

**Surgeon General NOTAM**  
**RISK MANAGEMENT LESSONS**  
**7 November 2002**

The following Notice to Airman (NOTAM) is released by the Clinical Quality Management Division, Air Force Medical Operations Agency, (AFMOA/SGZC) to disseminate lessons learned from medical incident investigations, sentinel events, and malpractice claims.

**ATTENTION:**  
**THE FOLLOWING IS AN OFFICIAL SG NOTAM**  
**PLEASE PRINT, READ, AND DISSEMINATE TO ALL PERSONNEL ASSIGNED.**

**TARGET AUDIENCE:** All healthcare team members who provide direct patient care, including trainees, should review this NOTAM in its entirety. It is requested that this also be discussed at periodic Professional Staff meetings for the general interest of all assigned providers.

**02-005: Awareness of the Health Risks associated with Dietary Supplements containing Ephedra (Ma Huang) or Ephedra Alkaloids**

A range of nutritional supplements, some of which purport to enhance fitness, increase endurance or control weight, contain Ephedra or its alkaloids and have been implicated in over 1000 adverse event reports submitted to the FDA Adverse Event Reporting System. Some outcomes have been fatal and include, unfortunately, US military personnel. Ephedra and its alkaloids have a wide range of effects that include stimulation of the cardiovascular, central nervous and thermo-regulatory systems. In 2000, the New England Journal of Medicine published the results of a study that reviewed reports of 140 deaths or injuries dealing with adverse events involving Ephedra alkaloids and reported to the FDA between June 1997 and April 1999. The review revealed:

- 10 events that resulted in death;
- 13 events that produced permanent disability;
- 31 percent of cases were considered to be definitely or probably related to the use of supplements containing Ephedra;
- 31 percent were deemed to be possibly related;
- 47 percent involved cardiovascular symptoms; and
- 18 percent involved the central nervous system.

High environmental temperatures coupled with intense exercise and inadequate hydration appears to exacerbate these effects. These are precisely the type of conditions, physical demands and physiological stressors placed upon our Service personnel in the operational and training environment. Moreover, other substances such as caffeine, when added with Ephedra (as in some of the commercially available products) may further contribute to these deleterious effects. Finally, the health risks posed by Ephedra may be further complicated by an individual's medical condition, interactions with prescription medications, other over the counter medications or other dietary supplements.

## RECENT CASE EXAMPLE

A 23 year-old male, who admitted to using dietary supplements including Ephedra, had a cardiac arrest and subsequently died when undergoing surgery to repair a chest muscle tear sustained while weightlifting. At post mortem examination he was found to have an enlarged heart with left ventricle hypertrophy. In this case, the cardiac changes underlying his sudden arrest were suggestive of those seen with Ephedra supplement use.

## CLINICAL CONSIDERATIONS

**RISK FACTORS:** The following environmental and personal risk factors can be associated with adverse events in young individuals using Ephedra supplements:

- a. Operational or training activities that involve high levels of physical activity.
- b. Operational or training activities in hot or cold thermal environments.
- c. Presence of cardiovascular, respiratory or diabetic disease.
- d. Acute febrile illness.
- e. Concomitant tobacco and caffeine use.
- f. Dehydration.

**AWARENESS:** As the case example illustrates, symptoms may arise in previously fit individuals with or without pre-existing disease. The results may be unpredictable and regrettably in a small number of individuals, fatal. The operational environment presents particular hazards that may exacerbate the side effects associated with Ephedra dietary supplements. Providers **MUST** have a high index of suspicion and low threshold for evaluating any patient with or without associated risk factors whose symptoms could be compatible with Ephedra dietary supplement use. AF/SG policy letters on the use of dietary supplements dated 21 Oct 99 and 5 Sep 02 respectively can be found at:

<https://www.afms.mil/aeromed/docs/policy/1999/28oct99.pdf>

[https://www.afms.mil/aeromed/docs/policy/2002/use\\_of\\_ephedra\\_00001.PDF](https://www.afms.mil/aeromed/docs/policy/2002/use_of_ephedra_00001.PDF)

In line with AF/SG policy, all personnel are to be strongly discouraged from using dietary supplements containing Ephedra.

## SUMMARY

1. Ephedra dietary supplements can produce significant side effects in the cardiovascular, nervous and thermo-regulatory system.
2. Adverse events in previously fit, young individuals can be fatal and sudden.
3. Environmental and personal health risk factors may exacerbate potentially serious Ephedra supplement side effects.
4. All personnel are to be strongly discouraged from using dietary supplements containing Ephedra.

This SG NOTAM is posted on the AFMOA/SGZC home page at

<https://www.afms.mil/clinqual/index/htm>.

POC: Wg Cdr V J Wallace AFMOA/SGZA, [victor.wallace@pentagon.af.mil](mailto:victor.wallace@pentagon.af.mil) Tel: DSN 767-4200