

DRUG OVERDOSES — A THREE YEAR STUDY AT ALTNAGELVIN HOSPITAL, LONDONDERRY

by

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INTRODUCTION

In recent years the incidence of drug overdosage has shown a dramatic increase. At Altnagelvin Hospital adult overdoses account for approximately 1% of the attendances at the Accident and Emergency (A&E) department and almost 14% of the acute medical admissions. This hospital is particularly suitable for studying overdosage as it is the only centre treating this problem in the Londonderry, Limavady and Strabane district, and follows a policy of admitting all overdoses presenting, regardless of their physical or mental condition. The population of the district is approximately 160,000 of which almost 95,000 live in the city area.

METHODS

A retrospective review of the case records of all adults presenting to Altnagelvin Hospital with drug overdosage between January 1980 and December 1982 was carried out, with the exception of twenty-three patients whose charts were unobtainable. Cases involving alcohol alone were excluded from the study, as these could be admitted to several different wards or observed overnight in A&E (depending on associated problems), and it was the feeling of the authors that they were grossly under-represented on the Hospital Activity Analysis coding which showed only 53 cases over the three years. Data was collected on personal information, past medical and psychiatric history, history of previous overdose, time and date of casualty admission, drugs taken, reason for overdose, treatment and outcome, psychiatric diagnosis and eventual discharge or transfer.

RESULTS

We studied 1055 admissions of 784 patients to Altnagelvin Hospital for drug overdosage in the three-year period (1.34 overdoses per patient). This represented 2.19 overdoses per thousand population per year in the district. All such patients were first seen in the A&E department, and appropriate immediate treatment having been instituted, were referred to the appropriate department i.e. medical ward or Intensive Care Unit (ICU). The flow diagram (Figure) summarises the disposal of patients from the A&E department. The majority of patients were seen by a psychiatrist except those who discharged themselves contrary to advice (CTA). Admissions to ICU amounted to 42 patients (4%), of whom 5 died.

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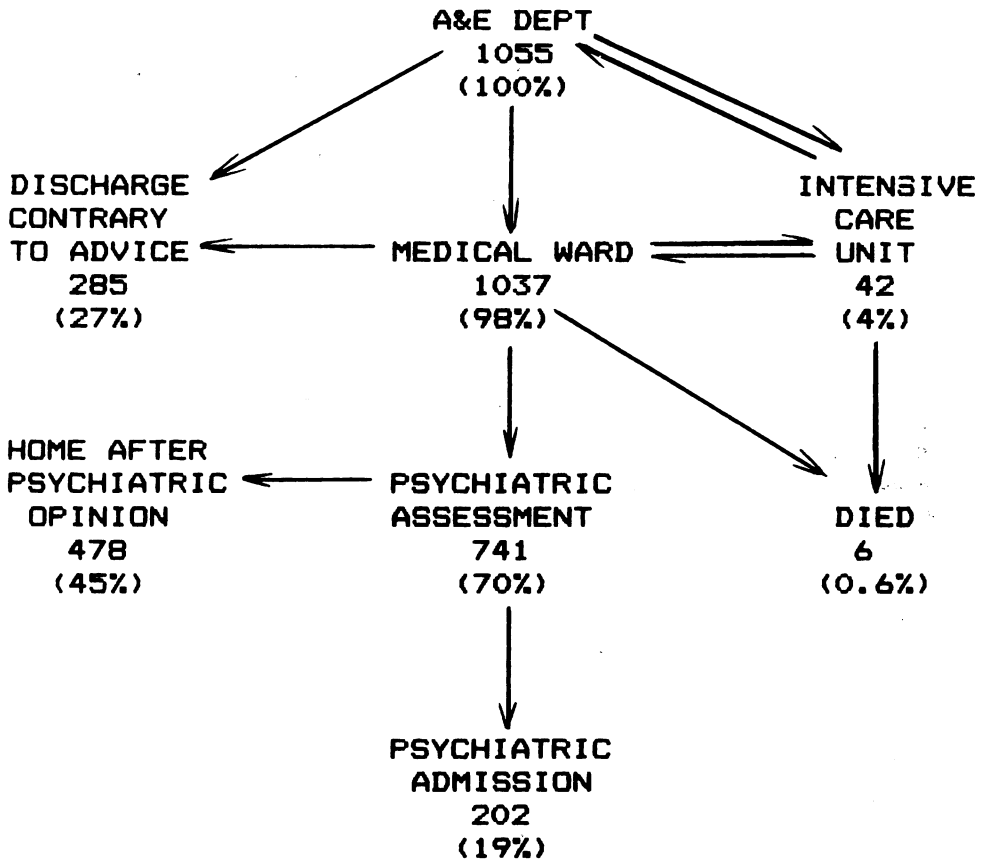


FIGURE. *Flow diagram showing management of drug overdose patients at Altnagelvin Hospital.*

The majority of cases were young people, with 427 males (84%) and 442 females (80%) under 40 years of age. The peak incidence occurred in the 20- to 24-year-old age group in males and in the 15 to 19 age group in females. The number of overdoses per year varied from 290 to 444. The overall female/male ratio was 1.07 (Table I).

303 males (60%) and 254 females (46%) were single; 143 males (28%) and 190 females (35%) were married; 51 males (10%) and 68 females (12%) were divorced or separated; and 3 males and 21 females were widowed. 312 males (61%) and 135 females (25%) who took overdoses were unemployed at that time. Employed persons constituted 118 males (23%) and 85 females (16%), while students or schoolgoers comprised 40 males (8%) and 66 females (12%). There were 225 females (41%) classified as housewives, and 7 males and 9 females had retired.

TABLE I
Annual overdose incidence

<i>Year</i>	<i>Male</i>	<i>Female</i>	<i>Total</i>	<i>F:M ratio</i>
1980	149	172	321	1.15
1981	142	148	290	1.04
1982	217	227	444	1.04
Total	508	547	1055	1.07

Drugs used

In general, the patients took more than one drug. The 1055 patients ingested a total of 1458 drugs, and 532 also took alcohol at the time of overdose. Excluding alcohol, this averages 1.4 drugs per overdose for both males and females. The details of the drugs ingested are shown in Table II. Alcohol was the most common agent, being taken (in addition to other drugs) in 64% of male overdoses and 38% of female overdoses. Benzodiazepines were taken equally in males (49%) and females (50%), making them the most commonly abused drugs in females. A proprietary combination of paracetamol and dextropropoxyphene (Distalgesic) was taken by 24 patients (16 female) although no severe adverse effects were encountered and there was no consistent trend in the annual ingestion rate of this preparation. Phenobarbitone was the only barbiturate taken by any patient. Other drugs — a heterogeneous group of proprietary analgesics, compound preparations, antibiotics, vitamins, disinfectants etc — were taken by 42% of the patients.

TABLE II
Drugs taken in overdoses

<i>Drug</i>	<i>Males (%)</i>	<i>Females (%)</i>
Alcohol	324 (64%)	208 (38%)
Benzodiazepines	249 (49%)	275 (50%)
Paracetamol	39 (8%)	68 (12%)
Aspirin	34 (7%)	56 (11%)
Anti-depressants	43 (8%)	48 (9%)
Major tranquillisers	40 (8%)	37 (7%)
Iron	21 (4%)	27 (5%)
Anti-convulsants	23 (5%)	20 (4%)
Mushrooms	18 (4%)	5 (1%)
Paraquat	3 —	2 —
Other drugs	230 (45%)	220 (40%)

Paraquat ingestion was alleged by 3 male and 2 female patients. Three died (2 male and 1 female), all within 48 hours of hospital admission. The other male had a strongly positive urine test, received standard treatment, and over the next week showed a marked disturbance of renal function which settled slowly to within normal limits without dialysis. He encountered no respiratory problems, was discharged home after 16 days and remained well. The other female showed no objective evidence of paraquat intake and suffered no ill-effects. 'Magic mushrooms (Liberty Caps or Psilocybe Semilanceata) were taken by 22 patients. There were no admissions with overdose of narcotic analgesics or cannabis, and only 3 patients were seen who admitted solvent abuse.

Overdoses tended to be clustered in late evening or early morning, this trend being more marked in males than in females. Thus 758 patients (73%) were admitted between 6 pm and 6 am. The busiest time was midnight to 6 am, with 382 overdoses (36%), and 6 am to midday was least busy with only 79 overdoses (7%). There was considerable variation in the number of overdoses on different days of the week with dissimilar patterns for males and females. Males tended to take an overdose more frequently on Friday and Saturday and females on Saturday followed in prevalence by Sunday and Monday. There was little seasonal variation. 212 males (42%) and 177 females (32%) had previously taken an overdose. Of these multiple overdoses, men were more likely to have taken their previous overdose in the recent past (187 men (88%) and 117 women (66%) in under 2 years), but women were more likely to have overdosed again after a prolonged period (60 women (34%) and 25 men (12%) after more than two years).

The area covered by our study was divided into Londonderry city and the 'country area' (which also included several towns). The city area had 379 male and 358 female overdoses while the country area had 129 male and 189 female overdoses. This gave a female to male ratio of 0.94 for the city area and 1.46 for the country area with the ratio of 1.07 overall. 185 males (49%) and 140 females (40%) from the city area had taken a previous overdose, whereas only 27 males (21%) and 37 females (20%) from the country area had done so. Within the city area there were remarkable clusters of cases: for example one patient overdosed 27 times during the study period, one family provided a total of 12 overdoses among 6 members of the family, and one street produced 32 overdoses.

Medical Management

Most overdoses were treated by simple measures, 952 (90%) receiving gastric lavage and 74 (7%) receiving syrup of Ipecac. Six patients had received saline or mustard draughts as emetics prior to admission without ill effect. Specific antidotes were administered to 63 patients (6%) and 10 received forced alkaline diuresis. Telemetric cardiac monitoring was carried out on 66 patients (6%). Duration of hospital stay varied from 1 to 27 days, average 1.15 days.

Forty-two patients (4%) required admission to ICU, comprising 19 males and 23 females. Fourteen of the males and 15 of the females had never taken an overdose before, and only one had taken an overdose in the previous six months. Alcohol had been taken by 8 males (42%) and 7 females (30%) and benzodiazepines by 9 males (47%) and 7 females (30%). Antidepressants or major tranquilisers were taken by

7 males (27%) and by 10 females (44%). Three males and 2 females took anti-convulsant drugs. Two of the fatal paraquat overdoses were admitted to ICU. Eighteen patients had endotracheal intubation performed and, of these, 8 required mechanical ventilation.

Six patients died in hospital during the study period (Table III) giving a mortality rate of 0.55% for the three years. Paraquat was taken in 3 of these 6 fatalities. Data obtained from the Office of the Registrar General for Northern Ireland showed that a further 12 patients died from drug overdose outside hospital, in this district, during the study period.

TABLE III
Details of fatalities

<i>Age</i>	<i>Sex</i>	<i>Drugs</i>
25	F	Chlordiazepoxide Iron Prednisolone Metoclopramide
53	F	Paraquat
61	F	Amtriptyline Haloperidol
61	M	Paraquat Methylated spirits
67	M	Alcohol Lorazepam
72	M	Paraquat

Psychiatric Assessment

The reason given for taking the overdose, as recorded in the patient's record, was often very vague and changed at different times during the admission. For 216 patients (20%), mostly those who discharged themselves CTA, no reason was recorded. Accepting these limitations to accuracy, 511 patients (48%) admitted that they were not intending to end their life and 152 (14%) claimed that they had actually been suicidal. Argument or disharmony with family or partner was given as a reason by 233 female patients (43%) and by 112 males (22%). Other reasons offered were depression, cited by 162 patients (15%), alcohol, cited by 125 (12%) and pregnancy, by 6 (1%). From the information available, it was not possible to assess the role of social deprivation.

All patients were seen by a psychiatrist except those who discharged themselves CTA (285 patients, 27%) and those who ingested 'magic mushrooms' (23 patients, 2%). Table IV shows the psychiatric diagnosis where recorded. 96 males (19%) and 106 females (20%) were admitted to psychiatric hospital (22 and 16 respectively being formal admissions). A further 77 females (14%) but only 20 males (4%) were

given an outpatient psychiatric appointment. The psychiatric diagnosis for informal admission was markedly different between the sexes. Among the male patients alcohol problems were diagnosed in 26 (35%), depression in 25 (34%) and schizophrenia in 10 (14%), while in the female group alcohol problems were found in 7 patients (8%), depression in 64 (71%) and none were schizophrenic.

TABLE IV
Psychiatric diagnosis

<i>Psychiatric diagnosis</i>	<i>Males (%)</i>	<i>Females (%)</i>
No diagnosis/None recorded	169 (54%)	222 (52%)
Alcohol problem	147 (47%)	28 (6%)
Depression	33 (10%)	105 (24%)
Social/Personality problem	75 (24%)	93 (22%)
Schizophrenia	13 (4%)	1 —
Other	3 (1%)	8 (2%)
Total assessed	310	432

Pregnancy

Fourteen patients who were pregnant and 14 who were within six months post-partum took overdoses during the study period. Of these, 5 pregnant patients and 3 post-partum were unmarried and a further 4 pregnant and 1 post-partum were divorced or separated. Drugs taken by similar percentages to those established in the general female population were benzodiazepines taken by 15 patients (46%), associated alcohol ingestion by 8 patients (29%), paracetamol by 4 patients (14%) and iron by 3 patients (11%). Aspirin taken by 8 patients (29%) and antidepressants or major tranquillisers taken by 6 patients (21%) were more commonly ingested by this group. Depression was diagnosed in 2 pregnant patients (14%) and 8 post-partum patients (57%) resulting in 1 and 6 informal admissions respectively.

Epilepsy

A total of 28 epileptics took 47 overdoses. Male epileptics (16 patients) took, on average, 2.0 overdoses each and females (12 patients) took 1.25 overdoses compared with an overall figure of 1.46 overdoses for males and 1.24 for females in the complete study. 30 epileptics (64%) had taken an anti-convulsive drug, compared to 43 (4%) in the total group. The use of alcohol was similar and of other drugs less common. Intensive care monitoring was carried out on 4 males (12%) and on 2 females (13%). There were no fatalities, and 6 males (19%) and 5 females (33%) required psychiatric inpatient treatment. Psychiatric diagnoses in males were alcohol dependency in 12 (38%) and schizophrenia in 4 (12%). Psychiatric diagnoses in females were depression in 4 patients (27%), and one each with hypomania, anxiety neurosis and dementia.

Mushrooms

In the autumn of 1982, a small epidemic of 'magic mushroom' overdoses occurred with a total of 23 overdoses (18 males and 5 females). All patients were less than 30 years of age. The main reason given for mushroom ingestion was experimentation, without suicidal intent. Alcohol was taken with the mushrooms in 7 cases (30%). There were no serious sequelae although one patient, who was thought to be depressed, was referred to the psychiatrist and subsequently admitted informally to psychiatric hospital.

Old Age

There were 22 overdoses (9 male) in patients over the age of 65 years, but no multiple overdoses. There were 2 widowers and 9 widows. Two males died, 2 required intensive care monitoring and 3 were admitted to psychiatric hospital. There were no female deaths but 2 required intensive care and 7 were admitted to psychiatric hospital. The diagnosis of alcohol dependency was made in 2 males and depression was diagnosed in 2 males and 6 females.

New Medical Illness

Nine of the patients in the study (0.9%) were found to have a new medical illness requiring further investigation and/or treatment. These consisted of carcinoma of colon (1 patient), new murmurs (2 young patients — one with Down's syndrome and evidence of pulmonary hypertension), gynaecological problems (4 patients), gonorrhoea (1 patient) and bilateral carpal tunnel syndrome (1 patient).

DISCUSSION

This study gives an overall picture of the pattern of overdose ingestion in the district over the three-year period. It is apparent that certain groups are associated with higher incidence of overdose. These included city dwellers (who were also more likely to have taken previous overdoses), the unemployed, single pregnant women and those with marital or alcohol problems. This was in keeping with the previously noted association of overdose with social deprivation.^{1, 2, 3}

There was a 40% increase in overdoses over the three years and indeed a 300% increase since 1973 in this hospital. The reasons for these increases are unclear but possible factors include the increasing incidence of alcohol dependency and of patients taking tranquillisers. This geographic area has experienced long-term relative social deprivation and unemployment. It may be that through the mass media people now expect more from life than in the past, and perhaps overdosing has become more socially acceptable. Previous publications have shown a marked female preponderance which has declined towards equality in recent years.^{4, 5, 6, 7} Our results are in accordance with this trend, showing only a slight female excess which diminished over the years.

Most patients took more than one agent, with alcohol and benzodiazepines being very common, again reflecting their ready availability and social acceptability. Accordingly, alcohol was most frequently taken by males and benzodiazepines by females. Except for phenobarbitone (taken either by epileptics or their relatives) there were no barbiturate overdoses, no doubt reflecting the recent drive to reduce

the prescription of hypnotic barbiturates to a minimum.⁸ Perhaps a similar drive to reduce prescription of benzodiazepines is now warranted. The proprietary combination of paracetamol and dextropropoxyphene (Distalgesic) has been a notorious overdose problem, due to its respiratory depressant effect.⁹ However, no serious incidents were encountered with our patients and the drug was not taken by any overdose patients dying before hospital admission (data from the Office of the Registrar General). In this series 3 of the 6 deaths in hospital were due to paraquat ingestion. However, paraquat ingestion is not invariably fatal¹⁰ and one patient survived, with treatment, despite having a strongly positive urine test for paraquat.

In September 1982 teenagers in the area began to experiment with 'magic mushrooms', and some were admitted with predictable minor somatic (anticholinergic) and mental disturbances (delusions, hallucinations) which settled with observation. It was found that only those experiencing a bad 'trip' presented to the A&E department. Obvious risks associated with this cult are ingestion of a truly poisonous mushroom or of injury being sustained while mentally disturbed.¹¹

Most overdoses were admitted during the night, which caused considerable disturbance to the other patients in the ward and placed an extra burden on the night staff. Overdoses (especially by males) were more frequent on Friday and Saturday nights, but were infrequent in male patients on Sundays when the public houses were closed. The admission policy of Altnagelvin Hospital for drug overdoses meant that they represented a high percentage of admissions to the medical wards. Undoubtedly, an admission/observation ward would have been better. Most overdose patients were seen by the psychiatrist the following day and their discharge or transfer expedited, resulting in a mean stay of just over 24 hours. After psychiatric assessment one patient in five was transferred to the psychiatric hospital. The common psychiatric diagnoses in males were alcohol dependency and depression whereas the majority of females were admitted with depression.

Epileptic patients accounted for 3.5% of the overdoses, which is similar to other published data¹² and much higher than the estimated prevalence of the condition in the community, which is approximately 0.5%.¹³ This probably relates to the social and psychiatric problems of the epileptic patient and not to the ready availability of their drugs, since a considerable number of these patients took drugs other than their anti-convulsant medication. Also a higher proportion required psychiatric inpatient treatment than the general population.

We feel that our policy of admitting all overdoses for observation and psychiatric assessment is appropriate because, although there was a low hospital mortality, there was significant medical and psychiatric morbidity. Furthermore it is often impossible to judge the seriousness of a particular overdose in A&E: the history is often inadequate or unreliable, and the subsequent behaviour of such unstable patients is highly unpredictable, there being a real risk of further self-poisoning or attempted suicide. This study examines in detail the recent experience of drug overdoses in our district hospital and shows a continuation of the steady increase in incidence seen in the last decade. This increase seems likely to continue as preliminary figures for 1983 show a rise of 25% on 1982. It is therefore felt that a prospective study is needed to assess in more detail the social factors contributing to overdoses, and thus to identify any strategy which could be used to reverse the trend.

SUMMARY

In a review of 1055 cases of self-poisoning at Altnagelvin Hospital from 1980 to 1982, the number of cases rose from 321 in 1980 to 444 in 1982, an overall increase of 38%. The peak incidence was in the 20-24 year-old age group in males and in the 15-19 age group in females. The ratio of females to males was 1.07 to 1. There was a high incidence of unemployment (61% of males) and of marital disharmony, and most patients came from the city area.

Drugs ingested most frequently were alcohol, benzodiazepines, paracetamol, antidepressants, aspirin, and the major tranquillisers.

All patients were admitted to the medical ward (4% going initially to ICU) for an average of 1.2 days. 202 patients (20%) were transferred to psychiatric hospital, 6 patients (0.6%) died and the remainder were discharged after observation and treatment. Overdoses represented 14% of all medical admissions.

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