

The Journal welcomes Letters to the Editor; if found suitable, they will be published as space allows. Letters should be typed double-spaced, should not exceed 400 words, and are subject to abridgment and other editorial changes in accordance with journal style.

ASEPTIC MENINGITIS AND TRIMETHOPRIM-SULFAMETHOXAZOLE

To the Editor:

Published case reports^{1,2} have incriminated trimethoprim-sulfamethoxazole as a cause of recurrent aseptic meningitis. We recently saw a patient who had two episodes of meningitis a month apart, both following doses of Septra.

A 28-year-old black woman was admitted because of a severe frontal headache of one day's duration. She had been treated with a seven-day course of Septra for a urinary tract infection approximately two weeks before without adverse effect. There was no history of sickle cell disease, collagen vascular disease, head trauma, sinusitis, or respiratory infection. The day prior to admission she developed a backache and took a dose of Septra. A severe headache developed shortly thereafter prompting an emergency room visit that night; there she was treated for tension headache. She was advised to continue the Septra because of six to eight white blood cells per high-power field (WBC/HPF) in her urine and a white cell count of $13.3 \times 10^3/\mu\text{L}$, but returned to the clinic the next morning with an unrelenting headache, stiff neck, and a temperature of 99.4°F .

Upon admission, urinalysis and serum chemistries were unremarkable. Spinal tap revealed a white cell count of $166/\mu\text{L}$ with 72 percent polymorphonuclear cells and

normal protein and glucose. A computed tomographic head scan, sinus films, immunoelectrophoresis studies of spinal fluids, and a tuberculosis skin test were negative. She was begun on intravenous ampicillin, which was stopped after cultures of spinal fluid, blood, and urine were negative. After observation off antibiotics for 48 hours, the patient was discharged free of symptoms.

One month later, she re-presented with an identical severe headache, neck stiffness, and temperature of 101.4°F that began shortly after taking another dose of Septra. White cell count was $16.5 \times 10^3/\mu\text{L}$ and spinal fluid contained a white cell count of $1,283/\mu\text{L}$, with 80 percent polymorphonuclear cells, normal protein and glucose, and negative cultures. She was treated empirically for ten days with intravenous penicillin because of the history of recurrent meningitis. Prior to discharge, the patient refused a rechallenge test with Septra.

The two prior cases^{1,2} of meningitis associated with trimethoprim-sulfamethoxazole had the extra evidence of a positive rechallenge test, which unfortunately our patient would not allow. Nevertheless, the close association of these two episodes of meningitis to ingestion of trimethoprim-sulfamethoxazole, coupled with a known initial exposure to the drug that was without incident, suggests the possibility of an unusual hypersensitivity reaction and adds to the previous observations.

Physicians should be aware of this possible association so that a

definite etiological mechanism can be explored with future patients in similar situations.

Richard H. Streiffer, MD
Jack G. Hudson, MD
Department of Family Medicine
Mercy Medical Center
Denver, Colorado

References

1. Hass EJ: Trimethoprim-sulfamethoxazole: Another cause of recurrent meningitis. *JAMA* 1984; 252:346
2. Kremer I, Ritz R, Brunner F: Aseptic meningitis as an adverse effect of cotrimoxazole. *N Engl J Med* 1983; 308:1481

OFFICE AUDIOMETRY

To the Editor:

Having recently surveyed audiometry in US family practice residency programs, I was pleased to see your journal publish an article on audiometry (*Snyder J: Office audiometry. J Fam Pract* 1984; 19:535-548). Family practice literature had previously suffered a paucity of up-to-date guidelines for office hearing testing. Our residency survey underscored the need for better and more uniform instruction of residents in audiometry.

Our survey questionnaire was mailed to all US family practice residencies in February of 1983, and 187 completed responses were obtained. Analysis of the results revealed three problem areas: (1) selection of patients, (2) audiometry equipment in use, and (3) training of residents and others performing audiometry.

Snyder was somewhat vague in
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NIX FOR LICE®

CREME RINSE

permethrin 1%

PEDICULICIDAL/OVICIDAL ACTIVITIES: *In vitro* data indicate that permethrin has pediculicidal and ovidical activity against *Pediculus humanus var. capitis*. The high cure rate (97-99%) of Nix in patients with head lice demonstrated at 14 days following a single application is attributable to a combination of its pediculicidal and ovidical activities and its residual persistence on the hair which may also prevent reinfestation.

INDICATIONS AND USAGE: Nix is indicated for the single-application treatment of infestation with *Pediculus humanus var. capitis* (the head louse) and its nits (eggs). Retreatment for recurrences is required in less than 1% of patients since the ovidical activity may be supplemented by residual persistence in the hair. If live lice are observed after at least seven days following the initial application, a second application can be given.

CONTRAINDICATIONS: Nix is contraindicated in patients with known hypersensitivity to any of its components, to any synthetic pyrethroid or pyrethrin, or to chrysanthemums.

WARNING: If hypersensitivity to Nix occurs, discontinue use.

PRECAUTIONS:

General: Head lice infestation is often accompanied by pruritus, erythema, and edema. Treatment with Nix may temporarily exacerbate these conditions.

Information for Patients: Patients with head lice should be advised that itching, redness, or swelling of the scalp may occur after application of Nix. If irritation persists, they should consult their physician. Nix is not irritating to the eyes; however, patients should be advised to avoid contact with eyes during application and to flush with water immediately if Nix gets in the eyes. In order to prevent accidental ingestion by children, the remaining contents of Nix should be discarded after use.

Combing of nits following treatment with Nix is not necessary for effective treatment. However, patients may do so for cosmetic or other reasons. The nits are easily combed from the hair treated with Nix after drying.

Carcinogenesis, Mutagenesis, Impairment of Fertility: Six carcinogenicity bioassays were evaluated with permethrin, three each in rats and mice. No tumorigenicity was seen in the rat studies. However, species-specific increases in pulmonary adenomas, a common benign tumor of mice of high spontaneous background incidence, were seen in the three mouse studies. In one of these studies there was an increased incidence of pulmonary alveolar-cell carcinomas and benign liver adenomas only in female mice when permethrin was given in their food at a concentration of 5000 ppm. Mutagenicity assays, which give useful correlative data for interpreting results from carcinogenicity bioassays in rodents, were negative. Permethrin showed no evidence of mutagenic potential in a battery of *in vitro* and *in vivo* genetic toxicity studies.

Permethrin did not have any adverse effect on reproductive function at a dose of 180 mg/kg/day orally in a three-generation rat study.

Pregnancy: Teratogenic Effects: Pregnancy Category B: Reproduction studies have been performed in mice, rats, and rabbits (200-400 mg/kg/day orally) and have revealed no evidence of impaired fertility or harm to the fetus due to permethrin. There are, however, no adequate and well-controlled studies in pregnant women. Because animal reproduction studies are not always predictive of human response, this drug should be used during pregnancy only if clearly needed.

Nursing Mothers: It is not known whether this drug is excreted in human milk. Because many drugs are excreted in human milk and because of the evidence for tumorigenic potential of permethrin in animal studies, consideration should be given to discontinuing nursing temporarily or withholding the drug while the mother is nursing.

Pediatric Use: Nix is safe and effective in children two years of age and older. Safety and effectiveness in children less than two years of age have not been established.

ADVERSE REACTIONS: The most frequent adverse reaction to Nix is pruritus. This is usually a consequence of head lice infestation itself, but may be temporarily aggravated following treatment with Nix. 5.9% of patients in clinical studies experienced mild temporary itching; 3.4% experienced mild transient burning/stinging, tingling, numbness, or scalp discomfort; and 2.1% experienced mild transient erythema, edema, or rash of the scalp.

DOSAGE AND ADMINISTRATION:

Adults and Children: Nix is intended for use after the hair has been washed with shampoo, rinsed with water and towel dried. Apply a sufficient volume of Nix to saturate the hair and scalp. Nix should remain on the hair for 10 minutes before being rinsed off with water. A single treatment is sufficient to eliminate head lice infestation. Combing of nits is not required for therapeutic efficacy, but may be done for cosmetic or other reasons.

SHAKE WELL BEFORE USING.

HOW SUPPLIED: Nix (Permethrin) 1% (wt./wt.) Creme Rinse is supplied in plastic squeeze bottles that contain 2 fl. oz. weighing 56 g. (NDC-0081-0780-81)

Store at 15°-25°C (59°-77°F).

Reference: 1. Data on file, Burroughs Wellcome Co. Copr. © 1986 Burroughs Wellcome Co. All rights reserved.

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his recommendations as to which patients should receive audiometry in the setting of the family physician's office. Our survey revealed inconsistency in the selection of patients for audiometry (Table 1). Usually residents recommended audiometry on a case-by-case basis using ill-defined guidelines.

Snyder concluded his article with cautious recommendations for hearing testing by family physicians, "screening or threshold measurement for AC (air conduction) and BC (bone conduction) are reasonable goals. . . ." Our survey revealed that 25 percent of residencies had no audiometer at all and that 32 percent of those with audiometers used small screening instruments incapable of measuring thresholds. Thirty-five percent were capable of measuring bone conduction; however, others¹ have suggested that BC is best tested by an audiologist. Fifty-six percent had had their audiometer calibrated within the past year. Twenty-two percent of family practice residencies utilized tympanometers. It is apparent that our family practice residents are being exposed to inconsistently adequate testing equipment.

The most critical element in pure tone audiometry is the tester, because he or she can easily introduce errors.² Audiologists performed audiometry in 31 percent of family practice residencies, while nurses performed audiometry in the majority of programs. Of these nurses, our survey revealed that only 20 percent had had any type of formal training in audiometry. More important, 48 percent of family practice residencies did not include hearing testing or audiometry in their curriculum.

Physicians are responsible for supervising in-office audiometry and for monitoring the various sources of error.³ While it may be

TABLE 1. WHICH PATIENTS RECEIVE AUDIOGRAMS IN FAMILY PRACTICE RESIDENCY OUTPATIENT DEPARTMENTS?

	Percentage of Respondents
All new patients	1
All patients with any ear complaint	16
All patients with hearing complaints	72
Patients with dizziness	40
Patients with ear infections	30
Patients with ear infection follow-up appointments	41
Preschool physical examination	62

possible to study Snyder's article and learn office audiometry adequately, my experience with residents indicates that physicians are quite interested in the results of audiometry, but they are seldom motivated to learn for themselves about sources of error or how the test is performed. Our residency programs, if not most family physicians, should pay more attention to the teaching and performance of audiometry.

Allan V. Abbott, MD
 Director, Family Practice Center
 Assistant Professor of
 Family Practice
 University of Southern California
 Idyllwild, California

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2. Egan JJ: Basic elements of hearing testing. Ear, Nose Throat J 1979; 58:56-59
3. Sataloff J: Hearing Loss. Philadelphia, JB Lippincott, 1966

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Norgesic[®] Forte TABLETS

(orphenadrine citrate, 50 mg; aspirin, 770 mg; caffeine, 60 mg)

Stops the pain, not the patient.

Brief Summary

Indications:

1. Symptomatic relief of mild to moderate pain of acute musculo-skeletal disorders.
2. The orphenadrine component is indicated as an adjunct to rest, physical therapy, and other measures for the relief of discomfort associated with acute painful musculo-skeletal conditions.

The mode of action of orphenadrine has not been clearly identified, but may be related to its analgesic properties. Norgesic and Norgesic Forte do not directly relax tense skeletal muscles in man.

Contraindications:

Because of the mild anticholinergic effect of orphenadrine, Norgesic or Norgesic Forte should not be used in patients with glaucoma, pyloric or duodenal obstruction, achalasia, prostatic hypertrophy or obstructions at the bladder neck. Norgesic or Norgesic Forte is also contraindicated in patients with myasthenia gravis and in patients known to be sensitive to aspirin or caffeine.

The drug is contraindicated in patients who have demonstrated a previous hypersensitivity to the drug.

Warnings:

Norgesic Forte may impair the ability of the patient to engage in potentially hazardous activities such as operating machinery or driving a motor vehicle; ambulatory patients should therefore be cautioned accordingly.

Aspirin should be used with extreme caution in the presence of peptic ulcers and coagulation abnormalities.

Usage in Pregnancy:

Since safety of the use of this preparation in pregnancy, during lactation, or in the childbearing age has not been established, use of the drug in such patients requires that the potential benefits of the drug be weighed against its possible hazard to the mother and child.

Usage in Children:

The safe and effective use of this drug in children has not been established. Usage of this drug in children under 12 years of age is not recommended.

Precautions:

Confusion, anxiety and tremors have been reported in few patients receiving propoxyphene and orphenadrine concomitantly. As these symptoms may be simply due to an additive effect, reduction of dosage and/or discontinuation of one or both agents is recommended in such cases.

Safety of continuous long term therapy with Norgesic Forte has not been established; therefore, if Norgesic Forte is prescribed for prolonged use, periodic monitoring of blood, urine and liver function values is recommended.

Adverse Reactions:

Side effects of Norgesic or Norgesic Forte are those seen with aspirin and caffeine or those usually associated with mild anticholinergic agents. These may include tachycardia, palpitation, urinary hesitancy or retention, dry mouth, blurred vision, dilatation of the pupil, increased intraocular tension, weakness, nausea, vomiting, headache, dizziness, constipation, drowsiness and rarely, urticaria and other dermatoses. Infrequently an elderly patient may experience some degree of confusion. Mild central excitation and occasional hallucinations may be observed. These mild side effects can usually be eliminated by reduction in dosage. One case of aplastic anemia associated with the use of Norgesic has been reported. No causal relationship has been established. Rare G.I. hemorrhage due to aspirin content may be associated with the administration of Norgesic or Norgesic Forte. Some patients may experience transient episodes of light-headedness, dizziness or syncope.

Caution:

Federal law prohibits dispensing without prescription. NG-7

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COMPUTERS AND LITERATURE SEARCH

To the Editor:

Although it has been possible to conduct a search of the medical literature using a computer since 1971, there still remains some confusion regarding computerized literature searching. In your special issue on computers, the authors of the article "Educational Applications of Computers" make several misleading statements regarding computer searching.¹

The authors stated that "catalogues of published articles" are accessible by computer. A more accurate description of on-line searching is that one is actually searching a database containing references to journal articles that can be accessed by author, title, journal title, subject heading, or text words found in the title or abstract.

Although the authors gave the impression that MEDLINE and MEDLARS are two distinct databases, MEDLINE is only one of the 17 databases available through the MEDLARS system, which is based at the National Library of Medicine (NLM) in Bethesda, Maryland.* MEDLARS stands for Medical Literature Analysis and Retrieval System. MEDLINE is the most well-known database for medicine. It contains over 3,500,000 references to biomedical journal articles published since 1966.

NLM is not the only vendor that offers access to the medical literature. Several other on-line database vendors buy the MEDLINE tapes

from NLM and load them onto their own computerized systems. These vendors also offer databases on a variety of subjects not available through the MEDLARS system.

At the present time, most computerized literature searches on MEDLINE are performed by a medical librarian who has received MEDLINE training approved by NLM. However, there are three new services available to the individual who would like to do his or her own searching: BRS/After Dark, DIALOG/Knowledge Index, and ISI/Sci-mate.** These services are user friendly and require no training in database searching techniques. Since these services are designed for the untrained searcher, there are limitations in retrieval, and the same search done by a medical librarian may yield more relevant information. However, the National Library of Medicine has recently started to offer MEDLINE training courses (previously limited to librarians) at various locations throughout the country.

Laurie A. Conway, MLS
Savitt Medical Library
University of Nevada School of
Medicine
Reno, Nevada

Reference

1. Coggan PG, Hoppe M, Hadac R: Educational applications of computers in medical education. *J Fam Pract* 1984; 19:66-71

**BRS, 1200 Route 7 Latham, NY 12110 (800-833-4707)

DIALOG, 3460 Hillview Avenue Palo Alto, CA 94304 (800-227-5510)

ISI 3501 Market Street University City Science Center, Philadelphia, PA 19104 (800-523-4092)

*National Library of Medicine (NLM), 8600 Rockville Pike, Bethesda, MD 20209 (800-638-8480)