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The Legal Landscape of Concussion: Implications for Sports Medicine Providers

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Context: Concussion legislation has been enacted in all 50 of the United States, aiming to prevent mild traumatic brain injuries and the potential long-term sequelae of these injuries in youth athletics. Sports medicine providers, in addressing this major public health concern, are tasked with adhering to the established standards of medical care while also considering the legal implications.

Evidence Acquisition: The PubMed (2011-2016) database was searched using the following search terms: *concussion*, *sports concussion*, *legislation*, and *concussion legislation*. References from consensus statements, review articles, and book chapters were also utilized.

Study Design: Clinical review.

Level of Evidence: Level 4.

Results: The Lystedt law and its progeny have increased awareness of the signs and symptoms of sports concussion, but adherence to state legislation can pose some challenges.

Conclusion: The presence of concussion legislation places a responsibility on the sports medicine provider to have a firm understanding of the legality of concussion management in the state(s) in which they practice.

Keywords: sports medicine; sports concussion; Lystedt law; concussion legislation

Given the rising number of sports concussions reported each year, especially at the high school level, sports concussion has become a major public health concern.^{2,14,15} Sports concussion remains a clinical diagnosis; thus, recognition of its signs and symptoms is crucial to the correct diagnosis.⁷ Initial work to improve concussion care focused on educating the general public and medical professionals about concerning signs and symptoms in athletes afflicted with a sports concussion, with the goal of improving early recognition and reducing long-term sequelae.¹⁶

In 2009, a landmark case demonstrated that education alone was not enough to influence behavior. As a result of the traumatic brain injury suffered by Zackery Lystedt, the Lystedt law was enacted.¹ This law is aimed at preventing complications

from mild traumatic brain injuries (mTBIs) sustained by youth participating in athletics.^{1,6,10} After implementation of concussion legislation in 2009, the rates of treated concussions in states without legislation were 7% higher in the 2009-2010 school year, 20% higher in the 2010-2011 school year, and 34% higher in the 2011-2012 school year ($P < 0.01$) than prelegislation trends (2005-2009).⁶

Presently, concussion law in all 50 of the United States and the District of Columbia generally involves the following 3 principles: (1) concussion education for coaches, athletes, and parents/guardians; (2) removal from play at the time of suspected injury without eligibility for same-day return to play; and (3) clearance by a healthcare provider trained in concussion management for an athlete to be eligible for return to play.⁴ In

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addition to possessing the medical knowledge to care for patients who have suffered a sports concussion, the sports medicine provider should have a sound understanding of concussion legislation in the state(s) in which they practice.

This article provides a primer on concussion care from both a medical and legal standpoint. Using 3 scenarios, the medical and legal evidence will be applied to highlight key points in sports concussion law. Specifically, preparation should be undertaken ahead of event coverage with respect to concussion care, the important concussion-related legal principles that must be understood while on the sideline of an event, and the principles of sports concussion legislation that apply to an athlete's return to play.

PREPARATION FOR SPORTS CONCUSSION CARE

Consider the following case: You are a sports medicine physician with training in the evaluation and management of sports concussion. During the preseason you completed the online coaches' concussion training available through the Centers for Disease Control and Prevention.⁸ While serving as the volunteer coach of your daughter's middle school soccer team, one of your players strikes her head on the goalpost during practice. At the time of injury, she denies having any concussion symptoms and she is allowed to resume participation. She continues to play with no additional hits to the head. Her parents are informed about the event. After returning home, the student-athlete develops headache and dizziness. The next day, the athlete is diagnosed with a concussion by her pediatrician.

Are you, as the coach, protected because you are serving as a volunteer? Should the athlete have been removed based on the suspicion of concussion rather than on the lack of symptoms? Are you held to a different standard from other volunteer coaches because you are also a physician?

Volunteer Protection: The Good Samaritan Laws

The sports medicine professional should understand how the Good Samaritan law applies in the state(s) in which he or she practices. Good Samaritan laws were written to protect individuals who try to help others in an emergency situation, even if the help they offer results in harm. One key point in many Good Samaritan laws is the distinction between "ordinary negligence" and "gross negligence." For example, one might be protected as a volunteer if ordinary negligence were involved but not protected if there is evidence of gross negligence. Assume that a driver fails to stop at a stop sign despite being attentive, having both hands on the steering wheel, and appropriately surveying the road. If this driver causes a collision in failing to stop, despite proper operation of the vehicle, then this is deemed "ordinary negligence." However, if the driver were to be distracted by a phone call or text message or was under the influence of drugs or alcohol then this would be

considered "gross negligence." Grossly negligent actions or omissions are generally not protected by Good Samaritan laws.

In this case, if the coach/physician relies solely on the statement from the player that she has no symptoms and makes a return-to-play decision based on that statement, this could be considered gross negligence. A comprehensive concussion evaluation should have occurred. The volunteer status does not excuse actions and omissions deviating from the established protocol for making return-to-play decisions. Though the coach/physician was coaching at the time of this evaluation, if he or she is going to make a return-to-play decision for the athlete, then the coach/physician is obligated to use his or her expertise in concussion evaluation.

This situation could be avoided with additional planning. The duty to act as a physician is not forgiven when assuming a different title, such as that of a head coach. In a case like this, we suggest that the team provide an athletic trainer or physician on the sideline so that a designated individual can manage the medical issues rather than allowing them to fall to the physician serving as the coach.

Concussion Protocol in the Emergency Action Plan

This case also highlights the need for a written emergency action plan (EAP). The EAP should be developed in conjunction with local emergency medical service officials as well as team and/or school administrators. The EAP describes the roles, responsibilities, and hierarchy of those involved in on-site medical emergencies and outlines the communication, equipment, and venue access used in case of emergency.⁶ The EAP should include a concussion management plan that includes annual concussion education for student-athletes, coaches, team physicians, athletic trainers, and athletic directors; a one-time preparticipation baseline concussion assessment for all student-athletes; immediate removal from play for all student-athletes with signs or symptoms concerning for concussion; evaluation of the student-athlete by a health care provider experienced in the diagnosis and management of concussion; no same-day return to play; and a plan for postconcussion management involving cognitive and physical rest.¹³ It is critical that the sports medicine provider review the EAP for any event and for any location he or she is assigned to cover.

PRINCIPLES OF CONCUSSION LEGISLATION TO UNDERSTAND ON THE SIDELINE

Consider the following case: You are on the sideline as the physician for your local high school football team. The starting wide receiver takes a hard hit during the game and falls to the ground. He returns to the sideline after the play, enabling you and the team athletic trainer the opportunity to assess him. You are concerned that the force of the hit and the athlete's head hitting the ground were significant and may have caused a head or neck injury. The concussion evaluation protocol in your EAP is followed, involving symptom evaluation, memory and

balance testing, and ongoing observation of the athlete for the remainder of the quarter. The athlete is not found to be injured. You clear him to return to play. You document your evaluation and management decisions.

If a team physician suspects that an athlete has a concussion, must the athlete be removed for the rest of the game regardless of the physician's evaluation of the athlete? Where does suspicion of concussion begin and end? If an athlete is suspected of concussion, evaluated by the team physician, and found not to be concussed then returns to play but after the game is found to have a concussion or worse, would the team doctor be liable?

Suspected Concussion

The first point to highlight in this case is the significance of "suspected concussion." Twenty-four states use the vocabulary "suspected concussion" in their concussion legislation (Alaska, Arizona, California, Colorado, the District of Columbia, Indiana, Kansas, Kentucky, Louisiana, Maryland, Michigan, Minnesota, Missouri, Nebraska, Nevada, New Jersey, Oklahoma, Oregon, Rhode Island, South Dakota, Utah, Virginia, Washington, and Wisconsin).¹⁸ For example, in California's AB 25, "An athlete who is suspected of sustaining a concussion or head injury in an athletic activity shall be immediately removed from the activity for the remainder of the day." "Suspicion of concussion" is a legal term first used by the authors of the Lystedt law in Washington State.^{1,10} Compared with terminology such as "diagnosis of concussion," "suspicion of concussion" creates a lower threshold for recognizing a possible concussion, allowing recognition by not just healthcare providers but by parents, coaches, officials, and teammates.

Sideline Concussion Evaluation

Once the athlete is removed from play, what is the next step? When does the "suspicion of concussion" end? State laws differ in designating who can perform the concussion evaluation once a concussion is suspected. Generally this is designated in 1 of 3 ways: (1) to a "licensed physician" (Alabama, North Dakota, South Carolina, and Texas), (2) to a "health care provider" (Arizona, Colorado, Delaware, Georgia, Kansas, Mississippi, Missouri, New Hampshire, Nevada, Oregon, Tennessee, Utah, Vermont, and Wisconsin), or (3) to a "licensed health care provider trained in the evaluation and management of concussion" (Alaska, Arkansas, California, District of Columbia, Florida, Hawaii, Indiana, Iowa, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Montana, Nebraska, New Jersey, New Mexico, Ohio, Oklahoma, South Dakota, Virginia, and Washington).¹¹

Once an athlete is removed for "suspected concussion," if there is no licensed health care provider present to perform a concussion evaluation, the athlete cannot return to play that day and urgent referral to a health care provider should be arranged.¹² If there is a licensed health care provider present to perform a concussion evaluation, the evaluation must be properly performed and documented. Proper evaluation of the athlete with

suspected concussion should include an assessment of the athlete's symptoms, a head and neck examination, and testing of the athlete's motor and memory skills.^{3,12} If available, baseline preinjury data for the athlete can aid in evaluation of concussion.

Because concussion symptoms can evolve, the athlete should be observed with serial examinations for any change in clinical condition.¹² If a concussion is diagnosed but symptoms resolve, the athlete is not permitted to return to play that day.^{7,11} In states with relevant concussion laws, only if the licensed healthcare provider determines by his or her full evaluation that there was no concussion can the athlete return to play on the same day as a suspected concussion.⁵ The licensed health care provider should document his or her evaluation, clearance decision, and ongoing observation of the athlete (whether the athlete is cleared or not) throughout the rest of the contest.

EVOLUTION OF CONCUSSION SYMPTOMS AND THE INFLUENCE ON LONGITUDINAL MEDICAL DECISION MAKING

Consider the following case: While covering your local high school varsity football team, the quarterback is tackled from behind. You observe his helmet snap violently from the tackle. He undergoes evaluation on the sideline and denies any head or neck pain. He is able to answer all the screening questions correctly, including the Maddocks questions.⁷ The decision is made to hold the athlete out of the game for a few plays. He does not demonstrate any evolution of symptoms and is allowed to return to the game. Later in the game, you notice his balance appears to be slightly impaired and he appears to be slower in his decision making. He has not taken any additional hits since being evaluated. You inform the coach that you want to reevaluate the athlete but the coach ignores your request. When the player returns to the sideline, you inquire about how he is feeling and he continues to deny any symptoms. Sideline balance testing is worse than on initial evaluation. Based on your evaluation, the player is withheld from further participation.

Is "clearing" a patient for return during a game considered a definitive act? How should the physician approach an evolution of symptoms without further injury? Does available concussion education address the fact that concussion symptoms evolve?

Evolution of Concussion Symptoms

If the physician conducted a proper sideline concussion examination and found the athlete not to be concussed, the physician can return the athlete to play. The examination must be documented, and the examination must reveal zero signs or symptoms of a concussion. If any symptoms are present, no matter the degree or frequency, removal is required and disqualification from immediate return to play is mandated.⁷

A point to highlight in this case is the physician's vigilance in monitoring this athlete. This is the correct approach. Athletes with concussion may not show immediate symptoms,⁷ thus the importance of ongoing observation by the designated

healthcare provider on the sideline. Continued surveillance of the player is necessary and good medical practice for a team physician.

The physician became increasingly concerned about the athlete and yet the coach disagreed and kept the athlete in the game. In this case, the relationship between the physician and the coaching staff needs to be reevaluated. The coach should not have the authority to overrule a physician's decision to remove a player and reevaluate him or her. Preseason planning and a written EAP should clearly define the professional relationship of all involved parties.⁶ The physician should document the interaction with the coach, and if this pattern of behavior continues, the physician should consider resigning from his or her position.

EFFECTS OF CONCUSSION LEGISLATION

The Lystedt law⁶ and its progeny have increased awareness of the signs and symptoms of concussion, but the culture of sports and the role that this culture has on reducing the likelihood of concussion recognition and reporting requires further evaluation.² Parent cooperation has also been identified as a potential barrier to concussion care, with several states reporting a small but persistent practice among some parents to “doctor-shop” or visit numerous physicians to find one who would certify that their child could return to play.¹¹

Access to providers familiar with concussion management may be challenging in rural or underserved areas, which may have fewer providers with concussion expertise.^{4,11} The individuals or entities allowed to evaluate, treat, and eventually clear athletes who have sustained a concussion for return to play are directly specified in most renditions of legislation.¹⁷ Educational models that use videoconferencing technology to train primary care providers to manage complex medical conditions outside their expertise have demonstrated excellent results and may be applied to concussion medicine as a means of improving the quality of concussion care.⁴

The goal of concussion legislation is to improve the safety of sports with regard to mTBI, primarily by preventing concussed student-athletes from returning to play prior to a full recovery.⁷ With the legal mandate to remove a student athlete from play due to concussion, the likelihood of a subsequent injury or long-term sequelae can be potentially avoided.⁶ By requiring a medically supervised return to play, the probability that a student-athlete returns prematurely should decrease.⁵ It is

recommended that sports medicine providers familiarize themselves with their state's concussion legislation, include concussion care in their emergency action plans, and perform and document complete concussion evaluations with ongoing sideline observation.⁹

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