House Bill 2016

Thank you for allowing me the opportunity to testify before the Health and Human Services Committee on this very important topic. The purpose of my testimony is to share my perspective as a practicing, board certified Neurologist on the continuing epidemic of sports-related concussions. I'm also here today as a representative of the Kansas Medical Society, the Medical Society of Sedgwick County and that of a concerned citizen.

We have made great strides protecting the children of Kansas since Kansas House Bill 2182 was passed in the spring of 2011. The speed of evolution of our understanding concussion/mild traumatic brain injury is almost staggering. We hear of six new articles of related medical topic per week.

As a refresher on concussions, we are talking about an injury to the **brain**. The brain consists of four pounds of tissue filled with about 100 billion nerve cells. Each cell reaches out and touches other cells through thousands of miles of interconnected axons. This creates several trillion synaptic connections, each firing 10-1000 times a second. These connections use more than a hundred known chemical-regulating and transmitting agents.

From this "bio-electrical hum," we achieve consciousness. This activity is all finely tuned and orchestrated and controls every movement, sensation, thought and emotion that compromises the human experience. Everything we are and everything we are to become.

Each time our head or body gets hit, putting our brain through linear or rotational acceleration and/or deceleration, we run the risk of tearing or damaging these fine connecting hair-like fibers. These connections, once interrupted, will never be re-connected; they do not grow back, similar to the damage from a stroke.

We physicians have learned there is no such thing as a mild, moderate, or severe concussion: they are all medically significant. We now know a seemingly light blow to the head can cause a more significant brain injury then a tremendously hard hit, due to brain anatomy and the direction of rotational shearing forces. We also know that an athlete does not need to be knocked out to have a severe injury. It doesn't even take a blow to the head to cause a concussion, just rapid head movement.

There is no accurate predicting of how bad the sustained injury is or how long it will take to recover. To make matters worse, up to 50% of athletes don't develop symptoms right away and are often unaware that they have even suffered a concussion.

Unfortunately these injuries are invisible to most of our medical tests. CT scans and MRI scans are not helpful in diagnosing the vast majority of concussions because the injury is beyond the sensitivity of current scanners. There are also several known medical modifying factors important to consider when evaluating concussions, including migraine, depression, attention deficit hyperactivity disorder/ADHD, other mental health disorders, learning disabilities, and sleep disorders. Not only do these tend to worsen following concussion, they are often associated with slower recovery and increased risk of persistent symptoms.

As a result, the best determinant is a detailed medical exam delivered by a trained medical professional. Neurocognitive and neuropsychological testing for memory, concentration, balance, coordination and other neurologic parameters are required to diagnosis and monitor recovery from a concussion.

In July 2015, I attended the American Academy of Neurology's Sports Concussion Conference. This was a three-day conference attended by 500 MDs with an interest in concussions, including some of the best minds from Neurology, Neurosurgery, Physical Medicine and Rehabilitation and the Armed Services in Denver, Colorado.

At this conference, we learned of the growing evidence suggested to direct correlation of head injury and subsequent development of depression, mild cognitive impairment, dementia, and Chronic Traumatic Encephalopathy/CTE. Just this week another college football player was found with CTE. This injury is only magnified in our children who do not reach neurologic maturation until 18 to 25 years of age. It appears our children are at elevated risk of these injuries. This population, the population you are discussing today, requires the most attention and medical diligence.

In addition, more than 270 articles on sports concussion were published in the medical literature in 2015; this continues to grow expediently. Even though I am passionate about the subject, this is overwhelming amount of information. What all this means is that recognition and management of concussions is a rapidly evolving process that should be in the hands of the medical professionals with the highest level of clinical understanding.

Physicians undergo years of rigorous training to establish a firm foundation of medical issues. Extensive continuing medical education helps us keep abreast of medical advances and the most up-to-date therapies. With this knowledge, we are the ones personally responsible for our patient's medical health and education. Anyone else making medical decisions that are not an active part of a physician-led care team is dangerous. Clearing an athlete to return to play is not a freestanding decision. It is part of a total health care monitoring process and requires knowledge of a patient's full medical history.

Ultimately our number one goal is to keep our athletes safe so they can go on to lead happy, healthy, productive lives. Please help me keep Kansas athletes safe. Let's keep medical decision-making in the hands of physicians. Let's not undermine the wonderful work started here the last couple of years.

This is a topic of growing medical concern that changes almost monthly. This needs to be addressed in the most appropriate setting and under medical guidance. Thank you for the chance to share these thoughts and please let me know if I can assist in any way.

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