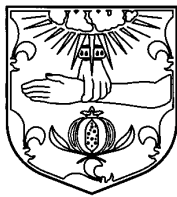


ALCOHOL – can the NHS afford it?

Recommendations for a coherent
alcohol strategy for hospitals



**A report of a Working Party of the
Royal College of Physicians**

February 2001

Cover photograph
Joanne O'Brien/Format

Royal College of Physicians of London
11 St Andrews Place, London NW1 4LE

Registered Charity No 210508

Copyright © 2001 Royal College of Physicians of London

ISBN 1 86016 146 4

Designed and typeset by the Publications Unit of the Royal College of Physicians

Printed in Great Britain by Sarum ColourView Group, Salisbury, Wiltshire

Contents

	Members of the Working Party	vi
	Executive Summary and Recommendations	vii
	National	ix
	Educational	ix
	Local trusts and purchasers	ix
	Mental health services	x
	Research and development	x
	Glossary of terms used	xi
1	Introduction	1
	Terms of reference	1
	Alcohol consumption in the UK	1
	Historical trends	1
	Sensible drinking	2
	Recent levels of consumption	3
	Alcohol consumption in the young	3
	Alcohol-related harm	4
	The burden of alcohol misuse on general hospital services	4
	Comparison with smoking	6
	Detection of harmful and hazardous drinking	6
	Management of harmful and hazardous drinkers in hospital	6
	Prevention of hazardous drinking	7
	Barriers to prevention strategies	8
2	The burden of alcohol misuse on general hospital services	9
	Categories of burden	9
	Direct causes	9
	Contributory factors	9
	Effect on course and outcome of admission	10
	Assessing the magnitude of the burden	10
	Theoretical approaches	10
	Hospital record-based methods	11
	Pragmatic approaches	11

	The visible burden of alcohol misuse on general hospital services in the UK	12
	Adult A&E/trauma hospital services	12
	Non-A&E hospital services	13
	Special patient groups	15
	International comparisons of the burden of alcohol on hospital services	15
	Population based studies	15
	Studies in the A&E/trauma setting	16
	Studies in the non-A&E/trauma setting	17
	Studies in special patient groups	17
	The financial burden	18
	Co-incident hazardous drinkers: the potential burden of alcohol misuse on general hospital services	19
	Conclusions	20
3	Detection of harmful and hazardous drinking	21
	Reasons for detection	21
	Methods of detection	21
	History and examination	21
	Laboratory markers	22
	Screening questionnaires	22
	Examples of good practice in detecting harmful & hazardous drinkers	24
	Conclusions and perspectives	25
4	Management of harmful and hazardous drinkers in general hospitals	27
	Introduction	27
	Typical contemporary general hospital practice	27
	Examples of good practice	28
	Good practice in A&E	28
	Good practice on the general ward	29
	Good practice in a paediatric setting	32
	Pharmacotherapy of alcohol withdrawal and alcohol-related neuropsychiatric conditions	32
	Sedative regimes	33
	Pharmacotherapy for alcohol-related neuropsychiatric problems	33
	Brief interventions in harmful and hazardous drinkers in general hospital	34
	What is a 'brief intervention'?	34
	Efficacy of brief interventions in the hospital setting	35

Implementing more effective hospital management of harmful and hazardous drinkers: removing the barriers	36
Organisational barriers	36
Negative staff attitudes	36
Lack of alcohol education and training in hospital staff	37
Conclusions and perspectives	38
References	40
Appendices	47
Appendix 1: Alcohol withdrawal: pharmacotherapy	47
Appendix 2: Vitamin prophylaxis	48
Appendix 3: Prevention and treatment of Wernicke’s Encephalopathy in the A&E department	49
Appendix 4: Summary job description for a Nurse Consultant specialising in alcohol-related problems	50
Appendix 5: Addresses of organisations and useful web pages and links	52
Appendix 6: Screening questionnaires	53
MAST questionnaires	53
AUDIT questionnaire	56
PAT questionnaire	57

Members of the Working Party

Ian Gilmore – Chairman

Registrar, Royal College of Physicians, London

Chris Day – Secretary

Professor of Liver Medicine, University of Newcastle upon Tyne, and Consultant Hepatologist, Freeman Hospital, Newcastle upon Tyne

Eric Appleby

Director, Alcohol Concern, London

Dennis Barnes

Chairman, Association of Nurses with an Interest in Substance Abuse (ANSA), Derby

Carol Black

Professor of Medicine, Royal Free Hospital, London

Rosie Boycott

Editor, Express Newspapers plc, London

Christine Godfrey

Professor of Health Economics, University of York

Clare Higgins

Consultant Physician, Northwick Park Hospital, Harrow

Andrew Hodgkiss

Consultant Liaison Psychiatrist, St Thomas' Hospital, London

John Kemm

Consultant in Public Health Medicine, NHS Executive West Midland Regional Office

Jane Marshall

Consultant Psychiatrist, National Alcohol Unit, Maudsley Hospital, London

Munir Pirmohamed

Reader/Consultant Physician, Department of Pharmacology and Therapeutics, University of Liverpool

Susan Michel

Alcohol Policy Team Leader, Department of Health, London

Mark Prunty

Senior Medical Officer, Drug and Alcohol Branch, Department of Health, London

Robin Touquet

Consultant in Accident and Emergency Medicine, St Mary's Hospital, London

Paul Wallace

Professor of Primary Health Care, Department of Primary Health Care and Population Sciences, Royal Free and University College School of Medicine, London

Michael Wilks

Education Adviser to the Medical Council on Alcoholism, Principal Forensic Medical Examiner, Metropolitan Police and Chairman of the Medical Ethics Committee, BMA, London

Verbal or written evidence was received from the following:

Joan Robson

Consultant in Paediatric A&E Medicine (retired), Alder Hey Children's Hospital, Liverpool

Kieran Moriarty

Consultant Physician & Gastroenterologist, Royal Bolton Hospital

Don Lavoie

Associate Director, Substance Misuse Advisory Service, London

Philip May

Team Co-ordinator, Soho Square Alcohol Treatment Services, London

Lynn Owens

Alcohol Specialist Nurse, Royal Liverpool University Hospital

Charles McKendrick

Retired Physician, University of Liverpool

'James R'

Patient

Executive Summary and Recommendations

Executive summary

General Household Survey data from 1998 showed that more than one in three men and one in five women in the UK regularly consume more alcohol than the currently recommended sensible limits. Since this misuse of alcohol can lead to a wide range of physical and psychosocial harm it is not surprising that it places a significant burden on the workload of the NHS — both primary care and hospital services. Alcohol misuse is a major cause of attendance and admission to general hospitals in both the A&E/trauma and non-emergency setting. It may cause admission directly, or together with other causes contribute to admission. Alcohol may also increase the burden on hospital services by adversely affecting the course of illness following admission. Importantly, the burden of alcohol misuse on general hospital workload results from damage not only to the harmful/problem drinker him or herself, but also to other third-parties affected by the excessive drinking such as those involved in accidents caused by intoxicated drivers. The resulting use of hospital facilities places a considerable financial burden on the NHS, inpatient costs alone accounting for 2–12% of total NHS expenditure on hospitals. In addition to this ‘visible burden’ of alcohol misuse, many studies have shown that approximately 20% of patients admitted to hospital for illnesses unrelated to alcohol are consuming alcohol levels potentially hazardous to their health. These coincidental hazardous drinkers represent the ‘potential’ or future burden of alcohol misuse on hospital services.

In view of the magnitude of the burden placed by alcohol on hospital services and its drain on resources, it is vital that these services have in place appropriate strategies for the early identification and management of harmful and hazardous drinkers. These include both the initial management of alcohol withdrawal in dependent patients as well as management strategies directed at the abnormal drinking behaviour that causes admission or, in the case of coincidental hazardous drinkers, that may lead to an alcohol-related admission in the future. Recent evidence suggests that both groups of patients will reduce their alcohol intake with appropriate treatment, and thus there is a huge potential for reducing the future burden of alcohol misuse on hospital services.

For effective early detection, detailed alcohol histories must be sought from patients who present with conditions often associated with alcohol misuse. However, considering the high frequency of hazardous drinking in all patients presenting to hospital services, a strong case can be made for incorporating screening for alcohol misuse into the routine health care provided in the general hospital setting. Of the available screening methods, alcohol questionnaires are more sensitive than currently available laboratory markers, and the AUDIT questionnaire appears to be most suited to use in the general hospital. Routine use of this questionnaire as a screening tool would have the added benefit of shifting the focus from alcoholism as a clinical entity to a public health perspective that emphasises the early detection of hazardous drinking before the onset of significant harm. AUDIT can be easily incorporated into a wider ‘Life-style Risk Assessment’ questionnaire. This highlights the public health perspective and helps change hospital culture towards disease prevention, and management of the whole patient rather than just their presenting disease. Nurses have been shown to be better and more cost-effective than doctors at screening admissions for alcohol misuse, and

some hospitals employ specialist alcohol nurses to carry out screening and brief interventions in hazardous drinkers, as well as to raise the profile of alcohol management across the hospital.

The optimal management of harmful or hazardous drinkers presenting to general hospital has been the subject of very little research, and current management strategies, where implemented, have had to extrapolate from studies performed in other settings. However, this does not excuse the current widespread failure to adopt strategies for the care of these patients in acute hospitals where they pose serious issues for risk management, resource utility, staff satisfaction levels and the quality of care for other patients.

From currently available examples of best practice, the Working Party identified several components that appeared to be critical for the development of a successful hospital alcohol strategy:

- a) a screening strategy for early detection of harmful/coincidental hazardous drinkers
- b) early assessment of dependence severity by appropriately trained staff
- c) widely available protocols for the pharmacotherapy of detoxification
- d) good links with committed liaison or specialised alcohol psychiatry services for the management of patients with more complex alcohol withdrawal
- e) assessment of the need for referral to on-going support services by appropriately trained staff with knowledge of local services
- f) provision of brief interventions for coincidental hazardous drinkers
- g) provision of general staff education and support
- h) service support from senior medical, psychiatric and nursing staff
- i) research and audit.

The development of a coherent alcohol strategy for hospital services first requires that several potential barriers are overcome at both the national and local level. At the national level, the Government's alcohol strategy needs to be urgently completed and implemented. The low national profile of alcohol as a health problem, in comparison to drugs for instance, remains a significant barrier that could be tackled by identifying a national figurehead to take a lead on alcohol issues. The GMC and UKCC need to make alcohol a required component of the medical and nursing undergraduate curricula to combat negative staff attitudes towards the management of patients with alcohol problems.

Within the general hospital there needs to be a change of culture to move beyond treating the presenting disease towards tackling the underlying alcohol problem and assuming a wider responsibility for health promotion. Poor liaison between acute hospital and mental health trusts, under-resourced liaison psychiatric services and lack of support for junior staff from senior medical and nursing colleagues, all need to be tackled before a local hospital alcohol strategy for harmful and hazardous drinkers can be devised and implemented.

The following recommendations are aimed at improving the management of the vast number of patients presenting to general hospitals in the UK who drink alcohol in excess of sensible limits. They also include measures directed at overcoming some of the potential barriers to achieving optimal management strategies. Adoption of these measures, we believe, will improve the treatment of the individual patient and improve the health of the nation. It will

also reduce the considerable burden that alcohol places on hospital services in the UK and release resources for other health priorities.

Recommendations

NATIONAL

- 1 The widespread consequences of alcohol misuse in this country should be given a higher profile. The issue needs to be clearly distinguished from drug misuse and have an identifiable national focus such as a designated national director.
- 2 There should be early publication and implementation of a National Alcohol Strategy. This must include measures directed at achieving an overall reduction in hazardous drinking in the population.
- 3 There needs to be a national lead to change the culture in secondary care. In general hospitals the challenge is to move beyond treating the presenting alcohol-related physical disease to tackling the underlying alcohol problem and assuming a wider responsibility for health promotion in patients.

EDUCATIONAL

- 4 In order to change attitudes to patients who misuse alcohol there is urgent need for improved education on alcohol for doctors, medical students, nurses and other health workers. This should be a requirement of undergraduate curricula.
- 5 Postgraduate medical and nursing training and certification in alcohol should be extended and made widely available.

LOCAL TRUSTS AND PURCHASERS

- 6 Each acute Hospital Trust should have a defined hospital strategy which should include:
 - a) a screening strategy for early detection of harmful/coincidental hazardous drinkers, administered as part of routine admission procedures through lifestyle questionnaires
 - b) early assessment of dependence severity by appropriately trained staff
 - c) widely available and audited protocols for the pharmacotherapy of detoxification
 - d) readily available 'acute response' from liaison or specialised alcohol psychiatry services for the management of more complex patients undergoing alcohol withdrawal
 - e) assessment of the need for referral to on-going support services by appropriately trained staff with knowledge of local services
 - f) provision of brief interventions for coincidental hazardous drinkers
 - g) provision of general staff education
 - h) occupational policies for alcohol for all hospital health care workers, for example with respect to drinking at work
 - i) close liaison with general practitioners on discharge.

- 7 Trust strategy should include the identification of:
- a) a senior member of medical staff and a senior member of nursing staff to act as a focus for alcohol strategy and to support more junior members of staff
 - b) senior psychiatric colleague with an interest in the management of alcohol problems to act as the primary link between the acute hospital trust and local mental health services. This individual may or may not be employed by the acute trust
 - c) one or more dedicated alcohol health workers employed by and answerable to the acute trust. The roles will include:
 - implementation of screening strategies
 - detoxification of dependent drinkers
 - brief interventions in hazardous drinkers
 - referral of patients for on-going support and with access/knowledge about locally available non-statutory and voluntary agencies
 - provision of links with liaison/specialist alcohol psychiatry
 - an educational resource and support focus for other health care workers in the Trust.
- 8 Responsibility for the development of the alcohol strategy and its implementation should be undertaken by a steering group consisting of the above clinical staff together with senior managerial personnel from the acute trust and mental health trust, and representatives from local primary care services, public health and purchasers.

MENTAL HEALTH SERVICES

- 9 In order to implement change in the general hospital there must be appropriate mental health support for improved liaison psychiatry to assist in the management of dependent drinkers presenting to acute hospitals.
- 10 Problems from alcohol misuse must be recognised as falling within the remit of all liaison psychiatric services.

RESEARCH AND DEVELOPMENT

- 11 More health services research is urgently required to obtain more evidence on which to base the development of hospital-based strategies for the detection and management of harmful and hazardous drinkers.
- 12 More biomedical research is required to unravel the pathogenesis of alcohol-related end-organ damage. This will lead to the development of novel treatment modalities and, ultimately, to disease prevention. Consideration should be given to establishing a National Institute for Alcohol Research akin to the National Institute on Alcohol Abuse and Alcoholism (NIAAA) in the US.

Glossary of terms used

Units

A unit of drink contains 8g of alcohol. This is approximately the amount of alcohol contained in half a pint of ordinary strength beer or cider, quarter of a pint of extra strong beer or cider, a small (100 ml) glass of wine, a glass of sherry or port, or a single pub measure (25 ml) of spirits.

Sensible drinking

A man who drinks 21 or less units per week, or a woman who drinks 14 or less units per week.

Moderate drinker*

A man who drinks 15 to 21 units per week, or a woman who drinks 11 to 14 units per week.

Very heavy drinker*

A man who drinks 50 or more units per week, or a woman who drinks 35 or more units per week.

Binge drinker

A man who regularly drinks 10 or more units in a single session, or a woman who regularly drinks 7 or more units in a single session.

Hazardous drinker (also called an at-risk drinker)

Very heavy drinkers and binge drinkers have drinking patterns that pose a considerable risk to their own and others' health and they may thus be described as hazardous drinkers.

Harmful drinker (also called a problem drinker)

A harmful or 'problem' drinker is one where there is clear evidence that alcohol use is responsible for (or substantially contributes to) physical or psychological harm, including impaired judgement or dysfunctional behaviour, which may lead to disability or have adverse consequences for interpersonal relationships. (Definition from ICD 10 Mental and behavioural disorders diagnostic criteria). This includes those whose drinking is causing harm to the physical, mental or social well being of others.

* These terms are related to the categories of alcohol consumption used in the General Household Survey Reports (Table 1).

Table 1. Categories of alcohol consumption used in General Household Survey Reports

	Units per week	
	Men	Women
Very light	<1	<1
Light	1–14	1–10
Moderate	15–21	11–14
Fairly Heavy	22–35	15–21
Heavy	35–50	22–35
Very Heavy	>50	>35

Questionnaire-positive drinker

There are a number of carefully standardised questionnaires designed to classify individuals who may be problem drinkers, eg CAGE,¹ MAST,² SADQ,³ AUDIT,⁴ PAT,⁵ OPCS drinking questionnaire.⁶ Those scoring above a certain level on these questionnaires are considered to be problem drinkers.

Alcoholic

Those who use this term consider that inability to control alcohol consumption is a specific disease. In this sense many individuals who are problem or hazardous drinkers are not alcoholics. Since this term is not precisely defined, it is not used in this report. It is widely used in North American literature.

Alcohol dependence syndrome ⁷

A syndrome characterised by: (a) narrowing of the drinking repertoire, (b) increased importance of drinking, (c) increased tolerance of alcohol, (d) repeated withdrawal symptoms, (e) drinking to avoid withdrawal symptoms, (f) subjective compulsion to drink, (g) reinstatement after abstinence. Most hazardous or problem drinkers do not have alcohol dependence syndrome.

Brief intervention

A 'brief intervention' usually consists of an assessment of alcohol intake: information on hazardous/harmful drinking and clear advice for that individual, often with booklets and details of local services.⁸ The interventions are usually carried out by generalist workers in non-specialist settings and are brief and user-friendly.

Glossary references

- 1 Ewing JA. Detecting alcoholism: The CAGE questionnaire. *J Am Med Assoc* 1984; 252: 1905–1907.
- 2 Selzer ML. The Michigan Alcoholism Screening Test: the quest for a new diagnostic instrument. *Am J Psych* 1971; 127: 1653–8
- 3 Stockwell T, Murphy D, Hodgson R. The Severity of Alcoholism Dependence Questionnaire: Its use reliability and validity. *Br J Addict* 1983; 78: 145–155.
- 4 Babor TF, de la Fuente JR, Saunders J. *AUDIT: The Alcohol Use Disorders Identification Test: Guidelines for use in Primary Care*. Geneva: World Health Organisation, 1989.
- 5 Touquet, T, Wright, S, Brown, A. Detection of alcohol misuse using the 'Paddington alcohol test', with subsequent counselling by an alcohol health worker: 1998 onwards. *J Accid Emer Med* 1998; 15: 412.
- 6 Meltzer H, Gill B, Petticrew M, Hinds K. *OPCS survey of psychiatric morbidity in Great Britain Report 1: The prevalence of psychiatric morbidity among adults living in private households*. Appendix B4. London: HMSO, 1995.
- 7 Edwards G, Gross M. Alcohol dependence: provisional description of a clinical syndrome. *Br Med J*; 1: 1058–1061.
- 8 Wallace PG, Cutler S, Haines AP. Randomised controlled trial of general practitioner intervention in patients with excessive alcohol consumption. *Br Med J* 1988; 297: 663–668.

1 Introduction

- 1.1 This report is the latest in a series on alcohol from the Royal College of Physicians. Previous reports have been: *Alcohol — a great and growing evil*,¹ *Alcohol and the young*² and *Alcohol and the heart in perspective: sensible limits reaffirmed*.³ Alcohol continues to be of concern to the College as a major cause of death, ill health and distress in our society. This latest report specifically considers the burden alcohol misuse places on general hospital services in the UK, how this should be managed and how it might be reduced. It does not consider the burden of alcohol on mental health services.

Terms of reference

- 1.2 The working party contributing to this report was asked to undertake the following tasks:
- to identify what proportion of hospital workload in the UK is attributable directly or indirectly to alcohol misuse
 - to determine how well hospital services are currently equipped to identify patients presenting with alcohol-related illness, and coincidental hazardous drinkers
 - to explore how well both groups of patients are currently managed
 - to recommend, from evidence of research and good practice, how current NHS resources could best be targeted to reduce the burden of alcohol on acute hospital services
 - to identify areas where information is currently lacking and in need of further research.

Alcohol consumption in the UK

Historical trends

- 1.3 Alcohol consumption has fluctuated widely throughout history. From medieval times it has been subject to excise duty and financial records have been kept from which consumption can be estimated (Fig. 1).⁴ By historical standards current levels of consumption are not remarkable but they have more than doubled since the 1930s when they were at their lowest ever level. For the past 20 years the per capita consumption estimated from excise data has been fairly stable (Fig 2), which is perhaps surprising in light of increasing prosperity and the greater availability of alcohol which might have been expected to lead to greater consumption. More detailed information about alcohol consumption can be obtained from the General Household Survey, which, in alternate years since 1982, has asked people about their drinking habits. Consumption estimated by this method is much lower than excise-based estimates (surprisingly, it appears that nearly half the alcohol on which duty is paid is not consumed), but trends are similar.

Sensible drinking

- 1.4 It is natural that people should want to know how much they can drink without harming themselves. In 1850 Dr Francis Anstie, a fellow of the Royal College of Physicians,⁵ suggested that an upper limit for safe drinking was 3oz of whisky, half a bottle of table wine or two pints of beer. This turned out to be very similar to the current guidance given by the Royal Colleges that *21 units per week or less for men and 14 units per week or less for women were unlikely to incur an increased risk of harm provided that drinking was not mixed with driving or other inappropriate activities.*^{1,3,6–8} (See Glossary for definition of a unit).
- 1.5 In 1995 the government established an inter-departmental working group to review guidance on safe drinking. They noted the evidence that the consequences of drinking depended not only on the average weekly consumption but also on how that consumption was distributed throughout the week, and concluded that guidance should be based on daily rather than week-

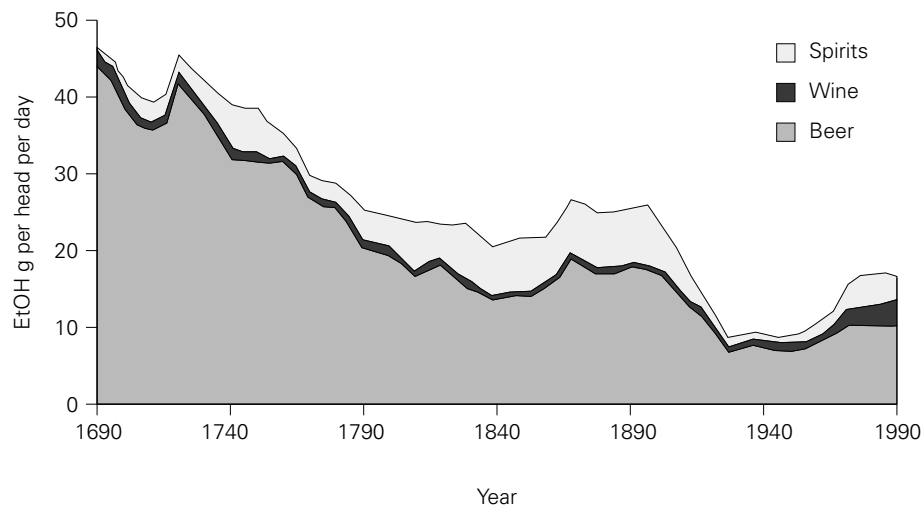


Figure 1. Alcohol consumption — historical trends (1690–1990) (From Ref 4)

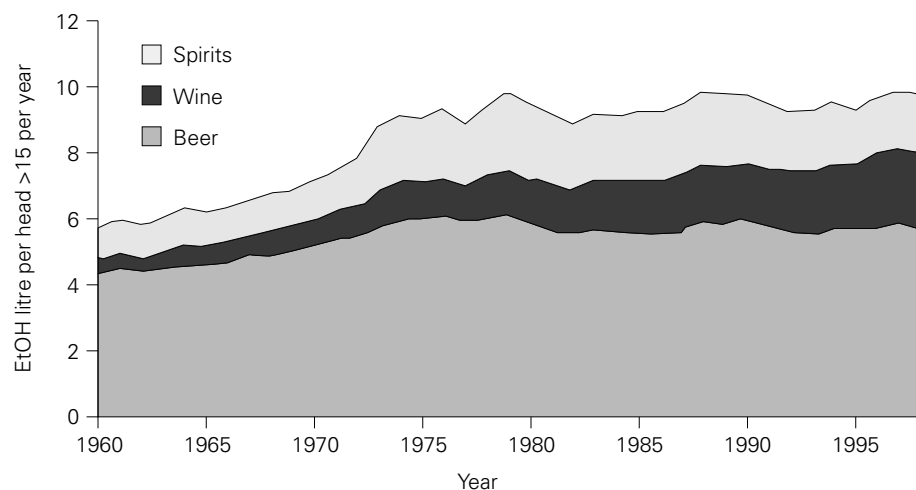


Figure 2. Alcohol consumption — recent trends (1960–1995)

ly consumption. Their report⁹ suggested a rather more restrictive guideline that: ‘Regular consumption of between 3 and 4 units a day by men of all ages and of between 2 to 3 units a day by women of all ages will not accrue any significant health risks. Consistently drinking 4 or more units a day by men and 3 or more units a day by women is not advised because of the progressive risk it carries’. Given the crudeness with which people estimate their alcohol consumption, this was not significantly different from the previous 21/14 units per week guideline. Unfortunately, the media misrepresented the new advice as a relaxation of the guidance, even though most people would find guidance on daily limits a more demanding target. Since information on weekly rather than daily consumption is generally more available, this report will base its definitions on weekly consumption levels.

Recent levels of consumption

- 1.6 At least 1.7 million men and 0.6 million women in the UK can be classified as heavy drinkers.¹⁰ General Household Survey data from 1998 showed that men drink more than women, with 27% of men reported drinking more than 21 units per week and 15% of women drinking more than 14 units per week¹⁰ (Fig. 3). Moreover, 38% of men reported drinking more than 4 units on at least one night in the past week and 21% of women drinking more than 3 units. These data also showed that young adults drink more than older adults. Among 16–24 year olds — the heaviest drinking group — 36% of men and 25% of women reported drinking more than the weekly guideline and 50% of males and 41% of females exceeded the daily guideline at least once a week.¹¹ Risky, single occasion, or ‘binge’ drinking appears to be the most common type of hazardous drinking in the young,¹² and heavy drinking teenagers are also more likely to continue their habit into young adulthood.¹³

Alcohol consumption in the young

- 1.7 There seems little doubt that alcohol use in children and adolescents is increasing. In 1996, 29% of 12–13yr old boys and 26% of girls admitted to drinking alcohol in the past week.¹⁴ By 1999, these proportions had risen to 38% and 30% respectively.¹⁵ In 1998, the equivalent figures for 14–15yr olds were 55% and 53%.¹⁶ Young people also appear to be drinking larger amounts of alcohol. The average consumption among 11–15 year olds in England increased

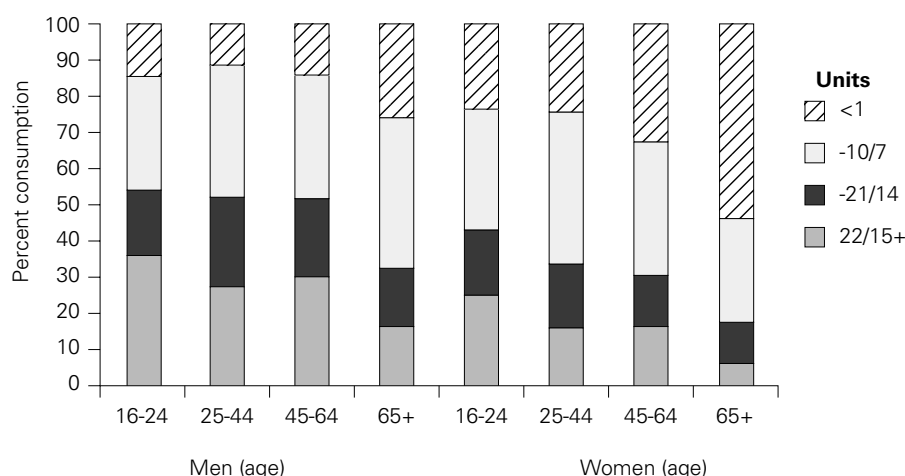


Figure 3. Weekly alcohol consumption (units) by age and sex (Source GHS 1998)¹⁰

from 0.8 units a week in 1990 to 1.8 units in 1996. If non-drinkers were excluded, the increase was from 5.4 to 8.4 units a week.¹⁷ Interestingly, the majority of these adolescents (57%) drank beer, lager or cider with only 14% drinking 'designer' alcopops and 14% drinking spirits. In 1995, Miller and Plant¹⁸ examined the prevalence of self-reported alcohol use in the UK among a large representative sample of people (n = 7,772) born in 1979. Almost all of these 15–16 year olds had drunk alcohol in the previous month. Most (78%) reported an episode of intoxication, 48% in the previous 30 days. In a subsequent study from the same group, 40% of 13–16yr old males and 32% of females reported consuming at least 11 units on their last drinking occasion.¹⁹

Alcohol-related harm

- 1.8 Virtually every system in the human body can be damaged by alcohol (Box 1). As we enter a new millennium, a paucity of clinical research has resulted in relatively little being known of the precise mechanisms by which alcohol causes organ damage. Accordingly, few, if any, specific treatments have been developed for alcohol-induced diseases. Not surprisingly, therefore, alcohol remains a significant cause of premature deaths. Official (ONS) figures almost certainly underestimate the magnitude of alcohol-related mortality. They do not include many deaths clearly attributable to alcohol, such as those due to alcohol-related road traffic accidents (RTAs). Doctors are often unaware of the contribution of alcohol to the cause of death and, even when they are, they may be unwilling to attach the stigma of alcohol to the deceased when signing death certificates. Within these constraints, estimates of the number of alcohol-related deaths per year in Britain have varied from 5,000 to 40,000.^{7,20}
- 1.9 A cause for particular concern is alcohol-related harm in young men — the group with the highest alcohol consumption in the UK and the only group in whom death rates are currently rising. The binge pattern of drinking prevalent in this group may be relevant in this respect. There is accumulating evidence that binge drinking is associated with severe impairment of judgement leading to an increase in the likelihood of accidents at home, at work, on holiday, and on the road.^{21,22} In Scotland the excess of deaths noted on Mondays has been attributed to weekend binge drinking.²³ Importantly, in addition to this physical harm, alcohol misuse causes significant psychological, social and economic harm. Every policeman is familiar with the annoyance, disturbance, damage to property and damage to others and themselves caused by people who have drunk too much, while social workers are all too familiar with the story of children and partners whose lives are made a misery as a result of alcohol misuse by one family member. The drain on the workforce due to alcohol related absenteeism is an obvious example of the economic harm caused by alcohol misuse.

The burden of alcohol misuse on general hospital services

- 1.10 Given that alcohol consumption above sensible limits is common, and that alcohol misuse can lead to a wide range of physical harm for which there is very little treatment, it is to be expected that a significant proportion of the workload of the NHS can be attributed to alcohol. The burden of alcohol misuse affects all parts of the service: primary care services and most hospital services including Accident & Emergency, medical and surgical inpatient services, paediatric services, psychiatric services and outpatient departments. Heavy drinkers consult

Nervous System

- Acute intoxication,
- Black-outs
- Withdrawal symptoms: tremor, hallucinations, fits
- Persistent brain damage: Wernicke's encephalopathy; Korsakoff's psychosis; cerebellar degeneration; dementia
- Cerebrovascular disease: strokes especially in young people, subarachnoid haemorrhage
- Head injury: associated with subdural and extradural haematomas
- Nerve and Muscle damage: peripheral neuropathy, chronic myopathy, rhabdomyolysis

Liver

- Fatty liver (steatosis): asymptomatic or right upper quadrant pain and hepatic enlargement
- Alcoholic steatohepatitis: varies from asymptomatic to presentation with acute liver failure
- Cirrhosis: may lead to decompensation with jaundice, ascites, variceal bleeding and encephalopathy
- Hepatocellular carcinoma

Gastrointestinal system

- Oesophagus: reflux oesophagitis, tearing and occasional rupture, carcinoma
- Stomach and duodenum: gastritis, aggravation and impaired healing of peptic ulcers
- Small bowel: diarrhoea and malabsorption
- Pancreas: acute and chronic pancreatitis, carcinoma
- Malnutrition and weight loss: reduced intake, malabsorption, impaired metabolism

Cardiovascular system

- Arrhythmias: atrial fibrillation, supraventricular and ventricular tachycardias, sudden cardiac death
- Cardiomyopathy: acute and chronic
- Hypertension: often difficult to control

Respiratory system

- Fractured ribs: traumatic, may be exacerbated by alcohol-induced osteoporosis
- Pneumonia: inhalation while intoxicated and/or alcohol-related general immunosuppression

Endocrine system

- Pseudocushings syndrome: associated with obesity, acne, hirsutism and hypertension
- Hypoglycaemia: attributable to poor calorie intake and/or alcohol inhibiting gluconeogenesis (more common in intoxicated children)

Reproductive system

Men:

- Hypogonadism: associated with loss of libido, impotence, loss of secondary sex characteristics and gynaecomastia
- Reduced/absent sperm formation: resulting in infertility

Women:

- Hypogonadism: associated with loss of libido, menstrual irregularities, and loss of secondary sex characteristics
- Increased risk of breast cancer

Occupation and accidents

- Impaired work performance and decision making
- Increased risk and severity of accidents

Children of problem drinkers

- Damage to the fetus and fetal alcohol syndrome
- Detrimental effect on physical development and behaviour

Drug interactions

- Increased risk of adverse drug reactions, eg paracetamol toxicity at therapeutic doses
- Reduced effectiveness of therapeutic drugs, eg warfarin, phenytoin

their general practitioners more frequently than the average patient,²⁴ as do members of their families.²⁵ This report is, however, concerned primarily with the burden alcohol misuse places on general hospital services. The categories of this burden together with the difficulties in assessing its magnitude and its financial impact are the principal focus of Chapter 2. In addition to those patients whose hazardous drinking has contributed directly or indirectly to the cause of their attendance at, or admission to, hospital (the *actual* or '*visible*' burden), several studies have shown that coincidental hazardous drinking is common in patients presenting to hospital services with non-alcohol-related problems. Chapter 2 also reviews these studies since these patients may be viewed as the *potential* or '*hidden*' burden of alcohol misuse on hospital services in the future.

Comparison with smoking

- 1.11 In order to put the burden of ill-health attributable to alcohol into perspective it is useful to compare it with smoking. Smoking has been estimated to cause over 100,000 deaths per year in the UK, which is several fold the number caused by alcohol.²⁶ It also causes much non-fatal disease, constituting a major burden for the NHS. However, the excess deaths from smoking tend to occur at an older age than those due to alcohol, so the number of years of life lost from smoking is closer to the number of years of life lost as a result of alcohol. Smoking rarely causes death or ill health in young people, whereas much of the burden of alcohol is in the young through accidents and violence. Although passive smoking (inhaling cigarette smoke from others) accounts for a small amount of ill health, most of the harm done by smokers is to their own health. In distinction, heavy drinkers cause almost as much harm to others as to themselves. An irresponsible drinker can cause havoc with the health and wellbeing of others, including spouses, children, neighbours, other road users and work colleagues. While it may seem that tobacco causes more ill health than alcohol, the harm done to health by these two substances is of a similar order of magnitude.

Detection of harmful and hazardous drinking

- 1.12 Before harmful and hazardous drinkers who present to hospital services with alcohol and non-alcohol-related conditions can be managed effectively, their abnormal drinking behaviour must be detected. The various methods used for detection, including blood tests and screening questionnaires, are reviewed in Chapter 3. In this regard lessons may be drawn from studies performed in the primary care setting. There is a substantial body of research on the identification and management of hazardous drinkers in primary care, which shows that there are opportunities to intervene before this drinking behaviour produces problems requiring hospital-based or specialist intervention. It has been well demonstrated that the use of simple screening instruments, particularly questionnaires such as the AUDIT and its derivatives, can lead to increases of up to 80% in the numbers of patients identified in general practice.^{27,28} In the same setting, the use of blood tests and laboratory markers for screening purposes is of limited value only.²⁹

Management of harmful and hazardous drinkers in hospital

- 1.13 Having identified alcohol as a direct or contributory cause of an individual presenting to hospital, it is essential that hospitals are capable of providing appropriate management for harmful drinking. The first priority is to address the immediate cause of admission (eg head injury, fractured limb, liver disease). In general, hospital services do this very well, although, as discussed, very few treatments have been developed that specifically target alcohol-related end-organ damage. Alcohol-dependent drinkers will also require specific pharmacotherapy for the alcohol withdrawal syndrome as well as prevention of the associated metabolic complications such as the Wernicke-Korsakoff syndrome (see Appendices 2 and 3). Once over this acute phase, patients require management directed at both reducing their harmful drinking to aid their recovery, and reducing the chances of them re-presenting with an alcohol-related illness in the future. There are examples where this is done very well, but a great deal of anecdotal evidence suggests that such good practice is the exception rather than the rule. Chapter 4 reviews both the current management of the harmful drinker presenting to hospital and examples of 'best

practice', including pharmacotherapy. Potential barriers to achieving best practice are also discussed.

- 1.14 The function of a good health service should be not only to care for those with disease but also to prevent disease where possible. As discussed, many patients presenting to hospital services do not have conditions attributable to alcohol but are hazardous drinkers by virtue of their high consumption. Unless they modify their behaviour many of these will, before long, require treatment for some condition attributable to their drinking, thus adding to the burden of alcohol on hospital services. Provided their hazardous drinking is detected, the presence of these patients in a hospital bed provides an ideal opportunity for intervention by providing advice on sensible drinking. While there are sensitivities about approaching and offering help to patients about an issue not pertinent to their admission, patients are likely to be receptive to advice if it is delivered as part of the response to an overall assessment of lifestyle risk factors.³⁰ In light of these considerations, Chapter 4 also reviews the management of coincidental hazardous drinkers identified following admission to hospital with a non-alcohol-related cause.
- 1.15 Studies on the efficacy of different interventions in coincidental hazardous drinkers in the hospital setting are scarce and, as with early detection, information on the effectiveness of management strategies in these patients is drawn largely from studies in primary care. There have been several trials of 'brief interventions' (see Glossary) in hazardous drinkers detected in primary care in the UK, US and internationally through the auspices of the World Health Organisation. All have shown that brief counselling in a general practice setting has an important beneficial effect in reducing alcohol consumption.^{31–33} Overall, the effect of brief intervention in the context of routine general practice consultation results in an estimated 25–45% reduction in alcohol consumption, with the effect greater in men than women.³⁴ Of great relevance to this current report is a recent outcome study performed in the US. It provides evidence that brief intervention in primary care leads not only to reduced alcohol consumption, but also to a reduction in the use of accident and emergency and other hospital facilities, reduced levels of crime and reduced involvement in road traffic accidents.³⁵
- 1.16 Despite these impressive results, studies in primary care also provide some insight into the barriers likely to be faced by hospitals trying to implement even evidence-based detection and intervention strategies. One study found that: (a) only 40% of primary care physicians were motivated to work with hazardous drinkers; (b) only 2% of 5,000 adults surveyed reported any discussion related to alcohol use with their general practitioner or any member of practice staff in the past 12 months.³⁶ A number of experiments have been undertaken to identify and evaluate methods of improving the implementation of brief interventions but the results of academic detailing, telephone contact and training sessions have all been rather disappointing.^{37,38}

Prevention of hazardous drinking

- 1.17 Extensive research has shown that the incidence of all categories of alcohol-related problems in a population are proportional to its per capita consumption. Furthermore, a significant proportion of the hospital workload attributable to alcohol arises in 'occasional' rather than heavy regular drinkers. Preventative measures aimed at reducing the burden placed by alcohol on

hospital services must therefore be directed at the whole population of drinkers and not restricted to heavy drinkers — the so-called ‘prevention paradox’.^{39,40} As discussed, both primary care and hospitals can play a role in prevention by detecting hazardous drinking in patients presenting to their services and offering advice on sensible drinking.

- 1.18 However, the greatest potential for effective prevention lies outside the remit of local health services. There are a range of actions which governments can take to reduce alcohol-related harm for which there is a wealth of evidence to show that they are effective.⁴¹ These include keeping prices of alcohol high through taxation, controlling alcohol advertising, regulating the situations in which alcohol is sold (licensing) and the situations in which it is drunk — for example banning drinking at football matches and on the streets in some town centres.⁴² We strongly support early publication of and implementation of the forthcoming National Alcohol Strategy. This must include measures directed at achieving an overall reduction in hazardous drinking in the population (Recommendation 2).

Barriers to prevention strategies

- 1.19 Perhaps the most significant barrier to strategies aimed at reducing hazardous drinking devised by both the NHS and the government is that alcohol consumption is widely perceived to have *beneficial* as well as harmful effects. For religious or other reasons some individuals abstain from alcohol, but many others derive pleasure from its use in moderation. For these individuals, drinking alcohol is part of social and cultural activities productive of happiness and well-being. The large amount of employment and economic activity related to the production and service of alcohol, and the revenue for government, also may be considered as ‘benefits’ of alcohol. The growing body of evidence that alcohol consumption reduces the risk of vascular disease in middle-aged and older individuals has also been widely publicised and has led some previously abstaining individuals to begin consuming alcohol. Some have even suggested that the amount of death and ill health that would be prevented if heavy drinkers became light drinkers is of the same order of magnitude as the amount prevented by abstainers becoming light drinkers.^{43,44}
- 1.20 The second potential ‘barrier’ to prevention strategies is that, in contrast to smoking, there exists an apparently ‘safe’ level of alcohol consumption below which harm is unlikely. This concept of sensible drinking clearly makes public health messages aimed at reducing the prevalence of hazardous drinking in the population more complex.

2 The burden of alcohol misuse on general hospital services

- 2.1 The overall aim of this chapter is to consider what proportion of general hospital workload in the UK is attributable, directly or indirectly, to alcohol misuse (the ‘visible’ burden). First, the different categories of burden placed by alcohol misuse on hospital services will be discussed. This will be followed by a review of the methodology available to assess the magnitude of this burden. The various studies that have attempted to address this issue in the UK will then be reviewed, followed by a consideration of salient data from studies performed outside the UK. An estimate of the financial cost of the burden will also be made. Finally, studies examining the issue of co-incident hazardous drinkers presenting to hospital with non-alcohol-related causes will be reviewed, since these patients may be viewed as the potential burden of alcohol misuse on hospital services in the future.

Categories of burden

Direct causes

- 2.2 The most obvious burden placed by alcohol on hospital services, which is also easy to assess, comprises those cases where alcohol is the direct cause of attendance at, or admission to, hospital; they include:
- a) Cases where alcohol is a *necessary and sufficient cause* of the presenting condition — conditions that are *exclusively and entirely caused by excessive alcohol consumption*. Examples would include acute alcohol intoxication and alcoholic liver disease
 - b) Cases where alcohol is a *sufficient but not necessary cause*, ie conditions that may be entirely caused by excessive consumption but which can also have other causes. Obvious examples would include acute pancreatitis and epileptic seizures. Injuries occurring whilst intoxicated and injuries caused by someone else’s drinking — for example during a road traffic accident (RTA) due to an intoxicated driver — also come into this category.

Contributory factors

- 2.3 The second, and more difficult to assess, category of burden placed by alcohol on hospital services comprises those cases where alcohol is neither a necessary nor sufficient cause of the presenting condition but is a contributory factor. These conditions can occur in the absence of excessive alcohol consumption but, where there is excessive consumption, other aetiological factors have to be present. Examples would include pulmonary tuberculosis, pneumonia and self-poisoning. Cases where alcohol misuse in one individual contributes indirectly to hospital attendance by another also come into this category such as the increased frequency of hospital attendance observed in the children of alcohol abusers.⁴⁵

Effect on course and outcome of admission

- 2.4 The third category of burden placed by alcohol on hospital services are those cases where alcohol misuse, as well as contributing directly or indirectly to the cause of hospital admission, may also adversely affect the course and outcome of the admission. An illustration of this category of burden comes from studies reporting an increased rate of complications and length of hospital stay in heavy drinkers following colorectal surgery⁴⁶ or admission to a burns unit.⁴⁷

Assessing the magnitude of the burden

Theoretical approaches

- 2.5 Theoretically, assessing the magnitude of burden of alcohol on hospital services could be approached using methods analogous to those used to assess the proportion of deaths attributable to alcohol (Table 2).⁴⁸ The burden could be estimated from the frequency of different causes of hospital admission/attendance and the disease-specific alcohol attributable fractions (AAF). The AAF refers to the fraction of cases with a particular diagnosis caused by alcohol. For diagnoses invariably related to alcohol the AAF is 1, while for diagnoses sometimes related to alcohol the AAF is between 0 and 1. This methodology has very recently been used in a study from Canada,⁴⁹ but has yet to be applied to the UK population since the AAF for causes of admission to hospital are generally unknown. Another theoretical approach is to derive the magnitude of the burden from the prevalence of different drinking levels in the population, and from consumption level-specific admission rates. As with the first method this is an attractive approach, but there are insufficient data on consumption-level-specific admission rates to rely on this type of analysis. It has been attempted in Scotland⁵⁰ and Sweden.⁵¹

Table 2. Alcohol attributable fractions for causes of death in the US, 1979–88.

NB. Different figures may apply to UK and for different time periods. From Stinson & de Baakey 1992.⁴⁸

Diagnosis	Age	AAF
Pulmonary TB	>35	0.25
Cancer neoplasm lip, oral cavity & pharynx	>35	0.50
Cancer oesophagus	>35	0.75
Cancer stomach	>35	0.20
Cancer liver and intrahepatic bile ducts	>35	0.15
Cancer larynx	>35	0.50
Cirrhosis of liver without mention of alcohol	>35	0.50
Biliary cirrhosis	>35	0.50
Acute pancreatitis	>35	0.42
Chronic pancreatitis	>35	0.60
Diabetes mellitus	>35	0.05
Essential hypertension	>35	0.07
Motor vehicle traffic and non-traffic accidents	>0	0.42
Water transport accidents	>0	0.20
Accidental falls	>15	0.35
Accidents caused by fire	>0	0.45
Accidental drowning and immersion	>0	0.38
Suicide and self inflicted injury	>15	0.28
Homicide	>15	0.46

Hospital record-based methods

2.6. An alternative method of assessing the burden would be to estimate the number of admissions attributed to alcohol from individual hospital records. Unfortunately, this is highly inaccurate. The record for each completed inpatient episode includes up to seven diagnoses, operations and procedures undergone, and other details of care received. Each diagnosis is given a code from the international classification of diseases (ICD) and the record is aggregated into a total record of the hospital work load. There are a few diagnoses directly attributable to alcohol with specific codes, namely:

- a) mental and behavioural disorders due to use of alcohol (F10.1–10.7)
- b) alcoholic polyneuropathy (G62.1)
- c) alcoholic cardiomyopathy (I42.6)
- d) alcoholic liver disease (K70)
- e) alcohol-induced chronic pancreatitis (K86.0)
- f) toxic effect of alcohol (T51.0)

However, unless one of these diagnoses is recorded, there is no way of being sure whether or not the admission was considered to be alcohol-related. Furthermore, not only are these conditions almost certainly under-recorded, but they represent the tiny tip of a massive iceberg of admissions attributable to alcohol. Record systems for outpatients and accident and emergency attendances are less well developed and contain even less retrievable information.

Pragmatic approaches

2.7 In view of these difficulties, the vast majority of studies that have attempted to estimate the burden placed by alcohol on hospital workload in the UK have so far relied on one of two pragmatic approaches. The first, and most commonly used, study design is based on determining the proportion of cases attending or admitted to hospital as a result of alcohol misuse — as categorised, either prospectively or retrospectively, by the medical staff. This method is clearly vulnerable to considerable bias. Medical staff tend to over-attribute the cause of admission to alcohol, particularly in those diseases where alcohol is a common aetiology such as acute pancreatitis or head injury. This type of bias does not apply to studies that have restricted their analyses to diseases caused uniquely by alcohol. However, as discussed, these represent only a small proportion of the burden of alcohol on hospital workload (Para. 2.3).

2.8 The second type of commonly used, pragmatic study design is based on determining the proportion of cases attending or admitted to hospital that have some indicator of excessive drinking, *regardless of the cause of admission*. Such indicators include:

- self-reported high consumption
- a high score on some standardised questionnaire-based screening tool eg CAGE, MAST, AUDIT (see Chapter 3)
- a biochemical indicator of alcohol consumption
- evidence of intoxication.

Unfortunately, the majority of these studies have failed to determine whether there is any causal relationship between excessive alcohol consumption and the presenting condition. Instead, they make the assumption that evidence of excessive drinking is enough to implicate alcohol as a cause of the admission. However, to validate this assumption, studies should determine whether the frequency of drinking is higher in those admitted to hospital than in a matched control group not admitted. Very few studies have included this proviso, but without it they are just as likely to identify co-incidental hazardous drinkers in whom alcohol has nothing to do with the cause of admission. For reasons discussed previously, it is important to identify these patients, but they should be viewed as the 'potential' burden of alcohol misuse on hospital services rather than the actual or 'visible' burden.

- 2.9 Finally, several studies have attempted to determine the influence of previous alcohol excess on the *course and outcome* of patients admitted with conditions that may or may not have been related to alcohol excess. These studies, largely performed outside the UK, are valuable for assessing the burden of alcohol on hospital services over and above its contribution to the presenting complaint.

The visible burden of alcohol misuse on general hospital services in the UK

- 2.10 Studies examining the burden of alcohol on hospital services within and outside the UK can be divided broadly into: those examining the burden of alcohol on accident and emergency (A&E)/trauma services, those performed in the non-A&E/trauma setting and those performed in specific patient groups.

Adult A&E/trauma hospital services

- 2.11 An indirect estimate of the impact of alcohol on the general workload of A&E departments in the UK was first highlighted in 1980 by a report that a third of all patients attending an A&E department had a blood alcohol concentration (BAC) over 80mg/100ml.⁵² Yates and colleagues⁵³ subsequently reported similar results in a more detailed study. For a two-week period they determined BAC, collected clinical records and interviewed all patients aged 16 and over attending two A&E Departments: 13% of all patients had a positive BAC; 60% of all assaulted patients, many with head injuries, were intoxicated; 19% of those attending within 2 hours of an accident at home also had a positive BAC. The authors concluded that alcohol abuse is commonly associated with injuries sustained at home and assaults occurring in public places that lead to A&E attendances.
- 2.12 More recently, a study from Liverpool has prospectively studied the contribution of alcohol misuse on the attendances and subsequent admissions of all patients presenting to A&E over a two-month period.⁵⁴ Based on clinical assessment, the attending doctor determined whether, in his/her opinion, the attendance was alcohol-related. Patients with alcohol-related attendances were placed into one of four categories:
- 1 Under the influence of alcohol at the time of attendance
 - 2 Suffering from a health problem for which there is good evidence to implicate alcohol in its aetiology
 - 3 The patient had suffered trauma as a result of excess alcohol consumption

- 4 The patient was an innocent third party who sustained trauma as a result of excess alcohol consumption by another individual.

Of 15,931 attendances, 12% were attributed to alcohol-related problems. Of these, 28% of patients were admitted, representing 6.2% of all admissions to the hospital during the period of the survey. Importantly, it was also reported that almost 3,000 extra new outpatient visits were generated by those with alcohol-related presentations during the 18 months following the initial attendance.

- 2.13 Several other UK studies have examined specific categories of A&E attendances/admissions. A study from Edinburgh examined injuries suffered by 102 pedestrians consecutively admitted to an A&E department.⁵⁵ These injuries comprised 0.8% of the department workload and 28% of RTA injuries. Patients under the influence of alcohol had more severe and widespread injuries, were more likely to have facial injuries and were more likely to be detained as inpatients.
- 2.14 Two studies have specifically examined the contribution of alcohol to head injuries presenting to A&E departments. The first reported that 43% of 204 patients with head injuries presenting to an A&E department over a 10-week period had alcohol in their urine.⁵⁶ A second, much larger study reported the workload pattern related to head injuries on an acute surgical unit in a central London teaching hospital.⁵⁷ Over a six-month period, 899 patients with head injuries were treated in the A&E department, of whom 156 were admitted. Of these, 51% of the adult admissions were intoxicated by alcohol, and alcohol was associated with a significantly increased length of stay. An audit of 6,114 patients with facial injuries presenting to 163 A&E departments in the UK during a week in 1997 reported that at least 22% were associated with alcohol consumption within four hours of the injury.⁵⁸ Finally, a study from Edinburgh examining 369 consecutive A&E admissions to a male 'acute' orthopaedic ward reported that alcohol had contributed to the accident in 19% of cases according to clinical assessment.⁵⁹
- 2.15 In summary, therefore, from these studies performed in UK A&E/trauma units, alcohol misuse is probably responsible for at least 10% of unselected attendances and almost certainly a higher percentage of attendances with head/facial injuries and trauma requiring admission to orthopaedic wards. Furthermore, in 1998, drink-driving was responsible for 2,940 serious casualties, many of whom will have presented to A&E departments.⁶⁰ Some circumstantial evidence suggests that intoxicated trauma patients have more severe injuries than 'sober' patients and are subsequently more likely to require hospital admission following their initial A&E attendance.

Non-A&E hospital services

- 2.16 Most of the relevant studies relating to alcohol and non-A&E services were performed over 10 years ago. In 1976, Quinn and Johnson studied men admitted as an emergency to a general medical unit of a Glasgow hospital and considered that 19% had illnesses related to alcohol.⁶¹ Three years later, a study based in Manchester assessed the causal role of alcohol in the illnesses of men and women who were admitted acutely ill to a general medical unit over a 12-month period.⁶² By *clinical assessment*, the study reported that alcohol was a direct or contributory factor in 27% of the illnesses leading to admission. As expected, the incidence of alcohol-

related illness was greater in patients who drank significantly; however, 71 of the 147 patients in whom alcohol was considered to play a part in their illnesses did not drink regularly, providing the first evidence that alcohol-related medical admissions are not restricted to regular drinkers. Although there was no gender difference in the frequency of alcohol-related admissions, the majority of women in whom alcohol was considered to play a part in their illness presented with self-poisoning, whereas the majority of men presented with physical illnesses.

- 2.17 The above findings were reproduced almost exactly in a subsequent study from London.⁶³ Based on assessment by the supervising house officer, 27% of 104 consecutive new and unselected admissions to a general medical unit in an inner city district general hospital were attributed to alcohol consumption. Similar to the Manchester study, a third of the 'alcohol-related' patients drank less than 20 units a week, and admissions attributed to alcohol consumption included both 'classical' alcohol-related conditions such as intoxication, withdrawal and alcoholic hepatitis, as well as conditions where alcohol was thought to play a contributory role including pneumonia and self-poisoning.
- 2.18 These two studies illustrate well the pitfalls of study-design based on clinical judgement alone. Clearly, in those cases where the condition responsible for admission is not exclusively due to alcohol, then categorising a case as alcohol related is necessarily based on clinical judgement and accordingly at risk of bias and inaccuracy. With this proviso, Taylor and colleagues reported the largest, and arguably best, example of this type of study.⁶⁴ They examined over 2,500 acute admissions to the intensive therapy unit (ITU), and medical, surgical, orthopaedic and casualty wards of a large general hospital in London. Based on clinical data and the results of a brief alcohol-screening questionnaire (MAST), 12% of admissions were considered to be definitely alcohol related, of which the majority (70%) were male, and over half were between the ages of 14 and 40. The proportion of alcohol-related admissions varied from 7.2% for a general surgical ward, to up to 26% for the casualty overnight observation ward.
- 2.19 More recently, McKnight and colleagues reported the contribution of alcohol intake to the cause of admission of 106 consecutive patients admitted to a medical unit in Edinburgh.⁶⁵ They reported that alcohol contributed to the admission of 41% of the men and 24% of the women. This sub-group were drinking an average of 15 units of alcohol per day and had consumed an average of 90 units in the week prior to admission.
- 2.20 These studies, based largely on clinical judgement, suggest that in the UK alcohol plays a direct or contributory role in between 7–40% of all acute, non-A&E, hospital admissions. The highest proportion (25–40%) appears to be in acute, unselected, medical admissions with the lowest in general, surgical (7%) admissions.
- 2.21 Complementary to these studies, Chick and colleagues have assessed the burden of alcohol on hospital admissions in the UK using a different methodology.⁵⁰ They obtained consumption data on over 1,000 men aged 18–65 admitted consecutively to the medical wards in Edinburgh and compared this to the alcohol consumption in men included in a general population survey. From these data they calculated the relative risk of hospital admission for different disease categories according to the level of alcohol consumption. They reported that for liver disorders, upper gastro-intestinal disorders, myocardial infarction, other cardiovascular disorders and respiratory disorders, increasing alcohol consumption correlated with an

increased risk of hospital admission relative to abstinence. Compared to abstainers, individuals drinking more than 51 units per week had an odds ratio of over 8 for being admitted to hospital with liver disease, of over 3 for myocardial infarction, and of over 4 for respiratory problems.

Special patient groups

- 2.22 Two UK studies have specifically examined the burden placed by alcohol on acute admissions to geriatric units. The better of these prospectively examined 539 consecutive, elderly, medical admissions for their alcohol intake and the contribution of alcohol to the cause of admission.⁶⁶ Eight per cent of admissions were identified from alcohol history and CAGE questionnaires as alcohol abusers, but only 2% of admissions were considered to be alcohol related. Alcohol abusers were predominantly men, and independently mobile, suggesting that drinking patterns in this age group may be partly determined by the physical ability to obtain alcohol. An identical figure (2%) was reported in a more recent study examining the contribution of alcohol to presentation of elderly patients to a hospital A&E department.⁶⁷
- 2.23 At the other end of the age spectrum, no published studies have specifically examined the burden of alcohol misuse in children and adolescents on hospital services. Evidence was, however, presented to the Working Party that between 1985 and 1996 the number of children attending the Royal Liverpool Children's Hospital (RLCH), Alder Hey each year with an overdose of alcohol increased from 20 to approximately 200, although local partnership schemes between the community, schools and police has resulted in a recent decline.⁶⁸ Consistent with national statistics on drinking habits in the young,¹⁷ the majority of the overdoses were with cider or vodka. At the same hospital in 1998/9, 30 children under 16 years of age were admitted with an alcohol-related diagnosis at an estimated cost of £26,370. Clearly, these alarming data are a cause for great concern.

International comparisons of the burden of alcohol on hospital services

- 2.24 Not surprisingly, a wide variety of studies examining the burden of alcohol on hospital services have been performed outside the UK. Those studies that provide insight into the likely burden of alcohol on UK hospital workload will be considered in four categories:
- 1) consideration of the overall population burden
 - 2) A&E/trauma units
 - 3) the non-A&E/trauma setting
 - 4) special patient groups

Population based studies

- 2.25 A study from Canada reported earlier this year has attempted to derive alcohol attributable fractions (AAFs) for 90 causes of disease, and has applied these to national morbidity data to estimate the number of admissions to hospital which can be attributed to alcohol.⁴⁹ The authors reported that in 1995, 82,014 (3%) hospital admissions in Canada were attributable to alcohol. The reliability of this estimate depends on the accuracy of the AAFs, and will 'miss' the

burden due to alcohol having an adverse effect on complications or length of stay rather than causing the admission. However, for the first time, an overall estimate of the burden of alcohol on hospital admissions in an entire population is assessed. Similar data derived from the UK population would be invaluable in providing a better estimate of the overall burden of alcohol on hospital services.

- 2.26 A study from Sweden has attempted to determine crude, consumption level-specific admission rates.⁵¹ As discussed previously, if estimates of the prevalence of different drinking levels in a population are known, these rates could give an estimate of the total burden placed by alcohol on hospital admissions in a given population. This study examined the association between the level of alcohol consumption and hospital admissions for non-psychiatric illness during a 15-year follow-up of a cohort of over 8,000 Swedish army conscripts. High consumers (more than 250g alcohol/week) had a higher rate of admission than abstainers (2.4 admission per capita versus 1.8). In addition, as in a previous UK study,⁵⁰ the relative risk for hospital admission was greater in high compared to moderate (1–100g of alcohol/ week) consumers, with a relative risk of 1.5 [1.2–1.8]. The association between alcohol and admission was positive in all diagnostic categories studied. Contrary to a previous study from the US,⁶⁹ there was no suggestion of a U-shaped curve between alcohol consumption and hospital admission — abstainers had the same rate of admission as moderate consumers.

Studies in the A&E/trauma setting

- 2.27 Many studies have been performed outside the UK which assess the burden of alcohol placed on A&E departments and trauma units. Only those studies providing further insight into the burden of alcohol on A&E/trauma unit workload in the UK will be reviewed. Several studies have confirmed the observation, reported in the UK study on pedestrian injuries,⁵⁵ that alcohol not only increases the chance of trauma occurring but also increases the severity of the injury suffered. Spaite and colleagues prospectively examined 350 patients presenting with bicycle-related injuries to a trauma centre at the University of Arizona.⁷⁰ The injury severity score (ISS) in 29 patients (8.3% of total) with detectable blood alcohol levels at the time of the accident was 10.3 compared to 3.3 for patients with an undetectable BAC ($p < 0.001$). The length of stay of the positive BAC group was three and a half days including a mean of 1.4 ITU days, compared to 0.5 and 0.1 days respectively for the negative BAC group. Importantly, mean combined hospital and physician charges were more than six times higher in the positive compared to the negative BAC group.
- 2.28 A larger study from Finland examined the influence of alcohol on the severity of injury suffered by 14,995 men presenting to an A&E department.^{71,72} For patients injured in falls and for injured car occupants, the severity of injury was greater in those with positive BACs compared to those with negative BACs, and for all categories of injured patients head injury was more common in intoxicated compared to sober patients (64% v 17%, odds ratio 8:3).
- 2.29 A recent study from Germany on trauma patients has shown that the effect of alcohol extends beyond its role in causing the trauma and influencing the severity of injury suffered, to determining the subsequent clinical outcomes.⁷³ This prospective study examined the influence of alcohol on the outcome of 102 polytraumatised patients transferred to ITU after admission to the emergency room and surgical treatment. Fifty of the patients were chronic heavy drinkers

(intake > 60g/day) and 33 were non-drinkers. Major intercurrent complications such as alcohol withdrawal syndrome, pneumonia, cardiac complications and bleeding disorders were almost three times more common in the alcoholic group than in the non-alcoholic group. Accordingly, stay in ITU was significantly prolonged in the alcoholic group by a median period of nine days.

Studies in the non-A&E/trauma setting

- 2.30 Studies from both Europe and North America have reported data broadly in line with UK studies. A study from Canada determined the degree to which the attending physicians in four different general medical units considered admissions to be alcohol related.⁷⁴ The percentage of alcohol-related admissions ranged from 6.4% to 15% across the four units. A more recent study from Germany determined the prevalence and spectrum of alcohol-related diseases in 1,288 consecutive new admissions to a general hospital.⁷⁵ The sample consisted of approximately equal numbers of medical and surgical patients. Of the total, 29% of male and 9% of female admissions were attributed to an alcohol-related disorder. Frequently diagnosed disorders in alcohol-dependent patients included delirium tremens, seizures, head injuries and liver cirrhosis, while in alcohol abusers trauma was the most common alcohol-related disorder. An excellent study from Sweden examined a cohort of 9,057 twins born after 1925 who responded to a questionnaire on lifestyle and personality in 1973, for causes of death and admission to hospital since 1992.⁷⁶ The proportion of hospital admissions attributable to high levels of alcohol consumption was 13.3% for men and 1.1% for women.

Studies in special patient groups

- 2.31 As in previous sections, non-UK studies in special patient groups are reviewed only where they provide additional insight into the likely burden of alcohol on hospital workload in the UK. Four studies, from Europe, Australia and America, further illustrate the principle that alcohol may not only contribute to the cause of hospital admission but may also adversely affect the clinical course following admission. Two studies from burns units have shown an adverse effect of alcohol intake on the outcome of burn trauma. In a study from Germany, chronic alcohol abuse was found significantly to increase mortality following burn trauma,⁷⁷ while in a larger US study of 3,047 consecutive hospitalised patients with burns, associated intoxication was associated with a higher incidence of associated injuries and, independent of burn size, with a higher frequency of skin graft loss, cellulitis, hypotension and pneumonia.⁴⁷ The intoxicated patients also had more intensive care unit admissions, ventilated days, operations, transfusions and total hospital days.
- 2.32 An Australian study performed on an orthopaedic ward demonstrated that, in both acute and elective patients, hazardous drinking was associated with more in-patient complications and greater nursing difficulty.⁷⁸ Finally, in a study from Denmark in heavy drinkers admitted for elective colorectal surgery, withdrawal from alcohol one month prior to surgery led to a dramatic fall in post-operative complications (31% versus 74% in those continuing to drink until admission). The reduction in the complications was most marked for post-operative myocardial ischaemia, arrhythmias and night-time hypoxia.⁴⁶

- 2.33 Two studies, both from USA, have examined the burden of alcohol on a hospital medical intensive treatment unit (ITU). In the first of these studies, performed in a large community trauma and tertiary referral hospital, 9% of 435 consecutive ITU admissions were alcohol-related, generating 13% of the costs.⁷⁹ In the second study, 21% of 200 consecutive medical ITU admissions were directly alcohol-related.⁸⁰ Alcohol withdrawal syndrome was the commonest alcohol-related admission with a mean ITU stay of five days. Patients with alcohol-related conditions tended to be younger and male. No comparable studies have been reported from the UK; however, the Working Party heard evidence that 22% of ITU admissions to the Royal Liverpool Hospital over a one-year period were alcohol-related. It would therefore seem likely that alcohol places a considerable burden on the country's overstretched ITU facilities.
- 2.33 Finally, a study from New York highlights a further potential, indirect burden placed on hospital services by alcohol.⁴⁵ This study looked at inpatient hospital utilisation rates in the children of dependent drinkers compared to other children. The findings indicate that children of dependent drinkers have higher rates of inpatient hospital admissions, spend more days in the hospital, incur greater hospital charges and are more susceptible to specific illnesses than other children. Clearly this represents a hidden 'burden' of alcohol on the hospital workload. Management of children with foetal alcohol syndrome also comes into this category.

The financial burden

- 2.35 It should be noted that the total cost of hospital services in 1997 — £23.4 billion ⁸¹ — was actually below total consumer expenditure on alcoholic drinks — £29.1 billion in the same year.⁸² Determining precisely how much of the total £23.4 billion expenditure on hospital services can be attributed to alcohol misuse is subject to the same sort of methodological issues that arise in determining the number of admissions that are directly or indirectly alcohol-related. Few studies have attempted to estimate this burden in the UK.
- 2.36 Most recently, McDonnell and Maynard⁸³ attempted to fully cost the burden of alcohol misuse on society, but their estimates were based only on very heavy drinkers. Excess hospital costs were calculated using data from research that had examined health service uptake by patients undergoing specialist alcohol treatment compared to that expected in age- and sex-matched, non-drinking controls. Updated to 1992 prices, their data suggested that even this select group accounted for approximately £161 million of additional hospital costs per year. These costs were later broken down into £41 million of inpatient costs related to diagnoses directly attributable to alcohol, and £120 million for diagnoses where alcohol was considered to play a contributory role.⁸⁴ Importantly, these figures did not include additional use of A&E Departments or outpatient attendances. Using a range of methodologies, including the use of AAF, Godfrey and Maynard⁸⁵ suggested that the best estimate of the *total* alcohol-related hospital costs in 1987 were around £400 million. Based on an estimate of the proportion of bed days attributed to the treatment of alcohol-related conditions, Godfrey & Hardman later suggested that the total hospital costs in 1990/91 were between £188 million and £392 million.⁸⁴ These last two studies made some attempt to account for a broader range of drinkers than were considered in the original McDonnell and Maynard study, but were similarly restricted to inpatient costs only.

- 2.37 There have been recent major studies of the costs of alcohol misuse undertaken in the US⁸⁶ and Canada.⁸⁷ In these studies hospital costs were significantly higher than the current UK estimates suggest. In the US the costs of treating alcohol-related illnesses were estimated at \$5.9 billion in 1992, of which \$5.3 billion was accounted for by hospital costs. In the same year, in Canada, the estimate of hospital costs was 767 million Canadian dollars. Both studies suggest that length of stay in hospital in those with alcohol-related conditions was longer than in those with similar health problems unrelated to alcohol consumption. Using data on disease specific costs or hospital stays, most studies conducted outside the UK have used AAFs to estimate alcohol-related hospital costs. Unfortunately such data are not readily available in the UK.
- 2.38 In 1996, the Department of Health did undertake a study to attribute all hospital cost to disease groups.⁸⁸ Disease areas considered to have some alcohol-related component such as: injuries and poisonings (5.8% of hospital costs); neoplasms (6.3%); cerebrovascular disease (4.2%) and digestive disorders (5%) accounted for a significant proportion of both inpatient and outpatient costs. This study and subsequent updates may provide a basis for more accurate estimates of alcohol-related hospital costs if, in the future, there is a systematic attempt to devise UK-related AAFs for different diseases.
- 2.39 An alternative approach is to use figures on the proportion of hospital admissions that are alcohol-related to generate some cost estimates. Acute specialties, of which 7–40% of episodes are considered to be alcohol-related, make up the majority of finished consultant episodes, and in general their unit cost per day is higher than for non-acute specialties. Using published statistics on average length of stay (five days for inpatient acute admissions) and costs for generic admissions,^{81,89} a 7% proportion gives a minimum estimate of £500 million in 1998/9 for inpatient costs alone, and a 40% proportion an estimate of £2.9 billion. Costs can be similarly estimated for A&E services. The unit cost of a stay per night in A&E at £359 per inpatient day is considerably higher than the £222 per day for generic admissions. The estimated cost per outpatient attendance at £37 is more modest, but the cost of transportation by emergency ambulance — £171 — and the extra security needed in A&E departments to deal with drunken admissions, gives some idea of the direct burden falling on the hospital sector.

Co-incident hazardous drinkers: the potential burden of alcohol misuse on general hospital services

- 2.40 In addition to studies aimed at determining the contribution of alcohol to the cause of hospital admission, many more studies in the UK and abroad have simply determined the proportion of cases attending or admitted to hospital with some indicator of hazardous drinking. Studies in a wide variety of hospital departments have shown that 20–25% of patients admitted to hospital have an alcohol consumption that is in excess of sensible limits.^{50,59,63,90–96} In many patients this alcohol consumption will have played no role in the reason for admission. For example, in the 1992 study by Mangion and colleagues,⁶⁶ although 8% of patients admitted acutely to a care-of-the-elderly department were identified as misusers of alcohol, only 2% of admissions were considered to be alcohol-related. These coincidental hazardous drinkers should be considered as the potential burden of alcohol misuse on hospital services in the future. Their presence in a hospital bed should be viewed as an ideal opportunity for intervention aimed at preventing them becoming part of the visible burden of alcohol on hospital services in the future.

Conclusions

- 2.41 Alcohol misuse places a considerable burden on hospital services in the UK. It is a major cause of attendance and admission to hospital in both the A&E/trauma and non-emergency setting. Alcohol misuse may cause admission directly, or contribute to attendance or admission together with other causes. In addition, alcohol may increase the burden on hospital services by adversely affecting the course of illness following admission, leading to more complications and accordingly a longer hospital stay.
- 2.42 The burden of alcohol misuse on the hospital workload results not only from the problems occurring in the alcohol misuser *per se*, but also from problems occurring in others affected by the excessive drinking: individuals involved in accidents attributed to intoxicated drivers and the increased use of hospital services by the children of heavy drinkers for example. Not surprisingly, this use of hospital services places a considerable financial burden on the NHS, with inpatient costs alone accounting for between 2% and 12% of total NHS expenditure on hospital services. Clearly, the magnitude of this burden and its drain on resources suggests that considerable efforts should be directed at identifying and reducing the intake of harmful and coincidental hazardous drinkers presenting to hospital. These issues will be discussed in the following two chapters.

3 | Detection of harmful and hazardous drinking

Reasons for detection

- 3.1 In view of the burden placed by alcohol on hospital services, it is vital that these services are capable of providing appropriate management of harmful and hazardous drinkers. This includes both the initial management of alcohol withdrawal as well as management strategies directed at the abnormal drinking behaviour that either contributed to the cause of admission or, in the case of coincidental hazardous drinkers, may lead to an alcohol-related admission in the future. However, before patients misusing alcohol and presenting to hospital services can be managed effectively, their abnormal drinking behaviour must be detected. Failure to detect harmful/hazardous drinking in this setting may have a variety of deleterious consequences. Early consequences range from unnecessary investigations looking for alternative aetiologies of an alcohol-related disease through to life-threatening alcohol withdrawal syndrome. Later consequences include recurrent harm and hospital attendance in harmful drinkers, and the subsequent development of harm in coincidental hazardous drinkers.
- 3.2 Recent evidence suggests that both patients in the harmful and in the coincidental hazardous drinking groups are amenable to treatment. A randomised trial in over 1,700 alcohol-dependent patients has shown that three different forms of 12-week, manual-guided, individually delivered psychosocial treatment regimes (12-step facilitation therapy, cognitive behavioural coping skills therapy and motivational enhancement therapy) all lead to a significant reduction in alcohol intake.⁹⁷ For the hazardous, non-dependent drinker, several studies have shown that brief drinking-focused interventions in general hospitals can lead to reductions in both alcohol use and the development of harm (see Chapter 4). The overall aim of this chapter is to review the currently available methods for detecting hazardous drinkers in the hospital setting and consider some examples of best practice upon which to base recommendations.

Methods of detection

History and examination

- 3.3 The importance of taking an adequate alcohol history cannot be over-emphasised. However, this is not often done, drinking history being described in the medical records using terms such as 'alcohol-social'. A study of 327 patient case-notes revealed that an accurate alcohol history was recorded in only 37%, with no mention of alcohol at all in 39%.⁹⁸ Reasons cited for this failure to take an alcohol history include junior doctors being 'too busy', feeling reticent about taking a drinking history, or thinking that alcohol is irrelevant to the reason for admission. Not surprisingly perhaps, two studies have shown that house officers detected only 40–50% of medical admissions subsequently identified as misusing alcohol.^{95,99}
- 3.4 Physical examination may be completely normal in coincidental hazardous drinkers. However, certain signs should alert the doctor to the possibility of excessive drinking. A clinical laboratory index comprising 17 clinical signs and 13 medical history items (Box 2) has been shown to be a highly diagnostic instrument.¹⁰⁰ The presence of four or more clinical signs or four or

Box 2. The alcohol clinical index. From Skinner *et al* 1986.¹⁰⁰

Clinical signs	Medical history items
Hand tremor	Inability to concentrate
Tandem gait	Troubled by mental confusion
Deep knee bend	Difficulty in remembering recent events
Spider naevi (>5)	Hallucinations
Collateral circulation	Hands shake in the morning
Gynaecomastia	Troubled by frightening dreams
Abdominal tenderness	Wake up with a headache
Rhinophyma	Hands often tremble
Facial erythema	Injured in an assault or fight
Coated tongue	Wake up feeling thirsty
Oedema of soft palate	Dry coated tongue
Nicotine stains	Cough on most days
Palmar erythema	Bring up phlegm
Bruises or abrasions	
Scars (secondary to trauma)	
Cigarette burns	
Tattoos	

more medical history items indicates a probability of alcohol abuse of greater than 0.9. In addition, when a patient presents with any of the conditions listed in Box 1 (page 5), there should be a high index of suspicion that alcohol is a contributory factor.¹⁰¹

Laboratory markers

- 3.5 Laboratory markers may provide corroboratory evidence of hazardous drinking in patients where this is clinically suspected (Box 3). However, none are sensitive or specific enough to be used in isolation,¹⁰² and none can distinguish hazardous drinkers from alcohol-dependent patients. The Working Party received evidence from Kings' College Hospital, London, which has recently studied the use of a third generation carbohydrate deficient transferrin (CDT) assay in screening for alcohol misuse. The study showed that the assay was no more sensitive than routine laboratory markers, and inferior to the AUDIT questionnaire (see below, para 3.10) in the detection of hazardous drinking. Its specificity for alcohol misuse, however, was occasionally useful in the detection of drinking in patients with other causes of abnormal liver function tests such as chronic hepatitis C and patients transplanted for alcoholic liver disease.

Screening questionnaires

- 3.6 The poor performance of clinical clerking and laboratory markers in the detection of hazardous drinkers has led to the development of a range of screening questionnaires available for use in the hospital setting. Although routine use of such instruments facilitates the detection of hazardous drinking, their value is limited by the time, skill and resources required. Questionnaires vary in the time frame they cover, the severity of hazardous drinking they detect and the cultural groups for which they are appropriate. Four brief screening tests will be described (also see Appendix 6):

Box 3. Laboratory markers that may indicate heavy drinking

Blood and breath alcohol

- A raised blood or breath alcohol is firm evidence of recent alcohol consumption. However alcohol is metabolised rapidly and absence of alcohol indicates only that alcohol has not been consumed in the past few hours.

Erythrocyte Mean Corpuscular Volume (MCV)

- MCV is raised in many chronic heavy drinkers but may also be raised for other reasons.

Gamma glutamyl transferase (GGT)

- GGT is a liver enzyme raised in a high proportion of chronic heavy drinkers but returns to normal levels after about 5 weeks abstinence. It may also be raised in non-alcoholic liver disease and in patients taking enzyme-inducing drugs.

Aspartate amino transferase (AST)

- The liver enzyme AST is raised after heavy binge drinking but returns to normal within about 48 hours. It may also be raised for other reasons.

Carbohydrate deficient transferrin (CDT)

- CDT is raised in some heavy drinkers. It is more specific than AST, GGT or MCV^{101a}

- 1) Michigan Alcoholism Screening Test (MAST)
- 2) CAGE questionnaire
- 3) Alcohol Use Disorders Identification Test (AUDIT)
- 4) Paddington Alcohol Test (PAT).

The MAST and CAGE¹⁰³ relate to lifetime symptoms, while the time frame for the AUDIT is the past year. In addition, the MAST and CAGE detect only severe alcohol problems and alcohol dependence,¹⁰⁴ while the AUDIT and PAT tests also detect coincidental hazardous drinking.

3.7 *The Michigan Alcoholism Screening Test (MAST)* exists in three versions (see Appendix 6). The first, administered and scored by an interviewer, consists of 25 items relating to personal opinions on drinking, problems related to drinking and some symptoms of alcohol-dependence. This version has been reported to have a sensitivity of 98% in detecting alcoholism.¹⁰⁵ The second version, known as the Brief MAST, is a 10-item questionnaire, again completed and scored by an interviewer, that performs as well as the longer MAST.¹⁰⁶ The third version, the Short Michigan Alcoholism Screening Test (SMAST), is a self-administered 13-item questionnaire particularly suited to the detection of alcohol dependence. These different versions of the MAST have been used extensively to detect alcohol problems in a wide range of patient groups including adolescents, the elderly and hospital inpatients and outpatients.^{107–110} In several of these studies the MAST has been shown to be more sensitive than routine history taking.¹⁰⁷

3.8 *The CAGE Questionnaire.* CAGE is an acronym for four questions:

- 1) Have you ever felt you ought to Cut down on your drinking?
- 2) Have people ever Annoyed you by asking about your drinking?

- 3) Have you ever felt bad or **Guilty** about your drinking?
- 4) Have you ever had a drink first thing in the morning (**Eye-opener**) to steady your nerves or get rid of a hangover?

3.9 A cut-off point of 2 provides good case/non-case discrimination for alcohol-dependent subjects.¹⁰³ The CAGE questionnaire has been used to detect alcohol problems in studies in the elderly, adolescents and emergency room patients,^{110a,111,112} and has been shown to be more sensitive than the commonly used laboratory markers.¹¹³ For example, in a study of psychiatric patients, GGT detected only one-third of those consuming more than 16 drinks per day, while the CAGE detected 93%.¹¹⁴ However, like the MAST, the CAGE questionnaire is insensitive to milder hazardous drinking.³¹

3.10 *The Alcohol Use Disorders Identification Test (AUDIT)* was developed specifically for use in primary care in 1982 by an international group of investigators assembled by the World Health Organisation.^{27,115} Its purpose was to identify individuals at risk of alcohol problems as a result of hazardous alcohol consumption. The AUDIT is a 10 item-questionnaire which can be self-administered or administered by non-clinical staff (see Appendix 6). It takes less than two minutes to complete. The 10 items cover the following areas:

- amount and frequency of drinking (3 items)
- indicators of alcohol dependence (3 items)
- common problems caused by alcohol (4 items).

Each item is scored on a scale of 0–4, giving a possible maximum score of 40. Different cut-off points can be used, but a score of 8 or more gives the highest sensitivity.¹¹⁶

3.11 A recent validity study in primary care recommended using five items for screening (1, 2, 4, 5 and 10), with a cut-off score of 5 — the short AUDIT.¹¹⁷ The AUDIT questions can be made less threatening by being incorporated into a ‘Life-style Risk Assessment’³⁰ — which encompasses questions regarding diet, smoking, exercise and stress management — or into the medical history. The AUDIT has been found to perform well in detecting both harmful drinkers and coincidental hazardous drinkers.^{117,118} However, its greatest strength is that it can identify hazardous drinking earlier with greater sensitivity and specificity than either the MAST/CAGE questionnaires^{118,119} or routine admission clerking.⁹⁵

3.12 *The Paddington Alcohol Test (PAT)* was developed for use in the A&E department¹²⁰ (Appendix 6). It takes one minute to complete and can detect hazardous and harmful drinking without prolonging patient waiting times in a busy A&E department. The PAT consists of three questions: two concerning consumption (heavy drinking and binge drinking) and a third which identifies whether the patient considers their attendance at the A&E department to be related to alcohol.

Examples of good practice in detecting harmful and hazardous drinkers

The Working Party received evidence on two examples of good practice using PAT and AUDIT for the detection of harmful and hazardous drinkers presenting to hospital services:

3.13 *The PAT in the A&E Department at St Mary's Hospital, London*

In light of the high frequency of hazardous drinking amongst their attendees A&E departments of general hospitals are clearly appropriate places for detection of alcohol misuse. Over the past 12 years the A&E department at St. Mary's Hospital in London has pioneered the routine use of screening questionnaires.^{121,122} Initially, a combination of the MAST and the CAGE was used. However, neither of these instruments includes questions on daily alcohol consumption or binge drinking. The appointment of a dedicated alcohol health worker (AHW) to the department in 1994 prompted the development of a brief, but effective, screening questionnaire for use in A&E departments — the Paddington Alcohol Test (PAT). Use of the PAT resulted in a 10-fold increase in referrals to the AHW for counseling.¹²⁰ Continuing audit and feedback has been shown to improve both PAT usage and detection of alcohol misuse.¹²³

3.14 *The AUDIT at Kings College Hospital, London*

In 1997, the Lambeth, Southwark & Lewisham Health Authority supported a two-year audit of the burden of alcohol problems at King's College Hospital in South East London.¹²⁴ A small group of interested clinicians was established whose objectives included: (a) the identification and piloting of an Alcohol Misuse Screening Questionnaire suitable for use in the general hospital in both in- and outpatient settings; (b) determining the numbers of alcohol misusing subjects in various patient groups attending the hospital. The AUDIT questionnaire was identified as the best available screening instrument for general use. Out of 2,988 consecutive acute medical admissions to one of three general medical wards, 250 harmful or hazardous drinkers were identified using a Health and Lifestyle Questionnaire that incorporated the 10-item AUDIT questionnaire. These patients were subsequently entered into a trial of brief intervention (see Chapter 4). The short AUDIT questionnaire was used in surveys of the A&E department and a dermatology outpatient clinic, and prevalence rates of harmful/hazardous drinking were 22% and 18% respectively. It was concluded that 10–20% of patients attending King's College Hospital were drinking in a hazardous/harmful way, although it was considered likely that in certain departments, eg orthopaedics and psychiatry, the figures would be higher. The study group has gone on to develop guidelines for the detection and management of harmful and hazardous drinkers, disseminated throughout the hospital via the hospital Intranet and formulary. The guidelines have also been specifically adapted for use by A&E staff and general practitioners.

Conclusions and perspectives

- 3.15 Detection of harmful and hazardous drinkers presenting to hospital is vital to allow them to be managed appropriately. In terms of harmful drinkers, detailed alcohol histories should certainly be sought from patients presenting with conditions associated with alcohol misuse (Box 1) and patients with signs and symptoms suggesting a high probability of problem drinking (Box 2). However, considering the high frequency of hazardous drinking in patients presenting to hospital services and the apparent efficacy of brief intervention in these patients, a strong case can be made for incorporating screening for alcohol misuse into the routine health care provided in the general hospital setting.
- 3.16 The simplest method of screening would be to encourage doctors to take an alcohol history in all patients admitted to hospital. However, even if this could be achieved (which is doubtful in view of time constraints and lack of motivation), several studies have shown that routine

history taking by junior doctors misses a significant proportion of harmful and hazardous drinkers. Of the other available methods of screening, questionnaires are more sensitive and cheaper than currently available laboratory markers, and the AUDIT questionnaire appears to be most suited to use in the general hospital setting. From the available evidence there seems little doubt that using this questionnaire to routinely screen medical admissions would identify significant numbers of hazardous drinkers that would otherwise be missed, thus providing the opportunity for intervention.

- 3.17 Routine use of the AUDIT questionnaire as a screening tool in the general hospital would have the added benefit of shifting the focus from alcoholism as a clinical entity, to a public health perspective that emphasises the early detection of a hazardous drinking before the onset of significant harm. Including the AUDIT in a 'Life-style Risk Assessment' questionnaire would further highlight the public health perspective and provide a further stimulus towards changing hospital culture away from management directed solely at the presenting disease and towards disease prevention and management of the 'whole patient'. The issue of who is best suited to administer the questionnaire will depend on the particular hospital setting and the resources available locally. Several studies have recommended that nurses ask patients to complete the questionnaire during the routine admission procedure (Recommendation 6),^{119,125} and nurses have been shown to be more cost-effective than doctors at screening admissions for alcohol misuse.¹²⁶ Some hospitals employ specific alcohol workers (usually trained nurses) who carry out screening and brief interventions as well as raising the profile of alcohol management across the hospital; we commend this practice (Recommendation 7).

4 Management of harmful and hazardous drinkers in general hospitals

Introduction

- 4.1 Once harmful or hazardous drinking in a patient presenting to general hospital services has been identified, it is critical that these services are capable of providing appropriate management of both alcohol withdrawal and the abnormal drinking behaviour. This management is the focus of this chapter. First, current hospital practice with respect to harmful or 'problem' drinkers will be discussed followed by some specific examples of 'better' practice. Second, the pharmacotherapy of alcohol withdrawal syndrome will be reviewed. Third, evidence for the use of brief interventions in the hospital setting will be discussed. Finally, potential barriers to achieving optimum management will be considered.
- 4.2 Although lessons can undoubtedly be drawn from the management of harmful drinkers in other settings, the optimal management of these patients in the general hospital setting has not been properly evaluated. This may be attributable, in part, to the sheer range of different management problems they pose, ranging from the patient in the A&E department who has self-harmed in the context of alcohol withdrawal to the recently detoxified inpatient on an orthopaedic ward expressing homicidal intentions. The significant burden these patients place on hospital services clearly provides strong justification for the establishment of more health services research into their management, as well as into the mechanisms through which alcohol causes physical damage. Consideration should be given to establishing a National Institute for Alcohol Research akin to the National Institute on Alcohol Abuse and Alcoholism (NIAAA) in the United States. (Recommendation 12). In the meantime, however, while the evidence base is being developed, the widespread failure to adopt strategies for the care of these patients in the general hospital setting poses serious issues for risk management, resource utility, staff satisfaction and the quality of care for other patients.

Typical contemporary general hospital practice

- 4.3 The harmful drinker usually presents to the general hospital through the A&E department with a medical, surgical or psychiatric problem. The range of presenting problems is enormous (see Box 1), but typically might include: coma due to single episode binge drinking; withdrawal fits in a dependent drinker; deliberate self-harm; a request for elective detoxification and rehabilitation; jaundice; a panic attack; a confusional state; a fracture. The patient will be seen by A&E doctors and nurses who may not identify alcohol misuse as a potential cause of the presenting complaint. The clerking will focus on the presenting problem and there is unlikely to be an attempt to elicit a history of other alcohol-related medical, psychiatric and social problems. If the patient requires admission, this is likely to be to the ward best equipped to deal with the presenting complaint. Often no detailed alcohol history or psychosocial assessment is attempted during the whole time the patient spends on the general ward, with no alcohol history of any sort being documented in the medical notes of more than 30–40% of acute general medical hospital admissions.^{95,98}

- 4.4 When dependent drinkers are identified there may be uncertainty about aspects of pharmacotherapy and ward observation. Should thiamine be administered orally or parenterally? What pattern of physical observation should accompany detoxification? Should oral vitamins continue after discharge? These decisions are often left to the most junior doctors on the team on the basis that: (a) alcohol-related problems are common and straightforward, (b) senior doctors should concern themselves with the management of patients with more 'complex' problems. Within a few days an unidentified dependent drinker may drift into uncontrolled alcohol withdrawal, complicated by fits or delirium tremens. Even if detoxification is successful, the patient may declare a range of unsuspected psychosocial problems on the eve of discharge. This can cause major problems on the general ward. The costs in terms of disturbance to other inpatients, stress among ward staff, delayed discharges and even litigation against the hospital are considerable.
- 4.5 When the abnormal drinking behaviour has been detected and an appropriate psychiatric referral made, still the outcome may be unsatisfactory. Some adult psychiatry services simply exclude substance misuse from their work and will not attend. More commonly, a trainee psychiatrist, with limited knowledge of alcohol-related problems or of local alcohol services, will attend along with variable senior supervisory support. These kinds of responses from mental health professionals may lead to a culture of non-referral of harmful drinkers admitted to general wards, even when the drinking is detected.

These scenarios present a rather bleak view of current practice but should be recognisable to clinicians.

Examples of good practice

▷ GOOD PRACTICE IN A&E

4.6 *Screening and brief interventions at St Mary's Hospital, London*

As discussed in Chapter 3, Touquet and colleagues have described their work over the last 12 years to improve detection and management of hazardous and dependent drinking among A&E attendees at St Mary's Hospital. Use of the Paddington Alcohol Test (PAT) to screen for harmful or hazardous drinking resulted in a ten-fold increase in referrals to an alcohol health worker (AHW) for counselling, generating 27 hours of work per week.¹²⁰ Brief interventions by the AHW resulted in a reduction of 43% in alcohol consumption from 30 to 17 units per day, and confirmed the now well established view that hazardous drinkers reduce their intake more than dependent drinkers in response to such treatment.¹²⁷

▷ The working party considered the important elements of this good practice to be:

- a) simple screening strategy for harmful and hazardous drinkers
- b) brief interventions for hazardous drinkers provided by a dedicated alcohol worker.

(Recommendation 6)

4.7 *Assessment and management of alcohol dependent patients at St Thomas's Hospital, London*

The A&E department at St Thomas's Hospital, London, has established a team of psychiatric liaison nurses who, in contrast to common practice, have made it part of their role to assist in the detection, assessment and management of alcohol dependent patients. Emphasis is placed on risk management and on interim care planning in the department. The liaison nurses are particularly skilled at assessing risk in problem drinkers who express suicidal ideas (or have self-harmed) and preventing escalation of violence in the A&E department. They also advise on detoxification regimes and appropriate referral. The severity of dependence in most of these patients means that brief interventions are unlikely to be effective. Instead, some patients are directed to local specialist alcohol services, both in the NHS and the voluntary sector, while those presenting with self-harm, severe withdrawal or confusional states are admitted to the A&E observation ward or a medical bed for a few days. The psychiatric liaison nurses also offer support and education to the general nurses in the A&E. There are currently seven liaison nurses devoted to the A&E department, which has approximately 120,000 presentations per annum, 500 with alcohol dependence syndrome.¹²⁸ These G grade nurses are either registered mental nurses with relevant experience or dual qualified in general nursing. A staff grade psychiatrist, a consultant psychiatrist and a well established A&E/liasion psychiatry steering group support their work. The nurses are currently managed by the Mental Health Trust. Joint management with the Acute Trust proved unwieldy in the past.

▷ The working party considered the important elements of this good practice to be:

- a) early detection of dependent drinkers
- b) assessment of dependence severity by appropriately trained staff
- c) the development of management protocols for detoxification and appropriate referral for on-going support
- d) provision of staff education and support
- e) service support from senior medical staff

(Recommendations 6 and 7)

▷ GOOD PRACTICE ON THE GENERAL WARD

4.8 *Alcohol liaison nursing at Royal Liverpool University Hospital*

The Working Party received evidence from an alcohol specialist nurse working at the Royal Liverpool University Hospital. Her original job description was to optimise the medical management of alcohol-dependent inpatients, offer brief intervention to inpatients identified as hazardous or to drinkers with early dependence, and to develop staff attitudes and knowledge about alcohol misuse. However, time constraints have forced her to spend less time on elective brief interventions in hazardous drinkers and more on the management of problem drinkers on the general wards. She has a background in general nursing and emphasised the importance of adequate clinical and professional supervision. A senior consultant physician championing the issue of alcohol within the general hospital, and a good working relationship with the psychiatric liaison nurse were also identified as crucial to her work (Recommendation 7).

4.9 This specialist nurse is currently undertaking a Research & Development project assessing the effects of her interventions on staff and patients. Over an 18-month period she received 1,654

referrals, 437 of whom were suitable for formal brief intervention. Ninety patients were subsequently followed up in a nurse-led clinic. At six months the mean AUDIT score had reduced from 20 to 11.9, the mean drink days per week from 5.7 to 3.6 and the mean daily alcohol consumption from 20.5 to 8.5 units. She estimated that, in total, her interventions prevented 258 admissions, covering the costs of her salary ten times over. Staff training included provision of information on the physical complications of alcohol and local alcohol services as well as encouraging staff to examine their attitudes towards alcohol. Initial evaluation of the success of this training also seems promising. She felt that if the teaching, research and clinical service were to expand and develop, a nurse consultant supported by an alcohol specialist nurse would be needed (see Appendix 4 for a sample job description).

▷ The working party considers the important elements of this good practice to be:

- a) management of harmful drinkers supervised by an appropriately trained member of staff
- b) brief interventions for hazardous drinkers provided by a dedicated alcohol worker
- c) provision of staff education and support
- d) service support from senior medical staff
- e) audit

Every acute hospital needs a minimum of one trained alcohol health worker, and larger ones would need several to maintain the educative and audit roles (Recommendation 6 and 7).

4.10 *The role of liaison psychiatry*

Liaison psychiatry services have developed to varying extents across the UK despite the case for expansion being vigorously articulated.¹²⁹ Some general hospitals rely for a service on a rota of psychiatric trainees, sometimes based off-site and with limited senior supervision. In such circumstances the psychiatrist will offer little to the problem drinker on a general ward. Indeed, some services formalise this with an operational policy that excludes alcohol and drug misuse from their duties. At the other extreme, relatively well-resourced liaison psychiatry services find that problem drinkers on the general wards represent about one quarter of their work. For example, at St Thomas' Hospital the multi-disciplinary team advises on the management of confusional and psychotic states amongst problem drinkers in general wards, assesses and manages mood disturbance and potential suicide and, where necessary, refers on to specialist alcohol services, community mental health teams or acute psychiatry wards before discharge.

- 4.11 One recommendation that sometimes arises is the need for a Registered Mental Nurse to provide one-to-one supervision of the patient during some of their time on a general ward. Protocols to guide such interventions and agreements about funding agency nurses to 'special' medical inpatients have proved useful. In addition to the general liaison service, a specialised neuropsychiatry liaison team assesses and helps to place cognitively impaired problem drinkers who are under 65 years of age. This assistance with discharge planning is particularly helpful in a central London hospital that discharges patients to areas of London with varying sectorised follow-up service options.

▷ The working party considers the important elements of this good practice to be:

- a) the acute services response — assessment and management of ‘complicated’ harmful and dependent drinkers by liaison psychiatrists who consider alcohol to be part of their remit
- b) appropriate referral for on-going support prior to discharge

(Recommendations 9 and 10).

4.12 *Referral for on-going support prior to discharge*

The importance of referring harmful/dependent drinkers for ongoing support before discharge was emphasised by several members of the working party as well as by some of those giving evidence. They considered it vital that these patients are assessed by an appropriately trained individual with knowledge of both the services available locally and the indications for referral to these services. It is clear that rotating, trainee doctors in the acute hospital may not have time to familiarise themselves with the range of local options or the grounds for choosing between them. A hospital alcohol worker, alcohol specialist nurse or psychiatric liaison nurse would appear to be best placed to refer on appropriately.

4.13 A large number of organisations, both within and without the NHS, offer a service to harmful drinkers. Patients with severe alcohol dependence will usually require referral to specialist alcohol services, where a variety of psychosocial treatment options have recently been shown to be beneficial,⁹⁷ as has pharmacotherapy.¹³⁰ However, within the NHS these services tend to be part of substance misuse teams (commissioned and managed by mental health trusts), and alcohol often falls behind drug dependence in their priorities.

4.14 Opportunities for residential rehabilitation are generally funded by local authorities via substance misuse social workers who may not be integrated with the NHS team. In some cases, where a need for psychiatric follow-up is identified, referral to the catchment area community mental health team is indicated. Depressive symptoms, morbid jealousy or continuing alcoholic hallucinosis after detoxification are among these indications. Indeed, admission to an acute psychiatry ward should be considered if these mental health problems are severe or associated with significant risk. The general practitioner is included in follow-up support for patients following discharge. There remains a pressing need for effective liaison between primary healthcare professionals and other community and hospital based services. Such liaison is essential to ensure proper co-ordination of support to patients.

4.15 Non-statutory agencies for alcohol misuse vary considerably from place to place. In London, for example, referral on to agencies such as Equinox or the Alcohol Recovery Project should be considered. The latter is one of the only organisations that will engage with patients who continue to drink. Several patients giving evidence to the Working Party felt that physicians, and more particularly psychiatrists, sometimes underestimated the value of self-help organisations such as Alcoholics Anonymous (AA). In fact there is published evidence of the efficacy of AA attendance in the maintenance of abstinence from alcohol¹³¹ and there are more than 4,000 groups in Britain holding 60,000 meetings each year. Volunteers from local AA groups are often prepared to come to general hospital wards to meet inpatients before their discharge and assist them in attending meetings immediately after discharge. General wards can promote this idea and offer written contact details, and general hospitals could offer appropriate space for AA meetings on site.

▷ GOOD PRACTICE IN A PAEDIATRIC SETTING

- 4.16 *The management of alcohol poisoning at the Royal Liverpool Children's Hospital, Alder Hey*
The Working Party received evidence on the management of the 200 children per annum presenting to the Royal Liverpool Children's Hospital, Alder Hey with acute alcohol poisoning. The initial management is by assessment, with resuscitation as required, looking particularly for the common complications of hypoglycaemia and hypothermia. Children are put into one of three categories for subsequent management:
- 1 one attendance with an overdose of alcohol or an injury related to intoxication
 - 2 one attendance with an overdose of alcohol plus another drug
 - 3 recurrent attendances with overdoses of alcohol.
- 4.17 Most children in the first category are discharged after a few hours of observation without follow-up. For those children and adolescents with alcohol and/or drug problems — particularly recurrent intoxication and excessive abuse — a more comprehensive assessment needs to be undertaken. Those children and adolescents with abuse and/or dependence often have co-existing psychological and psychiatric comorbidity, and may have problems with other domains of functioning such as family, academic and criminal involvement. These issues require assessment: often paediatric staff will initiate this, but much of it is typical of the work of child and adolescent mental health. Assessment needs to address not only these issues but also issues of confidentiality, consent to treatment and need for parental involvement. Liaison and/or referral to child psychiatric services as well as specific young people alcohol services may be warranted. Clear guidelines on assessment and availability of advice and support to paediatric staff should be readily available. Of paramount importance is the welfare of the child; this may at times raise child protection issues.

Pharmacotherapy of alcohol withdrawal and alcohol-related neuropsychiatric conditions

- 4.18 Alcohol withdrawal symptoms are variable in intensity. Unless managed appropriately with adequate sedation, severe alcohol withdrawal symptoms can occur in patients admitted to hospital either for the prime purpose of alcohol withdrawal (primary detoxification) or for other medical/surgical reasons resulting in their alcohol being withdrawn (secondary detoxification). Severe withdrawal may be predicted if patients have had high levels of alcohol intake, previous history of severe withdrawal, previous history of seizures or delirium, concomitant use of psychoactive drugs, poor physical health, high levels of anxiety or other psychiatric disorders.¹³² Severe alcohol withdrawal states include delirium tremens, alcohol withdrawal seizures, alcoholic hallucinations and blackouts. Complications such as liver failure, hypoglycaemia and subarachnoid haemorrhage can occur in these patients and they therefore require inpatient medical supervision. Heavy alcohol consumption and alcohol withdrawal are associated with a range of neuropsychiatric conditions, some of which have a high morbidity and mortality (see Box 1). Vitamin B deficiency is known to contribute substantially to the aetiology of a number of these conditions and therefore, in addition to sedation regimes, vitamin B supplements are central to the management of alcohol withdrawal.

Sedative regimes

- 4.19 Evidence suggests that benzodiazepines and chlormethiazole have similar efficacy for the treatment of withdrawal symptoms, including the prevention of seizures and delirium tremens.^{133,134} Respiratory suppression leading to death has been reported in patients combining alcohol and chlormethiazole.¹³⁵ Its use is therefore now reserved for those rare patients with withdrawal fits resistant to treatment with benzodiazepines. The mainstay of treatment for alcohol withdrawal states is the benzodiazepine chlordiazepoxide. It is slowly absorbed, has a long half-life and low potency. It also has a lower abuse potential than other drugs such as diazepam because of its slower onset of action. Adequate doses of chlordiazepoxide usually prevent withdrawal fits; in general, the longer acting agents are more effective in preventing seizures than short-acting drugs. Alcohol withdrawal seizures are usually self-limiting; however, if a patient develops prolonged or recurrent seizures, intravenous lorazepam (2mg) is effective in terminating seizures and preventing recurrence, and may be less of a respiratory depressant than diazepam.¹³⁶ Intravenous chlormethiazole should be used on a short-term basis only in resistant cases, and patients should be observed for signs of respiratory depression.
- 4.20 There is little evidence to support the use of conventional anti-epileptics in either the treatment or prophylaxis of alcohol withdrawal seizures. Haloperidol (1.5–5mg 2–3 times daily) or a similar sedative major tranquilliser can be added to chlordiazepoxide in patients with severe psychotic symptoms. However, this should be used with caution and for a short-term because of its epileptogenic potential. Beta-blockers can mask the adrenergic symptoms of withdrawal but will not provide prophylaxis against withdrawal seizures, and thus should be used only as adjunctive therapy.

Pharmacotherapy for alcohol-related neuropsychiatric problems

- 4.21 Alcohol misuse is often associated with poor dietary intake resulting in a variety of nutritional deficiencies. Vitamin B deficiencies are particularly common. For example, Thiamine (B1) deficiency has been reported in 30–80% of heavy drinkers, pyridoxine (B6) deficiency in 50%, and riboflavin (B2) deficiency in 17%. Less commonly, nicotinic acid deficiencies have been reported.^{137,138} Vitamin B deficiency, particularly thiamine, can result in Wernicke's encephalopathy (WE) (see Appendix 3), which is both common and potentially fatal, as well as being associated with chronic morbidity in the form of Korsakoff's psychosis. WE is characterised by a triad of clinical signs — ataxia, confusion and ophthalmoplegia. Harper *et al*¹³⁹ found only 10% of patients had the full triad, and the majority presented with an altered consciousness level ranging from confusion to coma. Many alcohol-dependent patients presenting to A&E are ataxic, confused and drowsy through intoxication, and some may be comatose or collapsed from other causes. Treatment directed at WE is therefore empirical and needs a high index of suspicion, the treatment of choice being parenteral high dose vitamin B in the form of Pabrinex (thiamine, riboflavin, pyridoxine and nicotinamide). This is especially important when the patient is hypoglycaemic, since intravenous glucose without thiamine may acutely precipitate WE. Patients developing signs of incipient WE during alcohol withdrawal are managed similarly. Intravenous Pabrinex is usually continued for 3–5 days until clinical improvement occurs. However, no formal, dose ranging, placebo-controlled studies have been conducted on the use of parenteral B-complex vitamins in chronic alcoholic misusers.

- 4.22 Parenteral high potency vitamin B preparations, including Pabrinex, are associated with a small risk of serious allergic adverse reactions, particularly when given intravenously.¹⁴⁰ In 1989 the Committee on Safety of Medicines (CSM) recommended for Parenterovite (withdrawn a few years later) that:
- use be restricted to patients in whom parenteral treatment is essential
 - intravenous injections should be administered slowly over 10 mins
 - facilities for treating anaphylaxis should be available.

These recommendations remain in place in the British National Formulary for intravenous thiamine in the form of Pabrinex. Patients with incipient WE therefore require transfer to an acute medical ward where intravenous B vitamins can be administered and continued in a safe environment. To prevent the neuropsychiatric complications of vitamin B deficiency in patients undergoing alcohol withdrawal in the community, high dose oral thiamine, (200mg/day) together with Vitamin B strong tablets, (30 mg/day) is the treatment of choice.

- 4.23 Protocols for the use of sedatives and vitamin supplements should be widely available and audited in each general hospital (Recommendation 6, see Appendices 1–3 for examples). Because of the particular problems encountered in A&E departments where patients may not stay long enough for staff to distinguish intoxication from the neurological sequelae of WE, a lower threshold for treatment with parenteral vitamin B is reasonable and an example of a protocol is given in Appendix 3.^{141,142} As an example of good practice, the Working Party received evidence that in Kings College Hospital, London such guidelines are available on the hospital Intranet and in the hospital formulary. Following successful alcohol withdrawal, pharmacotherapy such as acamprosate¹³⁰ and disulfiram can be useful adjuncts in management of the alcohol dependent patient. Early treatment is advocated, but only in conjunction with specialist alcohol service referral and advice.

Brief interventions in harmful and hazardous drinkers in general hospital

- 4.24 This chapter has, thus far, dealt largely with the management of the harmful, often alcohol-dependent, drinker presenting to general hospital. Following management of their withdrawal the majority of these patients will require conventional specialist alcohol treatment services accessed via psychiatric liaison nurses, liaison psychiatry, an alcohol health worker or formal referral by the general ward consultant. However, as discussed previously, a high proportion of patients admitted to hospital, with or without an alcohol-related cause, whilst drinking at hazardous levels are not alcohol dependent. Such patients are ideal candidates for brief interventions.

What is a 'brief intervention'?

- 4.25 Brief interventions can be defined as interventions for hazardous drinkers whose level of alcohol consumption places them at risk of experiencing problems associated with their drinking, but who have few, if any, symptoms of alcohol dependence.⁹⁴ The term 'brief intervention' is used to describe a range of interventions with similar properties. They are of shorter duration, lower intensity and are cheaper to implement than conventional treatments.¹⁴³ These interventions are usually carried out by generalist workers in non-specialist settings and, in order to

Box 4. Common elements of brief interventions (FRAMES)

F Feedback	Feedback of assessment
R Responsibility	Advise patient that drinking is their Responsibility
A Advice	Give clear Advice (written or verbal) to reduce or stop drinking
M Menu	Give a 'Menu' of options (a range of options)
E Empathy	Be Empathic, warm and understanding
S Self-efficacy	Encourage patient's Self-efficacy for change (optimism)

enhance implementation, they are brief and user-friendly. They are ideally suited to delivery by appropriately trained alcohol workers. A brief intervention usually consists of an assessment of alcohol intake, information on hazardous/harmful drinking, and clear advice for that individual, often with booklets and details of local services.³¹

- 4.26 The effective components of brief interventions and the 'minimum dose' necessary for behavioural change have been debated at length. It seems that raising awareness at a critical time (eg on admission to hospital) may be helpful in facilitating behavioural change. If individuals can be helped to examine their drinking in an empathic way they may feel motivated to do something about it. Once this motivation has been effected, further change may occur with little assistance. Miller & Sanchez¹⁴⁴ have summarised the common elements of brief interventions that have been shown to be effective, and have coined the acronym FRAMES as an aide-memoire (see Box 4). Follow-up may help to consolidate behavioural change but is not needed for all patients. Brief interventions may prompt a natural change process that would not otherwise have happened, or would have been delayed.¹⁴⁵

Efficacy of brief interventions in the hospital setting

- 4.27 Evidence suggests that overall brief interventions are effective in men and reduce alcohol intake by about 20%.^{31,34} Populations not directly seeking treatment seem to derive more benefit than populations seeking treatment, perhaps because the latter group has more serious problems and higher levels of dependence. Studies carried out specifically in the general hospital setting suggest that brief interventions can lead to significant reductions in alcohol use and/or related problems.^{146–150} As discussed above (paras 4.7–8), brief interventions in both the A&E setting and a nurse-led alcohol clinic were successful at achieving a reduction in alcohol intake in hazardous, non-dependent drinkers identified on presentation to hospital. Importantly, the nurse-led clinic appeared to be cost-effective by preventing hospital admissions. This is consistent with studies from the US showing that brief interventions lead to a significant fall in future health care costs.^{35,151}
- 4.28 In contrast to these studies, however, the Working Party heard evidence from a study carried out at King's College Hospital specifically examining the effectiveness of brief interventions in hospital settings. In this study 154 patients who had been detected by screening acute medical admissions for hazardous drinking using the AUDIT questionnaire (see Chapter 3) were randomly allocated to control (n=75) or treatment (n=79) groups. The control group received no advice about their drinking. The treatment group had a 'brief intervention' session lasting 10 minutes, during which time they were advised to reduce their drinking. Both groups were

followed-up at three and 12 months. Although both treatment and control groups showed reductions in AUDIT scores and weekly alcohol consumption, there was no evidence of an independent treatment effect that could be attributed to brief intervention counselling. This lack of treatment effect could be explained by the confounding effect of the control patients agreeing to take part in the trial and be followed-up. They were therefore effectively receiving some form of 'brief intervention'.

Implementing more effective hospital management of harmful and hazardous drinkers: removing the barriers

- 4.29 The available evidence clearly suggests many ways of improving the care of harmful and hazardous drinkers presenting to hospitals. However, in making recommendations it is necessary to consider what potential barriers might prevent their implementation.

Organisational barriers

- 4.30 The organisational barriers to the implementation of the recommended changes are numerous and significant. The separation of mental health from acute trusts and their separate commissioning by health authorities poses a major obstacle. The separation of specialist alcohol and drug services from general adult psychiatry services within the mental health trusts, and within mental health commissioning, complicates matters further. Add to this the sectorisation of mental health and substance misuse services, but the non-sectorisation of acute hospital trusts, and the management of change becomes very difficult.
- 4.31 As a worked example of how these organisational issues stifle service development for problem drinkers in the general hospital, the efforts to appoint an alcohol worker at St Thomas's Hospital will be described.

St Thomas's Hospital sees patients from all over London and the South East and a large number of problem drinkers are of no fixed abode. In fact, only about 40% of problem drinkers in the hospital have an address within Lambeth, Southwark & Lewisham Health Authority (LSL). Substance misuse services are tightly sectorised within LSL and throughout the rest of London. Who then should fund and employ the proposed alcohol worker? The specialist substance misuse service offered a part-time worker who would only see inpatients at St Thomas's with home addresses in LSL. Meetings to resolve this involved up to 12 people from different organisations and were difficult to convene. The simplest solution here is for the acute trust to directly employ an alcohol liaison nurse. But such an isolated professional would need formal links with, and support from, liaison psychiatry and local specialist alcohol services. One solution to these organisational barriers is to establish steering groups of key clinical and managerial personnel from the general hospital, liaison psychiatry and substance misuse services (Recommendation 8).

Negative staff attitudes

- 4.32 Another crucial obstacle to change in the care of harmful/hazardous drinkers in the general hospital is staff attitudes. Hospital doctors and nurses are often reluctant to raise the issue of alcohol consumption with patients, even when they suspect that it is a major contributory

factor to the admission. This stance may reflect lack of time, negative personal attitudes, a stereotypical view of a problem drinker and a failure to understand the difference between hazardous/harmful use and dependence. Many hospital doctors do not believe that it is within their remit to offer advice/treatment to such patients and many believe that treatment is unlikely to be successful. The most junior doctors — pre-registration house officers — often have to manage problem drinkers but the current undergraduate curriculum may not have prepared them for the prevalence and complexity of alcohol-related problems. Thus they may be left anxious and lacking the knowledge/skills when faced with these patients. Lack of support from senior colleagues and local services may compound a negative attitude to these difficult, often multiply reattending, patients. This may be superimposed on an ambivalent attitude to alcohol arising as a result of a heavy-drinking medical school culture.

- 4.33 A recent study carried out in a London teaching hospital exploring the attitudes of doctors towards inpatients with an identified alcohol problem has confirmed these impressions.¹⁵² Sixty-one doctors on three medical firms were sent an anonymous self-report questionnaire; 32 doctors responded (63%). Those who did respond were predominantly white and male, with a mean age of 36 years. On average these doctors spent approximately three hours per week dealing with alcohol problems as part of their clinical caseload. Alcohol-dependent patients were viewed as violent and aggressive. They found these patients frustrating and tried to avoid them by delegating care. Overall they had little confidence in treating these individuals, viewing any therapeutic input as 'futile'. About one-third of respondents indicated that there was very little internal support available to assist them in the management of alcohol-dependent patients. It emerged in focus groups that these strongly negative attitudes had largely been picked up at medical school, prior to clinical experience. Alcohol misuse had also been accorded a low priority in the teaching curriculum.
- 4.34 Unfortunately, negative attitudes of health care professionals can have a profound effect on health care delivery. Individuals with alcohol problems often fail to seek treatment or delay it until symptoms are severe. Denial, lack of confidence in the health care system and stigmatisation are all influential factors. Sadly, it appears that this stigma persists. In the Millward study,¹⁵² alcohol-dependent patients were more dissatisfied with their care than two control groups of patients, perceiving that doctors avoided them and focused mainly on their secondary symptoms. Alcohol consumption as a potential cause for admission was not discussed and, when alcohol was discussed, authoritarian approaches were used. Nurses in both primary and secondary care have also been shown to lack confidence in dealing with patients with alcohol-related problems.^{153,154} Patients with multiple presentations, for instance to the A&E department, are seen as 'revolving door' patients who are too difficult to change.
- 4.35 There needs to be a national lead to change this culture in secondary care. In general hospitals, the challenge is to move beyond treating the presenting alcohol-related physical disease to tackling the underlying alcohol problem and to assume a wider responsibility for health promotion in patients (Recommendation 3).

Lack of alcohol education and training in hospital staff

- 4.36 It is clear from the studies cited above that a lack of appropriate education and training in medical and nursing staff contributes significantly to their negative attitudes towards patients with

alcohol problems. Unfortunately, there is currently no requirement for medical schools to provide properly structured educational programmes on alcohol, and there is evidence of substantial variation in the quality and quantity of teaching in this area of the curriculum.^{155,156} Though the General Medical Council has made no specific recommendation about the inclusion of education on alcohol in the undergraduate curriculum, it does make it clear that students should be enabled ‘*to acquire a knowledge and understanding of the full range of problems that present to doctors, as well as the range of solutions that have been developed for their recognition, investigation, prevention and treatment*’.¹⁵⁷ Furthermore, the GMC states that students should ‘*acquire and demonstrate attitudes necessary for the achievement of high standards of medical practice*’.

- 4.37 Both of these recommendations argue strongly for proper teaching about alcohol within undergraduate curricula — a view we strongly endorse (Recommendation 4). The UK Central Council of Nursing Midwifery and Health Visiting (UKCC) has taken a positive stance in ensuring that the promotion, restoration and maintenance of health are central themes of the nursing curriculum introduced at the end of the 1980s. However, alcohol was not identified as a discrete topic, and no coherent approach was therefore taken to the prevention and management of alcohol problems *per se*.¹⁵⁸
- 4.38 In addition to this lack of undergraduate education and training, there is currently no provision of postgraduate training and certification for doctors and nurses wishing to take a special interest in the management of patients with alcohol problems. The English National Board of Nursing, Midwifery and Health Visiting (ENB) has examined the issue of education and training needs for nurses in the overall area of substance misuse and has developed guidelines for education and training for nurses and midwives.¹⁵⁹ However, the working party heard evidence that of 138 general hospital trusts surveyed in 1999, only six employed an alcohol specialist nurse. In the case of doctors, most of the emphasis on postgraduate training is in the area of drug misuse rather than alcohol. Indeed, the Department of Health has recently announced the provision of substantial resources to support both training and certification in substance misuse. Given the similarity between drug and alcohol misuse and the much greater overall impact of alcohol on health, there seems to be a powerful case for providing equivalent resource to support the extension of such training and certification to the field of alcohol (Recommendation 5). We believe that these issues need a greater focus of attention than is currently the case, and that a Director, analogous to those in place for cancer and coronary heart disease, should be appointed to oversee a national programme (Recommendation 1). Local implementation of national policies will need to be addressed by alcohol strategy groups which link primary and secondary care and acute and mental health areas (Recommendation 8). Within the general hospital this will need a senior member of both medical and nursing staff to act as champion for alcohol issues (Recommendation 7).

Conclusions and perspectives

- 4.39 From the available evidence and examples of good practice it is possible to devise a scheme for the optimum management of harmful and hazardous drinkers presenting to hospital services.

Following the detection of their alcohol misuse, all patients should be assessed for:

- a) evidence of end-organ damage requiring specific medical management
- b) evidence of alcohol dependence (see Glossary).

Ideally this assessment should be performed jointly by appropriately educated and trained medical staff together with a dedicated alcohol health worker, usually an alcohol specialist nurse with or without formal psychiatric training. Dependent patients should undergo pharmacotherapy for alcohol withdrawal syndrome according to standardised hospital protocols. Following the completion of withdrawal, severely dependent patients should be assessed either by liaison psychiatry or, ideally, specialist alcohol services so that treatment appropriate to their level of dependence can be initiated and follow-up planned. This follow-up plan, which should be discussed with the primary care physician, may include the use of non-statutory agencies according to local availability. Patients with no or early evidence of dependence should be offered a brief intervention delivered by an appropriately trained member of staff — ideally an alcohol specialist nurse. The need for follow-up in these patients has not been established but, as for dependent patients, liaison with the primary care physician is vitally important.

- 4.40 In conclusion, the evidence reviewed here provides a clear basis for the recommendations listed at the beginning of this report. These recommendations are aimed principally at improving the current, largely suboptimal, management of the vast number of patients presenting to general hospitals in Britain who drink alcohol in excess of sensible limits. Adoption of these measures, we believe, will improve the treatment of the individual patient and improve the health of the nation. It will also reduce the considerable burden alcohol places on hospital services in the UK and release resources for other health priorities.

References

- 1 Royal College of Physicians. *A great and growing evil: the medical consequences of alcohol abuse*. London: RCP, 1987.
- 2 Joint working party of Royal College of Physicians and British Paediatric Association. *Alcohol and the young*. London: RCP, 1995.
- 3 Joint working group of Royal College of Physicians, Royal College of Psychiatrists and Royal College of Physicians. *Alcohol and the heart in perspective: sensible drinking reaffirmed*. London: RCP, 1995.
- 4 Spring JA, Buss DH. Three centuries of alcohol in the British diet. *Nature* 1977; **270**: 567–72.
- 5 *Munk's Roll Vol 4*, compiled by GH Brown. London: RCP, 1955.
- 6 Royal College of Psychiatrists. *Alcohol our favourite drug*. London: Tavistock, 1986.
- 7 Royal College of General Practitioners. *Alcohol: a balanced view*. London: Royal College of General Practitioners, 1987.
- 8 Faculty of Public Health Medicine. *Alcohol and the public health*. Basingstoke: Macmillan Education, 1991.
- 9 Interdepartmental working group. *Sensible drinking*. London: Department of Health, 1995.
- 10 Office for National Statistics (ONS). *Living in Britain: results from the 1998 General Household Survey*. London: The Stationery Office, 2000.
- 11 Bridgwood A *et al*. *Living in Britain: results from the 1998 General Household Survey*. London: The Stationery Office, 2000.
- 12 Murgraff V, Parrot A, Bennett P. Risky single-occasion drinking amongst young people — definition, correlates, policy and intervention: a broad overview of research findings. *Alcohol Alcohol* 1999; **34**: 3–14.
- 13 Ghodsian M, Power C. Alcohol consumption between the ages of 16 and 23 in Britain: a longitudinal study. *Br J Addict* 1987; **82**: 175–80.
- 14 Balding J. *Young people in 1996*. University of Exeter: Schools Health Education Unit, 1997.
- 15 Department of Health. *Health survey for England*. Department of Health: London: The Stationery Office, 1999.
- 16 Robson WJ. Alcohol misuse in children. *Arch Dis Child* 2001; in press.
- 17 Goddard E. *Young teenagers and alcohol in 1996, vol 1*. London: Office for National Statistics, 1997.
- 18 Miller P, Plant MA. Drinking smoking and illicit drug use among 15 and 16 year olds in the United Kingdom. *Br Med J* 1996; **313**:394–7.
- 19 Anderson K, Plant M. Abstaining and carousing: substance use among adolescents in the Western Isles of Scotland. *Drug Alcohol Depend* 1996; **41**:189–96
- 20 Maynard A, Godfrey C. Alcohol policy — evaluating the options. *Br Med Bull* 1994; **50**: 221–30.
- 21 Health Education Authority. *Think about drink: there's more to a drink than you think*. London: Health Education Authority, 1996.
- 22 Honkanen R. Alcohol in home and leisure injuries. *Addiction* 1993; **88**: 939–44.
- 23 Evans C, Chalmers J, Capewell S, Redpath A *et al*. I don't like Mondays: Days of the week of coronary heart disease deaths in Scotland. Study of routinely collected data. *Br Med J* 2000; **320**: 218–9.
- 24 University of Birmingham School of Psychology. *The Birmingham untreated heavy drinkers project: report on wave 1*. Birmingham: University of Birmingham Press, 1998.
- 25 Buchan IC, Buckley EG, Deacon GLS, Irvine R, Ryan R. Problem drinkers and their problems. *J R Coll Gen Pract* 1983; **31**: 151–153.
- 26 Peto R. Smoking and death; the past 40 years and the next 40. *Br Med J* 1994; **309**: 937–9.

- 27 Saunders JB, Aasland OG, Babor TF, De la Fuente JR, Grant M. Development of the Alcohol Use Disorders Identification Test (AUDIT): W.H.O. collaborative project on early detection of persons with harmful alcohol consumption, part II. *Addiction* 1993; **88**:791–804.
- 28 Wallace P. Patients with alcohol problems — simple questioning is the key to effective identification and management. *Br J Gen Pract*: in press.
- 29 Cutler SF, Wallace P, Haines A. Assessing alcohol consumption in general practice patients: a comparison between questionnaire and interview. *Alcohol Alcohol* 1988; **23**(6): 41–450.
- 30 Daepfen JB, Yersin B, Landry U, Pecoud A, Decrey H. Reliability and validity of the Alcohol Use Disorders Identification Test (AUDIT) imbedded within a general health risk screening questionnaire: results of a survey in 332 primary care patients. *Alcohol Clin Exp Res* 2000; **24**: 659–65.
- 31 Wallace PG, Cutler S, Haines AP. Randomised controlled trial of general practitioner intervention in patients with excessive alcohol consumption. *Br Med J* 1988; **297**: 663–8.
- 32 Fleming MF, Barry KL, Manwell LB, Johnson K, London R. Brief physician advice for problem alcohol drinkers; a randomized controlled trial in community based primary care practices. *JAMA* 1997; **277**:1039–45.
- 33 World Health Organisation Brief Intervention Study Group. A cross national trial of brief interventions with heavy drinkers. *Am J Public Health* 1996; **13**: 453–66.
- 34 Freemantle N, Gill P, Godfrey C, Long A *et al*. Brief interventions and alcohol use. *Qual Health Care* 1993;**2**:267–73.
- 35 Fleming MF, Mundt MP, French MT, Manwell LB *et al*. Benefit-cost analysis of brief physician advice with problem drinkers in primary care settings. *Med Care* 2000; **38**:7–18.
- 36 Anderson P. Managing alcohol problems in general practice. *Br Med J* 1985; **290**:1873–5
- 37 McAvoy BR. Alcohol education for general practitioners in the United Kingdom — a window of opportunity? *Alcohol Alcohol* 2000; **35**(3): 225–9.
- 38 Lock C, Kaner E, Heather N, McAvoy B, Gilvarry E. A randomised controlled trial of the marketing strategies to disseminate a screening and brief alcohol intervention programme to general practitioners. *Br J Gen Pract* 1999; **49**: 695–8.
- 39 Rose G. Strategy of prevention: lessons from cardiovascular diseases. *Br Med J* 1981; **282**: 1847–51.
- 40 Kreitman, N. Alcohol consumption and the preventive paradox. *Br J Addict* 1986; **81**: 353–63.
- 41 Edwards G, Anderson P, Babor TF, Caswell S *et al*. *Alcohol policy and the public good*. Oxford: Oxford Medical Publications, 1994.
- 42 Plant M, Single E, Stockwell T. *Alcohol: minimising the harm*. London: Free Association Books, 1997.
- 43 Thun MJ, Peto R, Lopez AD, Monaco JH *et al*. Alcohol consumption and mortality among middle aged and elderly US adults. *N Engl J Med* 1997; **337**: 1705–14.
- 44 White *et al*. *J Public Health Med* 1999; **21**:407–411.
- 45 Woodside M, Coughy K, Cohen R. Medical costs of children of alcoholics — pay now or pay later? *J Subst Abuse* 1993; **5**(3): 281–7.
- 46 Tonneson H, Rosenberg J, Nielsen HJ, Rasmussen V *et al*. Effect of preoperative abstinence on poor post-operative outcome in alcohol misusers: randomised controlled trial. *Br Med J* 1999;**318**:1311–6.
- 47 Grobmyer SR, Maniscalco SP, Purdue GF, Hunt JL. Alcohol, drug intoxication, or both at the time of burn injury as a predictor of complications and mortality in hospitalized patients with burns. *J Burn Care Rehabil* 1996; **17**: 532–9.
- 48 Stinson FS, deBaKey SF. Alcohol related mortality in United States 1979–1988. *Br J Addict* 1992; **87**: 777–83.
- 49 Single E, Rehm J, Robson L, Truong MV. The relative risks and etiological fractions of different causes of death and disease attributable to alcohol, tobacco and illicit drug use in Canada. *Can Med Assoc J* 2000; **162**: 1669–75.
- 50 Chick J, Duffy JC, Lloyd GC, Ritson B. Medical admissions in men: the risk among drinkers. *Lancet* 1986; **2**(8520): 1380–3.

- 51 Andreasson S, Allebeck P, Romelsjo A. Hospital admissions for somatic care among young men: the role of alcohol. *Br J Addict* 1990; **85**(7): 935–41.
- 52 Holt S, Stewart IC, Dixon JMJ, Elton RA *et al*. Alcohol and the emergency service patient. *Br Med J* 1980; **281**: 638–40.
- 53 Yates DW, Hadfield FM, Peters K. Alcohol consumption of patients attending two accident and emergency departments in north-west England. *J R Soc Med* 1987; **80**: 486–9.
- 54 Pirmohamed M, Brown C, Owens L, Luke C *et al*. The burden of alcohol misuse on an inner-city general hospital. *QJM* 2000; **93**: 291–5.
- 55 Bradbury A. Pattern and severity of injury sustained by pedestrians in road traffic accidents with particular reference to the effect of alcohol. *Injury* 1991; **22**(2): 132–4.
- 56 Boyle MJ, Vella L, Moloney E. Role of drugs and alcohol in patients with head injury. *J Royal Society of Medicine* 1992; **84**(10): 608–10.
- 57 Williams RJ, Hittinger R, Glazer G. Resource implications of head injuries on an acute surgical unit. *J R Soc Med* 1994; **87**(2): 83–6.
- 58 Hutchison IL, Magennis P, Shepherd JP, Brown AE. The BAOMS United Kingdom survey of facial injuries. Part 1: aetiology and the association with alcohol consumption. *Br J Oral Maxillofac Surg* 1998; **36**(1): 3–13.
- 59 Chick J, Rund D, Gilber MA. Orthopaedic trauma in men: the relative risk among drinkers and the prevalence of problem drinking in male orthopaedic admissions. *Ann R Coll Surg Engl* 1991; **73**(5): 311–5.
- 60 Department of the Environment, Transport and the Regions. *Road Accidents in Great Britain — The Casualty Report 1998*. London: The Stationery Office, 1999.
- 61 Quinn MA, Johnston RV. *Health Bull (Edinb)* 1976; **34**: 253.
- 62 Jariwalla AG, Adams PH, Hore BD. Alcohol and acute general medical admissions to hospital. *Health Trends* 1979; **11**: 95–7.
- 63 Lockhart SP, Carter YH, Straffen AM, Pang KK *et al*. Detecting alcohol consumption as a cause of emergency general medical admissions. *J R Soc Med* 1986; **79**: 132–136.
- 64 Taylor CL, Kilbane P, Passmore N, Davies R. Prospective study of alcohol-related admissions in an inner-city hospital. *Lancet* 1986; 265–7.
- 65 McKnight JA, McCance DR, Lundy FT, Widsom GB, Hayes JR. Alcohol intake in patients admitted acutely to a general medical unit. *Ulster Med J* 1995; **64**(2): 157–63.
- 66 Mangion DM, Platt JS, Syam V. Alcohol and acute medical admission of elderly people. *Age Ageing* 1992; **21**(5): 362–7.
- 67 Van der Pol V, Rodgers H, Aitken P, James O, Curless R. Does alcohol contribute to accident and emergency department attendance in elderly people? *J Accid Emer Med* 1996; **13**(4): 258–60.
- 68 Robson WJ. Alcohol and Young People. *Alcohol* 1997; **16**(6): 1–2.
- 69 Longnecker MP, MacMahon B. Associations between alcoholic beverage consumption and hospitalization, 1983 National Health Interview Survey. *Am J Public Health* 1988; **78**(2): 153–6.
- 70 Spaite DW, Criss EA, Weist DJ, Valenzuela TD *et al*. A prospective investigation of the impact of alcohol consumption on helmet use, injury severity, medical resource utilization, and health care costs in bicycle-related trauma. *J Trauma* 1995; **38**(2): 287–90.
- 71 Honkanen R, Smith GS. Impact of acute alcohol intoxication on the severity of injury: a cause specific analysis of non-fatal trauma. *Injury* 1990; **21**(6): 353–7.
- 72 Honkanen R, Smith G. Impact of acute alcohol intoxication on patterns of non-fatal trauma: cause specific analysis of head injury effect. *Injury* 1991; **22**(3): 225–9.
- 73 Spies CD, Neuner B, Neumann T, Blum S *et al*. Intercurrent complications in chronic alcoholic men admitted to the intensive care unit following trauma. *Intensive Care Med* 1996; **22**(4): 286–93.
- 74 Lange DE, Schacter B. Prevalence of alcohol related admissions to general medical units. *Int J Psychiatry Med* 1989; **19**: 371–84.

- 75 Gerke P, Hapke U, Rumpf HG, John U. Alcohol-related diseases in general hospital patients. *Alcohol Alcohol* 1997; 32(2): 179–84.
- 76 Andreasson S, Brandt L. Mortality and morbidity related to alcohol. *Alcohol Alcohol* 1997; 32(2): 173–8.
- 77 Germann G, Barthold U, Lefering R, Raff T, Hartmann B. The impact of risk factors and pre-existing conditions on the mortality of burn patients and the precision of predictive admission-scoring systems. *Burns* 1997; 23(3): 195–203.
- 78 Poon A, Owen J, Gijbsers AJ. Identification of at-risk drinkers in an orthopaedic inpatient population. *Aust N Z J Surg* 1994; 64(11): 775–9.
- 79 Baldwin WA, Rosenfeld BA, Breslow MJ, Buchman TG *et al.* Substance abuse-related admissions to adult intensive care. *Chest* 1993; 103(1): 21–5.
- 80 Marik P, Mohedin B. Alcohol-related admissions to an inner city hospital intensive care unit. *Alcohol Alcohol* 1996; 31(4): 393–6.
- 81 Office of Health Economics. *Compendium of Health Statistics*. London: The Stationery Office, 2000.
- 82 Office of National Statistics (ONS). *Business Trends*. London: The Stationery Office 1999.
- 83 McDonnell R, Maynard, A. The cost of alcohol misuse. *Br J Addict* 1985; 80: 27–35.
- 84 Godfrey C, Hardman G. *Changing the Social Costs of Alcohol: Final report to the AERC*. York: Centre for Health Economics, University of York, 1994.
- 85 Godfrey C, Maynard A. *A Health Strategy for Alcohol: Setting Targets and Choosing Policies. YARTIC Occasional Paper 1*. York: Centre for Health Economics, Leeds Addiction Unit, University of York, 1992.
- 86 Harwood H, Fountain D, Livermore G. The Economic Costs of Alcohol and Drug Abuse in the United States, 1992. NIDA & NIAAA. 1989. <http://www.nida.nih.gov/EconomicCosts>
- 87 Single E, Robson L, Xie X, Rehm J. *The costs of substance abuse in Canada*. Toronto: Canadian Centre on Substance Abuse, 1996.
- 88 Department of Health. *Burdens of disease: a discussion document*. London: The Stationery Office, 1996.
- 89 Netten A, Dennett J. *Unit costs of health and social care*. Canterbury: Personal Social Services Research Unit, University of Kent, 1999.
- 90 Barrison IG, Viola L, Mumford J, Murray RM *et al.* Detecting excessive drinking among admissions to a general hospital. *Health Trends* 1982; 14: 79–83.
- 91 Hurt RD, Finlayson RE, Morese RM, Davis LJ. Alcoholism in elderly persons: medical aspects and prognosis of 216 inpatients. *Mayo Clin Proc* 1988; 63: 753–60.
- 92 Moore RD, Bone LR, Geller G, Mamon JA *et al.* Prevalence, detection and treatment of alcoholism in hospitalised patients. *J Am Med Assoc* 1989; 261: 403–7.
- 93 Orford J, Somers M, Daniels V, Kirby B. Drinking amongst medical patients: levels of risk and models of change. *Br J Addict* 1992; 87: 1691–702.
- 94 Chick J. Alcohol problems in the general hospital. *Br Med Bull* 1994; 50: 200–10.
- 95 Canning UP, Kennell-Webb SA, Marshall EJ, Wessely SC, Peters TJ. Substance misuse in acute general hospital admissions. *QJM* 1999; 92:319-26.
- 96 Watson HE. Problem drinkers among acute care inpatients. *Nursing Standard* 2000; 14: 32–5.
- 97 Anon. Matching alcohol treatments to client heterogeneity: Project MATCH post-treatment drinking outcomes. *J Stud Alcohol* 1997; 58: 7–29.
- 98 Barrison IG, Viola L, Murray-Lyon IM. Do housemen take an adequate drinking history? *Br Med J* 1980; 281: 1040.
- 99 Feldman E, Mayou R, Hawton K, Ardern M, Smith EBO. Psychiatric disorders in medical in-patients. *QJM* 1987; 63: 405–12.
- 100 Skinner HA, Holt S, Sheu WJ, Israel Y. Clinical versus laboratory detection of alcohol-abuse — the Alcohol Clinical Index. *Br Med J* 1986; 292:1703–8.

- 101 Paton A. *ABC of alcohol*. London: BMJ Publishing Group, 1994.
- 101a Stibler H. Carbohydrate-deficient transferrin in serum: a new marker of potentially harmful alcohol consumption reviewed. *Clin Chem* 1991; **37**: 2029–37.
- 102 Sharpe PC, McBride R, Archbold GP. Biochemical markers of alcohol abuse. *QJM* 1996; **89**: 137–44.
- 103 Mayfield D, McLeod G, Hall P. The CAGE questionnaire: validation of a new alcohol-screening instrument. *Am J Psychiatry* 1974; **131**: 1121–3.
- 104 Babor TF, Bruce E, Hodgson R. Alcohol related problems in the primary care setting: a review of early intervention strategies. *Br J Addict* 1986; **81**: 23–46.
- 105 Selzer ML. The Michigan Alcoholism Screening Test: the quest for a new diagnostic instrument. *Am J Psychiatry* 1971; **127**: 1653–8.
- 106 Pokorny AD, Miller BA, Kaplan HB. The brief MAST: a shortened version of the Michigan Alcohol Screening Test. *Am J Psychiatry* 1972; **129**: 342–5.
- 107 Cyr MG, Wartman SA. The effectiveness of routine screening questions in the detection of alcoholism. *J Am Med Assoc* 1988; **259**: 51–4.
- 108 Bickel HT, Amass L. The relationship of mean daily alcohol levels to admission MAST, clinical absenteeism and depression in alcoholic methadone patients. *Drug Alcohol Depend* 1993; **32**: 113–8.
- 109 Gold MK, Gladstein J. Substance misuse among adolescents with diabetes mellitus: preliminary findings. *J Adolesc Health* 1993; **14**: 80–4.
- 110 Nilssen O, Ries RK, Rivara FP, Gurney JG, Jurkovich GJ. The CAGE questionnaire and the short MAST in trauma patients: comparisons of their correlations with biological markers. *J Trauma* 1994; **36**: 784–8.
- 110a Saunders WM, Kershaw PW. Screening tests for alcoholism — findings from a community study. *Br J Addict* 1980; **75**: 37–41.
- 111 Maisto SA, Connors GJ, Allen JP. Contrasting self-report screens for alcohol problems: a review. *Alcohol Clin Exp Res* 1995; **19**: 1510–6.
- 112 Cherpitel CJ. Analysis of cut points for screening instruments for alcohol problems in the emergency room. *J Stud Alcohol* 1995; **56**: 695–700.
- 113 Yersin B, Nicolet JF, Decrey H, Burnier M *et al*. Screening for excessive alcohol drinking — comparative value of Carbohydrate-Deficient Transferrin, Gamma-Glutamyl-Transferase, and Mean Corpuscular Volume. *Arch Intern Med* 1995; **155**: 1907–11.
- 114 Bernadt MW, Mumford J, Taylor C, Smith B, Murray RM. Comparison of questionnaire and laboratory tests in the detection of excessive drinking and alcoholism. *Lancet* 1982; **1**: 325–8.
- 115 Harvey, J. Detecting the problem drinker. *Medicine (Baltimore)* 1995; **23**: 47–50.
- 116 Conigrave KM, Saunders JB, Reznik RB. Predictive capacity of the AUDIT questionnaire for alcohol-related harm. *Addiction* 1995; **90**: 1479–85.
- 117 Piccinelli M, Tessari E, Bortolomassi M, Piasere O *et al*. Efficacy of the Alcohol Use Disorders Identification Test as a screening tool for hazardous alcohol intake and related disorders in primary care: a validity study. *Br Med J* 1997; **314**: 420–4.
- 118 Bohn MJ, Babor TF, Kranzler HR. The Alcohol Use Disorder Test: validation of a screening instrument for use in medical settings. *J Stud Alcohol* 1995; **56**: 423–32.
- 119 MacKenzie DM, Langa A, Brown TM. Identifying hazardous and harmful alcohol use in medical admissions: a comparison of AUDIT, CAGE and brief MAST. *Alcohol Alcohol* 1996; **31**: 591–9.
- 120 Smith SGT, Touquet R, Wright S, Gupta ND. Detection of alcohol misusing patients in accident and emergency departments: the Paddington Alcohol Test (PAT). *J Acc Emerg Med* 1996; **13**: 308–12.
- 121 Green M, Setchell J, Hames P, Stiff G *et al*. Management of alcohol abusing patients in accident and emergency departments. *J R Soc Med* 1993; **86**: 393–5.
- 122 Touquet R, Priest R. Management of alcohol abusing patients in accident and emergency departments. *J R Soc Med* 1994; **87**: 720.

- 123 Huntley JS, Blain C, Hood S, Touquet R. Improving detection of alcohol misuse in patients presenting to an accident and emergency department. *Emer Med J* March 2001: in press.
- 124 Peters TJ. *Report of the Alcohol Contracted Audit Group at King's College Hospital to Lambeth, Southwark and Lewisham Health Authority*. London: 1999.
- 125 Allen JP, Litten RZ, Fertig JB, Babor T. A review of research on the Alcohol Use Disorders Identification Test (AUDIT). *Alcohol Clin Exp Res* 1997; 21: 613–19.
- 126 Tolley K, Rowland N. Identification of alcohol-related problems in a general hospital setting — a cost-effectiveness evaluation. *Br J Addict* 1991; 86: 429–38.
- 127 Wright S, Moran L, Meyrick M, O'Connor R, Touquet R. Intervention by an alcohol health worker in an accident and emergency department. *Alcohol* 1998; 33: 651–6.
- 128 Cassar S, Hodgkiss A, Ramirez A, Williams D. Mental health presentations to an inner city accident and emergency department. *Psychol Bull* 2001; in press.
- 129 Royal College of Physicians/Royal College of Psychiatrists. *The psychological care of medical patients: recognition of need and service provision*. London: RCP, 1995
- 130 Tempesta E, Janiri L, Bignamini A, Chabac S, Potgieter A. Acamprosate and relapse prevention in the treatment of alcohol dependence: a placebo-controlled study. *Alcohol Alcohol* 2000; 35: 202–9.
- 131 Vaillant GE. What can long-term follow-up teach us about relapse and prevention of relapse in addiction? *Br J Addict* 1988; 83(10): 1147–57.
- 132 Raistrick D. Management of alcohol detoxification. *Advances in Psychiatric Treatment* 2000; 6: 349–55.
- 133 Mayo-Smith MF. Pharmacological management of alcohol withdrawal. A meta-analysis and evidence-based practice guideline. *JAMA* 1997; 278: 144–51.
- 134 Williams D, McBride A. The drug treatment of alcohol withdrawal symptoms: a systematic review. *Alcohol Alcohol* 1998; 33:103–15.
- 135 McInnes GT. Chlormethiazole and alcohol: a lethal cocktail. *Br Med J* 1987; 294: 592.
- 136 D'Onofrio G, Rathlev NK, Ulrich AS, Fish SS, Freedland ES. Lorazepam for the prevention of recurrent seizures related to alcohol. *N Engl J Med* 1999; 340: 915–9.
- 137 Thomson A *et al*. Nutrition and alcoholic encephalopathies. *Acta Med Scan Suppl* 1987; 717: 55–65.
- 138 Thomson A, Heap L, Ward R. Alcohol induced malabsorption in the gastrointestinal tract. In: Preedy V & Watson R (eds). *Alcohol and the gastrointestinal tract*. CRC Press, 1986.
- 139 Harper C, Giles M & Finlay-Jones. Clinical signs in the Wernicke-Korsakoff complex: a retrospective analysis of 131 cases diagnosed at necropsy. *J Neurol Neurosurg Psychiatry* 1986; 49: 341–5.
- 140 O'Brien P. Parenteral vitamin therapy in alcoholism. *Psych Bull* 1995; 19: 188.
- 141 Cook CCH, Thomson AD (1997): B-complex vitamins in the prophylaxis and treatment of Wernicke-Korsakoff syndrome. *Br J Hosp Med* 1997; 57: 461–5.
- 142 Touquet R, Fothergill J, Henry JA, Harris NH. Accident and emergency medicine. In: Powers MJ, Harris NH (eds). *Clinical negligence*. London: Butterworths, 2000.
- 143 Heather N. Treatment Approaches to Alcohol Problems. *WHO Regional Publications* 1995, European Series No. 65 1995.
- 144 Miller WR, Sanchez VC. Motivating young adults for treatment and lifestyle change. In: Howard G (ed). *Issues in alcohol use and misuse in young adults*. Notre Dame IN : University of Notre Dame Press, 1993.
- 145 Bien TH, Miller WR, Tonigan JS. Brief interventions for alcohol problems: a review. *Addiction* 1993; 88: 315–36.
- 146 Chick J, Lloyd G, and Crombie E. Counselling problem drinkers on medical wards: a controlled study. *Br Med J* 1985; 290: 965–7.
- 147 Elvy GA, Wells JE, Baird KA. Attempted referral as intervention for problem drinking in the general hospital. *Br J Addict* 1998; 83: 83–9.

- 148 Persson J, Magnusson P-H. Early intervention in patients with excessive consumption of alcohol: a controlled study. *Alcohol* 1989; 6: 403–8.
- 149 Daniels V, Somers M, Orford J. How can risk drinking amongst medical patients can be modified: the effects of computer screening and a self-help manual. *Behavioural Psychotherapy* 1992; 20: 47–60.
- 150 Marshall EJ, Canning UP, Kennell-Webb S, Gunstone C *et al.* An investigation into the effectiveness of a brief intervention amongst ‘at risk’ alcohol misusers and general wards: a randomised controlled trial. *Addiction Biology*: in press.
- 151 Holder HD. Cost benefits of substance abuse treatment: an overview. *Journal of Mental Health Policy and Economics* 1988; 1: 23–9.
- 152 Millward L. *Attitudes towards alcoholics: staff–patient relationships in the acute hospital setting*. Unpublished PhD thesis. University of London, 2000.
- 153 Brown C, Pirmohamed M, Park BK. Nurses’ confidence in caring for patients with alcohol-related problems. *Prof Nurse* 1997; 13: 83–6.
- 154 Owens L, Gilmore IT, Pirmohamed M. General practice nurses’ knowledge of alcohol use and misuse: a questionnaire survey. *Alcohol Alcohol* 2000; 35: 259–62.
- 155 Walsh RA. Medical Education about Alcohol: a review of its role and effectiveness. *Alcohol Alcohol* 1995; 30(6): 689–702.
- 156 Wallace P. Medical students, drugs and alcohol: time for medical schools to take the issue seriously. *Med Educ* 2000; 34: 86–7.
- 157 General Medical Council. *Tomorrow’s doctors: recommendations on undergraduate medical education*. London: GMC, 1993.
- 158 Watson HE. Nursing: prevention and management of problem drinking. *Alcohol* 2000; 19: 2–3.
- 159 English National Board for Nursing Midwifery and Health Visiting. *Guidelines for good practice in education and training nurses, midwives and health visitors*. London: 1996.