Letters to the Editor

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WILDERNESS MEDICINE

To the Editor:

I read with interest the recent article by Crouse and Josephs that detailed the health care needs of Appalachian trail hikers.[1] Their data are generally similar to what has been reported recently for hikers in Yosemite National Park.[2] I would like to compliment the authors for completing one of very few studies relating to health care problems experienced by backpackers, hikers, and trekkers, despite the millions of people who regularly engage in these outdoor activities.

Based on a composite of published reports on medical problems encountered in wilderness and outdoor adventure recreation, as well as my personal experience as an expedition physician, the overwhelming bulk of backcountry medical problems fall into four categories: (1) mechanical trauma; (2) infectious diseases; (3) environmental exposure problems; and (4) overuse or overexertion syndromes.[3,4] Although the exact nature and proportion of problems actually occurring on any given outing depend on environmental, activity, and personal factors, Crouse and Josephs report that about 70% to 80% of outdoor adventure enthusiasts will experience some type of medical problem during any multiday outing, with about 15% to 20% of the problems being serious enough to require formal medical care. The occurrence of injuries is likely to exceed that of illnesses by a ratio of 3 to 2.[5,6]

Family physicians wishing to learn more about wilderness medicine and medical problems occurring during outdoor adventure recreational activities should know about the Wilderness Medical Society (WMS), a nonprofit, professional educational organization established in 1983. WMS now has about 3000 members located in all 50 states of the United States and in more than 25 foreign countries. The Society publishes an international, peer-reviewed, quarterly journal entitled *The Journal of Wilderness Medicine*, as well as a quarterly newsletter and periodic position statements on topics of concern. The Society, which is approved to give continuing medical education (CME) by the Accreditation Council of Graduate Medical Education, conducts three high-quality CME courses each year as well as approving a number of programs sponsored by other organizations and groups. More information about WMS can be obtained from its headquarters at 401 West Michigan St, Indianapolis, IN, 46206 (Telephone 317-631-1745).

An increasing number of persons are engaging in wilderness and outdoor adventure recreation, with concomitant increases in the number needing preactivity medical screening, activity specific medical advice, and treatment for wilderness-related medical problems. Physicians need to understand the settings where these activities take place and how to prevent illness and injury from occurring there as well as how to take care of problems occurring in these medically spartan environments—or at least ensure that their patients are prepared to handle such problems when formal medical care may be miles away. Participating in the Wilderness Medical Society's activities is a good way to improve knowledge and skills in this regard.

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CERVICOGRAPHY

To the Editor:

In a recent article on cervicography, Ferris et al[1] concluded that "cervicography improved the detection of cervical cancer." We believe this conclusion is unjustified.

The authors admit that because of the study design, the sensitivity and specificity of cervicography cannot be calculated. This problem is a result of failure to apply the gold standard, colposcopy with or without biopsy, to patients with a negative test. The reported positive predictive value of the test, 62.9%, is not a stable property of the test, but depends on the prevalence of disease. Sensitivity and specificity data could be used to determine the positive predictive value of this test strategy in a clinical population with a different prevalence of cervical disease.

Ferris et al suggest using the cervigram in parallel with the Pap smear as a screening tool. Whenever two diagnostic tests are performed in a parallel fashion, the sensitivity of the test is increased at the cost of decreased specificity. A conclusion that the combination improves the detection of cervical disease would require a hypothesis test such as:

$$H_0: \text{Sensitivity}_{(\text{cervicography}+\text{Pap})} = \text{Sensitivity}_{(\text{Pap alone})}$$

against the alternative hypothesis:

$$H_1: \text{Sensitivity}_{(\text{cervicography}+\text{Pap})} > \text{Sensitivity}_{(\text{Pap alone})}$$

Analysis would involve McNemar's test of paired proportions, as it is possible that the observed increase in positive predictive value is due to chance alone. If a significant effect on sensitivity were documented in such a study, specificity data also could be obtained.

Such a study is feasible. Assuming Pap smear sensitivity to be 0.68 with a threshold for improvement of at least 0.10 with the addition of cervicography,[2] accepting a type I error of 0.05 and type II error of 0.20, the number of patients with cervical disease who would need to be examined can be determined by the following equation:[3]

$$n = \{p_0q_0[z_{1-\alpha} + z_{1-\beta}\sqrt{p_1q_1/(p_0q_0)}]^2\}/(p_1 - p_0)^2 = 128$$

Estimating the prevalence of disease at at least the proportion documented in this study (411/1449 = 0.28), the total number of subjects to be examined would be 457 (128/0.28), requiring only a few more colposcopy examinations than the investigators actually performed. Although the investigators point out that routine colposcopy is not clinically indicated, such a practice is clearly reasonable in a research setting.

Given the information gleaned from such a study, the clinician could then determine, given the prevalence of cervical disease in the clinical setting, whether a policy of including cervicography with routine Pap smear is warranted.

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The preceding letter was referred to Dr Ferris and Mark Litaker, who respond as follows:

The cervicography article recently published in the Journal[1] is based on an observational rather than experimental study. Therefore, it is reasonable to present estimates of the effectiveness of the tests, along with confidence intervals based on these estimates, as descriptors of the observed effectiveness of the tests.

The confidence intervals denote both the quality and precision of each test. In this study, cervicography was found to be superior to Pap smear in detection of cervical dysplasia, 50.5% vs 25.6%, respectively. The validity of this statement is further supported by the reported confidence intervals for cervicography and Pap smears (44.9% to 56.0% and 20.8% to 30.8%, respectively) that do not overlap. Hence, the new technology of cervicography was found clinically effective for detecting cervical dysplasia when compared with the traditional cytologic approach.

When two diagnostic tests are used in parallel, the sensitivity can increase. However, the sensitivity also may stay the same, compared with one test alone if the tests are based on similar methodology. In this case, the Pap smear and cervicography demonstrated a 43.3% overall agreement, indicative of favorable test complementarity and relative distinctiveness. Just as correctly noted, the predictive value of a test depends on the prevalence of disease. Unfortunately, the gold standard of cervical histology and basis for any comparison is not truly stable due to an interobserver reliability of only 65%.[2]

In regard to the suggested analysis, McNemar's test is not applicable to the situation in which one of the tests (Pap smear) is a subset of the other (Pap smear and cervigram). Because one of the table cells (positive Pap smear, negative combined test) cannot occur, the test statistic reduces to $(b-1)^2/b$, where b is the number of cases that are negative on the single test and positive on the combined test. McNemar's test could be used to compare the performance of cervigram alone vs Pap smear. The sample size formula suggested is for a comparison of two independent proportions and ignores the pairing of the tests.

An appropriate analysis might be based on the relative difference between the proportions, which is the proportion of true cases missed by the single test but identified by the combined test.[3] In this study, however, "atypical" Pap smear and combined test are excluded; all 44 subjects with dysplasia who were missed by Pap smear were identified by the combined test. Since the result gives a relative difference of 1.0 and precludes the calculation of a standard error (due to a zero denominator), that test is not possible. However, when only positive test results were considered, an additional 14% of women with dysplasia not detected by Pap smear were appropriately identified by cervicography alone. Therefore, it appeared justified to assert "cervicography improved the detection of cervical disease."[1] The combination of tests also further enhanced detection (62.9%; 95% CI, 57.3% to 68.3%) when compared with traditional cytologic screening.

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URINARY FREQUENCY IN CHILDREN

To the Editor:

We read the article "Extraordinary Daytime Urinary Frequency in Children" with great interest (*Cohen HA, Nussinovitch M, Kauschansky A, et al. Extraordinary daytime urinary frequency in children. J Fam Pract 1993; 37:28–9*). However, the authors' conclusion that this malady has a psychogenic cause seems inappropriate, given the nature of their study.

While it is true that all 15 of the patients included in their case series reported an antecedent life stress, it is unclear to us how this establishes even simple association, much less causality. Even discounting the potential for recall bias, which certainly may be operative here, it is essential that any stress reported be considered in context. A large portion of the January 1990 to September 1992 study period overlapped with the Gulf War, which certainly was a season of increased stress for all Israeli citizens, particularly children.

If all children in the population were stressed, it would follow that all children in the study would be stressed. Was the amount of stress borne by these children greater than the general stress level in any quantifiable way? Did these children differ in any other ways from their peers without urinary frequency? Is the incidence of this malady different in stressed as compared with nonstressed children?

The case-series design chosen by the authors does not address these questions. Until these questions are addressed, claims of causality should not be made.

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SMOKELESS TOBACCO

To the Editor:

I read with interest the article on smokeless tobacco (ST) cessation (*Sinusas K, Coroso JG. Smokeless tobacco cessation: report of a preliminary trial using nicotine chewing gum. J Fam Pract 1993; 37:264–7*). During my residency in 1991, I conducted a pilot study on ST cessation using nicotine polacrilex gum. The subjects were adolescent students at a suburban high school near Pittsburgh.

The study included an extensive behavioral self-help program that was provided to me by Dr Elbert Glover for use in the study. Only three of approximately 40 students who were regular users of ST could be recruited for the study. All three students completed the written behavioral work and each student attended all of the three follow-up sessions. At the end of the 6-week study period, none had quit using ST despite what seemed to be adequate use of the nicotine gum.

In private practice, I have tried this program of nicotine gum and behavioral intervention with two adult patients. Neither returned for the recommended follow-up office visits, and both were still using ST at last report.

I assume that Dr Sinusas and Dr Coroso used the 2-mg nicotine gum, which is the dosage I used. Whether the use of either 4-mg nicotine gum or transdermal nicotine patches would improve cessation rates remains to be investigated.

I agree that prevention is the key to the smokeless tobacco problem. The recent banning of ST use by minor league baseball players during games is a positive step toward eliminating the high visibility this product has in athletics. Because the number of teenage ST users continues to increase, we need much more research into effective ST cessation programs.

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