First-time hospital admissions with illicit drug problems in Indigenous and non-Indigenous Western Australians: an application of record linkage to public health surveillance

Abstract

Objective: To monitor incidence rates of first-time hospital admission with an illicit drug problem in the Indigenous and non-Indigenous populations of Western Australia in 1980-95.

Method: Some 10,533 first admissions among 16,294 total admissions mentioning any of 19 groups of illicit drug problems were identified using linked hospital separation data from the WA Health Services Research Linked Database.

Results: Trends in age-standardised rates showed two distinct features: a rapid acceleration in first-time admission rates commencing from about 1991; and a cross-over of the rates in Indigenous and non-Indigenous people. In 1980, the rates were 9.2 per 100,000PY in Indigenous and 16.4 per 100,000PY in non-Indigenous people. By 1995, the respective rates were 180.7 and 95.5 per 100,000PY. Largest proportional increases were observed in first-time admissions mentioning amphetamine dependence or abuse, although increases were seen also in problems due to opiates, hallucinogens, cocaine and cannabis.

Conclusion: The results are consistent with data on the rising use of injectable amphetamines and other illicit drugs, especially among Aboriginal people.

Implications: Urgent attention is required to identify ways of reducing health problems due to illicit substance use in both Indigenous and non-Indigenous Australians.

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Health-risk behaviours that contribute to the major causes of mortality, morbidity and social problems among youth and adults are of major concern to public health organisations and practitioners. Since 1985, the National Drug Strategy and its forerunner, the National Campaign Against Drug Abuse, have sought to minimise the harm caused by tobacco, alcohol and illicit drugs in the Australian community.[1] Several key indicators have been proposed to evaluate progress in achieving national policy objectives on illicit drugs, including crime statistics, survey measures of use, hospital separations and deaths associated with illicit drugs.[1]

Several problems exist in the interpretation of existing indicators of illicit drug problems. Cross-sectional self-report measures are likely to under-estimate the actual consumption of illegal substances and comparisons between surveys are usually complicated by differences in survey design and time-dependent extraneous influences on response.[1] Hospital separation and mortality rates are as much influenced by treatment policies and programs as they are by efforts at primary prevention. An additional indicator is needed that reliably reflects the underlying incidence rate of new cases of illicit drug problems in the population.

Record linkage has enabled the incidence rates of serious conditions, such as myocardial infarction, motor neuron disease and treated psychiatric disorders, to be estimated from routine hospital separation data by counting first-time hospital admissions as incident events.[2-4] In this study, we trial the use of linked hospital separation data as a public health surveillance system to monitor trends in first-time hospital admissions with illicit drug problems. We apply the new method to the Indigenous and non-Indigenous populations of Western Australia (WA). Almost all Indigenous people in WA are of Aboriginal origin.

Methods

Linked 1980-95 hospital separation data were extracted from the population-based WA Health Services Research Linked Database[5] using the following criteria: any mention of one or more of 19 groups of illicit drug problems represented by the ICD-9-CM[6] or ICD-9[7] codes 292, 304.x (x=0,2,3,4,5,7), 305.x (=2,3,5,6,7), 648.3, 965.0.x (=0,1,2,9), 969.x (=6,7), E850.x (=0,1,2) and E854.x (=1,2). The codes were broadly inclusive of drug problems caused by opiates, hallucinogens, amphetamines, cocaine and cannabis. When an individual

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patient had at least one hospital separation record that mentioned one of the target codes, as either a diagnostic condition or external cause of hospitalisation, all of their linked hospital records in 1980-95 were selected. The extracted file of 115,021 records was date-stamped 2 June 1997.

For each individual patient, hospital separation records mentioning an illicit drug problem were serial numbered and the first hospital admission identified in each instance. First hospital admissions were classified by sex, five-year age group, race (Aboriginal/non-Aboriginal), type of drug problem and calendar year. There were 10,533 first admissions among 16,294 total admissions mentioning an illicit drug problem in 1980-95. The numbers of first-time hospital admissions observed in the early years of the study were over-estimated due to the inclusion of patients who were re-admitted with an illicit drug problem after a first admission prior to 1980. However, given the comparatively low ratio (1.5) of total to first-time admissions, a clearance period to provide for the removal of patients who were first incident prior to 1980 was considered unnecessary in an application of record linkage to public health surveillance.

Numerators of incidence rates of first hospital admission mentioning an illicit drug problem were divided by estimated person-years at risk obtained from the Australian Census. The rates in Aboriginal and non-Aboriginal people in each calendar year were age standardised by 10-year age group to the Standard World Population.[8]

Results

The trends in standardised rates of first-time hospital admission with an illicit drug problem showed two distinct features (Figure 1). First was the cross-over of the incidence rates in Aboriginal and non-Aboriginal people. In 1980, the rate in non-Aborigines (16.4/100,000PY; relative standard error [RSE] 0.65) was 1.8 times that in Aborigines (9.2/100,000PY; RSE 0.06), whereas by 1995, the situation had reversed with a rate in Aboriginal people (180.7/100,000PY; RSE 0.11) almost twice that in non-Aboriginal people (95.5/100,000PY; RSE 0.02).

A second feature was the rapid acceleration in first-time admission rates from about 1991 (Figure 1). In the first 11 years of observation, there was a gradual increase in rates, averaging around +1.7 to +3.4/100,000PY per year. From 1991 to 1995, there was a somewhat phenomenal increase in first-time admission rates with illicit drug problems in Aborigines (+33.5/100,000PY per year) and a lesser but nevertheless substantially increased trend in non-Aborigines (+15.1/100,000PY per year).

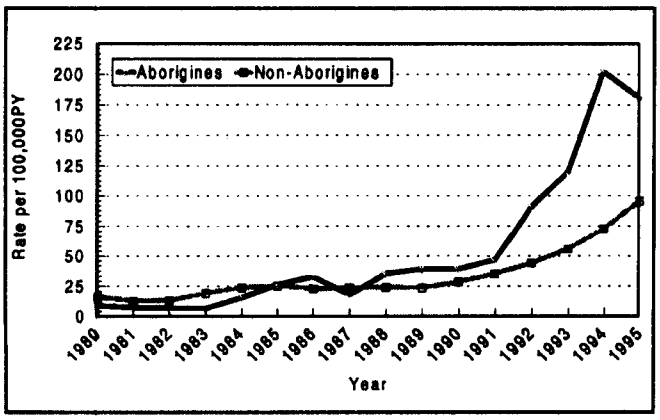

Figure 1: Trends in age standardised incidence rates of first-time hospital admission with an illicit drug problem according to race in Western Australia in 1980-95.

Table 1 shows the numbers of first-time hospital admissions classified by race, time period and specific type of drug problem. No one drug type dominated the rising numbers of events, with increases over time seen in all condition codes indicative of problems due to opiates, hallucinogens, amphetamines, cocaine and cannabis. The largest proportional increases were observed in amphetamine dependence and abuse (ICD-9-CM or ICD-9 304.4 and 305.7). From 1986-90 to 1991-95, first-time hospital admissions for the combination of these amphetamine codes increased 10-fold in non-Aborigines and 18-fold in Aboriginal people.

Discussion

The validity of first-time hospital admissions with illicit drug problems as an indicator of the underlying incidence rate of new cases in the population depends on two main assumptions. These are:

1. The cumulative incidence of at least one hospital admission for any reason in the population of illicit drug users in a given time period remains constant.
2. The propensity to identify an illicit drug problem during the course of a hospital admission and to record it on the hospital separation abstract is fixed.

It is possible for both these assumptions to be incorrect. The risk of hospital admission may be affected by a shift in the severity of health problems in illicit drug users or by a change in treatment policy. The propensity for illicit drug problems to be recorded on hospital separation abstracts may be affected by changes in public attitudes towards disclosure of illicit drug use, in the interest shown by clinicians or by new funding arrangements if there is a financial incentive to record co-morbid conditions. However, in WA during the period of study, there was no documented major change in treatment policy affecting the risk of hospital admission. Nor were financial incentives introduced for hospitals to identify co-morbid conditions.

There was no trend in our data to indicate an overwhelming increase in the propensity to mention illicit drug problems as secondary diagnoses on hospital separation abstracts. Illicit drug problems were identified exclusively as a secondary diagnosis in 76.2% of first-time cases in 1980, rising to 85.8% in 1992, but then falling back to 78.0% by 1995. The hypothesis that the increase in apparent incidence is due to a greater propensity to record illicit drug problems as a secondary diagnosis, as one would expect with changes in public attitude or clinical behaviour, is therefore an implausible alternative explanation of the rise in first-time hospital admission rates.

Accepted at face value, the data point to a dramatic rise in hospital episodes mentioning illicit drug problems among

Indigenous Western Australians. Changes over time in the propensity to self-identify as 'Aboriginal' could be at work, although this trend would also affect the Census denominators of the rates. Moreover, our results are consistent with trend data on the prevalence of drug use. In 1989, the National Aboriginal Health Survey identified the use of illicit drugs, particularly injectable heroin, as a major emerging health issue for the Australian Indigenous population.[9] A national survey in 1995-96 found that the prevalence of hepatitis C exposure, a marker of sharing of contaminated injecting equipment, was approximately 70% among Indigenous injecting users, a figure 12 times higher than in the Australian population.[10] Anecdotal evidence also suggests that the prevalence of injecting among Indigenous Western Australians is increasing. In providing information to the Parliamentary Select Committee into the Misuse of Drug Act, the Perth Aboriginal Medical Service stated that the Aboriginal community had identified illicit drug use and, in particular, injecting drug use as a major concern.[11]

A high prevalence of injectable drug use in Aboriginal people might reflect not only a rise in use of heroin, but also increases in the use of other illicit drugs such as amphetamines. This is supported not only by our results, but also by a study of injecting drug users in the Nunga Community in South Australia, where it was found that the use of injectable amphetamines and other designer drugs was increasing and that these drugs were likely to be used in combination.[12] The results of the present study suggest that the prevalence of non-injectable illicit drug use is also increasing among Aboriginal people. The 1994 National Drug Strategy Household Survey reported that 51% of Indigenous Australians had tried at least one illicit drug compared with 38% of non-Indigenous Australians.[13] It also reported that cannabis use was a significant problem, with nearly triple the proportion of weekly users compared with non-Aborigines.[13]

Our data also suggest that while not as dramatic as in Indigenous Australians, health problems due to use of illicit substances by non-Aboriginal people may have also increased, especially since 1991. This is supported by a number of independent sources. Admissions to WA Alcohol and Drug Authority programs increased three-fold from 1989 to 1997.[11] There have been large increases in the distribution of needles and syringes, rising some 25-fold from 1987 to 1997.[11] In addition, cannabis use has increased and WA arrest, seizure and outpatient treatment data all suggest that amphetamine use has increased significantly since the late 1980s.[14]

One implication of the current findings is that research is urgently required to identify ways of reducing illicit substance use associated with both Indigenous and non-Indigenous Australians. The question needs to be posed, however: how do we as researchers, most of who are non-Aboriginal people, drive our efforts to produce meaningful research outcomes for the Indigenous

Table 1: Numbers of first-time hospital admissions with illicit drug problems according to race, drug type and calendar period in Western Australia in 1980-95.

Type of drug problem	ICD-9-CM or ICD-9 codes	Admissions of Aborigines			Admissions of Non-Aborigines		
		1980-85	1986-90	1991-95	1980-85	1986-90	1991-95
Drug psychosis	292	10	13	42	437	593	1033
Opiate dependence	304.0	1	4	22	551	444	792
Combination of opioid type drug with any other	304.7	–	–	–	47	28	27
Cocaine dependence	304.2	–	–	–	6	7	7
Cannabis dependence	304.3	2	2	6	53	41	78
Amphetamine dependence	304.4	–	3	28	13	32	200
Hallucinogen dependence	304.5	–	–	1	10	1	9
Cannabis abuse	305.2	3	26	150	132	351	1539
Hallucinogen abuse	305.3	–	–	4	27	56	258
Opiate abuse	305.5	–	1	11	37	87	414
Cocaine abuse	305.6	–	–	–	6	10	43
Amphetamine abuse	305.7	–	3	81	31	89	980
Maternal drug dependence	648.3	–	11	40	18	76	232
Opiate poisoning	965.00, 965.01[a], 965.02[a], 965.09[a]	3	14	19	298	321	689
Hallucinogen poisoning	969.6	3	2	8	30	8	67
Psychostimulant poisoning	969.7	–	4	10	35	84	134
Accidental opiate poisoning	E850.0, E850.1[a], E850.2[a]	–	1	–	55	31	83
Acute hallucinogen poisoning	E854.1	–	–	4	7	2	20
Accidental psychostimulant poisoning	E854.2	–	–	5	8	7	30
Total	All of above	22	84	431	1,801	2,268	6,635

Note:
(a) These codes were unavailable in ICD-9, which applied pre-1988.

community? Furthermore, how can these outcomes be put into action to produce positive benefits for Indigenous Australians? A major ingredient, we believe, is involvement of Indigenous communities in the development of both research and health promotion and disease control initiatives. A system of linked hospital morbidity data, as described in this report, provides a potential means of monitoring and evaluating outcomes of future interventions.

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