PROBLEM DRINKING IN ORTHOPAEDIC PATIENTS

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Problem drinking was found to be likely in 21% of inpatients in a general orthopaedic and fracture service, and in 42% of outpatients attending the fracture clinics. The questionnaire showed that the problem was most common among young men, particularly among outpatients. Previous hospital admissions were more frequent in this group.

Many of the health problems associated with the chronic abuse of alcohol are directly relevant to orthopaedic practice. Early intervention may be highly successful, and it is recommended that screening for problem drinking be considered in orthopaedic and fracture services.

A significant relationship has been established between alcohol abuse and accidental injuries and death, particularly in relation to traffic accidents and home and industrial accidents (Haddon 1963; Wechsler et al. 1969). Problem drinkers frequently occupy emergency rooms and beds of general hospitals. There is a growing opinion that the general hospital is an appropriate place for the identification, intervention and referral of alcoholic patients and problem drinkers, although health professionals as a whole lack familiarity in this field (Lewis and Gordon 1983). The hospital is in a good position to co-ordinate the health services essential for the referral and treatment of alcoholism.

Studies on the prevalence of alcoholism amongst general hospital admissions have shown a wide variety of results ranging from 5% to 77% (Roch 1939; Taughen 1976). The prevalence may vary depending on the type of patient surveyed and the diagnostic criteria used. The majority of studies involving orthopaedic patients have also sampled other hospital admissions (Gomberg 1975; Jarman and Kellett 1979; Beresford et al. 1981). One study diagnosed alcoholism amongst 31% of orthopaedic patients (Beresford et al. 1981), but there have been no major published studies on the prevalence of problem drinking amongst orthopaedic outpatients. Related studies in accident and emergency departments have generally focused on excessive blood alcohol levels (Honkanen and Visuri 1976; Rutherford 1977; Holt et al. 1980).

Specific problems related to orthopaedic practice have been identified in problem drinkers. These include a pattern of fracture incidence resembling that of a geriatric population (Nilsson 1970; Snell 1971; Horak and Nilsson 1975; Kristensson, Lunden and Nilsson 1980): multiple fractures (Snell 1971; Oppenheim 1977), increased urinary excretion of calcium and magnesium (Kalbfleisch et al. 1963), delayed healing of fractures (Karlstrom and Olerud 1974), increased osteoclastic activity (Johnell, Nilsson and Wiklund 1982), a reduction in bone mass (Saville 1965; Nilsson and Westlin 1973; Dalén and Feldreich 1974), and ischaemic necrosis of bone (Hungerford and Zizic 1978). Defences against infection may be impaired (Karlstrom and Olerud 1974) and alcohol withdrawal symptoms may seriously complicate management after injury or surgery.

Alcoholic myopathy may also present in orthopaedic practice (Edmondson 1980). In the subclinical presentation, the serum creatine phosphokinase (CPK) is raised without symptoms or physical signs. Acute polymyositis, with tender muscles, elevated CPK and myoglobinuria, is usually readily recognised. In the chronic form, muscle wasting and weakness predominate. Selective atrophy of Type II (fast twitch) fibres has been demonstrated (Hanid et al. 1981). A rather similar presentation is seen in alcohol-induced vitamin deficiency and polynuropathy, the features of which are pain and weakness in the limbs with paraesthesia and sensory change.

All too often a diagnosis of alcohol dependency is made only when manifestations such as delirium tremens, cirrhosis of the liver, or pancreatitis appear. Frequently this is because physicians are insufficiently aware of the diagnostic signs of problem drinking and do not fully appreciate the effect it has on health. Physicians who do recognise alcohol behind a medical problem are in a unique position to intervene and engage the patient
in treatment. However, the first step in this process is to determine the extent of the problem in the area of interest.

MATERIAL AND METHODS
Data were collected consecutively from 171 acute outpatients from December 1982 to January 1983, and 713 inpatients from June 1982 to June 1983 in the Orthopaedic Department of Christchurch Hospital, New Zealand. Serving a population of approximately 350,000, the hospital’s orthopaedic service admits patients for elective orthopaedic surgery, but the majority of admissions have acute limb injuries. The orthopaedic service also sees all patients with significant limb injuries requiring outpatient care. Only patients between the ages of 15 and 75 years who consented, and whose injuries enabled them to take part, were in the study.

Each patient was given a structured questionnaire which included the Canterbury alcoholism screening test (CAST) (Elvy and Wells 1984), various questions relating to the behavioural consequences of excessive drinking, and also demographic items. The CAST is a screening test for problem drinking consisting of a 23-item self-report section and a 4-item physician’s assessment. It was developed from 1984 non-orthopaedic general hospital admissions and was shown to classify correctly 95% of alcoholics and misclassify only 1.6% of controls. In a validation study on 165 patients attending for alcoholism treatment, the CAST screened all as problem drinkers. The clinician’s section of the CAST examines for the presence of elevated serum gamma-glutamyl transpeptidase (GGT), elevated aspartate transaminase (AST), Dupuytren’s contracture and a palpable liver. The CAST takes about four minutes to administer by a trained interviewer, and was designed for the early detection of patients with current alcohol problems in an unselected hospital population.

Problem drinkers in this study are those patients whose maladaptive response to alcohol consumption has adverse behavioural consequences such as impaired work performance, accidents, poor interpersonal relations, and a disrupted family life. The idiosyncratic nature of problem drinking makes a precise operational definition difficult. However, problem drinkers are not necessarily alcohol-dependent or progressing to dependence, nor is there always an obvious relationship between an individual’s alcohol problems and the quantity of alcohol consumed. Patients who answered three or more of the questions positively on the self-report section of the CAST were classified as problem drinkers. However, a score of three or more is not sufficient for a diagnosis of dependent or non-dependent problem drinking: this score indicates drinking problems severe enough to warrant a full clinical assessment (Elvy and Wells 1984).

Data on the clinician’s section of the CAST were collected only for inpatients since it was not possible to arrange for routine blood examinations in outpatients. The data from the inpatients were collected from interviews by one of two trained nurses. This information was part of a major three-year follow-up study which is assessing the effectiveness of referring inpatient problem drinkers to alcohol treatment facilities.

RESULTS
Full data were obtained from 705 of the 713 inpatients, and 137 of the 171 outpatients. Eight (1%) inpatients refused to participate. Three (2%) outpatients refused and 31 (18%) were unable to complete the questionnaire because they were too ill or were called for examination or treatment.

Table I. Age and sex of 705 inpatients and 137 outpatients

<table>
<thead>
<tr>
<th></th>
<th>Inpatients</th>
<th>Outpatients</th>
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<tbody>
<tr>
<td>Males</td>
<td>451</td>
<td>82</td>
</tr>
<tr>
<td>Females</td>
<td>254</td>
<td>55</td>
</tr>
<tr>
<td>Mean age</td>
<td>38</td>
<td>33</td>
</tr>
<tr>
<td>Age range</td>
<td>15-77</td>
<td>15-75</td>
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Table I shows that the mean age and age range for the groups were very similar. However, the distributions were significantly different (P<0.02), with the outpatients having a higher percentage of 15 to 25 year olds and a lower percentage in the 46+ age range.

The CAST score distribution for both groups is given in Table II. Using the recommended cut-off score, 21% of inpatients and 42% of outpatients had alcohol problems severe enough to warrant further assessment. The CAST scores were found to be sensitive to age for both groups (P<0.001 and P<0.05 respectively) with each having a higher prevalence of problem drinking in those aged 15 to 25 years.

Table II. CAST score distribution

<table>
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<tr>
<th>CAST score</th>
<th>Inpatients</th>
<th>Outpatients</th>
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<tbody>
<tr>
<td>0</td>
<td>401</td>
<td>32</td>
</tr>
<tr>
<td>1–2</td>
<td>156</td>
<td>47</td>
</tr>
<tr>
<td>3–8</td>
<td>119</td>
<td>41</td>
</tr>
<tr>
<td>9+</td>
<td>29</td>
<td>17</td>
</tr>
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Data from the CAST clinician’s assessment were not used for determining the prevalence of problem drinking. In 81% of patients liver function test results were available, and in 93% it was clear from the ward notes that the patient’s liver had been palpated and Dupuytren’s contracture had been sought. Elevated GGT was the commonest abnormal marker (Table III) and in over a quarter of problem drinkers the serum level was raised.

For all ages in both groups, there were significantly more male than female problem drinkers (P<0.01 for
both groups) with the difference being more apparent in the over-25s. For both sexes, the probability of being a problem drinker was much greater in the under-25s, particularly amongst outpatients (under-25s, \( P = 0.51 \); over-25s, \( P = 0.35 \)). The CAGE estimates how much a patient drinks during a normal drinking week, based on the type of container and drink. When these estimates were converted to pure ethanol, 8% of inpatients and 14% of outpatients reported drinking in excess of 500 ml (about 50 nips of spirit) of ethanol each week. Considering drinkers only, 14% of inpatients and 20% of outpatients reported drinking at this excessive level. The high-level consumers were disproportionately represented by males under 25. Seventeen per cent of outpatients and 9% of inpatients reported family members with drinking problems. Overall, problem drinkers were eight times more likely than non-problem drinkers to report that other family members have had difficulty with alcohol, and were five times more likely to have had more than one previous admission (not necessarily alcohol-related).

**DISCUSSION**

Alcohol abuse is now recognised as a major problem in many countries, with substantial health and social costs. Most previous reports from orthopaedic units have discussed established alcohol dependency which had led to late physical manifestations; and there is, of course, no doubt of the association between acute ethanol overdose and high-speed road accidents. This study suggests that, in addition to these, many minor injuries treated in outpatient departments occur in young people who are problem drinkers, but not as yet alcohol-dependent. They are likely to have had many previous hospital attendances and admissions.

There are, therefore, a number of sound reasons to examine the problems arising and procedures required in a fracture and orthopaedic service in the context of a high prevalence of problem drinking, particularly in young males, and the association between this and (a) high-speed road traffic injuries, (b) less severe locomotor injuries, and (c) multiple hospital attendance and admission.

The CAST, while not intended to be a definitive diagnostic instrument, does give an estimate of the extent of problem drinking. The logistic implications of this study are considerable: in our population some 400 inpatients and 8000 outpatients could require further assessment in the course of a year. The prognosis for full recovery from alcoholism is favourable provided patients are treated early and have not lost their social, physical and mental stability (Blume 1983). Therefore screening of populations at risk, followed by interviews to identify individuals with definite problems, could allow more cost-effective use of limited treatment resources. It is emphasised that screening should concentrate on detecting the social and behavioural consequences of alcohol abuse rather than identifying patients with established physical dependence. Beresford et al. (1982) clearly identified the poor sensitivity of hospital staff to alcohol problems. Their data are not dissimilar to our results; their conclusions and suggestions for change should also be supported.

The prevalence of problem drinking amongst orthopaedic inpatients is substantially higher than in any other specialty in a hospital (Elvy 1984). Surgeons responsible for fracture and orthopaedic services may have a unique opportunity to influence an important public health problem. They should consider the extent of their local problem and the costs and benefits of screening in the context of available resources.

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**REFERENCES**


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