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Assessment and management of alcohol use disorders

Ed Day,[1] Alex Copello,[2] Martyn Hull[3]

[1]Addictions Department, Institute of Psychiatry, Psychology & Neuroscience, King's College London, London SE5 8AF, UK
[2]School of Psychology, University of Birmingham, Birmingham, UK
[3]Ridgacre Medical Centres, Quinton, Birmingham, UK
Correspondence to: E Day Edward.Day@kcl.ac.uk

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Alcohol can impact on both the incidence and the course of many health conditions, and nearly 6% of all global deaths in 2012 were estimated to be attributable to its consumption.[1] A quarter of the UK adult population drinks alcohol in a way that is potentially or actually harmful to health.[2] Between 2002 and 2012 in England the number of episodes where an alcohol related disease, injury, or condition was the primary reason for hospital admission or a secondary diagnosis doubled.[3] Despite the large numbers of people drinking alcohol at higher risk levels, a relatively low number access treatment.[4] Possible causes for this include missed opportunities to identify problems, limited access to specialist services, and underdeveloped care pathways. International studies have shown that more than 20% of patients presenting to primary care are higher risk or dependent drinkers,[5] yet the problem of alcohol is inadequately addressed. This review focuses on practical aspects of the assessment and treatment of alcohol use disorders from the perspective of the non-specialist hospital doctor or general practitioner.

How are alcohol use disorders defined?

As the level of alcohol consumption goes up, so the risk of physical, psychological, and social problems increases. Alcohol related harm is a public health problem, and strategies that reduce average consumption across the whole population by even a small amount produce considerable health benefits. Increasing the cost of alcohol has been consistently associated with a reduction in alcohol related harm,[6] and a minimum cost for a unit of alcohol has been under consideration in the United Kingdom.[7]

THE BOTTOM LINE

- Alcohol use disorders exist across a spectrum, and public health measures to reduce the drinking of a whole population have considerable health benefits
- All front line clinicians should be aware of the potential effects of alcohol consumption and be able to screen for alcohol use disorders using the alcohol use disorders questionnaire test
- Brief interventions are quick and easy to deliver and have a potentially large impact on reducing hazardous and harmful drinking
- Benzodiazepines are the drug of choice for medically assisted alcohol withdrawal
- Relapse to drinking is common in the first year after stopping drinking, but psychological treatments, mutual aid groups, and relapse prevention drugs increase the likelihood of remaining abstinent

SOURCES AND SELECTION CRITERIA

We structured this review around a series of clinical guidelines developed by the UK National Institute for Health and Care Excellence. Three separate expert groups considered public health, physical, and psychological and social issues around alcohol use. The guidance is summarised in the form of clinical pathways (http://pathways.nice.org.uk/pathways/alcohol-use-disorders).

Alcoholic drinks have different strengths, and so alcohol is not measured by number of drinks but by number of "units." In the United Kingdom, 1 unit comprises 8 grams of alcohol (equivalent to 10 mL of pure ethanol), but elsewhere this value is defined differently.[8] Box 1 shows how to calculate the number of units. The terminology used to define alcohol use disorders is currently evolving, with various organisations using slightly different terms.[9 10] However, the general agreement is that there is no such thing as a "safe level" of drinking and that the risk of harm increases with either frequency of consumption or amount consumed on a drinking occasion.[8] To plan effective intervention strategies, the categories of alcohol use disorders defined in table 1 are most commonly used. Figure 1 shows the prevalence of these categories in England.

The term "addiction" is not used in current classificatory systems, partly because it has pejorative connotations. The latest version (fifth edition) of the *Diagnostic and Statistical Manual of Mental Disorders* has removed the category of dependence, and instead describes a spectrum of alcohol use disorders of differing severity.[11] The

Box 1 | How to calculate units of alcohol

The alcohol content of a drink is usually expressed by the standard measure "alcohol by volume," or ABV. This is a measure of the amount of pure alcohol as a percentage of the total volume of liquid in a drink and can be found on the labels of cans and bottles. For example, if the label on a can of beer states "5% ABV" or "alcohol volume 5%," this means that 5% of the volume of that drink is pure alcohol.

The number of units in any drink can be calculated by multiplying the total volume of a drink (in millilitres) by its ABV (which is measured as a percentage) and dividing the result by 1000. For example, the number of units in a pint (568 mL) of strong lager (ABV 5%) would be calculated:

5(%) x 568 (mL)/1000=2.84

This is worth doing, as the increasing strength of many alcoholic drinks and the larger glass sizes served in bars mean that people are often drinking more alcohol than they realise.

Units calculators are available (for example, www.nhs.uk/Tools/Pages/Alcohol-unit-calculator.aspx)

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Previous articles in this series

- Management of chronic pain in older adults (*BMJ* 2015;350:h532)
- Cancer induced bone pain (*BMJ* 2015;350:h315)
- Managing patients with multimorbidity in primary care (*BMJ* 2015;350:h176)
- The prevention and management of rabies (*BMJ* 2015;350:g7827)
- Heparin induced thrombocytopenia (*BMJ* 2014;349:g7566)

Table 1 | Classification and definition of alcohol use disorders

Category of drinking	Definition	AUDIT score
Low risk	No amount of alcohol consumption can be called "safe," but risks of harm are low if consumption is below levels specified in the "increasing risk" category (below)	≤7
Increasing risk (hazardous)	Regularly drinking more than 2 or 3 units a day (women) and more than 3 or 4 units a day (men)	8-15
Higher risk (harmful)	Regularly drinking more than 6 units daily (women) or more than 8 units daily (men), or more than 35 units weekly (women) or more than 50 units weekly (men)	16-19
Dependence, as defined by ICD-10 (international classification of diseases, 10th revision)[9]	See thebmj.com for full table and definition of dependence	≥20

AUDIT=alcohol use disorders identification test.

concept of alcohol dependence is, however, important to describe people in whom the ability to control the frequency and extent of consumption has been completely eroded, while recognising that dependence may exist at different levels of severity.[12 13]

How can alcohol use disorders be identified?

Most people with risky patterns of drinking are not dependent on alcohol (fig 1). A few minutes spent systematically identifying drinkers at increased risk of harm and delivering advice about moderating alcohol consumption has been shown to be an effective strategy in various settings,[14 15] and the process of identification and brief advice should be offered as a first step in treatment.[4] In the United Kingdom, the National Institute for Health and Care Excellence recommends that professionals in the National Health Service should carry out alcohol screening as part of routine practice,[4] and all doctors should feel comfortable and confident in raising the topic of alcohol consumption in a consultation. However, the low level of detection and treatment suggests that generalists are not sufficiently proactive in screening groups potentially at risk, including those who have relevant physical conditions (for example, hypertension and gastrointestinal or liver disorders); mental health problems, such as anxiety or depression; been assaulted; are at risk of self harm; regularly experience unintentional injuries or minor trauma; and regularly attend genitourinary medicine clinics or repeatedly seek emergency contraception.

AUDIT, the alcohol use disorders identification test (fig 2), consists of 10 questions about drinking frequency and intensity, experience of alcohol related problems, and signs of possible dependence.[16] It is the ideal screening questionnaire for detecting drinkers at increasing or higher risk.[1] Furthermore, the AUDIT score can guide clinicians as to the best intervention, including brief advice or a referral to specialist services (box 2). Owing to the potentially more important effects of alcohol on certain populations, scores should be revised downward when screening young people aged less than 18, or adults aged more than 65 (see box 2). Biochemical measures such as liver function tests are not normally used for screening, but may be helpful in assessing the severity and progress of an established alcohol related problem, or as part of a secondary care assessment.[17]

A guiding style that aims to build motivation and avoid confrontation is recommended, and motivational interviewing has shown considerable promise in this area. Although a review is beyond the scope of this article, useful materials can be found at www.motivationalinterviewing.org.

What treatments are available for alcohol dependence in the non-specialist setting?

Identification and brief advice is an important public health approach because of the numbers of people drinking at increasing risk or higher risk levels. However, even after gold standard brief interventions in primary care, nearly two thirds of people will still be drinking at an increasing or

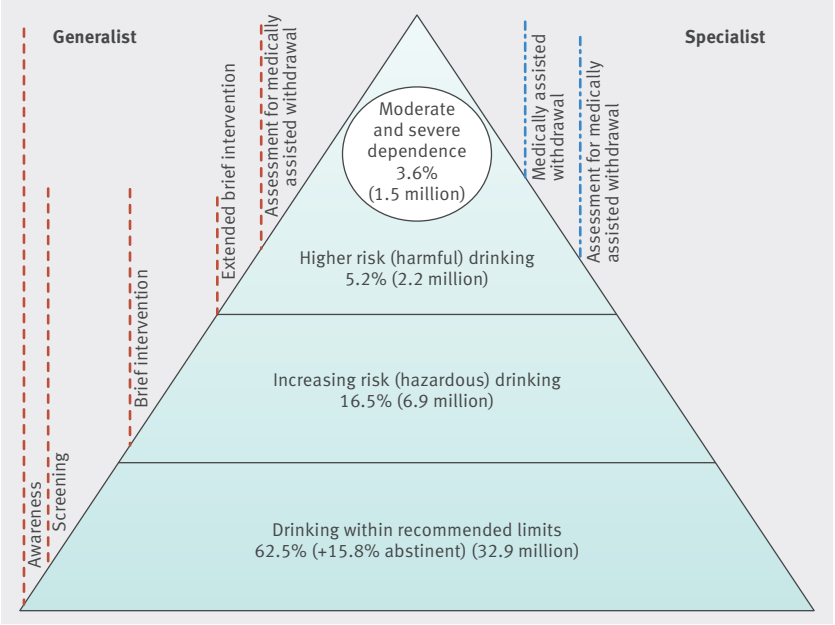

Fig 1 | Prevalence of alcohol use disorders in England (taken from general household survey 2009 and psychiatric morbidity survey 2007) and recommended treatment strategies across the spectrum

Alcohol use disorders identification test (AUDIT)

1. How often do you have a drink containing alcohol?
(0) Never
(1) Monthly or less
(2) 2-4 times a month
(3) 2-3 times a week
(4) 4 or more times a week ☐

2. How many units of alcohol do you have on a typical day when you are drinking?
(0) 1 or 2
(1) 3 or 4
(2) 5 or 6
(3) 7, 8, or 9
(4) 10 or more ☐

3. How often do you have 6 or more units if female, or 8 or more units if male, on a single occasion in the past year?
(0) Never
(1) Less than monthly
(2) Monthly
(3) Weekly
(4) Daily or almost daily ☐

4. How often during the past year have you found that you were not able to stop drinking once you had started?
(0) Never
(1) Less than monthly
(2) Monthly
(3) Weekly
(4) Daily or almost daily ☐

5. How often during the past year have you failed to do what was normally expected from you because of drinking?
(0) Never
(1) Less than monthly
(2) Monthly
(3) Weekly
(4) Daily or almost daily ☐

6. How often during the past year have you needed a first drink in the morning to get yourself going after a heavy drinking session?
(0) Never
(1) Less than monthly
(2) Monthly
(3) Weekly
(4) Daily or almost daily ☐

7. How often during the past year have you had a feeling of guilt or remorse after drinking?
(0) Never
(1) Less than monthly
(2) Monthly
(3) Weekly
(4) Daily or almost daily ☐

8. How often during the past year have you been unable to remember what happened the night before because you had been drinking?
(0) Never
(1) Less than monthly
(2) Monthly
(3) Weekly
(4) Daily or almost daily ☐

9. Have you or someone else been injured as a result of your drinking?
(0) No
(2) Yes, but not in the past year
(4) Yes, during the past year ☐

10. Has a relative or friend, doctor, or another health worker been concerned about your drinking or suggested that you cut down?
(0) No
(2) Yes, but not in the past year
(4) Yes, during the past year ☐

Total score: ☐

Fig 2 | Alcohol use disorders identification test

higher risk level.[15] At the "dependent" end of the drinking spectrum, change is even more difficult to achieve. People with a moderate to severe level of alcohol dependence may benefit from more intensive help from mutual aid groups such as Alcoholics Anonymous or specialist treatment services, or both.[4] Abstinence is the preferred goal for many such people, particularly for those whose organs have already been damaged through alcohol use, or for those who have previously attempted to cut down their drinking without success. In considering the correct level of treatment intensity it is important to consider risks, capacity to consent to treatment, the experience and outcome of previous episodes of treatment, motivation for change, and other existing problems, including harm to others.

Three interventions may assist generalists in altering the drinking trajectory: medically assisted withdrawal, facilitation through mutual aid, and use of drugs to prevent relapse.

Medically assisted withdrawal

The alcohol withdrawal syndrome develops when consumption is abruptly stopped or substantially reduced, and symptoms and signs appear within 6-8 hours. These include anxiety, tremor, sweating, nausea, tachycardia, and hypertension, usually peaking over 10-30 hours and subsiding within two or three days. Seizures may occur in the first 12-48 hours (but rarely after this), and delirium tremens is a serious condition that occurs 48-72 hours after cessation of drinking, characterised by coarse tremor, agitation, fever, tachycardia, profound confusion, delusions (characteristically frightening), auditory and visual hallucinations, and possibly hyperpyrexia, ketoacidosis, and circulatory collapse.

Minor degrees of alcohol withdrawal are common and can be managed with information, reassurance, and adequate fluid intake. However, the alcohol withdrawal syndrome is potentially life threatening; systematic reviews recommend long acting benzodiazepines (chlordiazepoxide or diazepam) as the drug of choice for managing the alcohol withdrawal syndrome and preventing serious complications such as seizures or delirium tremens.[19 20] The aim is to titrate the initial dose to the extent of withdrawal symptoms and then slowly to reduce the dose over 7-10 days using a standard fixed dose protocol (table 2, see thebmj.com). Rating scales such as the clinical institute withdrawal assessment for alcohol (CIWA-Ar) can be used to measure the severity of the withdrawal symptoms and more accurately adjust the dose, but the use of such a regimen triggered by symptoms is only recommended if trained staff are available, such as in an inpatient setting.[21] Prescribing in the community for alcohol dependent patients without adequate assessment and support is not recommended, as successful withdrawal is unlikely and there are considerable associated clinical risks. This is a common scenario facing general practitioners, and expeditious referral to specialist services for support from a specialist alcohol nurse during medicated withdrawal is advised.

Doses of benzodiazepines should be reduced for children and young people aged less than 18 years, adults aged more than 65 years, and those with impaired liver synthetic function, such as reduced albumin or increased prothrombin time (where a benzodiazepine requiring less metabolism within the liver, such as oxazepam, may be preferred). Clinicians should be aware of complications from nutritional deficiency, such as the Wernicke-Korsakoff syndrome. This should be suspected in anyone with a history of alcohol dependence and one or more of ophthalmoplegia, ataxia, acute confusion, memory disturbance, or unexplained hypotension, hypothermia, or unconsciousness. Treatment with intramuscular or intravenous thiamine is important to prevent permanent memory loss and should continue until the symptoms and signs stop improving.[21] Most episodes of medically assisted alcohol withdrawal can take place at home, but inpatient treatment should be considered if patients drink more than 30 units of alcohol daily, have a history of epilepsy, withdrawal related seizures, or delirium tremens, or have comorbid physical or mental health conditions.[19]

Mutual aid facilitation

Treatment of alcohol withdrawal is not sufficient on its own and should be viewed as the precursor to a longer term treatment and rehabilitation process. Research consistently shows that people with alcohol dependence who have stopped drinking are vulnerable to relapse and that they may have unresolved problems that predispose them to it.[22] Mutual aid groups (for example, Alcoholics Anonymous and UK SMART Recovery) are a source of ongoing

Box 2 | Delivering alcohol identification and brief advice in practice

The rationale

A large body of international research evidence indicates that 1 in 8 people drinking at increasing risk or higher risk levels who receive structured brief advice reduce their drinking to within lower risk levels.[4] Raising the problem of alcohol consumption with patients often meets with several attitudes, including indifference, confusion about what is and is not healthy, and possibly defensiveness and irritability. Clinicians should ensure that they are aware of the facts about alcohol consumption and health related harms to convey the risks of drinking to patients accurately. It is important to avoid stigmatising terms such as "alcoholic," emphasising the concept of increasing risk with increasing consumption and suggesting trying to cut down to a lower risk level rather than stopping. Clinicians should also be able to detect alcohol dependence and refer to specialist help.

Stage 1: raise the problem

The most time and resource effective strategy in non-specialist settings is to target those at greatest risk—that is, people with relevant physical (for example, hypertension, gastrointestinal or liver problems) or mental health (anxiety or depression) conditions, at risk of self harm, or who regularly experience unintentional injuries or minor trauma.

Ask the first three questions on the AUDIT questionnaire (see fig 2) and score the answers (known as AUDIT-C).

Score of ≥5—suggests a high likelihood that the patient is drinking at an increasing risk level, and the full AUDIT questionnaire should be administered (this threshold may be reduced to 3 or more in young people aged less than 18 years or adults older than 65 years)[30 31]

Stage 2: administer and score the 10 item AUDIT questionnaire

Score ≤7—this result should be fed back in a positive manner—for example, reiterate the sensible drinking guidelines and point out that people who exceed these levels increase their chances of alcohol related health problems such as unintentional injuries, high blood pressure, liver disease, cancer, and heart disease, while congratulating them for adhering to guidance

Score 8-19—this suggests that the patient's drinking pattern is in the increasing risk or higher risk band, and clinicians should move to offering brief advice as described in stage 3

Stage 3: deliver structured brief advice

Use an open ended "transitional" statement such as "how important is it for you to change your drinking?," possibly accompanied by a simple "readiness ruler"—that is, ask patients to rate between 1 and 10 how confident they feel in making changes. This can be followed by asking what would have to happen to make the number go up.

A structured episode of brief advice may only last 5-10 minutes and is best guided by a structured advice tool (for example, www.alcohollearningcentre.org.uk/alcoholeLearning/learning/IBA/Module4_v2/pdf/structured_advice_tool.pdf). This makes use of the FRAMES (feedback, responsibility, advice, menu, empathy, self efficacy) structure for brief interventions. The leaflet provides material to use for three of these elements:

- Feedback on patients' level of drinking when compared with others, the common effects of drinking, and the potential benefits of reduction
- A menu of options to support the attainment of their preferred drinking goal
- Advice on units and limits

Clinicians should aim to be firm enough to ensure that patients realise that it is their responsibility to make the change (restating the need to reduce risk and encouraging patients to begin now), while also showing empathy (for example, "it can be very difficult to make these changes if everyone around you is drinking heavily") and aiming to boost their confidence and self efficacy ("You mentioned you were going to drink a non-alcoholic drink first when you get home in the evening. That sounds like an excellent start. Let's see how you get on and arrange another time to talk to discuss how you get on").

It is a good idea to offer a follow-up appointment to assess progress. An "extended brief intervention" places greater emphasis on exploring the pros and cons of change and formulating a specific action plan. This approach is often based on the principles of motivational interviewing,[18] and again is best guided by a structured leaflet such as the one available at www.alcohollearningcentre.org.uk/alcoholeLearning/learning/IBA/Module5_v2/extended_intervention_worksheet.pdf.

Patients should be referred for more specialist alcohol assessment and intervention if they ask for such help, already exhibit major alcohol related harm, have an AUDIT score of >20, or exhibit features of the alcohol dependence syndrome.

A step by step teaching module and full range of materials is available at www.alcohollearningcentre.org.uk/eLearning/.

TIPS FOR NON-SPECIALISTS

- Consider the far reaching effects of alcohol, not only to individual physical and mental health, but to family members and the community as a whole
- Screen for alcohol problems in all healthcare settings, and particularly in high risk populations
- Providing structured brief advice and feedback is an effective strategy in high risk drinkers
- Adopt a positive, motivational approach to managing alcohol use disorders
- Take a long term, stepped care perspective, moving to more intensive interventions when a less intensive option has not worked
- Promote attendance at mutual aid groups such as Alcoholics Anonymous or UK SMART Recovery wherever possible

support for people seeking recovery from alcohol dependence, and for partners, friends, children, and other family members. Long term cohort studies show that people who actively participate in mutual aid are more likely to sustain their recovery,[23] and NICE recommends that treatment staff should routinely provide information about mutual aid groups and facilitate access for those who want to attend.[19]

Clinicians should be aware of the range of mutual aid groups available locally and how to access them. Level of clinician knowledge about Alcoholics Anonymous groups has been positively correlated with levels of referral,[24] and attending a meeting is an invaluable learning experience. Evidence from randomised controlled trials suggests that proactive efforts to engage patients with mutual aid groups increase attendance, particularly introducing the patient to a group member in advance of a meeting.[25] A simple three stage process to guide this is available (www.nta.nhs.uk/uploads/mutualaid-fama.pdf).

Relapse prevention drugs

Interventions based on psychological or social processes of change are the mainstay of treatment for alcohol dependence.[26] Although research suggests that such treatments lead to improved outcomes when compared with no treatment, the evidence favouring one type of psychological intervention over another is less clear. Other factors such as therapist characteristics and service variables are also important. The uptake and implementation of psychological approaches in the United Kingdom vary widely,[19 27] and most practice involves an eclectic approach that combines strategies from various psychological approaches and typically lasts 12 weeks. In those who have decided to become abstinent from alcohol, this treatment is enhanced by both attendance at a mutual aid group and the prescribing of relapse prevention drugs. Several drugs can be prescribed in primary care, although they may all be started and monitored by a specialist.

Acamprosate and the opioid antagonist naltrexone—both these drugs are effective in increasing the time to first drink and to relapse in people with alcohol dependence who have achieved abstinence.[19] Acamprosate may also be neuroprotective and is believed to act by altering the balance between excitatory and inhibitory neurotransmission.[20] Naltrexone seems to reduce cravings by

reducing the reinforcing effect of alcohol consumption. Both drugs should only be used in combination with an individual psychological intervention, started as soon as possible after withdrawal, and may be prescribed for six months or more depending on perceived benefit. Systematic reviews suggest a number needed to treat to prevent return to any drinking of between 12 and 20.[28]

Disulfiram—this drug works by interfering with the metabolism of alcohol, causing an accumulation of acetaldehyde in the body and a throbbing headache, facial flushing, palpitations, dyspnoea, tachycardia, nausea, and vomiting within 10 minutes of alcohol consumption. Its use as a deterrent is most suited to people who have abstinence as a goal and who have someone to supervise consumption each day. Treatment should be started at least 24 hours after the last alcoholic drink and should be used with caution in the context of pregnancy, liver disease, severe mental illness, stroke, heart disease, or hypertension. Patients need to know about the symptoms caused by the interaction between alcohol and disulfiram and the rare and unpredictable onset of hepatotoxicity, which is unrelated to dose.

Nalmefene—is an opioid antagonist that is indicated for the reduction of alcohol consumption in adults with alcohol dependence who have a high risk drinking level (>7.5 units/day in men and >5 units/day in women), but without physical withdrawal symptoms and who do not need immediate medically assisted withdrawal. The drug should be started only in patients who continue to have a high risk drinking level two weeks after initial assessment, and it should only be prescribed in conjunction with continuous psychosocial support focused on treatment adherence and reducing alcohol consumption. Such psychosocial support can be delivered in primary care, and this seems to be a cost effective approach to dealing with higher risk drinking.[29] The recommended dose is one tablet on each day the patient perceives a risk of drinking, ideally 1-2 hours before the anticipated time of drinking.

When should people with alcohol use disorders be referred?

Referral for specialist treatment should be considered if patients have failed to benefit from a brief intervention or an extended brief intervention and want to receive further help, show signs of moderate or severe alcohol dependence (see table 1), or have severe alcohol related physical impairment or a related comorbid condition (for example, liver disease or mental health problems). General practitioners should actively encourage patients to attend local mutual aid groups such as Alcoholics Anonymous, as well as access local specialist services for full assessment and management. The general practitioner's role in supporting patients and their family is crucial, as in any long term chronic disorder.

ANSWERS TO ENDGAMES, p 35

For long answers go to the Education channel on thebmj.com

STATISTICAL QUESTION

Standard deviation or the standard error of the mean

Statements *a*, *c*, and *d* are true, whereas *b* is false.

ANATOMY QUIZ

Axial computed tomogram of the glottis

A: Vocal cord
B: Arytenoid cartilage
C: Lamina of the cricoid cartilage
D: Thyroid cartilage

PICTURE QUIZ

Headache, flashing lights, and blurred vision

1 Hypertensive crisis with acute hypertensive retinopathy (previously known as malignant hypertension). This is a hypertensive emergency defined by severe hypertension (>180/120 mm Hg) with evidence of end organ damage and disc swelling on fundoscopy.
2 The fundal photograph shows cotton wool spots, flame haemorrhages, and disc swelling, which are abnormal signs that are characteristic of acute severe hypertensive retinopathy associated with a hypertensive emergency. All three changes are caused by disease of the inner nerve fibre layer of the retina.
3 Although many grading scales are available, the Keith-Wagener-Barker classification, which categorises hypertensive retinopathy into four grades, is the most widely used. Grades 1 and 2 describe mild to moderate chronic arteriolar narrowing, whereas grades 3 and 4 reflect more acute destructive changes—retinal haemorrhage, ischaemia, and disc swelling.
4 Hypertensive crisis associated with acute hypertensive retinopathy is a hypertensive emergency and requires immediate management and investigation. The aims of undertaking further investigations are to assess for evidence of end organ damage and to determine any possible secondary cause of the hypertension.
5 Patients presenting with a hypertensive emergency require inpatient admission for acute control of blood pressure, support of any potentially failing organ systems, and investigation of possible causes. The initial aim is to reduce blood pressure by no more than 25% over the first hour, often through intravenous labetalol or nitroprusside.