that attention to injury morbidity and mortality has increased in direct proportion to the deemphasis on the vague and misleading term "accident." Among the first to avoid the word "accident" were railroaders, who commonly held that all injuries or wrecks were due to improper working procedures or less than optimally designed equipment.[2] For instance, during the early 1970s, a large sign identifying Chicago's Potato and Onion Mart on North Western Ave proclaimed "Safety Is No Accident."

In 1978, it was proposed that medicine take the lead in disposing of the terms "accident" and "accidental injury" and that "injury" replace those words; the idea of the proposal was that, according to common medical usage, injuries are less likely to be considered random occurrences not amenable to prevention.[3] It is noteworthy that even the journal *Accident Analysis and Prevention* has stated that the terms "accident" and "accident prevention" should be avoided.[4] Several years ago, an editorial published in the *British Medical Journal* pointed out that the word "crash" is more descriptive than "accident" in terms of those unexpected, unfortunate events that may occur on roads; according to the editorial, the apparently long-lived appeal of "accident" may be that it helps some people avoid any sense of responsibility for such events.[5]

Still, use of the term "accident" is more widespread than one might wish. For instance, a select president's commission prepared a report on loss of coolant in 1979 at a nuclear power plant and called it *The Accident at Three Mile Island.* On the other hand, 10 years later, an elite, multidisciplinary panel considering the risks of nuclear power avoided using the misleading words "accident" and "accidental radiation release."[6] Recently, several publications have disavowed use of "accident" or moderated their definitions of it.[7–9]

The historical review[1] cites the well-known booklet *Accident Facts* as an example of a publication that continues to use the ill-advised term "accident." On the contrary, those who prepared the 1994 edition of that useful publication stated their intention to avoid that word, thus joining all who are attempting to develop a clearer understanding of the real issue: injuries and their causes and prevention.[10] □

Theodore C. Doege, MD, MS

Requests for reprints should be sent to Theodore C. Doege, MD, MS, 5518 S Garfield Ave, Hinsdale, IL 60521.

References

1. Loimer H, Guarnieri M. Accidents and acts of God: a history of the terms. *Am J Public Health.* 1996;86:101–107.
2. Stein JL. A new slant on 'accidents'. *Chemical Week.* February 25, 1987:4.
3. Doege TC. Sounding board. An injury is no accident. *N Engl J Med.* 1978;298:509–510.
4. Langley JD. The need to discontinue the use of the term 'accident' when referring to unintentional injury events. *Accid Anal Prev.* 1988;20:1–8.
5. Evans L. Medical accidents: no such thing? *BMJ.* 1993;307:1438–1439.
6. Council on Scientific Affairs. Medical perspective on nuclear power. *JAMA.* 1989;262:2724–2729.
7. Arnold C. Editor's reply. *Stat Bull.* July–September 1992:35.
8. Evans L. *Traffic Safety and the Driver.* New York, NY: Van Nostrand Reinhold; 1991:8.
9. Last JM. *A Dictionary of Epidemiology.* 3rd ed. New York, NY: Oxford University Press; 1995:3.
10. *Accident Facts.* Itasca, Ill: National Safety Council; 1994.

Hepatitis C Virus Infection among Alaskan Drug Users

Hepatitis C virus infects 1% of the population worldwide, and there are 170 000 new cases each year in the United States. Hepatitis C virus is associated with cirrhosis, end-stage liver disease, hepatocellular carcinoma, and several extrahepatic syndromes.[1] Hepatitis C virus infection is the leading cause of liver transplants.[2] Of all US cases, 42% involve a history of injection drug use. Sexual transmission is less efficient than parenteral transmission.[3]

Recent studies have documented problems with injection drug use in Alaska.[4] Knowledge of hepatitis C virus is sparse, partly as a result of the recency with which it became a reportable disease (January 1996). The purpose of the present study was to identify the prevalence of and predictors for hepatitis C virus among drug users in Anchorage, Alaska. Previous studies describing hepatitis C virus risk factors have used risk behavior data from clinical settings. The current design was unique in that data were collected at a nonclinical location from drug users who were not involved in drug treatment at the time.

This research was part of a multisite study of out-of-treatment drug users. Participants provided informed consent, and data were collected under a federal certificate of confidentiality. The participants were at least 18 years old and (1) reported no drug treatment in the preceding 30 days; (2) reported injecting cocaine, opiates, or amphetamines and presented recent needle marks; or (3) reported smoking cocaine and produced urine that tested positive for cocaine metabolites. The participants received urinalysis screening for cocaine metabolites, morphine, and amphetamines (ONTRAK; Roche Diagnostic Systems, Nutley, NJ).

Predictor variables were drawn from the Risk Behavior Assessment, a structured interview that elicits demographic, substance use, drug treatment, sexual behavior, health, criminal activity, and income information. The instrument has good reliability and validity.[5] Phlebotomy was performed, and serum was tested by SmithKline Beecham Clinical Laboratories. Antibodies to the recombinant hepatitis C virus antigens C100-3, HC-31, and HC-34 were determined by an enzyme immunoassay method (Abbott Laboratories, Chicago, Ill).

The study sample ($n = 501$) consisted of 71% men and 29% women. The mean age of participants was 34.5 years ($SD = 7.2$); 48% were White, 29% were Black, and 17% were American Indian/Alaska Native. Forty-one percent of the participants reported injection drug use within the previous 30 days; the mean number of times injected in the last month was 18.6 ($SD = 51.1$). Ninety-two percent reported smoking cocaine. There was a significant bivariate association between hepatitis C virus positivity and injection drug use status ($\chi^2[1, n = 532] = 122.80$, $P < .001$). Positivity among those reporting only injection drug use was high (81%).

The results of the study (see Table 1) indicate that risk factors for hepatitis C virus were (1) injected drugs in last 30 days, (2) ever injected cocaine, (3) ever used speedball, (4) ever used heroin, (5) number of days in jail (two terms), and (6) number of sex partners in last 30 days (two terms). Protective factors were (1) living with a partner of the opposite sex, (2) perceived homelessness, and (3) use of alcohol in the previous 30 days. The Hosmer–Lemeshow goodness-of-fit test demonstrated an adequate model fit.

These findings indicate that Anchorage, a small city in the largest rural US state, has hepatitis C virus prevalence rates similar to those found in metropoli-

TABLE 1—Estimated Coefficients, Odds Ratios, and 95% Confidence Intervals for the Multiple Logistic Regression Model Predicting Report of Hepatitis C Infection: Anchorage, Alaska

	β	Odds Ratio	95% Confidence Interval
Injected any drug in last 30 days	1.68	5.34	3.21, 8.89
Ever injected/snorted cocaine	1.50	4.50	1.24, 16.41
Ever used speedball	0.95	2.59	1.40, 4.79
Ever in drug treatment	0.66	1.94	1.22, 3.07
Ever used heroin	0.60	1.82	1.07, 3.10
Live with sex partner (opposite sex)	−0.76	0.47	0.23, 0.93
Perceived homelessness	−0.84	0.43	0.26, 0.71
Used alcohol in last 30 days	−0.93	0.40	0.17, 0.92
One or more days in jail (ever)	0.15[a]	...	...
No. days in jail (ever)	0.00[a]	...	...
One or more sex partners in last 30 days	0.00[a]	...	...
No. sex partners in last 30 days	0.10[a]	...	...

Note. Hosmer–Lemeshow goodness of fit: $\chi^2(8) = 5.096$, $P = .7472$.
[a]Interaction tables available from the authors upon request.

tan inner cities.[6] This study demonstrates that geographic location may not define differences in risk. A potential diffusion of blood-borne pathogens into rural American Indian/Alaska Native populations has been reported[7] and may be a result of regular migration between rural and urban areas.

The strong association between injection drug use and hepatitis C virus, with 81% of injection drug users being infected, provides further evidence of injection drug use as a significant risk factor. These results are consistent with other recent research.[8] The basis for the high infection rates among injection drug users appears to be the efficient transmission of hepatitis C virus by injection drug use and the high proportion of chronically infectious cases from which transmission can occur. This same cohort of injection drug users reported high rates of needle sharing,[9] which is likely to have contributed to the high prevalence of hepatitis C virus. Having injected any drug in the previous 30 days and having ever injected cocaine, speedball, or heroin as predictors of hepatitis C virus infection are consistent with previous reports.[8]

Participation in drug treatment programs may indicate long-term history of drug abuse. Risk-taking behaviors such as needle sharing suggest that drug treatment was ineffective or that the amount of treatment was inadequate. High seroprevalence rates have been reported among those in methadone maintenance[6]; however, those individuals may have been infected prior to treatment.

The risk for hepatitis C virus in this cohort increased with number of sex partners and with number of days spent in jail. While the literature suggests that sexual transmission plays a modest role in the prevalence of hepatitis C virus, this association cannot be ignored. Hepatitis C virus risk associated with length of time in jail may be an indication of a greater likelihood of high-risk behaviors.

The protective factors are more difficult to interpret. Living with an opposite-sex partner may be indicative of a stable relationship, and individuals in such relationships may share needles only with their partner. Perceived homelessness may indicate individuals in transition rather than those who are sleeping on the streets or in shelters. The effect of having used alcohol in the previous 30 days is unclear. Alcohol use has been shown to be inversely related to heroin use in heroin addicts.[10]

Hepatitis C virus is a highly infectious disease in this Alaskan population of injection drug users. The uniqueness of the hepatitis C virus further complicates control of this disease. We suggest that screening should target populations with a history of prolonged incarceration, drug treatment, and injection drug use. With prevalence at 81%, the time for prevention among long-standing injection drug users in Alaska may have passed. However, every effort must be made to prevent hepatitis C virus infection in noninfected injection drug users. □

Dennis G. Fisher, PhD
Andrea M. Fenaughty, PhD
Amy A. Paschane, MS
David M. Paschane, BS
Henry H. Cagle, BS
Sylvia M. Orr, PhD

The authors are with the IVDU Project, University of Alaska Anchorage.

Requests for reprints should be sent to Dennis G. Fisher, PhD, IVDU Project, University of Alaska Anchorage, 3211 Providence Dr, Anchorage, AK 99508.

Acknowledgments

This research was funded in part by grants from the National Institute on Drug Abuse (U01 DA07290 and R01 DA10181). Support for Dr Fenaughty was provided in part by an Individual National Research Service Award (F32 DA05599) from the National Institute on Drug Abuse.

For their supportive efforts, we wish to acknowledge the assistance of the staff of the Drug Abuse Research Field Station, Anchorage, Alaska; the staff of the Alaska Health Sciences Information Service, University of Alaska Anchorage; and the Department of Psychology, University of Alaska Anchorage.

References

1. Alter MJ, Margolis HS, Krawczynski K, et al. The natural history of community-acquired hepatitis C in the United States. *N Engl J Med.* 1992;327:1899–1905.
2. Rosen HR, Shackleton CR, Martin P. Indications for and timing of liver transplantation. *Med Clin North Am.* 1996;80:1–34.
3. Pachucki CT, Lentino JR, Schaaff D, et al. Low prevalence of sexual transmission of hepatitis C virus in sex partners of seropositive intravenous drug users. *J Infect Dis.* 1991;164:820–821.
4. Fisher DG, Cagle HH, Wilson PJ. Drug use and HIV risk in Alaska Natives. *Drugs Soc.* 1993;7:107–117.
5. Dowling-Guyer S, Johnson ME, Fisher DG, et al. Reliability of drug users' self-reported HIV risk behaviors and validity of self-reported recent drug use. *Assessment.* 1994;1:383–392.
6. Fingerhood MI, Jasinski DR, Sullivan JT. Prevalence of hepatitis C in a chemically dependent population. *Arch Intern Med.* 1993;153:2025–2030.
7. Conway GA, Ambrose TJ, Chase E, et al. HIV infection in American Indians and Alaska Natives: surveys in the Indian Health Service. *J Acquir Immune Defic Syndr.* 1992;5:803–809.
8. Thomas DL, Vlahov D, Solomon L, et al. Correlates of hepatitis C virus infections among injection drug users. *Medicine.* 1995;74:212–220.
9. Fisher DG, Cagle HH, Queen PJ, Hosmer D. Needle sharing among IVDU's in Anchorage, AK. In: *Abstracts of the Xth International Conference on AIDS* [Berlin]. 1994;10:2092.