Date: January 10, 2023

Source of Report: LD 104 (PL 2021 Chapter 12) An Act To Protect the Health of Student Athletes by Requiring the Department of Education To Report on the Incidence of Concussions (20-A MRSA §254, sub-§17)

Topic: Concussion Incidence in Maine Schools

Context

LD 104, An Act To Protect the Health of Student Athletes by Requiring the Establishment of Procedures To Report Concussions, directs the Commissioner of Education, in consultation with an organization representing school principals, to report to the Joint Standing Committee on Education and Cultural Affairs any available data on the incidence of concussions sustained by student athletes in the State. In addition, the report must also include recommendations on best practices for the collection of such data. This data is to be reported no later than January 31, 2022, and annually thereafter. The Department of Education (DOE) has continued to work collaboratively with the Maine Principals' Association and other stakeholders to create this report on the available data on the incidence of concussions sustained by student athletes in the State using existing or new data collection systems.

Background

Pursuant to 20-A MRSA §254, sub-§17, as enacted by PL 2011, c. 688, §1, the DOE was directed to develop model policy on management of head injuries in school activities and athletics. It further required the DOE to establish a working group to complete this task. Membership in the group has varied over time but has consistently included a representative from Maine Principals' Association, Maine Athletic Trainers Association, Maine Association of School Nurses, Maine Interscholastic Athletic Administrators Association, Maine Concussion Management Initiative (MCMI), and the Brain Injury Association of America - Maine Chapter. Even prior to the enactment of this law, these stakeholders had been meeting to lay the groundwork for effective concussion management in schools. The original model policy was completed and sent to superintendents in November 2012. After the drafting the model policy, the Workgroup focused on developing a web-based collection of Concussion Management Resources for school administrative units to use. The resources include sample forms, letters, training opportunities, and resources to assist school administrative units with the implementation of concussion management policies. These were last updated by the concussion Workgroup in 2019-2020.

Since 2012, the Department and partner organizations have provided professional development to school nurses, athletic trainers, coaches, and primary care providers on concussion management in schools. As a result of these trainings held over the last decade, there is an increased awareness of the risks, symptoms, and long-term outcomes of concussion in schools.

While concussion research continues to grow and evolve, there is still much more to understand about this type of injury. The members of the stakeholder group recognize the importance of tracking concussions, and support data collection practices. The data gathered from concussion tracking is necessary to understand how students are affected by and recover from concussion and will allow professionals in schools to respond effectively. The focus of LD 104 is the student athlete, but because concussions occur in all activities of daily living - at home, at play, and at school – the stakeholders participating in the Concussion Workgroup recommend that concussion tracking extend to include all students, not just student athletes. It must also be noted that tracking concussions and concussion reporting is not a requirement for schools. Participation in this effort is voluntary. The makeup of the current Workgroup is listed here:

Name	Role
Emily Poland, MPH, RN, NCSN	School Nurse Consultant, DOE
Paul Berkner, DO	Medical Director, Student Health Services, University of New England Founding member of the Maine Concussion Management Initiative
Gerry Durgin	Executive Director Maine Interscholastic Athletic Administrators' Association
Michael Burnham	Executive Director, Interscholastic Division Maine Principals' Association
John Ryan, EdD, LAT, ATC, RAA Head Athletic Trainer South Portland High School	President, Maine Athletic Trainers Association National Athletic Trainers Association Board of Directors
Steve Wade, MBA	Brain Injury Association of America, Maine Chapter
Laura Stewart, RN	School Nurse

Actions

Since March 2021, the Concussion Workgroup met monthly to determine how concussion data would be tracked, identify schools in the study, plan trainings to use the tracking platform, review and update resources for the field, and prepare the recommendations for this report. The work of collecting and analyzing the data to make recommendations for improved management of concussions in schools is ongoing.

LD 104 asked this Workgroup to examine incidences of concussions in athletics, but it is important to note that all students in schools are at risk for concussion regardless of how it is sustained. When a student sustains a concussion, it impacts their education. With that in mind, the Workgroup's continuing efforts will work to expand policies and practices related to concussion for all students in a school.

Trainings and Resources Provided to the Field

- Updated the Maine DOE Concussion Management Resources
- Public Notice released through DOE Newsroom on Concussion Resources and Reporting

Data Tracking Platform

LD 104 directed the Workgroup to base its report on any available data on the incidence of concussions sustained by student athletes in the state using existing or new data collection systems. The Concussion Workgroup chose to use the Head Injury Tracker (HIT) because it provided schools with an easy, confidential, and secure method of collecting concussion data, and it was available at no cost. In addition, HIT was already used by some schools in Maine. MCMI developed HIT in 2013 to track patterns of concussions in schools. The platform is used to analyze data, track patterns of concussions, and allow schools to compare the incidences of concussion in different activities, assessing those that may represent higher risk for concussion.

Participating Schools

Fifteen schools who were already enrolled in and using HIT were contacted directly and invited to participate. The Workgroup members then identified other high schools in the state in order to have representation from all counties. Those that were interested were included in the cadre. In September, the schools' certified Athletic Trainers (ATC) and school nurses were invited to attend one of two informational sessions to inform them of the legislative request and goals of the Workgroup. They also received training to use the HIT platform. Although additional schools were identified, for a total of 25, ultimately, only 15 schools submitted data to be included in this report.

Reporting of a concussion incident can be cumbersome for school staff. If there is no shared record keeping system between ATC and school nurses, they may need to document in more than one location for it to be tracked for the purposes of this report. For example, when a concussion incident occurs, school staff first enter the information into the school's student information system paper record or electronic health record. To include the data for state reporting, the school staff must also enter the information into the HIT system. Staff members from schools involved in the concussion data collection report that it was challenging to stay current with entries in the HIT system because they were also responsible for pandemic-related tasks, including pool testing and contact tracing. Participating school staff members reported that, as a result, not all of their concussion data had been entered into the HIT system.

The Concussion Workgroup would like to acknowledge the commitment of our Athletic Trainers and School Nurses in making the effort to assist us in gathering this critically important health information.

Results

The data related to the incidences and risk of concussion were analyzed in order for the team to arrive at the recommendations.

The analysis of the data collected from the 15 reporting schools focused on three elements:

1. Concussions/Athlete exposure: This has become a standard within the sports medicine community to accurately reflect the incidence of concussions. It is the number of

concussions divided by the total number of athletes participating in the sport within the schools, multiplied by the number of games and multiplied by the number of practices. This represents how many concussions occurred per possible exposures. (1)

2. Athlete-based concussion risk: This is the risk that any one athlete will sustain a concussion within a season. It is calculated by taking the number of concussions that occurred divided by the number participants in the sport for that year across the reporting schools. (1)
3. Days Affected: The average number of days that it took for the student to return to full academics and full athletic participation.

Table 1. Maine 2021 Head Injury Tracker Data									
Sport	**Total participants in sport**	**Total practice exposures**	**Total practice concussions**	**Risk of Concussion in Practice Per 10,000 exposures**	**Total competition exposures**	**Total competition concussions**	**Risk of Concussion in Competition Per 10,000 exposures**	**Total Concussion Risk Per 10,000 exposures**	**Maine One-Season Athlete-Based Concussion Risk (Concussions/ # participants)**
Football	641	25,640	21	8.2	5,128	29	56.5	16.2	7.8%
Soccer (girls)	485	19,400	5	2.6	8,730	13	14.9	6.4	3.7%
Field Hockey	326	13,040	2	1.5	5,868	7	11.9	4.8	2.7%
Soccer (boys)	657	26,280	4	1.5	11,826	9	7.6	3.4	2.0%
Volleyball	301	12,040	1	0.8	5,418	5	9.2	3.4	2.0%
Cheer (spirit)	127	5,080	1	2	1,016	1	9.8	3.2	2.0%
Cross Country (girls)	149	5,960	0	0	1,192	0	0	0	2.0%
Cross Country (boys)	193	7,720	1	1.3	1,544	0	0	1	2.0%
Golf	180	7,200	0	0	1,800	0	0	0	2.0%
Total	3059	122,360	35	1.9	42,522	64	12.2	4.3	2.9%
Data as reported by 15 high schools in Maine through the Head Injury Tracker.									

Table 2. High School RIO National Data				
Sport	**Risk of Concussion in Practice Per 10,000 exposures**	**Risk of Concussion in Competition Per 10,000 exposures**	**Total Concussion Risk per 10,000 exposures**	**High School Rio-One Season Athlete Based Concussion risk (Concussions/ # participants)**
Football	5	35.8	10.4	5.30%
Soccer (girls)	2.14	21.8	8.19	3.30%
Field Hockey	0.87	6.51	2.66	NA
Soccer (boys)	1.04	9.34	3.57	1.60%
Volleyball	2.08	5.3	3.14	2.80%
Cheer (spirit)	3.6	2.22	3.26	NA
Cross Country (girls)	0.1	0.3	0.13	NA
Cross Country (boys)	0.07	0	0.06	NA
Golf	NA	NA	NA	NA
Total	2.04	10.37	4.17	
High School RIO™ (Reporting Information Online) is an internet-based data collection tool used in the National High School Sports-Related Injury Surveillance Study. High School RIO™ captures athletic exposures (number of athlete practices and number of athlete competitions per week), injury (body site, diagnosis, severity, etc.) and injury event (mechanism, activity, position/event, field/court location, etc.) data weekly throughout the academic year using certified athletic trainers (ATCs) as data reporters.				

As reported through HIT, for the concussions sustained, on average students missed 9 days of academics and 16 days of athletics. This data is incomplete since a number of submissions did not complete the entire HIT data for each incident.

Table 3. Maine HIT Return to Academics and Sports		
	Return to Academics	Return to Athletics
Average	9.35 days	16.16 days
Median	6 days	13.00 days
SD	10.68522	11.10
Return to academics/athletics data from the Head Injury Tracker as reported by 15 high schools in Maine. For Academics 3 individuals had no return date entered; for Athletics 7 individuals had no return date entered.		

As reported in the HIT platform between the dates of January 1, 2022, and June 30, 2022, there were 23 injuries reported, of these 16 were female. Age ranges from 15-18 years old. 12 injuries were directly related to their primary sport, 8 were related to other sporting activities, and one was a motor vehicle accident. Given these small numbers, athlete-based exposure risk is not helpful given the sample size. In order to understand the health and safety risk for our students in Maine, we need to have better data.

Although we include a table of national data for reference, it must be clearly stated that we are not able make any real comparisons to Maine data. There is simply not enough quality concussion data to make any generalizations or conclusions.

Recommendation

It is the recommendation of the Concussion Workgroup to continue to work with schools in this effort of monitoring concussions. In addition, we recommend a shift in focus of concussions associated with athletics to any student who may sustain a concussion. Regardless of where the injury occurs, there will be lost academic time and there must be a gradual return to pre-concussion activity. Improved recognition and management of concussion can result in less academic time lost.

Second, we recommend that the Joint Standing Committee on Education and Cultural Affairs expand its request of data to include any data that is available from hospitals and medical practices. Perhaps a collaboration with Maine CDC could provide such data to the Committee and it may inform further education and decision making as it will shed light on concussion data that is not captured within the schools.

Third, one of the major challenges in requesting data from school is that it is an added burden to the local staff. One option to decrease the burden of reporting would be if there was a statewide school electronic health record used by school nurses and potentially athletic trainers that could generate a state aggregate report without the need for any additional work by local school staff so long as they documented within the system. The Workgroup feels it important to highlight how a system such as this could reduce the burden and increase efficiency of generating student health data to inform statewide policies. The Department has issued a Request for Information (RFI #202210176) on November 16, 2022 which will assist in having a better understanding of solutions that are available in the marketplace.

References

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