

3. Macintyre, S., and West, P.: 'What does the phrase "safer sex" mean to you?' Understanding among Glaswegian 18-year-olds in 1990. *AIDS* 7: 121-125, January 1993.
4. Weiss, S. H., Weston, C. B., and Quirinale, J.: Safe sex? Misconceptions, gender differences and barriers among injection drug users: a focus group approach. *AIDS Educ Prev* 5: 279-293, winter 1993.
5. Wenger, N. S., Linn, L. S., Epstein, M., and Shapiro, M. F.: Reduction of high-risk sexual behavior among heterosexuals undergoing HIV antibody testing: a randomized clinical trial. *Am J Public Health* 81: 1580-1585, December 1991.
6. Wenger, N. S., et al.: Effect of HIV antibody testing and AIDS education on communication about HIV risk and sexual behavior. *Ann Intern Med* 117: 905-911, Dec. 1, 1992.
7. Davies, P. M.: Safer sex maintenance among gay men: are we moving in the right direction? *AIDS* 7: 279-280, June 1993.
8. Surgeon General's report to the American public on HIV infection and AIDS. Centers for Disease Control and Prevention, June 1993.
9. Camprostrini, S., and McQueen, D. V.: Sexual behavior and exposure to HIV infection: estimates from a general-population risk index. *Am J Public Health* 83: 1139-1143 (1993).
10. Gold, R. S., Karmiloff-Smith, A., Skinner, M. J., and Morton J.: Situational factors and thought processes associated with unprotected intercourse in heterosexual students. *AIDS Care* 4: 943-951 (1992).

*Robert C. Freeman, PhD*  
*John F. French, MA*

Dr. Freeman is with the NOVA Research, Company, Bethesda, MD. Mr. French is with New Jersey Department of Health, Division of Alcoholism, Drug Abuse, and Addiction Services, Data Analysis and Epidemiology Unit.

*Tearsheet requests to Robert C. Freeman, PhD, NOVA Research Company, 4600 East-West Highway, Suite 700, Bethesda, MD 20814; tel. 301-986-1891; FAX 301-986-4931.*

## What Is the Addicts' Grapevine When There's 'Bad Dope'?

### *An Investigation in New Jersey*

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#### SYNOPSIS

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AFTER A RASH of fatal overdoses among drug users that was attributed to the synthetic narcotic analgesic fentanyl, the New Jersey Department of Health conducted street interviews with 160 injection drug users in an attempt to identify the channels through which this population had heard about the outbreak and to gauge drug addicts' responses to the incident.

The results of the investigation suggest that the drug users learn about such severe threats to health from a variety of sources. The frequency with which some of these sources are reported differs significantly according to the sex of the drug user and, even when sex is controlled, the frequency may vary substantially from city to city in a relatively limited geographic area.

Although television was, for this population, a more important source of information about the outbreak than was any other formal means of communication, drug users did not regard TV as a reliable source of good information about "bad dope." Moreover, it does not appear that broadcasts of public warning messages about such substances are a guarantee that addicts will not search for the drug.

The data reported in this study point up a need for health officials' greater understanding of the channels through which drug users receive information on threats to their health. The study also provides an understanding of how public health messages are perceived and processed by needle users. The final lesson is the need for close collaboration among drug enforcement personnel, testing laboratories, and health officials in the various affected locales to clarify the public health message.

In their review of an outbreak of 50 heroin overdoses that occurred in San Francisco over one weekend in 1989, Sorensen and colleagues (1) noted the relative lack of knowledge exhibited by health officials of the ways in which drug users learn about and process information regarding threats to their health, such as potent drug mixtures that result in overdoses and deaths. Unfortunately, such outbreaks are recurrent. Greater understanding of addicts' views of episodes like these may enable public health officials to inform this subpopulation more adequately at appropriate times in the future to prevent adverse outcomes.

The results of an investigation into addicts' responses to a rash of overdoses that occurred in the New York metropolitan region over several days in early February 1991 (2-4) shed further light on some of the points made by Sorensen and colleagues regarding drug users' views of such incidents. In this case, the New Jersey State Medical Examiner attributed 12 deaths to overdoses of fentanyl, a synthetic narcotic analgesic similar to, but more potent than, morphine (5). Eight similar deaths were reported in New York City and one in Connecticut (5). Although the full extent of the drug's distribution and effects is difficult to gauge accurately, it appears that hospital emergency rooms in a four-county region of northern New Jersey treated 152 drug-related cases—108 above normal—in a one-week period immediately following reports of the outbreak. Of the 12 fentanyl-related deaths in New Jersey, 10 were of males; 9 victims were African American and 2 were Latino. All but one bore "track marks" indicative of injection drug use (5).

Despite the fact that fentanyl-related deaths had been reported in various locales in the late 1970s and 1980s (6-8), the drug had not been considered a problem in New Jersey prior to this episode. Indeed, after having found no positive reactions, the State Medical Examiner had discontinued (in 1990) routine testing for fentanyl as part of the standard autopsy toxicological battery of tests (5).

## Methods

Two weeks after the outbreak of overdoses was reported in the media, the New Jersey Department of Health (NJDOH) initiated street interviews with active injection drug users (IDUs) in Newark, Jersey City, and Paterson in an effort to identify the channels through which these people had heard about the health threat and to gauge the drug addicts' responses to the incident. The interviewers, all former addicts, worked in these three cities as community health outreach workers (CHOWs) on NJDOH-directed demonstration research projects that were aimed at reducing AIDS risk behaviors among IDUs and their sex partners.

In the survey, CHOWs approached people they knew to be drug injectors on the basis of previous street contacts. Interviewers indicated respondents' race, sex, age, and

neighborhood of contact on the 1-page interview form and then asked 10 questions about the addicts' awareness of and responses to the outbreak. Response categories were mostly closed-ended, except for one question that probed respondents' opinions about what was in the "bad dope" and another that asked who they would most likely trust to provide good information about bad dope. Interviews generally were completed in less than 90 seconds. No monetary inducements were offered to participants.

A convenience sample of 160 IDUs was interviewed. Two-thirds were African American, one-fifth were non-Latino white, and the remainder were Latino. Females comprised one-third of the sample. The median age of the overall sample was 33 years, and the median duration of injection drug use was 9 years.

## Results

Only 1 addict out of 160 had not heard of the outbreak at all. Among those who heard about it, however, striking inter-city differences were found in the reported sources of information, despite the fact that the three cities where the data were gathered all lie well within range of the dominant New York City electronic and print media, are close to one another geographically, and are well-linked by mass transit.

In Jersey City, where the drug was not available and where no deaths occurred, drug users were equally likely to report that they had heard about the epidemic from TV and from other addicts. In Newark, where the majority of the deaths occurred, more than three-quarters of the sample (78 percent) had heard about the fentanyl outbreak from friends, but just 16 percent cited newspapers as their source. In Paterson, where two had died and where police had used bullhorns to broadcast warnings about the drug, 13 percent of the sample reported that they had learned of the outbreak from police, but just 39 percent had heard about it from TV (table 1).

When information sources were ranked for each city, newspapers and friends showed the greatest inter-city variation. Newspapers, the source most likely to be cited by Paterson respondents, ranked only third in Jersey City and tied for fourth in Newark, while friends, the most oft-mentioned source in Newark, ranked a mere fourth in each of the two smaller cities. Source rankings were most similar in Jersey City and Paterson (Spearman's  $r_s = .85$ ), and most dissimilar between the Newark and Paterson responses ( $r_s = .44$ ).

Of course, such between-city differences in reported information sources might be explained by differences in the composition of the sample in each city. For instance, in the full sample, males were most likely to have learned about the outbreak from TV, but females were most likely to have heard about it from friends, a source that only ranked fourth in citations among males (table 2). In addition, more than 46 percent of males—but only 20 percent

**Table 1. Sources of information, by percentages,<sup>1</sup> about the outbreak of fatal fentanyl overdoses in New Jersey, 1991**

Source	Jersey City (N=48)	Newark (N=58)	Paterson (N=54)
Television.....	58	59	39
Radio.....	8	12	7
Newspaper.....	46	16	52
Other addicts.....	58	33	31
Friends.....	19	78	30
Relatives.....	0	16	2
Police.....	2	0	13

<sup>1</sup>Percents do not add to 100 because of multiple reporting.

of females—reported that they had read about the outbreak in newspapers. Males were significantly (at the .05 level) more likely than were females to cite newspapers and police as sources of information about the outbreak.

Nevertheless, the frequency with which the various information sources were mentioned showed substantial city-to-city variation even when sex was controlled (table 3). Among males, significant differences by city were found in the percent mentioning newspapers, police, and friends as sources of information; among females, the city effect was significant for TV, friends, relatives, other addicts, and newspapers.

In addition to determining the channels through which public health messages reach IDUs, we also investigated addicts' responses to such information. The data suggest that Sorensen and coworkers were prescient in cautioning that public warning messages might have the unintended effect of increasing some drug users' interest in acquiring the drug. Indeed, 21 percent of the respondents reported that they had actively searched for the drug after hearing about the overdoses, and the percentage reporting this differed significantly by city with a *P* value of < .001. In Jersey City, it was 44.7 percent, Newark, 8.9 percent, and Paterson, 13 percent.

Insofar as TV may be a vital source of information for

**Table 2. Reported sources, in percentages<sup>1</sup>, of information about the fentanyl outbreak, by sex, New Jersey, 1991<sup>2</sup>**

Source	Males (N=99)	Females (N=55)	<i>P</i> value (by chi square)
Television.....	54.5	41.8	NS
Radio.....	8.1	10.9	NS
Newspaper.....	46.5	20.0	<.01
Other addicts.....	45.5	30.9	NS
Friends.....	39.4	54.5	NS
Relatives.....	4.0	10.9	NS
Police.....	7.1	...	<.05
"The street".....	7.1	16.4	NS
Others.....	3.0	...	NS

<sup>1</sup>Percents do not add to 100 because of multiple reporting.

<sup>2</sup>Six respondents for whom data was missing have been dropped from this analysis.

addicts when overdoses occur, Sorensen and colleagues suggest that a collaboration between public health planners and the media might be effective in limiting adverse consequences from such incidents. Although television seems to have been a relatively important source of information about the fentanyl epidemic in New Jersey, it appears, however, that addicts tend not to regard this medium as a source of reliable information. When asked who they would trust to give them good information about bad dope, the respondents listed the following sources in descending order: friends, 33.8 percent; other addicts, 25 percent; "nobody" 20.6 percent; relatives 6.9 percent; newspapers, 6.3 percent; hospitals and "others" 3.8 percent each; and drug dealers, 2.5 percent.

## Discussion

Our results suggest that injection drug users learn about severe threats to their health from a variety of sources. Nevertheless, male addicts in this sample were significantly more likely than were females to hear about the fentanyl outbreak through newspapers, while females were more apt to receive this information through friends. Among both males and females, however, TV was mentioned more often as a source of information than were other formal communication channels such as newspapers, radio, or the police.

When sex was controlled, significant between-city variations in the reported sources of information about the outbreak remained, but—apart from the unusual communications tactic used by police in Paterson—the factors that might account for these differences are not readily apparent. It may be speculated, for instance, that the large percentage of the Jersey City sample that reported hearing about the episode through other addicts (especially common among females) may indicate a particularly close-knit network of needle users in that city. It is evident that more research is needed to delineate the networks through which health messages reach drug users. Particularly helpful would be an exploration of the ways in which such networks vary according to the addict's age, sex, and race-ethnicity.

In addition to identifying channels through which addicts receive relevant public health information, health officials need to understand how public health messages are perceived and processed by members of the needle-using subculture. Because it is an article of faith among many addicts that drug effects can be controlled by altering dosage levels, reports of bad dope often are regarded as evidence of a potent substance that may be harmful only when insufficient care is taken in its administration. Interestingly, the percentage of respondents that reported searching for the drug after hearing about its effects was significantly higher (about 45 percent) in Jersey City where the drug did not appear on the street.

The fact that a relatively high proportion of respondents in this city claimed to have learned about the out-

**Table 3. Reported sources of information about the 1991 fentanyl outbreak in New Jersey, by city and sex, in percentages<sup>1</sup>**

Source	Males				Females			
	Jersey City	Newark	Paterson	P value	Jersey City	Newark	Paterson	P value
Television.....	56.8	63.0	45.7	NS	44.4	55.2	17.6	<.05
Radio.....	8.1	7.4	8.6	NS	11.1	13.8	5.9	NS
Newspapers.....	51.4	25.9	57.1	<.05	22.2	6.9	41.2	<.02
Other addicts.....	54.1	44.4	37.1	NS	77.8	24.1	17.6	<.01
Friends.....	16.2	85.2	28.6	<.001	33.3	75.9	29.4	<.01
Relatives.....	...	11.1	2.9	NS	...	20.7	...	<.05
Police.....	...	...	20.0	<.001	...	...	...	...
"The street".....	10.8	...	8.6	NS	22.2	6.9	29.4	NS
Others.....	2.7	...	5.7	NS	...	...	5.9	NS

<sup>1</sup>Percents do not add to 100 because of multiple reporting.

break from other addicts (table 1) suggests that addicts may be particularly likely to initiate an active search for an apparently more potent "high" when information about the drug's availability comes from fellow needle users. On the other hand, the fact that no deaths occurred in Jersey City may have fostered a belief that the drug was somewhat more benign than the media had made it appear and led to a search for the drug. In any event, it bears repeating that, among this sample, only friends and other addicts received wide support as sources of good information about bad dope, and that no respondents regarded TV or radio reports or the police as reliable sources of such information.

One additional problem in coordinating a media response to an epidemic of overdoses is illustrated by the New York-New Jersey fentanyl outbreak. To inform the public adequately in such instances, it is important to be able to report the brand name of the substance, but the brand names used by street drug distributors often are specific to a particular city. For example, although police in Paterson recovered 18 bags of powder—later shown to be 12 percent pure fentanyl hydrochloride—which were labeled "Tango and Cash," the bags that tested positive for fentanyl in nearby Newark carried the brand name "Goodfellas." Both labels—widely reported in the media after the first deaths occurred—had been used as brand names for heroin prior to the fentanyl episode. The fact that a particular drug mixture may be marketed under different names in different cities points up the need for collaboration among drug enforcement personnel, testing laboratories, and health officials in the various affected locales in an attempt to clarify the public health message.

In summary, while our data should be treated with the same caution accorded any that are gathered via a convenience sampling technique, they suggest that, in disseminating public health messages following outbreaks of drug overdoses, health officials might benefit from a greater understanding of the channels through which drug users receive information about threats to health and a more thorough knowledge about the way in which drug users perceive

and process public health messages. Studies aimed at filling this gap in knowledge would be most beneficial. In addition, health officials must be sensitized to the need to work closely with drug enforcement and testing personnel in other locales in devising the media message to be directed at drug users following outbreaks of drug overdoses.

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**References**

1. Sorensen, J. L., et al.: Mass media as drug users' key information source on overdoses. *Am J Public Health* 82: 1294 (1992).
2. Nieves, E.: Toxic heroin has killed 12, officials say. *New York Times*, Feb. 4, 1991, p. B1.
3. Killer smack's really a synthetic. *New York Daily News*, Feb. 5, 1991, p. 2.
4. Mendez, I., and Burroughs, T.: Cops hunt source of 'Tango-Cash' drug. *Star Ledger*, Newark, NJ, Feb. 5, 1991, p. 64.
5. Data Analysis and Epidemiology Unit: Second interim fentanyl report. Division of Alcoholism, Drug Abuse and Addiction Services, New Jersey Department of Health, Trenton, Apr. 15, 1991.
6. LaBarbera, M., and Wolfe, T.: Characteristics, attitudes, and implications of fentanyl use based on reports from self-identified fentanyl users. *J Psychoactive Drugs* 15: 293-301 (1983).
7. Ayres, W. A., Starsiak, M. J., and Sokolay, P.: The bogus drug: three-methyl and alpha-methylfentanyl sold as 'China White'. *J Psychoactive Drugs* 13: 91-93 (1981).
8. Hibbs, J., Perper, J., and Winek, C. L.: An outbreak of designer drug-related deaths in Pennsylvania. *JAMA* 265: 1011-1013 Feb. 27, 1991.