

CATEGORY II – SPECIALITIES & SETTINGS: ALCOHOL AND THE EMERGENCY DEPARTMENT

1.0 Introduction

Alcohol misuse poses a major problem in modern society. Physical and psychological alcohol-related harm result in large numbers of Emergency Department (ED) attendances.

Emergency services face increasing pressure as a consequence of alcohol misuse. Alcohol related attendances at Emergency Departments may occur as a direct result of alcohol misuse through acute intoxication and/or the longer term effects of chronic alcohol misuse. Patients may also present with conditions associated with alcohol ingestion including trauma, assaults, road traffic accidents, and domestic violence. Consequently, the cost to the NHS of alcohol related harms continues to grow.

Emergency Departments have a key role in identifying individuals who may be at risk of developing or have developed alcohol related health issues and to implement interventions, which may ultimately reduce alcohol related harms, to the individual, their families and society as a whole.

LEARNING OUTCOMES

Medical students will be skilled in:

1. Identification of the signs/symptoms related to alcohol misuse.
2. Recognising that attendance at an Emergency Department provides an opportunity for brief intervention and health promotion advice.
3. Providing information on the health risks associated with chronic alcohol misuse.
4. Recognising the signs and symptoms of alcohol withdrawal and how to manage these.

2.0 Context of alcohol use

Alcohol currently costs the NHS an estimated £3.5 billion/year. Attendance at Emergency Departments alone accounts for £1 billion/year. In 2012, approximately 1.2million people attended Emergency Departments as a result of excessive alcohol consumption, either acutely or chronically. This is a rise of 50% since 2002. Alcohol related hospital admissions continue to rise – in 2014, there were an estimated 1,1 million admissions – an increase of 35% over the 2013 figure (HSCIC 2015). Societal cost of excess alcohol use is approximately £21 billion (Public Health England Alcohol treatment in England 2013-14).

Up to 40% of patients presenting to the ED during the day and 70% of patients presenting at night, have been drinking prior to their attendance. Almost half of all assaults are alcohol related (I.A.S 2013, Budd 2003) and 14% of road traffic accidents are related to illegal blood alcohol levels. (Department of Transport 2016).

Excessive alcohol consumption is associated with over 40 medical conditions including stroke, cancer, heart disease, hypertension and liver disease and is thus a major preventable cause of mortality and morbidity. In the UK, 33.5% of adults aged 16 years and over have a disorder of alcohol use, spanning from individuals who drink harmfully (including binge drinking) through to those who are alcohol dependent. Alcohol dependence is estimated to affect between 3-6% of adults in England and 18% are

believed to binge drink (NICE 2011). Reducing alcohol related harm is thus a major government priority (Department of Health 2010).

3.0 Description and Definitions

Consumed in moderation alcohol can facilitate social interaction and in small amounts has been associated with a lower risk of coronary heart disease and stroke, but this is a debatable issue. However when consumed excessively, alcohol promotes risk taking behaviours and may make patients vulnerable to a range of negative life events including assault, sexual assault, unprotected sexual intercourse, and road traffic collisions. Chronic exposure to alcohol affects all body systems and has a range of negative health consequences (table 1). Over time, tolerance and dependence may occur.

Recommendation on alcohol intake

In January 2016, the government published new guidelines for alcohol consumption (DH, 2016), recommending that men and women should drink no more than 14 units of alcohol per week and that these units should be spread across several days. A further recommendation is not to 'save up' the 14 units for 1 or 2 days, but to spread them over 3 or more days. People who have 1 or 2 heavy drinking sessions each week increase the risk of death from long term illnesses, accidents and injuries. A good way to reduce alcohol intake is to have several alcohol free days a week (DH, 2016). If episodes of heavier drinking occur, a 48 hour alcohol free period is recommended (Patient.co.uk 2012). The Royal College of Physicians (2011) recommends that the maximum weekly allowance for men should be 21 units and 14 units for women, with 2-3 alcohol free days per week. Some argue that the recommended weekly allowance remains too high, as there appears to be an increased risk of developing certain cancers, even at lower levels of consumption. Older people may be of particular risk.

Harmful Drinking: Harmful drinking is defined as a pattern of alcohol consumption causing health problems directly related to alcohol (NICE 2011).

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Alcohol Dependence: a subjective awareness of compulsion to drink on regular basis, with increasing alcohol tolerance. Abstinence may result in withdrawal symptoms.

Binge Drinking: >8 units for men, 6 units for women in one day.

Calculating Alcohol Units

The ability to accurately calculate the number of units a patient is drinking is required.

One unit of alcohol is 10ml by volume (or 8gm by weight) of pure alcohol. Alcoholic beverages are labelled with percentage alcohol by volume (%ABV).

The number of UK units of alcohol in a drink can be calculated by multiplying the volume of the drink (in millilitres) by its % ABV, and dividing by 100.

E.g. One Imperial pint (568mls) of beer at 4% ABV contains:

$$\frac{568 \text{ ml} \times 4}{1000} = 2.3 \text{ units}$$

1 unit of alcohol is about equal to:

- Half a pint of regular strength beer, lager or cider (3-4% ABV)
- A single (25ml) pub measure of spirits (40% ABV)

1.5 units of alcohol is about equal to:

- A small glass (125ml) of standard strength wine (12% ABV)
- A 35ml measure of spirits (40% ABV)

It should be noted that many wines and beers that are currently available are stronger than the %ABV stated above. Additionally if patients are drinking at home and self-pouring it can be difficult to ascertain volumes accurately.

4.0 Health risks associated with excessive alcohol consumption.

Drinking regularly above recommended guidelines is associated with health risks:

- Men are twice as likely to get cancer of the mouth, pharynx or larynx, while women are 1.7 times more likely.
- Women increases their risk of breast cancer by approximately 20%.
- Men and women are 1.7 times more likely to develop liver cirrhosis.
- Men are 1.5 times more likely to develop high blood pressure and women 1.3 times more likely.

With higher levels of consumption health risks increase further (NHS 2012).

Table 1: Physical and psychological health hazards associated with alcohol abuse (Adapted from: Royal College of Physicians, 2001)

System	Associated issues
Nervous system	Acute intoxication, blackouts, seizures, brain damage, stroke, head injury, peripheral neuropathy, chronic/ acute subdural haemorrhage
Liver	Fatty liver, alcoholic liver disease, liver failure, cirrhosis, hepatocellular carcinoma, portal hypertension (associated gastro-intestinal varices)
Gastro-intestinal system	Oesophagitis, gastritis, peptic ulcer disease, diarrhoea and malabsorption, acute/ chronic pancreatic problems, gastro-intestinal bleeding
Cardiovascular system	Arrhythmias, dilated cardiomyopathy and hypertension
Respiratory system	Rib fractures and pneumonia
Endocrine system	Pseudo-Cushing's syndrome and hypoglycaemia, gynaecomastia
Reproductive system	Hypogonadism: associated with loss of libido, impotence, reduced/absent sperm formation, risk of breast cancer
Occupational/ social	Impaired work performance and decision making, increased risk of accidents, sick days, criminality, debt
Children of problem drinkers	Damage to the foetus, detrimental effect on physical development and behaviour, foetal alcohol syndrome
Drug interactions	Increased risk of adverse drug reactions, reduced effectiveness of therapeutic drugs, non-compliance with medications, accidental overdose of medications
Psychological	Low mood, depression, hallucinations, memory problems, anxiety, psychosis, personality problems, self-harm, suicide

Effects on brain receptors:

Alcohol acute activation of glutamate receptors in the brain result in feelings of euphoria, loss of judgement and impairment of co-ordination. Chronic activation of glutamate receptors results in cell death and cerebellar deterioration which may culminate in Wernicke-Korsakoff syndrome.

Acute activation of GABAA brain receptors causes sedation. Chronic GABAA receptor stimulation causes lethargy, impairment of motor skills and reduced co-ordination.

Clinical signs of acute alcohol intoxication.

The clinical signs associated with acute alcohol ingestion will vary depending on the amount of alcohol ingested but may include smell of alcohol, slurred speech, ataxia, lethargy, vomiting, erratic behavior and emotional lability. Severe alcohol intoxication may result in reduced GCS (Glasgow Coma Score) and collapse. Patients with reduced GCS and vomiting may be at risk of airway compromise and aspiration pneumonia. In severe cases, advanced airway protection with intubation and

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ventilation may be required. In the presence of head injury, patients with reduced GCS should have a CT brain performed to exclude intracranial causes of reduced GCS. All patients should have blood glucose checked and monitored due to the risk of hypoglycaemia. Acutely intoxicated patients are managed supportively in the majority of cases, with close observation in the recovery position.

Vignette

Mr Robertson is a 42 year old builder who presents to the Emergency Department following a fall on the way home from the pub. He has worked as a labourer since the age of 16 and rarely misses a working day. He is married with two children.

He has sustained a head injury and smells of alcohol. He is mobile around the department and has a GCS (Glasgow Coma Score) of 15. He has a large occipital laceration, approximately 4cm in length, which will require sutures.

A	Airway (& Cervical spine)	<p>Is the airway clear?</p> <p>Consider added noises:</p> <ul style="list-style-type: none"> - snoring suggests partial airway obstruction. This may occur due to reduced conscious level after excess alcohol. Always consider alternative causes of reduced GCS (drugs, hypoglycaemia, head injury, sepsis). - gurgling may occur due to blood from facial trauma or vomit. <p>Patients with reduced GCS may require airway support.</p> <p>Patients with evidence of a head injury and reduced GCS should be assumed to have a cervical spine injury and appropriate immobilisation applied.</p>
B	Breathing	<p>What are the respiratory rate and oxygen saturations?</p> <p>Is there equal air entry bilaterally?</p> <p>Are there any added sounds in the lung fields?</p> <p>Patients who have vomited are at risk of aspiration.</p> <p>Chest trauma may occur following collapse/ falls. Look for bruising or deformity.</p> <p>Co-ingestion of depressants may result in reduced respiratory rate and de-saturation.</p>
C	Circulation	<p>What is the pulse rate and blood pressure?</p> <p>Alcohol may be associated with atrial fibrillation following acute or chronic use.</p> <p>Chronic alcohol use is associated with hypertension.</p> <p>Consider occult injury in patients who are acutely intoxicated. Falls may result in chest/abdominal/ pelvic injuries or fractures. Patients may not always report pain.</p>
D	Disability	<p>Is the patient alert? (AVPU/Glasgow Coma Score (GCS) (alert, voice, pain, unresponsive)</p> <p>Pupil examination: Size, symmetry, reactivity.</p> <p>Does the patient have external evidence of a head injury?</p> <p>Is the patient moving all 4 limbs equally?</p> <p>Arrange CT brain in patients with head injury who fulfil criteria in NICE (2014) guidelines for Head Injury Management.</p>
E	Exposure	<p>Check patient for other injuries</p> <p>Stigmata of liver disease: spider naevi, gynaecomastia, palmar erythema suggest chronic alcohol abuse</p> <p>Temperature: due to vasodilatory properties of alcohol patients are at risk of hypothermia.</p>
G	Glucose	<p>Blood glucose checked due to risk of hypoglycaemia.</p>

Further things to consider:

- Has the patient had any other Emergency Department attendances related to alcohol misuse?
- Patients must be safely mobile prior to departure from the department. This may require a period of observation/ admission, to "sober up".
- Patients who have a head injury should be assessed according to NICE Guidelines and a CT brain performed as

indicated. On discharge they should be given appropriate written advice.

- Patients who have sustained cuts/lacerations/ abrasions should have tetanus status documented and receive immunization as appropriate.
- Although blood alcohol concentrations can be measured in many hospitals, they are rarely utilized in the Emergency Department, as they do not influence management.

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Always be wary of attributing reduced GCS to alcohol consumption and consider all possible causes of reduced GCS.

- All patients who present to the Emergency Department should have an alcohol, tobacco and recreational illicit drug use history recorded and appropriate health promotion advice given.
- Patients who report alcohol consumption above recommended amounts, or have attended as a consequence of alcohol, should have a brief intervention prior to discharge.

Alcohol Withdrawal

Individuals, who have become physiologically dependent on alcohol and subsequently stop, significantly reduce their alcohol intake or are unable to drink due to illness, are at risk of withdrawal symptoms. This may occur within a few hours of the last drink. Patients who have attended the Emergency Department acutely intoxicated but have been admitted for observation or to sober up, may also be at risk of withdrawal during their admission.

In mild cases, patients may experience nausea or vomiting, tremor, anxiety, and sweating. In more severe cases, patients may experience auditory, visual or tactile hallucinations, autonomic instability (including tachycardia and pyrexia). Severe complications of alcohol withdrawal include seizures, delirium tremens (DT's) or Wernicke's Encephalopathy.

Alcohol withdrawal and its sequelae are common presentations to the Emergency Department. Prompt recognition of alcohol withdrawal and rapidly administered treatment is required to reduce the significant associated morbidity and mortality.

Patient should be examined systematically using an ABC approach.

Things to consider include:

- Patients may present during or following a seizure. Patients may require airway support due to reduced GCS or persistent seizure activity despite anti-seizure medication administration.
- Patients who are confused, have had seizures or have external evidence of head injury, should be discussed urgently with a senior Emergency Doctor for consideration of a CT brain to exclude intracranial bleeds.
- Consider the possibility of cervical spine injury in any patient with external evidence of a head injury.
- Is there an alternative cause for the patient's symptoms and signs? These might include sepsis, intracranial pathology, toxicological, hypoglycaemia and psychiatric causes.
- Malnourishment may result in electrolyte abnormalities including hypokalaemia and hypomagnesaemia. These should be identified and corrected. Electrolyte abnormalities increase the risk of cardiac arrhythmia.
- Malnutrition is associated with vitamin deficiencies. In the ED, high dose parenteral Vitamin B should be administered to reduce the risk of Wernicke's Encephalopathy. Analytical

confirmation of deficiency is NOT required prior to administration.

- Examine for stigmata of chronic liver disease.
- Abdominal pain is a common problem in chronic alcohol users. Consider: pancreatitis, gastritis, peptic ulcer disease, perforation of duodenal/ gastric ulcers, spontaneous bacterial peritonitis, alcohol-induced hepatitis.
- Consider alcoholic ketoacidosis when patients are vomiting. Perform blood gas for acid-base disturbance.

Scoring Systems for Alcohol Withdrawal

The most commonly utilized system for scoring alcohol withdrawal is the Clinical Institute Withdrawal Assessment of Alcohol Scale, Revised (C.I.W.A-Ar) (Sullivan 1989).

Acute Management of Alcohol Withdrawal

The first line treatment of alcohol withdrawal management is administration of benzodiazepines. The use of a long acting oral benzodiazepine, such as chlordiazepoxide is preferred for the management of withdrawal symptoms. In the Emergency Department, severe withdrawal symptoms may require the administration of a parenteral (intravenous) benzodiazepine, such as diazepam or lorazepam, due to rapid onset of action. Intravenous management of alcohol withdrawal syndrome should be discussed with a senior Emergency Department doctor. In patients with significant liver disease, there is an increased risk of toxicity from benzodiazepines, due to changes in metabolism and clearance. All patients must have their pulse, blood pressure, pulse oximetry, respiratory rate and GCS monitored closely to identify potential toxicity from benzodiazepines. Patients should be regularly assessed using a validated scoring system for alcohol withdrawal, such as the C.I.W.A to guide benzodiazepine administration.

Patients should have baseline blood tests performed including full blood count, renal profile, liver function tests, amylase, coagulation screen and magnesium levels performed.

In patients where sepsis is a possible differential diagnosis, chest x-ray and urinalysis should be performed. Suspicion of central infections may require CT brain +/- Lumbar puncture. Suspicion of spontaneous bacterial peritonitis might require ascitic tap for microbiology, culture and sensitivity.

Administration of high dose parenteral B vitamins (Pabrinex) is generally indicated in all patients who attend the Emergency Department with alcohol withdrawal symptoms. Alcohol abusers and malnourished individuals have a reduced ability to absorb thiamine, in addition to generally having poor dietary intake. Administration of high dose B vitamins, aims to prevent the development of Wernicke's encephalopathy.

Seizure and status epilepticus in alcohol dependent patients are managed as per Advanced Life Support guidelines for seizure management.

Delirium Tremens

Delirium Tremens occur in approximately 5% of patients with alcohol withdrawal, usually 2-3 days following cessation of alcohol. Untreated it has a high morbidity and mortality rate of 15-20%. Characteristic symptoms include severe tremor,

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alteration in consciousness, acute confusion, autonomic instability (tachycardia and fever) and severe hallucinations. Early detection and management will usually prevent onset (Wyatt 2012).

Wernicke's Encephalopathy

The classical triad of symptoms: acute confusion, ataxia and ophthalmoplegia occur in only 10% of patients. Due to acute deficiency of thiamine, treatment involves rapid restoration with high dose intravenous thiamine administration. (Pabrinex) (Wyatt 2012). This is important to avert Korsakoff's Syndrome.

Barriers to detecting alcohol issues in the Emergency Department.

Patients may not always offer reliable information regarding

their alcohol consumption, smoking history or use of recreational, especially illicit substances. It is a key aspect of the social history that all patients are asked about alcohol, smoking and recreational drug use, including prescription drugs and over the counter. Factors that may inhibit disclosure include social stigma, potential impact on employment or fear of involvement of police or social services (e.g. following road traffic accidents, young children at home). Patients may not always present at the time of injury – consider alcohol use in delayed injury presentations.

Potential questions

When asking questions about alcohol, ask questions about amount, type, frequency and circumstances. Below are some examples of questions you could ask to elicit the information.

Examples of questions	Reason for asking
Do you drink alcohol?	Ask everyone. Even if you think they may not drink, it is important to ask everyone. For example, in some cultures drinking alcohol is not permitted. However, this does not mean that people from that cultural background do not drink and may not have problems.
What do you usually drink?	May give an indication of level of problems, as some alcoholic drinks are known to have a high % alcohol volume, such as special brew and spirits. Some drinks are more costly than others and this may also be an indication of the problems someone may be facing if they are not working and may have reduced access to disposable income to fund their drinking. It is also helpful to ask about all drinks and suggest types, so that if there are memory issues (particularly for older people, or those affected by head injury), you don't get a 'no' answer to a collective name and it might be an aide memoir (e.g. red wine, white wine, sherry, spirits) to name a few.
How many days a week do you have a drink? How much do you usually drink?	To establish regularity of drinking. To be able to assess the units the individuals is drinking. Daily drinking may be an indication of dependence. Establish whether drinking is linked to access to money (e.g. pay day, days they receive benefits). You are trying to assess severity of drinking and whether the individual is drinking at hazardous levels.
Are there any days when you don't have a drink?	To assess whether there is a dependence and whether the individuals is able to control drinking.
Show me how big a glass you might use	People do find it difficult to know how much they drink, and so might use terms such as small glass, if they show you (compared to another drinking vesicle) it gives the assessor an indication of size, as they may be drinking more than they describe.
What time do you usually have your first drink of the day?	Example: first thing in the morning, lunchtime or evening. This may give an indication of the likelihood of dependence.
How do you usually get your drink?	Is it part of routine shopping or does someone buy alcohol for them?
Do you feel that your current attendance at ED is related to alcohol?	This also helps to establish insight into the presenting problems and the link to alcohol.
Have you previously been to ED for an attendance that was also related to alcohol?	To establish whether there is a history of alcohol related attendance. This may indicate the need for an onward referrals such as refer to alcohol liaison services in the ED (if they are available), referral to psychiatric liaison, other services and to set up and appointment with other services locally.
Have you ever considered changing your drinking in anyway? Do you have any concerns about the amount of alcohol you drink? Would you like to reduce the amount of alcohol you drink? Have you ever received any help in attempt to reduce your alcohol intake?	Assess insight, willingness to accept there may be a problem and willingness to accept some help.

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For older people, you may ask other questions, specifically related to older people

Have you ever needed to ask someone passing by to go and buy you something?	Assessing severity of problem and vulnerability.
How much do you think you spend on your drinking?	Get a sense of whether drinking has an impact on other needs, such as buying food and other provisions.
How does drinking affect you (sleep, walking, movements, concentration) What would happen and how would you feel, if you didn't have a drink or drank less?	Obtain the person's own view of any effects and whether this is a problem or stops them doing their usual activities during the day.

5.0 Screening Tools

There are a range of screening tools that may be used to assess alcohol intake. Choice of screening tool may be affected by Departmental and/or personal clinician preference. The most frequently used tools in the ED are listed below.

- Fast Alcohol Screening Test (FAST)
- AUDIT (Alcohol Use Disorders Identification Test) is a screening instrument of good sensitivity and specificity for detecting hazardous and harmful drinking among people not seeking treatment for alcohol problems
- Paddington Alcohol Test (PAT)
- Severity of Alcohol Dependence Questionnaire (SADQ)

6.0 Brief Interventions in the Emergency Department

It is widely recognized from studies in the UK and internationally that brief interventions in the Emergency Department are effective in reducing alcohol related harms. The purpose of the brief intervention is that it helps the patient think about their own alcohol intake and the relationship of this to their health and well-being. A brief intervention is a practice that aims to identify a real or potential alcohol problem for an individual, and motivate that individual to do something about it (WHO 2014). The brief intervention may take as little as 5 minutes.

A brief intervention should include

1. An understanding of how much the patient is drinking (quantity and frequency).
2. Any negative effects the patient may be experiencing or potential harm(s) that may result occur as a consequence of their alcohol consumption.
3. Exploring the benefits of reducing or stopping alcohol consumption.
4. Explore the potential barriers to change.
5. What is the patient's personal target? Reduce alcohol or stop drinking?
6. What plans might a patient put in place to reduce/stop drinking? What help might they require to achieve this aim?

Potential benefits of reducing alcohol consumption may include improved mood, improved personal relationships and financial benefits. Physical benefits might include improved sleep,

increased energy, weight loss, improved memory, reduced risk of injury and no hangovers. Long term health benefits include reducing risk of hypertension, cancer, liver disease.

7.0 References and useful resources

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