

initiatives to minimise harmful outcomes must develop general policies that can have local effects in a varied Northern Territory population. NT police have targeted cannabis in remote communities. A Substance Abuse Select Committee and Illicit Drugs Task Force, each with Indigenous representation, will report to the NT government during 2002.

We recently began collecting baseline data to allow us to evaluate the effects on patterns of use of cannabis (and related harm) of community-wide interventions. These interventions will be similar to those implemented for petrol sniffing,² but with a focus on improved availability of appropriate drug education. We have selected a random sample of about a third of the

residents (aged 13–34 years) from two communities. From this sample, current cannabis users (at least weekly) and past petrol sniffers have been identified by using health worker consensus classification, supported by data from review of the health clinic chart and self-report, if available. These data for 145 males and 141 females are presented in the Figure. Among males aged 20–34 years, 74% are current cannabis users and, of these, 60% are former petrol sniffers. To date, 57 cannabis users have agreed to interview (34 males and 23 females) and, of these, 38 met DSM-IV criteria for cannabis dependence.³

A particular health concern is that persistent cannabis use may compound any residual cognitive impairment from petrol sniffing.

Competing interests: None identified.

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1. Clough AR, Guyula T, Yunupingu M, Burns CB. Diversity of substance use in eastern Arnhem Land (Australia): patterns and recent changes. *Drug Alcohol Rev.* In press, 2002.
2. Burns CB, Currie BJ, Clough A, Wuridjal R. Evaluation of strategies used by a remote Aboriginal community to eliminate petrol sniffing. *Med J Aust* 1995; 163: 82–86.
3. American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 4th ed. Washington, DC: American Psychiatric Press, 1994. □

Corrections

Re “Thiazolidinediones and type 2 diabetes: new drugs for an old disease”, the New Drugs, Old Drugs article by Trisha M O’Moore-Sullivan and Johannes B Prins in the 15 April issue of the *Journal* (*Med J Aust* 2002; 176: 381–386), in which an editing error resulted in the word “tryglyceride” replacing “total cholesterol”. Thus, on page 383, under the subheading “Both drugs increase HDL and LDL and decrease FFA levels; pioglitazone lowers triglyceride levels”, the first sentence in the second dot point should read “Rosiglitazone also tends to increase total cholesterol level and studies have reported variable effects on ratios of **total cholesterol** to high-density lipoprotein (HDL) and of LDL to HDL.” □

Re the article “The contribution of airway structure to early childhood asthma”, by McKay KO and Hogg JC, in the 16 September supplement to the *Journal*, *Early childhood asthma: what we know and what we need to know* (*Med J Aust* 2002; 177: S45–S47). The last two lines of the figure caption on page S46 were omitted. The full caption should read:

“The vessels in the submucosa (a) are smaller than the vessels in the adventitia (c), and the vessels that pass through the muscle layer (b) connect them. These two sets of vessels are perfused in series, providing a basis for a difference in the nature of the inflammatory reaction in the submucosa and lumen compared with the peribronchiolar space.”

The article, with correct caption, appears on our website. □

Hepatitis C virus seroconverters: help wanted

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TO THE EDITOR: In Australia, an estimated 11 000 people become infected with hepatitis C virus (HCV) each year.¹ Most are injecting drug users.

The Early Hepatitis C Intervention Project was a collaboration between the STD Services Surveillance Unit, Drug and Alcohol Resource Unit and Infectious Diseases Unit at the Royal Adelaide Hospital, Adelaide, South Australia. Its objectives were to manage people who had seroconverted in the preceding 12 months and to provide standard treatments for drug use and dependence. Services included information and education on HCV, refer-

ral, counselling, psychosocial support and three-monthly clinical evaluation. The project was approved by the Ethics Committee of the Royal Adelaide Hospital and funded by the Department of Human Services for 18 months.

The attendance rate was low. Of 88 people with HCV seroconversion who were identified as eligible for enrolment by the Surveillance Unit (from the mandatory notification scheme), 57 agreed to further contact by mail or telephone, and 12 attended for risk assessment. Of these, eight enrolled in the project (10% of those eligible).

Despite demographic variation within the group, similarities included difficulties with accommodation, finances, mental health and social integration. Seven of the eight participants had injecting drug use as the risk factor for HCV infection. Most participants also used alcohol and cannabis. During the program, half decreased their risk-taking behaviour: four reduced injecting drug use, and four reduced alcohol use, reaching low risk levels. Characteristics of participants at their last interview are summarised in the Box. Two participants are maintaining regular contact with the Drug and Alcohol Resource Unit.

Despite encouragement, few of the target group engaged in the program. We do not know why so few people who agreed to attend a first appointment failed to do so. We did not have their permission or the resources to contact them again. Maintaining contact with participants also proved challenging, and was in part unsuccessful because of complex, multifaceted social issues aside from HCV infection (Box). These included unstable accommodation, use of health services only when in crisis, mental health problems, financial difficulties, polydrug use and continued risk-taking behaviours despite harm-reduction information.

In conclusion, the Australian epidemic of HCV infection, driven by injecting drug use, is likely to continue unless a new approach to harm minimisation is developed. Such an approach will recognise that comorbidities and social dislocation influence risk of infection. Unless treatment programs address coexisting problems, it will be futile to offer definitive treatment for HCV infection.²

Within the limited objectives and resources of this project, we were unable to support these people comprehensively. We believe that a “one-stop shop” that includes active and intensive case management by a flexible, multidisciplinary team and deals with social, economic and mental health

Characteristics of participants in the Early Hepatitis C Intervention Project at last interview

Age, sex	Employment	Polydrug use	Place of residence	Current mental illness*	Attendances		IDU change‡	Persistent viraemia‡
					At 5 nominated appointments	Total†		
19, F	No	Yes	NFA	Yes	3	6	Reduced IDU	Yes
21, F	Part-time	Yes	NFA	Yes	3	5	Reduced IDU	No
21, M	No	Yes	NFA	Yes	3	4	No IDU at enrolment	Yes
24, M	Voluntary	No	Rental	Yes	1	1	Denied IDU ever	Yes
30, M	Casual	Yes	NFA	No	2	4	No IDU	Yes
36, M	No	Yes	Parents	Yes	1	4	Unknown	Yes
38, M	Full-time	Yes	NFA	Yes	2	3	Reduced IDU	No
43, M	Full-time	No	Rental	Unknown	1	1	Unknown	No

IDU=injecting drug use. NFA=no fixed abode.

*Mainly depression, anxiety and personality disorder. †Includes self-initiated visits.

‡Determined by polymerase chain reaction.

issues may be a more effective approach to the care of people with recent HCV infection.

1. Commonwealth Department of Health and Aged Care. National Hepatitis C Strategy 1999-2000 to 2003-2004. Canberra: The Department, 2000.
2. Jaeckel E, Cornberg M, Wedemeyer H, et al. Treatment of acute hepatitis C with interferon alfa-2b. *N Engl J Med* 2001; 345: 1495-1497. □

Serial correlation and confounders in time-series air pollution studies

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TO THE EDITOR: The recent article by Johnston et al is an important contribution to the small but growing body of literature on the health effects of particulate matter (PM) pollution derived from bush or forest fire.¹ The authors studied an important wood smoke PM exposure in Australia and

showed consistent associations between higher concentrations of PM and emergency department presentations for asthma. Most research on the effects of PM has focused on motor-vehicle-derived PM pollution.^{2,3}

However, Johnston et al do not appear to have accounted for serial correlation in their data. Measurements connected in time, such as repeated measurements of the same population, are likely to be correlated and not independent.⁴ Further, school holidays have been shown to influence hospital admission rates.⁵ The major Northern Territory school holidays in June and July are in the middle of the study period.

Johnston et al adjusted for some important confounders in their analysis (acute respiratory infections and weekdays/weekends).¹ However, in time-series data, especially those dealing with asthma, serial correlation, as well as other potentially important confounders such as school holidays and temperature and humidity, should also be assessed. It may be that, even after appropriate adjustments for serial correlation and potential confounders, the

rate ratios found by Johnston et al may not alter appreciably. However, it would have been useful for the investigators to have at least discussed any effects that controlling for serial correlation and other potential confounders might have had on their findings.

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4. Schwartz J, Spix C, Touloumi G, et al. Methodological issues in studies of air pollution and daily counts of deaths or hospital admissions. *J Epidemiol Community Health* 1996; 50: S3-S11.
5. Storr J, Lenney W. School holidays and admissions with asthma. *Arch Dis Child* 1989; 64: 103-107. □

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IN REPLY: Jalaludin and colleagues query the potential effects that serial correlation and confounding by school holiday time periods may have had on our finding of an association between particulates derived from bushfire smoke and asthma presentations.¹

As previously discussed by Schwartz, time series analyses are important to control for serial correlations, particularly those due to the effects of seasonality and weather fluctuations.² Our study did not cover a number of seasons. It was conducted during one tropical dry season, a period characterised by remarkably stable day-to-day weather conditions.³ For this reason, we believe that the effects of any autocorrelation would have been negligible. It is of interest that the development of statistical methods for analysing time series of count data during the 1990s, and analysis of large studies of particulate pollution using these methods, did not have an important effect on the conclusions reached by earlier studies.⁴

There is evidence that hospital admissions for asthma fall during school holidays.⁵ Anecdotal reports of more regional fires suggest that, if anything, particulate concentrations over Darwin might increase at these times. A reanalysis

Asthma presentations and exposure levels of PM₁₀* (µg/m³)

Same-day PM ₁₀ category (µg/m ³)	Rate ratio for asthma presentations (95% CI)	
	Original analysis†	Revised analysis‡
< 10	1.0	1.0
10- $<$ 20	0.90 (0.60-1.35)	0.84 (0.43-1.63)
20- $<$ 30	1.11 (0.74-1.69)	1.13 (0.58-2.18)
30- $<$ 40	1.18 (0.72-1.97)	1.21 (0.58-2.50)
≥ 40	2.38 (1.46-3.90)	2.47 (1.21-5.01)

*Particles of 10 microns or less in aerodynamic diameter per cubic metre. †Adjusted for influenza-like illness and weekday. ‡Adjusted for influenza-like illness, weekday and school holiday periods.