medical well-being.
- (6) "Youth sports program" means a program organized for recreational athletic competition instruction for participants who younger than 19 years old.

.03 Incorporation by reference

A. In this chapter, the following document is incorporated by reference.

B. Document Incorporated

Policies and Programs on Concussions for Public Schools and Youth Sport Programs (Maryland State Department of Education, updated through December 2012).

.04 Training

A. ~~By August 31, 2012,~~ Each local school system shall train each coach in concussion risk and management. At a minimum, the coach's training shall include:

- (1) The nature of the risk of a brain injury;
- (2) The risk of not reporting a brain injury;
- (3) Criteria for removal and return to play;
- (4) Understanding concussions;
- (5) Recognizing concussions;
- (6) Signs and symptoms;
- (7) Response and action plan.

B. Each school system shall require a certificate of completion from a coaches' training course with refresher training every two years as a condition of coaching employment.

C. Each school system shall require all Physical Education teachers to provide a certificate of completion of concussion education training.

.05 Policies and Procedures.

- A. ~~By August 31, 2012, e~~Each school system shall implement policies consistent with this chapter and the Policies and Programs on Concussions for Public Schools and Youth Sport Programs to assure student-athletes, parents, or guardians and school personnel receive an informational sheet describing:
 - (1) The nature and risk of a concussion or head injury;
 - (2) The criteria for removal from play and return to play;
 - (3) The risks of not reporting injury and continuing to play; and
 - (4) Appropriate academic accommodations for diagnosed concussion victims.
- B. Under the policy, each school system shall require every student-athlete and at least one parent or guardian to verify in writing that they have received information on concussions and sign a statement acknowledging receipt of the information before a student participates in an authorized interscholastic athletic activity.
- C. By August 15, 2013, each local school system shall implement policies consistent with the Policies and Programs on Concussions for Public Schools and Youth Sport Programs that
 - (1) Identify and ensure appropriate academic accommodations and restrictions are made available to student athletes during the recovery phase from a concussion;
 - (2) Ensure that the parent, guardian or emergency contact person is notified in person or by telephone and in writing immediately after a student athlete sustains a suspected concussion;
 - (3) Ensure that the athletic director and school nurse are notified before the start of the next school day of a student athlete who has sustained a suspected concussion.
- D. By August 15, 2013 the MSDE in collaboration with an appropriate medical, academic and athletic advisory team will:
 - (1) identify collision, contact and non contact sports; and
 - (2) recommend limitations of contact exposures in those sports.

.06 Removal and Return to Play.

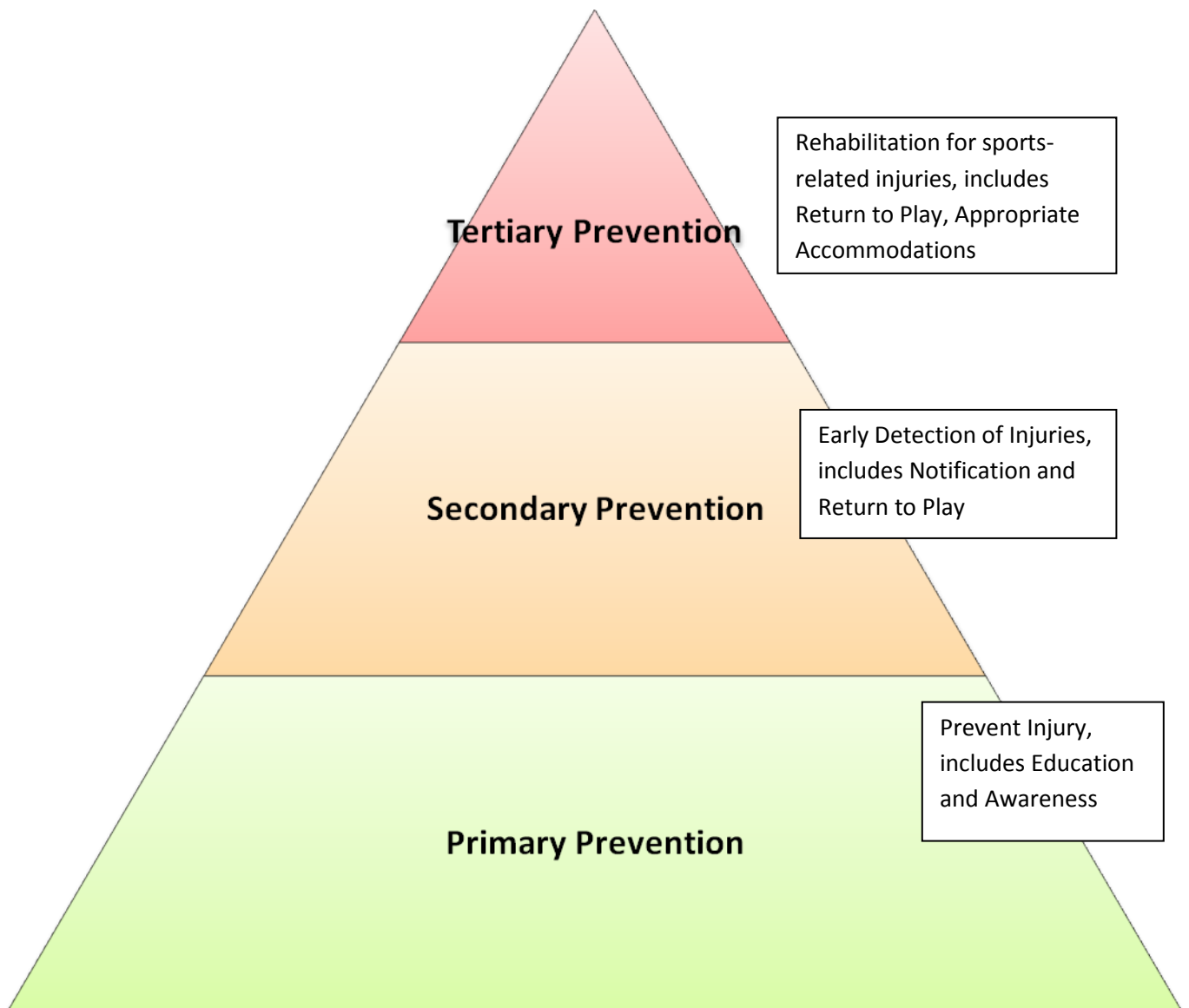
- ~~(1) After an appropriate medical assessment, any student athlete suspected of sustaining a concussion shall immediately be removed from practice or play. The student athlete may not return to play until cleared by a licensed health care provider authorized to provide sports physical examinations and trained in the evaluation and management of concussions.~~
- A. Any student-athlete suspected of sustaining a concussion shall immediately be removed from practice or play.
- B. Each school shall use the gradual return to play protocols instituted in the Policies and Programs on Concussions for Public Schools and Youth Sport Programs.
- C. The student-athlete may not return to play until the student receives written clearance after receiving an appropriate medical assessment by one of the following:
 - (1) A licensed physician trained in the evaluation and management of concussions;
 - (2) A licensed physician's-assistant trained in the evaluation and management of concussions in collaboration with the physician assistant's supervising physician or alternate supervising physician within the scope of the physician assistant's Delegation Agreement approved by the Board of Physicians;
 - (3) A licensed nurse practitioner trained in the evaluation and management of concussions;
 - (4) A licensed psychologist with training in neuropsychology and in the evaluation and management of concussions; or
 - (5) A licensed athletic trainer trained in the evaluation and management of concussions, in collaboration with the athletic trainer's supervising physician or alternate supervising physician and within the scope of the Evaluation and Treatment protocol approved by the Board of Physicians.
- ~~(2) D. To assist student-athletes, parents, and school personnel, to deal with concussion events, each local school system shall provide to all involved persons:~~
 - (1) Written notification of possible head injury;
 - (2) Medical clearance forms for gradual return to sports participation following concussion;
 - (3) Graduated return to play protocols.

.07. Youth Sports Programs Use of School Property.

- A. Youth sports programs seeking to use school facilities shall verify in writing distribution of concussion information to parents or guardians and receive verifiable acknowledgement of receipt.
- B. Each youth sports program will annually affirm to the local school system their compliance with concussion information procedures.

LILLIAN M. LOWERY, Ed.D.
State Superintendent of Schools

Appendix F



Reference: Park, Eugene, Bell, Joshua D., and Baker, Andrew J. (2008). *Traumatic brain injury: Can the consequences be stopped?* CMAJ 178(9).

Appendix G

Medical Clearance for Suspected Head Injury To be completed by a Licensed Health Care Provider (LHCP)

Directions: Provide this form to the health care provider evaluating the student's injury. Return form to school nurse immediately. If the student is diagnosed with a concussion, the form will be copied by the school nurse and the original form returned to the parent to use at the follow-up visit that clears the student for participation in athletics.

Student Name: _____

Date of Injury: _____

Initial Evaluation

Date: _____	LHCP* Name: _____
Signature: _____	Phone: _____
Diagnosis:	<input type="checkbox"/> No Concussion, may immediately resume all activities without restriction
	<input type="checkbox"/> Concussion *
	Date student may return to school: _____
Note: Student will be removed from all sports and physical education activities at school until medically cleared. School will implement standard academic accommodations unless specific accommodations are requested.	
* (LHCP is a Physician, Nurse Practitioner, Physician's Assistant, Neuropsychologist)	

*Follow-Up Evaluation (Required for Athletes with Concussions)

All student athletes with concussions must be medically cleared before beginning supervised Gradual Return to Sports /Physical Education Participation (RTP) program. According to COMAR 13A.06.08.01, the following licensed health care providers are permitted to authorize a student athlete to return to play:

- (1) A licensed physician trained in the evaluation and management of concussions;
- (2) A licensed physician's-assistant trained in the evaluation and management of concussions in collaboration with the physician assistant's supervising physician or alternate supervising physician within the scope of the physician assistant's Delegation Agreement approved by the Board of Physicians;
- (3) A licensed nurse practitioner trained in the evaluation and management of concussions;
- (4) A licensed psychologist with training in neuropsychology and in the evaluation and management of concussions; or
- (5) A licensed athletic trainer trained in the evaluation and management of concussions, in collaboration with the athletic trainer's supervising physician or alternate supervising physician and within the scope of the Evaluation and Treatment protocol approved by the Board of Physicians.

I certify that I am aware of the current medical guidance on concussion evaluation and management; the above-named student-athlete has met all of the above criteria for medical clearance for his/her recent concussion, and as of the date below is reading to return to a supervised Gradual Return to Sports/Physical Education Participation (RTP) program (lasting a minimum of 5 days.) Note: Students whose symptoms return during the RTP progression will be directed to stop the activity, rest until symptom free. The student will resume activity at the previous stage of the protocol that was completed without recurrence of symptoms. Students with persistent symptom return will be referred to their health care provider for evaluation.

Date: _____ LHCP Name: _____

Signature: _____ Phone: _____

¹ 2010 AAP Sport-Related Concussion in Children and Adolescents, 2008 Zurich Concussion in Sport Group Consensus.

Graduated Return to Play Protocol

Description of Stage	Date Completed	Supervised by
<p>STAGE 1: LIGHT AEROBIC ACTIVITY</p> <p><u>Begin stage 1 when:</u> Student is cleared by health care provider and has no symptoms</p> <p><u>Sample activities for stage 1:</u> 20-30 minutes jogging, stationary bike or treadmill</p>		
<p>STAGE 2: HEAVY AEROBIC AND STRENGTH ACTIVITY</p> <p><u>Begin stage 2 when:</u> 24 hours have passed since student began stage 1 AND student has not experienced any return of symptoms in the previous 24 hours</p> <p><u>Sample activities for stage 2:</u> Progressive resistance training workout consisting of all of the following:</p> <ul style="list-style-type: none"> • 4 laps around field or 10 minutes on stationary bike, and • Ten 60 yard sprints, and • 5 sets of 5 reps: Front squats/push-ups/shoulder press, and • 3-5 laps or walking lunges 		
<p>STAGE 3: FUNCTIONAL, INDIVIDUAL SPORT-SPECIFIC DRILLS WITHOUT RISK OF CONTACT</p> <p><u>Begin stage 3 when:</u> 24 hours have passed since student began stage 2 AND student has not experienced any return of symptoms in the previous 24 hours</p> <p><u>Sample activities for stage 3:</u> 30-45 minutes of functional/sport specific drills coordinated by coach or athletic trainer. NOTE: no heading of soccer ball or drills involving blocking sled.</p>		
<p>STAGE 4: NON-CONTACT PRACTICE</p> <p><u>Begin stage 4 when:</u> 24 hours have passed since student began stage 3 AND student has not experienced any return of symptoms in the previous 24 hours</p> <p><u>Sample activities for stage 4:</u> Full participation in team's regular strength and conditioning program. NOTE: no heading of soccer ball or drills involving blocking sled permitted.</p>		
<p>STAGE 5: FULL-CONTACT PRACTICE AND FULL PARTICIPATION IN PHYSICAL EDUCATION</p> <p><u>Begin stage 5 when:</u> 24 hours have passed since student began stage 4 AND student has not experienced any return of symptoms in the previous 24 hours</p> <p><u>Sample activities for stage 5:</u> Unrestricted participation in practices and physical education</p>		
<p>STAGE 6: RETURN TO GAME</p> <p><u>Begin stage 6 when:</u> 24 hours have passed since student began stage 5 AND student has not experienced any return of symptoms in the previous 24 hours</p>		

PRE-PARTICIPATION HEAD INJURY/CONCUSSION REPORTING FORM FOR EXTRACURRICULAR ACTIVITIES

This form should be completed by the student's parent(s) or legal guardian(s). It must be submitted to the Athletic Director, or official designated by the school, prior to the start of each season a student plans to participate in an extracurricular athletic activity.

Student Information

Name:

Grade:

Sport(s):

Home Address:

Has student ever experienced a traumatic head injury (a blow to the head)? Yes _____ No _____

If yes, when? Dates (month/year): _____

Has student ever received medical attention for a head injury? Yes _____ No _____

If yes, when? Dates (month/year): _____

If yes, please describe the circumstances:

Was student diagnosed with a concussion? Yes _____ No _____

If yes, when? Dates (month/year): _____

Duration of Symptoms (such as headache, difficulty concentrating, fatigue) for most recent concussion:

Parent/Guardian: Name: _____ (Please print)

Signature/Date _____

Student Athlete: Signature/Date _____

Appendix H

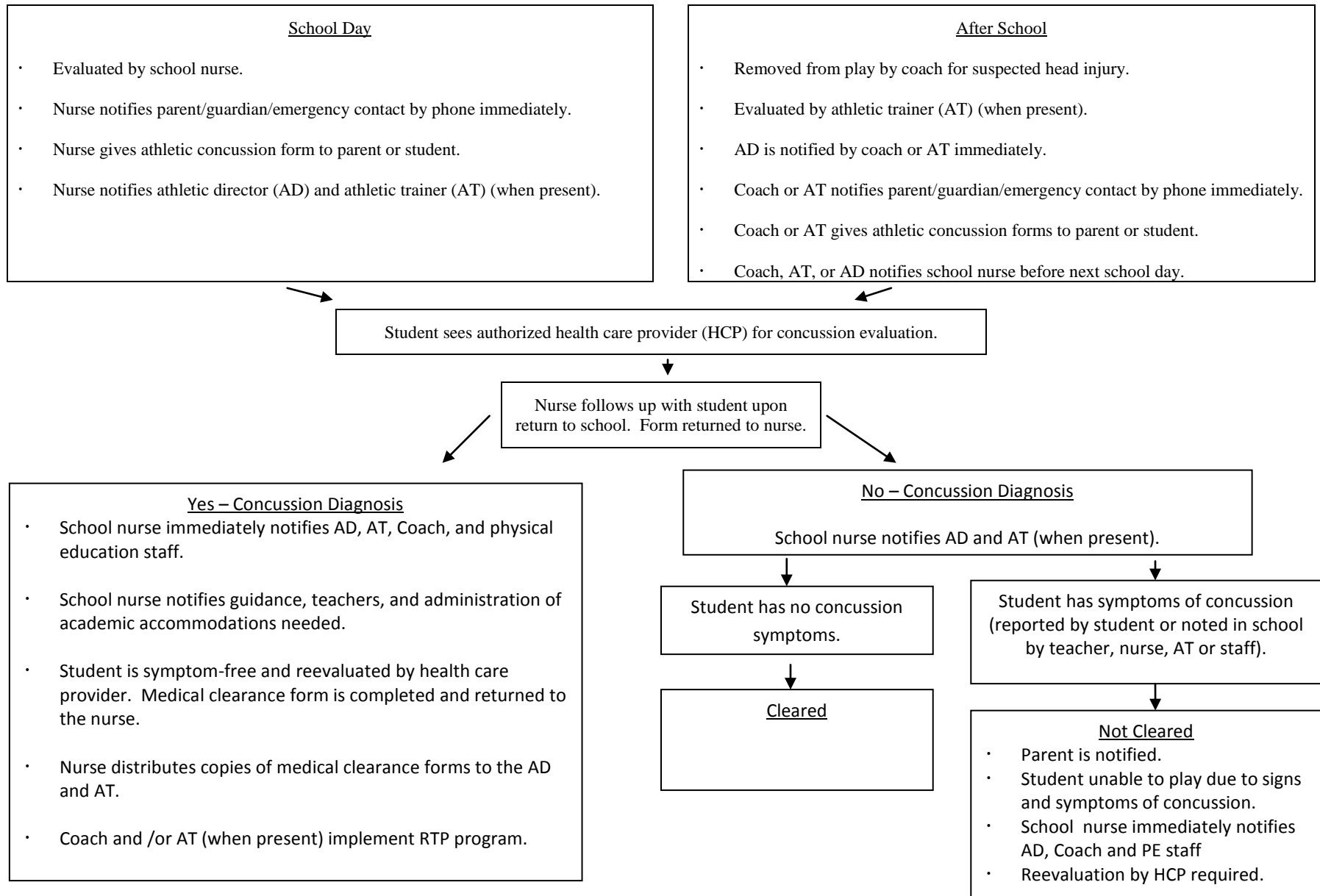
Appropriate Educational Accommodations

Post-Concussion Effect	Functional School Problem	Accommodation/ Management Strategy
Attention/ Concentration	Short focus on lecture, class work, homework	Shorter assignments, break down tasks, lighter work load
“Working” Memory	Holding instructions in mind, reading comprehension, math calculation, writing	Repetition, written instructions, use of calculator, short reading passages
Memory Consolidation/ Retrieval	Retaining new information, accessing learned info when needed	Smaller chunks to learn, recognition cues
Processing Speed	Keep pace with work demand, process verbal information effectively	Extended time, slow down verbal info, comprehension-checking
Fatigue	Decreased arousal/ activation to engage basic attention, working memory	Rest breaks during classes, homework, and exams
Headaches	Interferes with concentration	Rest breaks
Light/Noise Sensitivity	Symptoms worsen in bright or loud environments	Wear sunglasses, seating away from bright sunlight or other light. Avoid noisy/ crowded environments such as lunchroom, assemblies, hallways.
Dizziness/Balance Problems	Unsteadiness when walking	Elevator pass, class transition prior to bell
Sleep Disturbance	Decreased arousal, shifted sleep schedule	Later start time, shortened day
Anxiety	Can interfere with concentration; Student may push through symptoms to prevent falling behind	Reassurance from teachers and team about accommodations; Workload reduction, alternate forms of testing
Depression/Withdrawal	Withdrawal from school or friends due to stigma or activity restrictions	Time built in for socialization
Cognitive Symptoms	Concentrating, learning	See specific cognitive accommodations above
Symptom Sensitivity	Symptoms worsen with <i>over</i> -activity, resulting in any of the above problems	Reduce cognitive or physical demands below symptom threshold; provide rest breaks; complete work in small increments until symptom threshold increases

Source: Sady, M.D., Vaughan, C.G. & Gioia, G.A. (2011) School and the Concussed Youth: Recommendations for Concussion Education and Management. *Physical Medicine and Rehabilitation Clinics of North America*. 22, 701-719. (pp.714)

Appendix I

High School Student-Athlete Probable Head Injury Flow Chart



Appendix J

Case Management and Care Coordination -Roles and Responsibilities

A student with a suspected or diagnosed TBI/concussion may need a designated school case manager to coordinate his/her care. Providing appropriate support for a student returning to school after a TBI/concussion requires a coordinated and collaborative team approach. The Task Force recognizes the student, parent, and school staff as integral partners in the management of TBIs/concussions in the school setting. The roles and responsibilities of team members for the management of students with a suspected or diagnosed TBI/concussion may include, but are not limited to, the following:

Team Members	Role(s)	Responsibilities
Student/Athlete	Notify appropriate school staff and parents/guardians about any head injuries	<ul style="list-style-type: none"> • Increase education about and awareness of TBIs/concussions including an understanding of signs and symptoms. • Immediately inform school staff and parents/guardians in the event of injury and suspected TBI/concussion. • Participate in care planning, including accommodations for return to learn and return to play authorization.
Parent/Guardian	Integral part of the process of planning, and coordination of care for the health and safety of the student	<ul style="list-style-type: none"> • Increase education about and awareness of TBIs/concussions; • Complete and return all necessary pre-participation forms and sports physical forms for the student annually. • Provide the school with emergency contact information that is accurate and updated as needed. • Provide the school with complete and accurate medical information related to the student’s TBI/concussion including written health care provider documentation. • Communicate with the school nurse and school staff to develop the plan of care for the student.

Team Members	Role(s)	Responsibilities
School Administrator	Leader of the school team	<ul style="list-style-type: none"> • Oversee/ensure implementation of school policies and protocols; • Communicate the importance of concussion management to all necessary school staff. • Encourage communication between all team members; and • Assure effective implementation of Return to Play (RTP) accommodations for students with concussion.
Private Medical Provider	Provide guidance and directives for the student's treatment of TBI/concussion in the school setting	<ul style="list-style-type: none"> • Provide written signed orders regarding restrictions and monitoring for specific symptoms that the provider should be made aware of by family and/or school nurse/school staff. • Provide the local school system-specific graduated return to activity schedule to follow, or approve use of the district's graduated return to activity schedule if deemed appropriate. • Provide written clearance/authorization for return to full activities. (In order for a student to return to athletic activities after he or she has sustained a concussion during school athletic activities, an evaluation must be completed and signed by a licensed physician.)
School Nurse (Registered Nurse)	Leader of the school health nursing team; may serve as a liaison between health care professionals and school-based personnel.	<ul style="list-style-type: none"> • Provide education about concussion management to other team members as indicated. • Interpret written orders from the health care provider including the return to school order; seek clarification if needed. • Institute health-related accommodations as needed in school; • Monitor student's status and progress in school and report changes to parent/guardian and health care provider. • Communicate status and progress to the athletic department and other school staff on a need-to-know basis. • Participate in school support team meetings and 504 Plans. • Document nursing care and communication with all team members. •

Team Members	Role(s)	Responsibilities
School Counselor	Provide support to the student and family and assist with academic accommodations as needed	<ul style="list-style-type: none"> • Communicate with school nurse about student and coordinate information for teaching staff about student’s return/treatment. • Reinforce student’s need for academic rest as ordered. • Convene team meetings as needed per student’s status. • Suggest necessary accommodations required to ensure student’s success based on information provided by school nurse and health care professional if needed. • Communicate with teachers and monitor effectiveness of classroom accommodations.
School Teachers (General Education and Special Education Teachers)	Ensure appropriate instruction and supports are provided for the student during the transition back to school	<ul style="list-style-type: none"> • Understand the signs and symptoms of TBI/concussion and the potential impact on academic performance. • Provide support for successful re-entry to school. • Participate as a member of the student services support team • Administer necessary testing, if special educator. • Assist in development and implementation of 504 Plan or IEP if applicable. • Assist in the development of short-term, appropriate accommodations in consultation with the school team. • Understand the range of accommodations needed for the student during the school day, including, but not limited to, shorter school day, rest periods, extended time for tests and assignments, copies of notes, alternative assignments, minimizing distractions, audio taping classes, or peer note taking. • Communicate student’s progress to school team.
School Psychologist	Resource consultant for the school team	<ul style="list-style-type: none"> • Consult with school team members regarding student(s) with prolonged or complex recovery. • Provide educational and psychological assessments as determined by the school team. • Consult with school team regarding educational planning and accommodations for the student with TBI/concussion.

Team Members	Role(s)	Responsibilities
Speech-Language Pathologist	Supports transition of the student back to school (e.g., return to learn) when necessary	<ul style="list-style-type: none"> ● Evaluate the student's current status and needs, including medical information, and provide appropriate recommendations if necessary. ● Assist in the development of a transition plan back to school, as needed. ● Review any prior testing performed in the medical setting post-injury and administer additional testing as needed. ● Assist in development of an Individualized Education Program (IEP) if applicable. ● Suggest appropriate instructional accommodations and modifications for student if applicable. ● Provide speech and/or language services if applicable and monitor student progress. ● Assist in promoting awareness of TBI/concussion symptoms.
Athletic Director	Provides leadership and supervision of the interscholastic athletic program.	<ul style="list-style-type: none"> ● Ensure concussion materials are provided to coaches, athletes, and parents. ● Provide concussion materials to coaches, athletes, and parents. ● Ensure athletes and parents have signed forms acknowledging receipt of concussion information. ● Ensure all coaches have completed annually a recognized concussion training course. ● Collect all Student Accident/Concussion forms from coaches. ● Provide a copy of the Student Accident/Concussion form to the principal or designee. ● Provide a copy of the Student Accident/Concussion form to the school nurse. ● When athlete returns, collect the signed Return to Play clearance from the coach. ● Provide a copy of the Return to Play clearance form to principal. ● Provide a copy of the Return to Play clearance form to school nurse.

Team Members	Role(s)	Responsibilities
Certified Athletic Trainer	Under the supervision of a qualified physician can assist the medical director and coach by identifying a student with a potential concussion and evaluate the student diagnosed with TBI/concussion in progress of return to athletic activities based on private medical provider orders and/or district protocol.	<ul style="list-style-type: none"> • Educate students and staff in concussion management and prevention. • Oversee student athletes taking baseline validated standardized computerized tests if permitted by district policy. • Evaluate student-athletes for signs and symptoms of a concussion when present at athletic events. • Observe for late onset of signs and symptoms, and refer as appropriate. • Evaluate the student to determine if injury warrants emergency transport per district policy. • Refer parents/guardians of student athletes believed to have sustained a concussion to their medical provider. • Provide parents/guardians with oral and/or written instructions on observing the student for concussive complications that warrant immediate emergency care. • Assist in implementation of accommodations for the student-athlete. • Monitor the student’s return to school activities and communicate with the supervising medical director, school nurse, parent/guardian, and appropriate school staff.
Physical Education Teacher	Provide appropriate instruction and supports for student’s transition back to school and during physical education class activities	<ul style="list-style-type: none"> • Recognize signs and symptoms of TBI/concussion and remove student from activities immediately if student presents with signs and symptoms. • Contact the school nurse or certified athletic trainer (if available) for assistance with any student injury (<i>thus transferring responsibility of treatment and parent notification...</i>). • Communicate with school administrator and school nurse regarding suspected TBI/concussion and any head injuries occurring in physical education class and complete required school incident report form. • Verify written authorization for student to participate in physical education activities post-TBI/concussion. • Adhere to the school’s gradual return to play protocol.

Team Members	Role(s)	Responsibilities
Coaches	Provides leadership and supervision of the interscholastic sport team to which he/she is assigned.	<ul style="list-style-type: none"> • Adhere to the local school system’s policies regarding concussion management and ensure coaching staff, assistant coaches, parents/guardians, and students are educated about concussions and local policies/procedures. • Provide students and parents/guardians with concussion information, prior to sports participation. • Review safety techniques, sportsmanship, and proper equipment with student athletes. • Understand the sport and create drills, practice sessions, and instruction to reinforce safety. • During practice and /or contests, remove an athlete if a TBI/concussion is suspected. • Contact parent/guardian to pick up student or call 911 if appropriate or parents cannot be located. • Provide parent and Emergency Medical Technician (EMT) with information about injury or suspected TBI/concussion including signs and symptoms observed. • Complete Student Accident/Injury Form or other school system form regarding TBI/concussion. • Provide a copy of the completed student accident/injury form to athletics director. • Follow up with parents/guardian regarding student athlete’s well-being. • Collect the signed Return-to-Play clearance and authorization form. • Provide a copy of the Return to Play clearance form to athletics director and communicate with school administrator and school nurse.