

# Preventing Heat Illness: Beyond the Basics

**L**AST YEAR, IN *ATT* 7(3), there was a Prevention column titled “Another look at sudden death and exertional hyperthermia.” Right around that same time the National Athletic Trainers’ Association published their Heat Illness Position Statement.<sup>1</sup> In fact, if you get on the Internet you can find many articles and references discussing heat illness from all sorts of angles, including, but not limited to, treatment, signs and symptoms, and prevention. So why another column? Well, why was there an Inter-Association Task Force on Exertional Heat Illness in Atlanta this past February “to address and review [yet again] a subject that has generated widespread media exposure and affliction to increasing numbers of people in recent years”?<sup>2</sup> Perhaps some of you read Gary Shelton’s article in the *St. Petersburg Times*,<sup>3</sup> August 21, 2001, after the death of pro football’s Korey Stringer, or articles like it. So, is this column going to be more of the “same old, same old”? Hopefully not, and it will certainly not be about treatment and signs and symptoms, because I bet that most of you are more conservative than ever in pulling athletes out of activity because of your concern that they have some signs or symptoms of heat illness. I also bet that you are very quick to treat or refer athletes with those signs and symptoms of heat illness. So why this column? Because I still do not think we are doing enough to try to *prevent* this life-threatening illness. Because I would like the readers to dig a bit deeper into their *proactive* world of prevention and see if they can’t head this problem off at the pass, . . . and the season of heat illness is upon us.

In last year’s column I put together an equation of sorts that included some variables that I think have a role in the onset of heat illness. Some of the variables have been written about and known about for a long time. Others might be a bit more novel, although cer-

tainly not original. We should look at combinations of variables that create the most likely scenario for heat illness (See Table 1). Discriminant analysis was not used to determine which of these variables or combination of variables plays the biggest role, or is most influential, in the onset of heat illness. If we could determine that, though, we could focus our attention on managing or controlling the variables that are most significant.

One of the latest incidents relating to heat illness was the death of a Baltimore Orioles baseball player during this past spring training. Interestingly enough, one of the major controversies in this case was over the ingestion of ephedra. Ephedra is an herbal form of ephedrine derived from *ma huang*. Ephedrine has been used for many years as a central-nervous-system stimulant and a decongestant. It is structurally similar to amphetamines, and it generally increases blood pressure and heart rate. One of its most common uses is to facilitate weight loss. The FDA does not regulate supplements such as ephedrine. Hence, products have been found to contain from 0% to 100% of the amount listed on the label, and it has been found that side effects do not always correlate with the amount consumed. The NCAA and the IOC have banned ephedrine. The FDA has documented 40 deaths, and according to the advocacy group Public Citizen over 100 deaths have been linked to ephedrine and its kin.<sup>4</sup> Its many side effects include irregular heartbeat, elevated blood pressure, dizziness, headache, stroke, and seizure. There are, however, conflicting arguments regarding the safety of ephedra.

**Table 1. Hypothetical Factors Predicting the Onset of Heat Illness**

Physiological	Psychological	Supplements	Miscellaneous
Overweight	Driven	Creatine	Weight loss
Very lean	Stubborn	Ephedrine	Verbal barbs

Four researchers at Baylor University have presented a paper<sup>5</sup> titled “The alleged role of ephedra in the death of a professional baseball player.” In this paper the authors question the allegations that ephedra played a major role in Steve Bechler’s death. They alluded to a number of risk factors that Mr. Bechler had that, they claim, played a more significant role in his death. See the sidebar for the list of associated factors leading to the heat illness on this case.

The researchers then pose some pointed questions that I think we should consider. They are paraphrased here.

Were team athletic trainers aware of the history of heat illness? If so, why weren’t additional precautions taken? Prior episodes of heat illnesses heighten the risk of recurrence.

If the athlete was overweight and out of shape, why wasn’t he given appropriate counseling about weight loss and getting in shape? Fatal heat stroke occurs 3.5 times more often in obese individuals.

Why didn’t preparticipation screening identify the aforementioned risk factors? Hypertension and liver problems are both contraindications to excessive exercise in hot or humid environments.

Where was the supervision that should have led to noticing the signs and symptoms of heat illness? The media reports that the player was dizzy, was

### Factors Associated With Heat-Illness Death

Prior history of heat illness in high school.

Family history of sudden death following exercise (20 year old half brother).

History of hypertension and liver problems.

Had not eaten solid food in a day or two in an effort to lose weight.

Apparently was not acclimated to the heat and humidity.

Appeared that he was wearing two or three layers of clothes to lose weight.

Was overweight and not fit enough to perform conditioning drills.

Was allowed to exercise until he collapsed with core temp of 106°.

able to perform only 60% of the drills, and collapsed on the field.

Did the staff know that he was not eating solid food? Combined weight loss and exercise must be undertaken with care and nutritional counseling.

Was the athlete counseled on the appropriate use of supplements? Athletes need to be educated about what is safe, legal, and appropriate.

I would also like to add a few more questions:

Was the athlete instructed as to what shape he should be in when reporting to spring training? Here I think one must take into consideration who is being given the instructions. We all know that some athletes report to camp in shape, and some athletes will not do anything, or will not do enough, to report in shape. Perhaps the latter athletes need to be educated in a different manner. Much like some athletes, who are very self-motivated to rehabilitate an injury, others need to be prodded, scolded, and threatened with consequences. Maybe a plan of attack would be to identify those athletes and create strict training regimens with negative consequences if training goals are not attained.

Any athlete with a medical history of heat illness or other precursor physical problem such as diabetes or epilepsy might need more extensive testing before being allowed to play.

Given the stakes for the athlete, as in the case of the professional baseball player, we are talking about income and dreams. Tenacious and strong-willed individuals might not say anything or actually deny any problems.

Are there any naïve and inexperienced athletes under your jurisdiction who need guidance? Are there any sleep-deprived or eating-disordered athletes on your teams? Are the players aware that if they have a gastrointestinal illness or virus they are predisposed to heat illness?

How well educated are your athletes? I am not asking how much information you have given them; that is not education. How much do they *know* and *understand*?

How could heat-related deaths in organized football go from an average of 4–5 a year before 1985 to less than 1 a year from 1985 to 1994, and now we are back to having 4 players die in 1998, 2000,