of patients receiving NSAIDs. We would be more confident about the study if the authors could answer the following questions.

Did the study pathologist who examined the jejunum and ileum examine the gastrointestinal tracts by themselves or entire cadavers? This could be an important distinction since, despite the pathologist's ignorance of the clinical and drug history, the presence of deformans arthritis in a cadaver could have been the cause of observer bias.

Were any of the patients in the aspirin, short-term NSAID, or long-term NSAID group receiving concomitant antiulcer therapy, particularly high-dose histamine H_2 antagonists or omeprazole? These drugs lead to healing of both gastric and duodenal ulcers and prevent recurrent ulcers despite continued NSAID use,[2] thereby obscuring a possible association between gastroduodenal ulcers and small-bowel lesions.

Were any of the patients in the NSAID groups receiving slow-release NSAID preparations, and if so, was there any increased prevalence of jejunal and ileal mucosal lesions in this subgroup? Enteric-coated and slow-release NSAID formulations have fewer gastric side effects,[3] but as far as we know, no studies have dealt with the problem of a possible increase in the number of lesions of the distal gastrointestinal tract.

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1. Allison MC, Howatson AG, Torrance CJ, Lee FD, Russell RI. Gastrointestinal damage associated with the use of nonsteroidal antiinflammatory drugs. N Engl J Med 1992;327:749-54.
2. Soll AH, moderator. Nonsteroidal anti-inflammatory drugs and peptic ulcer disease. Ann Intern Med 1991;114:307-19.
3. Tronstad RI, Aadland E, Holler T, Olaussen B. Gastroscopic findings after treatment with enteric-coated and plain naproxen tablets in healthy subjects. Scand J Gastroenterol 1985;20:239-42.

Dr. Allison replies:

To the Editor: The study pathologist inspected the alimentary canal by itself before confirming the individual drug histories. All visibly abnormal areas were removed for microscopical examination by a second pathologist, who remained unaware of the clinical details until the study was completed.

Of the 249 NSAID users, 68 (27 percent) had received antisecretory drugs and 4 (2 percent) had received misoprostol. Six of the 21 NSAID users (29 percent) with nonspecific ulcers of the small intestine were being treated with histamine H_2 antagonists. Of these six patients, one had coexisting duodenal ulceration and two had received only a few doses of ranitidine before death. Thus, the use of both NSAIDs and ulcer-healing agents cannot explain our failure to demonstrate an association between gastroduodenal ulcers and ulcers of the small intestine in users of NSAIDs.

Finally, the numbers of patients taking enteric-coated and slow-release NSAID preparations were too small to permit a meaningful analysis of the frequency of ulceration in these subgroups. Only two of the patients with nonspecific ulcers of the small intestine were taking slow-release preparations. It may be relevant that two of the three patients with small-bowel perforation had received apazone, a drug whose uptake by the gastric mucosa is low and that is preferentially absorbed in the small intestine.*

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PREVALENCE OF HIV-INFECTED SYRINGES DURING A SYRINGE-EXCHANGE PROGRAM

To the Editor: Syringe-exchange programs represent one attempt to slow the spread of human immunodeficiency virus type 1 (HIV-1) infection among injection-drug users.[1] We evaluated such a program in New Haven, Connecticut, operated by the city's health department. The program allows injection-drug users four opportunities per week to exchange their used syringes on a one-for-one basis for clean, attached syringe–needle combinations. Our evaluation used a system of tracking and testing to record all syringes distributed and returned.[2] The syringes returned were tested with the polymerase chain reaction for HIV-1 proviral DNA as evidence of use by an HIV-infected injection-drug user. Two rounds of amplification and Southern blotting lowered the limits of detection to as few as two copies of HIV-1 DNA.[3]

The prevalence of infected syringes was determined before the start of the program for two sources (Table 1). We randomly selected and tested 160 syringes not distributed through the program that were returned as the program began. The prevalence of HIV-1 in these syringes was 68 percent. The testing of a group of 180 syringes returned through an illegal exchange that operated once a week revealed a prevalence of 63 percent — not significantly different. We tested 1860 randomly selected needles distributed through the syringe-exchange program and returned from November 14, 1990, through December 31, 1991. Initially, the prevalence of HIV-1 proviral DNA in these syringes was no different from that in the 160 needles tested before the program began. By the third month of program operation, however, the prevalence had fallen to 57 percent. In the months thereafter, the prevalence stabilized, approaching a steady-state level of 43 percent (610 of 1426), substantially lower than the initial prevalence ($P<0.001$ by the chi-square test). Once the prevalence declined, it did not change signifi-

Table 1. Prevalence of HIV-1 in Needles Tested before and during the Syringe-Exchange Program.

CATEGORY OF NEEDLE	NO. TESTED	NO. HIV-POSITIVE	PERCENT HIV-POSITIVE (95% CI)*
Used before needle exchange, Nov.–Dec. 1990	160	108	68 (60–75)
Exchanged illegally	180	113	63 (56–70)
Exchanged through the program			
Nov.–Dec. 1990	274	175	64 (58–70)
Jan. 1991	160	91	57 (49–64)
Feb.–April 1991	347	141	41 (36–46)
May–July 1991	343	139	41 (35–46)
Aug.–Oct. 1991	398	166	42 (37–47)
Nov.–Dec. 1991	338	164	49 (43–54)

*CI denotes confidence interval.

cantly during the following 11 months. Throughout the study, we found no changes in the demographic characteristics or drug-use habits of newly enrolled clients that could account for the decrease in the prevalence of HIV-1 proviral DNA in the needles.[4]

We conclude that the syringe-exchange program in New Haven accounted for the decrease in the percentage of syringes used by at least one HIV-1–infected injection-drug user. Since only syringes used by HIV-1–infected people and shared with uninfected people can transmit the virus, the decrease suggests that syringe exchange can slow the spread of HIV-1 infection.

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1. Stimson GV. Syringe-exchange programmes for injecting drug users. AIDS 1989;3:253-60.
2. Kaplan EH. Evaluating needle exchange programs via syringe tracking and testing. AIDS Public Policy J 1991;6:109-15.
3. Heimer R, Myers SS, Cadman EC, Kaplan EH. Detection by polymerase chain reaction of human immunodeficiency virus type 1 proviral DNA sequences in needles of injecting drug users. J Infect Dis 1992;165:781-2.
4. O'Keefe E, Kaplan E, Khoshnood K. City of New Haven Needle Exchange Program preliminary report. New Haven, Conn.: City of New Haven, July 1991:18-28.

THINGS THAT GO BANG IN THE NIGHT

To the Editor: Implantable cardioverter–defibrillator devices (ICDs) placed in patients who have malignant ventricular arrhythmias can be responsible for serious psychological problems, including anxiety and depression.[1-4] Some patients report severe sleep disorders, including phantom shocks, a very interesting phenomenon that is the subject of this report. Of 84 patients seen in our follow-up clinics who have had long-term ICD therapy, 4 (2 men and 2 women) have reported nocturnal phantom shocks. All had previously received shocks from an ICD, preceded in two by presyncope. In every case, the patients had received no more than one shock per clinical episode. None of the four had had an inordinately difficult psychological adjustment to ICD therapy.

The episodes always occurred after the patient was fully asleep, never during wakefulness. Typically, there were no prodromal symptoms or unusual events during the preceding day. In each case, the patient was awakened abruptly from a sound sleep with the sensation of having received a defibrillator discharge, but no memories of any dreams. When the shocks were witnessed, the patients were observed to be "jolted," as they are when they receive an actual shock, and to cry out as if stricken. A few patients have even described a soreness in the chest immediately after they recovered consciousness. In all cases, checking the counters that record the discharge of each device gave no indication that the ICD had actually delivered a shock. Despite our reassurances, these patients have continued to receive phantom shocks that necessitated repeated visits to evaluate the function of the device. Two patients required a psychiatric referral.

We wish to inform practicing physicians that this phenomenon may occur in patients with ICDs. Phantom shocks should be discriminated from real shocks before any treatment is prescribed or the device is reprogrammed. Treatment of secondary psychiatric disorders may provide a solution. This report further substantiates the adjustment problems patients may have after the implantation of an ICD and the need for intensive counseling before and after the insertion of the device.

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1. Cooper DK, Luceri RM, Thurer RJ, Myerburg RJ. The impact of the automatic implantable cardioverter defibrillator on quality of life. Clin Prog Electrophysiol Pacing 1986;4:306-9.
2. Kalbfleisch KR, Lehmann MH, Steinman RT, et al. Reemployment following implantation of the automatic cardioverter defibrillator. Am J Cardiol 1989;64:199-202.
3. Vlay SC, Olson LC, Fricchione GL, Friedman R. Anxiety and anger in patients with ventricular tachyarrhythmias: responses after automatic internal cardioverter defibrillator implantation. PACE Pacing Clin Electrophysiol 1989;12:366-73.
4. Keren R, Aarons D, Veltri EP. Anxiety and depression in patients with life-threatening ventricular arrhythmias: impact of the implantable cardioverter-defibrillator. PACE Pacing Clin Electrophysiol 1991;14:181-7.