

The cost of treatment of deliberate self-harm

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SUMMARY

The recent changes in NHS management structure have allowed us for the first time, to estimate the cost of treatment of an illness.

We wanted to determine the treatment cost of a case of deliberate self-harm (DSH) to a large University Teaching Hospital and to this aim, we reviewed the case notes of 190 consecutive cases of deliberate self-harm presenting to A&E. On average, each attendance costs £425.24, from attendance to A&E to hospital discharge.

INTRODUCTION

Deliberate self-harm (DSH) remains a considerable health problem and in 1988 it was estimated that 100 000 admissions per year were due to self poisoning (Butterworth & O'Grady, 1989). Since the DHSS issued its guidelines in 1984 (DHSS, 1984) confirming that not all patients with DSH need to be admitted, discharge rates from A&E have increased with some units reporting 30% discharge of patients with deliberate self-poisoning (Gardner, 1980; Owens & Jones, 1988). It has been pointed out that these discharges from A&E must be taken into account in any assessment of the problem (Adams, 1986; Cameron *et al.*, 1990). They represent a constant workload to A&E departments, as all patients need to be assessed by trained staff which is time consuming and as Ramsay *et al.* (1982) pointed out, the cost of DSH to the Health Service is not so much in beds, but in staff time. This study was conducted to estimate the cost of treatment of DSH to a large University Teaching Hospital, where each year approximately 1000 patients attend the A&E department with DSH. Cost estimate was to include A&E attendances, inpatient treatment and psychiatric assessment.

PATIENTS AND METHODS

We adopted the definition of Robinson & Duffy (1989) who defined parasuicide as a 'self-initiated and deliberate act in which the patient was injured by laceration, jumping, hanging or shooting, or was poisoned by therapeutic drugs, illegal drugs, solvent, noningestants or carbon monoxide'.

We examined 200 consecutive cases that presented to the Royal Hallamshire Hospital Accident and Emergency Department between June and September 1990 with a presumptive diagnosis of DSH. Patients were identified from the A&E admissions register and cross checked with the social work register. After examination of the A&E records, 10 patients (0.5%) were excluded from the study as they did not fulfil the criteria for DSH: four patients suffered from alcohol intoxication alone, four had taken accidental overdoses and two had sustained lacerations at work. The remaining 190 cases of DSH were included in the study, which took the form of an extensive review of all previous A&E records and hospital case notes.

RESULTS

Patients

Within the study period nine patients attended on 21 occasions with DSH. For this reason, while the number of episodes of DSH presenting to the Department was 190, the actual number of patients was 178. The characteristics of these 178 patients with reference to age, sex and basic demographic data are summarized in Table 1.

The average age for men was 31.3 years (range 15–70) and for women 33.5 years (range 14–81) as the department does not see children. We found that 93 out of 178 patients (53%) had taken overdoses in the past and 26 out of 178 (14.6%) had attempted to slash their wrist.

Management in A&E

Types of DSH

Out of 190 attendances 78 (93.6%) were for overdoses. Five patients (2.6%) attended with overdoses of illicit drugs, two (1%) had ingested household chemicals, three (1.5%) slashed their wrists, one (0.5%) tried to stab himself with a piece of glass, one (0.5%) jumped off a bridge and one (0.5%) attempted electrocution.

Treatment in A&E

In 15 cases (7.9%) patients required emergency resuscitation, mainly for respiratory depression, although one patient required resuscitation for multiple injuries. A total of 78 (41.1%) underwent gastric lavage and 61 (32.1%) were given ipecachuana to induce vomiting. Forty-two (22.1%) required observation only, three (1.5%) were treated for glass lacerations to forearms and one (0.5) required minor surgery for removal of glass from the chest wall.

Table 1. Demographic variables of 178 consecutive patients attending A&E with DSH

Total number of patients		178 (100%)
Sex	male	69 (38.9%)
	female	109 (61.1%)
Past history of OD	yes	93 (53.4%)
	no	53 (29.7%)
	no data	30 (16.8%)
Employment status	employed	45 (25.3%)
	retired/student	45 (25.3%)
	unemployed	61 (34.2%)
	no data	27 (15.2%)
Home circumstances	living alone	37 (20.8%)
	with parent(s)	34 (19.1%)
	with friends	5 (2.8%)
	with partner	55 (30.9%)
	chaotic	24 (13.5%)
	no data	23 (12.9%)
Substance abuse	alcohol	33 (18.5%)
	illicit drugs	6 (3.4%)
	none	50 (28.0%)
	no data	89 (50.1%)

Outcome in A&E

The admission pattern for all patients is summarized in Table 2. Thirty attendances (14%) resulted in discharge or self-discharge from A&E. The only death in the department was a 29-year-old male brought in following distalgesic and alcohol overdose.

Table 2. Outcomes of 190 Episodes of DSH on discharge/transfer from A&E. Numbers and (percentage)

Discharges from A&E	17	(8.9%)
Self-discharges from A&E	13	(6.8%)
Died in A&E	1	(0.5%)
Admitted:		
for observation	123	(64.7%)
for specific Px	20	(10.5%)
to ITU/CCU	4	(2.1%)
psychiatric ward	6	(3.1%)
no data	6	(3.1%)
Total	190	

Inpatient management

Inpatient stay

Out of 153 admissions, 123 were for observation alone, 20 were admitted for specific therapy. One patient was treated on ITU after surgery, another patient required ventilatory support after carbamazepine overdose and two were admitted to CCU for monitoring after beta-blocker overdose. After an average length stay of 2.0 days, 111 (72.5%) patients were discharged home, 25 (16.3%) took their own discharge and 11 (7.1%) were transferred to psychiatric wards. For six patients data are missing because hospital records were lost.

Psychiatric referral after admission

Out of 153 patients admitted to hospital, 93 (60.8%) were referred to the duty psychiatrist. The pattern of referral and outcome is illustrated in Fig. 1. It is interesting to note that one in 10 patients referred to the psychiatrists discharged themselves before being seen and a further one in 12 refused psychiatric advice after being seen. The psychiatric diagnosis was known in 10 cases (eight – major depression, two – schizophrenia). All 10 patients were well known to the psychiatrists and only one new psychiatric diagnosis (major depression) was made.

Costing

Cost of treatment in A&E

The figures made available by our Finance Department give the average cost of an A&E attendance at £72.72. This includes costs for staff, surgical equipment, general services, capital charges and depreciation, but does not make allowances for the above average staff time per patient necessary to deal with a case of deliberate

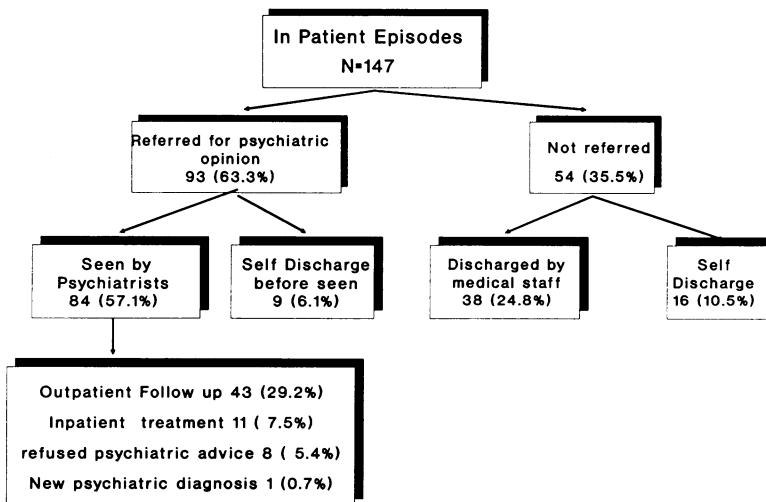


Fig. 1 Psychiatric referral pattern.

self-poisoning. A conservative estimate for treatment of 190 DSH episodes in A&E is £13 818.18 (Table 3).

Cost of in-patient treatment

The figures were made available by the Hospital Finance Department. The extra-contractual tariff for a general medical bed per day for Diagnostic Related Groups 449 and 450 (Poisoning and Toxic Effects of Drugs with and without concomitant complications) is £151 per day. The equivalent charge for a bed on ITU is £648 per day. Both prices were quoted at self-cost without profit margin and include capital charges, depreciation, general services, staff and equipment cost. The study patients spent a total of 309 days in hospital, three of these in CCU and 10 on Intensive Care. Calculating the cost of a bed on CCU at the same rate as a medical bed (no figures are available for beds on CCU at present), the in-patient treatment bill was £513 629.

Cost of psychiatric referral

Overall, 99 patients were referred to a psychiatrist, six patients directly from A&E and 93 patients from the wards. In this city the psychiatric services are based at other hospitals and although our hospital does not have to pay for the service, the cost of providing it is not included in the price per bed per day. In an estimate of treatment cost of DSH, it must be included as it must be provided. No figures are available for the cost of referring a hospital in-patient for assessment and in the absence of exact data, we assumed it would cost approximately the same as a psychiatric out-patient appointments (£90.36). Based on this available estimate of cost, the hospital bill for psychiatric services would have been approximately £8945.64.

Total cost of treatment

The estimated total cost of treating 190 patients from attendance at A&E to discharge was £80 872.84 or an average of £425.64 per patient, irrespective of whether patients were discharged or admitted from A&E. In 1990, our A&E Department saw 955 attendances for DSH at an estimated cost, using the above figures, of £406 409.33. This is a conservative estimate of the hospital bill.

Table 3. Cost analysis of 190 attendances for DSH from A&E attendance to hospital discharge

190 A&E attendances	£13 818.00
299 inpatient days	£51 629.00
10 days ITU	£6 480.00
99 psychiatric referrals	£8 945.64
Estimated hospital bill for treatment of 190 cases of DSH	£80 872.84
Average cost per patient	£425.64

DISCUSSION

Our local problem of deliberate self-poisoning, which represented the overwhelming majority of DSH (97%) seems on age, sex and demographic data and overdose characteristics comparable to those reported by other units (Adams, 1986; Robinson & Duffy, 1989).

The average length of hospital stay for overdoses was 1.62 days. This is comparable to other studies: Adams (1986) reported an average stay of 1.6 days and Ramsay *et al.* (1982) reported 1.9 days. The average length of stay due to all forms of DSH was 2.0 days. The difference between the two averages was due to one single patient who spent 60 days in hospital after having sustained multiple injuries jumping off a bridge.

We attempted to estimate the real cost of treatment of DSH, which is higher than could be expected from estimates that only take hospital admission and the days on which hospital beds are occupied into account.

Are there any savings to be made? Over 60% of the treatment bill is due to cost of hospital stay and increasing the discharge rate from A&E is therefore likely to achieve this aim most efficiently. Out of all 190 cases we considered after case note review that 23 patients could have been discharged from A&E. This would have increased the A&E discharge rate to 27.8%, saved £5556.80 in hospital bed days and reduced the total bill by 6.8%. This seems a small price to pay for the safety afforded by an admission policy that states 'if in doubt — admit', as it reduces the burden of responsibility for assessing suicide risk. Furthermore, the estimated total treatment bill per year for the hospital of £406 409.33 represented only 0.4% of the hospital budget and DSH accounts for 0.0015% of the number of days on which beds were occupied. As admissions for DSH represent an average of 13.5% of all acute medical admissions and a constant 1.8% of all attendances at A&E, we are providing fast and effective treatment to large numbers of patients at very low cost. As no patient who reached hospital alive died, we seem to achieve the modern target of efficient, high quality care.

However, Cameron *et al.* (1990) pointed out that the present emphasis in management of DSH is to identify a minority who are mentally ill instead of helping the majority who are not. He suggested that among others, outcome measures for management and preventative strategies for DSH should include number of A&E attendances/year and number of repeat episodes per patient. This seems appropriate because DSH is a repetitive phenomenon (Adams, 1986; Owens & Jones, 1986; Robinson & Duffy, 1989; Cameron *et al.*, 1990) and a past history of DSH increases probability of completed suicide (Hawton & Fagg, 1988), the risk rising steadily with each previous attempt (Leon *et al.*, 1990).

Applying above outcome measures, results are less encouraging: within the 3-month study period, nine out of 178 patients (5.0%) repeated deliberate self-harm on 12 occasions and one 19 year-old-male succeeded in committing suicide a few weeks after discharge. Worse still, in the 6 months since conclusion of the study, 26 (14%) of the original 178 patients have re-attended A&E with further 37 episodes of DSH and our inability to stop our patients repeating DSH cost a further £15748.68, adding 20% to cost of treatment of this group of patients.

As Chin *et al.* (1985) and Bancroft *et al.* (1977) pointed out, many patients seek

help from outside agencies for psychosomatic complaints prior to the suicide attempt, although few are, at the time, identified as suicide risks. This adds an unknown amount to the total cost of treatment for no proven benefit — we do not know how many patients are deterred from attempting suicide, we can only, with the benefit of hindsight, identify those where intervention failed. Likewise, there are no controlled trials that assess the effectiveness of various forms of crisis intervention in reducing the number of repeat DSH episodes after the patient has been identified as 'at risk' by his first attempt.

We suggest that one of the most pressing needs for improvement of quality of care for DSH are trials that assess the type, the level and the cost of non-medical support necessary to prevent repeated episodes of DSH.

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