



Substance abuse in anaesthetists

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Key points

- Raising awareness and improving education about addiction have not resulted in a decrease in mortality or relapse rates.
- The literature tends to highlight the opioid-dependent trainee, but all grades of anaesthetists abuse these drugs.
- Substance dependence is recognized as a disease not a crime and should be treated as such.
- Postponing intervention until evidence of substance abuse is obtained 'beyond reasonable doubt' increases the risk of a tragic outcome.
- Each anaesthetic department should nominate a consultant responsible for member's welfare.

Approximately 10–14% of all doctors will become substance-dependent over their lifetime; the incidence in anaesthetists being 2.7 times greater than other physician groups.^{1,2} Including alcohol, studies describe 0.86–2% of anaesthetic trainees and 1.3% of consultants being addicted; if alcohol is excluded, drug addiction occurs in 1.6% of trainees and 1% of non-training grades.^{1,3,4} Sixty-two per cent of residency programme directors in the USA reported at least one trainee with a substance abuse problem and a worrying progressive increase in incidence was noted, being highest over the 10 yr since 2003.^{3,4}

Anaesthetists are over-represented at treatment centres in the USA with 2.5 times greater attendances compared with other physician groups.² Conversely at the Practitioners Health Programme (PHP) in London, anaesthetists appear to be under-

represented, possibly meaning anaesthetists are either not coming forward for help or they are being managed elsewhere, as it is unlikely that the incidence is appreciably lower in the UK (C. Gerada, Medical Director, The Practitioner Health Programme, London, personal communications and unpublished data).

Definitions

Substance abuse has been defined as 'the repeated, excessive or inappropriate use of a mood altering substance resulting in negative consequences[†] in one or more life areas, and where addiction cannot be diagnosed' (M. Kaufmann, Medical Director, Ontario Medical Association Physician Health Programme, Toronto, Canada, personal communications and unpublished data).

Addiction is defined by the American Society of Addiction Medicine (ASAM) as 'a primary, chronic disease of brain reward, motivation, memory and related circuitry. Dysfunction in these circuits leads to characteristic biological, psychological, social and spiritual manifestations. This is reflected in an individual pathologically pursuing reward and/or relief by substance use and other behaviours. Addiction is characterized by inability to consistently abstain, impairment in behavioural control, craving, diminished recognition of significant problems with one's behaviours and inter-personal relationships and a dysfunctional emotional response. Like other chronic diseases, addiction often involves cycles of relapse and remission. . . .' (ASAM, 2011 reproduced with permission).

Risk factors

Whether there is such an entity as an addictive personality is debateable, but the single biggest risk factor is a family history of drug or alcohol dependence. Onset involves the interaction of developmental and environmental factors in addition to inherited and other genetic factors, which determine the severity of substance abuse and its subsequent course—a mixture of nature and nurture (Table 1).

[†]Negative consequences include domestic, social, financial, and legal problems.

A common misconception is that anxiety, depression, or both are the cause of substance use. They may well be a contributory factor, as is job-related stress, but more often than not they are the result of chronic substance abuse, especially where alcohol is involved. In the majority of cases, mood problems resolve with abstinence and so tend not to be treated immediately. Those who do have a co-morbid diagnosis need close psychiatric support.

It is possible to become physically dependent on a drug and suffer withdrawal if it is stopped abruptly, but not be addicted by definition, unless the hallmark signs of craving, loss of control, and compulsion are present.

Patterns of substance abuse

Among trainees, the main drugs abused are:^{3,4}

- (i) i.v. opioids (fentanyl in 64%),
- (ii) alcohol (35%),
- (iii) marijuana (14%),
- (iv) cocaine (12%),
- (v) hypnotics (midazolam in 12%),
- (vi) oral opioids (10–14%),
- (vii) anaesthetic agents [propofol 5–8%; inhalation agents (including nitrous oxide) 2–3%].

Fifteen per cent used drugs before commencing anaesthetic training, 22% abused more than one drug,⁴ and 18% died or nearly died without family or work colleagues being aware of there being a substance abuse problem.¹

Fentanyl and its derivatives are responsible for up to 20% of admissions to specialist physician treatment programmes in the USA (P. Earley, Earley Consultancy, Georgia Professionals Health Program, Atlanta, GA, USA, personal communications and unpublished data). The onset of tolerance and addiction are rapid, as more risks are taken to divert increasing amounts for personal use, so raising the likelihood of being discovered. Fentanyl abuse

appears to occur in a younger age group than alcohol problems, as it is usually detected much earlier in the course of events (the median time to abuse being discovered is 4 months),⁴ compared with alcohol abuse which may take many years before detection (Fig. 1). Doses of up to 500 µg (10 ml) of fentanyl per day are common, but over 50 ml has been reported. Despite various methods to tighten control over opioids,^{1,4} the incidence would not appear to be decreasing,⁴ as addicts become very resourceful—fentanyl can even be extracted from transdermal patches using a microwave oven. Many substance abusers report prior use of minor opioids, in particular codeine, but on trying fentanyl, never turn back. After long-term intake, opioid tablets can exhibit the same classic opioid withdrawal seen with fentanyl, so should not be dismissed as ‘milder cases’ of addiction.

Propofol—first use to detection is also usually within 4 months. Craving and compulsion can be particularly intense, resulting in some users inserting an indwelling i.v. cannula for increasingly frequent top-ups. Intoxication commonly results in minor trauma and road accidents; withdrawal signs include anxiety and diaphoresis. Propofol users are often ‘polyaddicts’, predominantly female, and have frequently have a history of early life trauma, depression (in the family and self), and a high frequency of relatives with substance dependence.⁶ Propofol abuse is associated with a high mortality (28–45%).^{5,7} Acquisition for personal use is relatively easy, since unlike major opioids, the use of propofol is not tightly monitored in the UK or in Australia.

Inhalation agents when abused are also associated with a high mortality (26%), with 22% of anaesthetic departments surveyed in the USA identifying at least one case.⁸

Whereas alcohol remains the first choice of drug when all doctors are considered, 2015 figures from Australia⁷ represent a considerable change from previous patterns seen among anaesthetists. Propofol was implicated in a remarkable 41% of substance abuse cases, with 32% using major opioids and 27% alcohol.⁷

Table 1 Risk factors for the development of substance abuse disorders

Risk factors for developing substance dependence

In general

1. Parental history of alcohol or drug abuse (even when adopted at birth)
2. Childhood abuse—physical, emotional, or sexual
3. Dysfunctional family/lack warmth and support
4. Having another mental health disorder
5. Being male⁴
6. Experimenting with drugs/alcohol at young age
7. Peers who use drugs
8. Tendency for doctors to self-medicate
9. Sense of professional immunity from addiction

Additional risk factors specific to anaesthetists

1. Direct contact with drugs (we are the only doctors to give drugs directly, rather than by proxy via a prescription)⁵
2. Daily exposure to highly potent and addictive opiates and sedatives—drugs most other doctors do not encounter⁵
3. Drugs are immediately available
4. Only a small volumes are required, so easy to remove (divert)
5. Drug abuse as a student may encourage trainees to enter the speciality hoping for easy drug access
6. Sensitization to fentanyl and propofol by aerosol contamination in the theatre atmosphere have been proposed and discussed^{5,6} (but in the author’s opinion also, is unlikely at the nanomolar concentrations described)

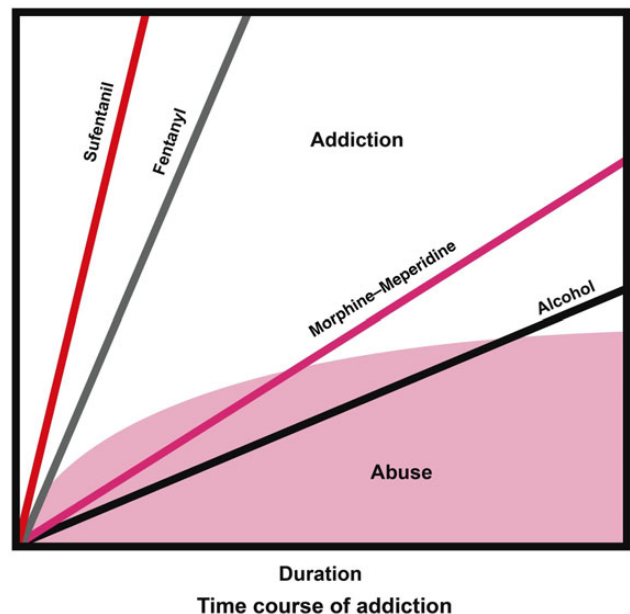


Fig 1 The relative addictive potential of several drugs. The intent is to display the concept visually; therefore, no numerical values are given. Alcohol dependence typically requires years to become apparent, whereas addiction to sufentanil occurs almost instantaneously. The rate of onset of addiction is directly related to the potency of the drug abused. Reproduced and Adapted with permission from WP Arnold III, Millers Anesthesia 6th Edn. 2005; 3167.

Interestingly, intoxication and witnessed use were more common modes of presentation than the usual behavioural signs. This could be demonstrative of the profound craving and compulsion described with propofol and fentanyl driving the addict to be less risk averse and use the drugs in situations where they are more likely to be caught out. Over half these cases were consultants; Skipper and colleagues² study of consultants found opioids to be the drug of choice in 55%—both reminders that opioid abuse is not a problem exclusive to trainees.

Signs of substance use

Although behavioural changes are the most frequent indicator addicts usually continue to maintain a professional demeanour and function at a surprisingly high level⁹ but when physical and behavioural changes do become noticeable, the disease process is often well advanced. Any suspicions must therefore be treated seriously and acted upon at the earliest opportunity. When the substances abused are anaesthetic drugs, an addict will ensure they are always at work in the theatre environment to maintain their supply. Conversely, an alcoholic will try to stay away from work as much as possible.

Signs and symptoms of substance abuse may include:

1. Decreased performance, unreliability, disorganization, unexplained absenteeism.
2. Lateness (although will often arrive in the workplace very early, to draw up drugs for cases unsupervised).
3. Requesting extra shifts (especially weekends), working late, favouring long lists to maximize drug access.
4. Preference for working alone.
5. Offering to prepare drugs for day lists before going home after a night shift.
6. Offering to draw up drugs for cases in other areas of the hospital.
7. Willingness to attend calls (often fictitious) out of main theatre environment (excuse to prepare drugs).
8. Offering to cover colleagues for breaks.
9. Frequent requests for toilet or refreshment breaks (with a change in mood or pin-point pupils on return).
10. Nasal rubbing/itching or drowsiness after drug 'top ups'
11. Nasal discharge, yawning, tears, pallor, sweating, pilo-erection, feeling cold if withdrawing from drugs.
12. Suspicious or protective behaviour around locker or briefcase.
13. Dropping or breaking an already empty drug ampoule to get a full replacement.
14. Poor anaesthetic record keeping—particularly altered or (deliberately) illegible entries.
15. Using anaesthetic techniques without narcotics, falsifying charts, and diverting drugs for own use.
16. Recurrent minor physical and facial injuries (commonly associated with propofol abuse).⁶
17. Difficulty finding the person when on call.
18. Frequent appearances in the hospital when not on call or on leave.
19. Patients regularly in pain postoperatively (out of proportion to documented doses of opioids allegedly administered).
20. Insistence on administering analgesia personally in the recovery room.
21. Incidences of questionable judgement, frequent clinical mistakes, and serious incidents.
22. Not joining in departmental activities or social events with colleagues.

23. Frequent gastrointestinal complaints (commonly associated with opioid withdrawal).
24. Weight loss, pallor.
25. Poor sleep, anxiety, depression.
26. Frequent vague, unexplained, or complex illnesses.
27. Chaotic career path often with many locum posts and working below qualification level as the addict will move on when suspicions are aroused.
28. Favouring covered arms and feet to conceal injection sites.

The family and relationships suffer too, and outside work there may be:

- (i) sexual, marital, and financial problems,
- (ii) drink-driving convictions,
- (iii) decreased involvement in family activities and commitments,
- (iv) dependent children developing behavioural problems,
- (v) frequent arguments—life revolves around the partner's addiction; family walk round 'on egg-shells' due to unpredictable moods,
- (vi) social isolation and loss of friends,
- (vii) cessation of hobbies and other interests.

Intervention

This is the process of explaining to a doctor that concerns have been raised about their behaviour, presenting them with any evidence of substance abuse and formulating a plan of action. Usually, by this time, a doctor no longer feels good after taking the drug—rather it has become necessary to maintain their usage just to be able to function and prevent unpleasant withdrawal symptoms. The inevitable lying, stealing, and violation of their normal moral code cause considerable shame and guilt. You will usually have in front of you a fearful colleague whose home and social life have already disintegrated. Being a doctor is often the glue that still holds these individuals together and now that their professional status is also at risk, not admitting to a problem is quite common initially on a purely protective basis, even if they are well aware of their difficulties. Alternatively, they may of course be in complete denial as part of their addiction and be incapable of perceiving their predicament. Often the doctor's repeated absences and strange behaviour may make it difficult to appear sympathetic, but a non-judgemental approach can result in a more productive intervention.

Sometimes, the doctor is actually relieved to have their addiction exposed. This group is usually compliant with suggestions for treatment options and tend to have a better outcome. Inpatient management at a treatment centre is advisable for i.v. opioid addiction. The best approach are those based on the 12-step recovery method, the foundation of the Alcoholics Anonymous (AA) recovery programme, and endorsed by the specialist physician addiction treatment centres in the USA and by the London PHP.

An angry response is more difficult and often happens with those in denial. These doctors should be offered the option of an assessment either with the employer's occupational health service or a substance abuse treatment centre (usually free of charge in the UK), and the opportunity to 'prove' they do not have a problem by consenting to hair or urine testing. If there is considerable evidence of drug abuse but non-compliance with suggestions, in the interest of patient safety, the regulatory authorities (the GMC in the UK) must be contacted and the doctor may be suspended from working. Sometimes, it is helpful to

stress that addiction is recognized as a disease for which there is treatment.

These meetings should not be conducted on a 1:1 basis, and never be 'corridor conversations'. Trainees should report suspicions to their College Tutor, Educational Supervisor, or other designated consultant mentor. Consultants and other non-training grades should speak to the Clinical Director, who should arrange to meet with the doctor equipped with names and phone numbers (see details below) of suitable contacts and have already been in touch with the occupational health department and/or a psychiatrist with expertise in addiction problems, who should also attend. The Australia and New Zealand College of Anaesthetists has recently recommended that there should be a consultant who is nominated as the Welfare Officer in each department, who may also be pivotal in the management of these cases.¹⁰

Always be aware that the sick doctor's memory and comprehension of what has been said may not be 100% and it is important to end the meeting with a recap of what has been discussed. Finally, there is a real risk of self-harm after intervention and no doctors should be allowed to go 'home alone' after this initial meeting exposing the addict's problems. Before the meeting, in the UK, a member of the British Doctors and Dentists Group (BDDG) or Sick Doctors Trust (SDT) may be contacted for support. The doctor should see their GP or go into treatment as soon as possible, especially if drug or alcohol withdrawal is a risk.

The role of medical regulators

The following comments regarding the role of regulators in dealing with doctors with substance abuse issues relate to the situation in the UK where the General Medical Council is the statutory body who regulate the medical profession.

If patient harm has occurred, the GMC must be contacted and the doctor excluded from the workplace. If there is evidence of drug abuse but non-compliance by the doctor during the intervention, GMC referral is also advised. Even if no patient harm has occurred, in the interests of patient safety, employers will usually exclude the doctor from the workplace until investigations are complete and a diagnosis confirmed. Some employers then make a decision about referral to the GMC at a later date or advise the doctor to self-refer. As a reminder, the GMC's publication *Good Medical Practice* (2013) states that 'If you have concerns that a colleague may not be fit to practise and may be putting patients at risk, you must ask for advice from a colleague, your defence body or us. If you are still concerned you must report this, in line with our guidance and your workplace policy, and make a record of the steps you have taken'.¹¹

Sometimes, when contacted for advice, or after self-referral, if all the conditions usually imposed on the registration of addicted doctors (e.g. attendance at peer support groups below) are being addressed, the GMC may suggest continuing to manage the problem at a local level with the support of the occupational health service and an addiction psychiatrist. Suspension of registration is not necessarily the rule, although it is often the case with all but the occasional relatively straightforward alcohol problem.

The GMC is particularly interested that the doctor displays insight into their problems and is willing to participate in remedial action. After referral or the first statutory hearing, if these prerequisites can be demonstrated, the GMC's sanctions may be a little more benevolent. The sanctions for doctors with substance abuse problems would appear to be rather varied. Suspension

of registration for opioid addiction can be for 2 yr (but recently, the author has seen two cases back at work within a year). Some opioid-addicted doctors find the regular hair testing (paid for by the GMC) is a helpful deterrent.

The doctor is allocated two, sometimes three, psychiatrists (who may or may not be addiction specialists) and a case supervisor, all of whom submit reports before review GMC hearings. A doctor is permitted to take someone along as moral support to hearings (the BMA Doctors for Doctors Unit has recently been providing this at no cost to members). When suspended from clinical practice, most doctors cease their defence body subscriptions, but membership at the time of onset of the investigative process enables provision of legal representation at the GMC hearings.

Worthy of mention here is that the GMC regard the theft of drugs as a concomitant of addiction and when in recovery, the doctor is deemed to be honest again. This was highlighted at the Shipman Inquiry.¹² If no patient harm has occurred, addiction is investigated as a health rather than conduct issue, even if a doctor has taken drugs from the workplace. Unfortunately, many employers still insist on reporting the doctor to the police for theft, and pursue the disciplinary route, which causes much added distress with court appearances and future difficulties with visa applications and working overseas.

Doctors who are recreational drug users and have been prosecuted by the police for possession are automatically reported to the GMC.

Relapse

A relapse is the return to substance use after a period of abstinence. It signifies that the individual still has a need for something to alleviate distress, usually because some important personal issues have not yet been addressed. For an opioid addict, abstinence must mean no alcohol either, which can be a pit-fall for many. The median time to relapse is 2.6 yr with a mortality of 13%,⁴ 85% using the original drug of choice.¹³ There is no place for minimizing the importance of a relapse by calling it 'a bit of a slip' and caution should be exercised in cases of poly-addiction that a doctor is using substances not included in their hair testing or not their main original drug of abuse. Examples of these 'cross-addictions' and behaviours are gambling, sex, excessive spending, and food. Compulsive behaviour around these activities can cause as much damage for the doctor's domestic and professional life as the original substance abuse.

Hair testing is preferable for opioid and propofol detection to verify the addict remains abstinent. It is more difficult to falsify than urine (which can be bought 'clean' or as reconstitutable powder on the Internet).

Reports of sustained abstinence by doctors in general are good—between 74% and 90%.⁹ In a literature review, Earley¹⁴ discusses some rather dismal earlier figures for anaesthetists. Skipper and colleagues² study, however, which excluded trainees, found anaesthetists had fewer positive chemical tests, no more relapses, and stayed in employment to the same degree as other doctors—76% remained working in anaesthesia. These good outcomes were attributed to them being in a nationally recognized recovery programme and being rigorously monitored.

In Bryson's³ study, 73.3% of trainees remained in anaesthesia, with a 29% relapse rate and 3% mortality. Warner and colleagues⁴ also reported a 29% relapse rate, but higher mortality of 13%. Domino's study of all medical specialities found a slightly higher relapse rate in those returning to anaesthesia.¹³

The predictors for a relapse/negative outcome are:^{13,14}

- positive family history,
- co-morbid psychiatric disorder,
- i.v. opioid use,
- history of previous relapse.

Back to work?

Addicts do not 'grow out of' drug dependence neither is the time spent in treatment a cure. Recovery is an ongoing process and not a nicely compartmentalized event and often requires major life changes. Whether substance abusing anaesthetists should continue in anaesthesia has provoked several recent articles which give an excellent overview of the debate.^{3,5,9,14}

At the Talbott Recovery Campus in Atlanta (which has extensive experience treating anaesthetists), several consultants formed an anaesthesia study group, publishing the Medical Personnel Addiction Recovery Inventory (MPARI) tool,¹⁴ and building on the Angres Criteria (1998), which are used by many State Health Programmes in the USA to stratify the likelihood of returning to anaesthetic practice (D. Angres, Medical Director, Positive Sobriety Institute, Chicago, IL, USA, personal communication).

Angres criteria

Category I—Certain return to anaesthesia immediately after treatment:

- Tremendous love for/commitment to anaesthesia
- Accepts and understands the disease
- Bonding with AA (or narcotics anonymous) and has a sponsor
- Strong family support
- Committed to recovery
- Balanced lifestyle
- No evidence of dual diagnosis, for example, bipolar disorder
- Treatment team, anaesthetic department, and employer support return

Category II—Possible return to anaesthesia (after some time away):

- Relapsed with recovery underway
- Dysfunctional but improving family situation
- Involved, but not bonded with AA/NA
- Improving recovery skills
- Some denial remains
- Mood swings without other psychiatric diagnosis

Category III—Redirect into another speciality:

- Prolonged i.v. use
- Prior treatment failure and relapses
- Disease clearly remains active
- Went into anaesthesia for drug access
- Dysfunctional family
- Non-compliant with regulatory bodies
- Poor recovery skills and no bonding with AA/NA, no sponsor
- Severe co-morbid psychiatric diagnosis

(Reproduced and adapted with permission, D. Angres).

These criteria are a guide only as there is no 'one size fits all' and each case should be judged individually. Simulation sessions as a prelude to recommencing clinical practice have been found to be very useful. Return to work should be gradual, with time

allowed for GMC and other appointments; finishing work in time to attend AA if required is helpful. One difficulty has been finding departments willing to offer placements for trainees who have been dismissed from their original Deanery.

The high mortality from both drug use and suicide remains a difficult problem. Hopefully, as awareness, education, and case management improve, those in the throes of addiction who so often see no future ahead may begin to see some hope and ultimately more anaesthetists can return to work and lead productive and contented lives once again.

Contact details of UK drug dependency support organizations for doctors

Practitioner health programme (PHP)

<http://www.php.nhs.uk/>

A confidential NHS funded service open to doctors and dentists living in the London area (although the service does provide telephone advice only for those outside of London).

Sick Doctors Trust (SDT)

www.sick-doctors-trust.co.uk

An independent charity, providing a 24 h helpline manned by doctors who are in recovery from addiction themselves. It provides support to doctors who think they may have a problem with their use of alcohol or other drugs. The helpline also accepts calls from family and colleagues.

The British Doctors and Dentists Group (BDDG)

www.bddg.org; <http://www.bddg-london.org/>

A UK-wide network of 18 groups of doctors and dentists in recovery from addiction. Callers can be put in touch with another doctor near to their home (in some cases, an anaesthetist) who may then introduce them to their local group. Doctors under GMC sanctions are often required to attend these groups as conditions of their continued registration.

Declaration of interest

The author is a Trustee with the charity, the Sick Doctors Trust.

References

1. Booth JV, Grossman D, Moore J *et al.* Substance abuse among physicians: a survey of academic anesthesiology programs. *Anesth Analg* 2002; **95**: 1024–30
2. Skipper GE, Campbell MD, DuPont RL. Anesthesiologists with substance use disorders: a 5-year outcome study from 16 state physician health programs. *Anesth Analg* 2009; **109**: 891–6
3. Bryson EO. Should anesthesia residents with a history of substance abuse be allowed to continue training in clinical anesthesia? The results of a survey of anesthesia residency program directors. *J Clin Anesth* 2009; **21**: 508–13
4. Warner DO, Berge K, Sun H *et al.* Substance use disorder among anesthesiology residents, 1975–2009. *J Am Med Assoc* 2013; **310**: 2289–96
5. Oreskovich MR. Anesthesiologists recovering from chemical dependency: can they safely return to the operating room? *Mayo Clin Proc* 2009; **84**: 576–80

6. Earley PH, Finver T. Addiction to propofol: a study of 22 cases. *J Addict Med* 2013; **7**: 169–76
7. Fry RA, Fry LE, Castanelli DJ. A retrospective survey of substance abuse in anaesthetists in Australia and New Zealand from 2004 to 2013. *Anaesth Intensive Care* 2015; **43**: 111–7
8. Wilson JE, Kiselanova N, Stevens Q et al. A survey of inhalational anaesthetic abuse in anaesthesia training programmes. *Anaesthesia* 2008; **63**: 616–20
9. Berge KH, Seppala MD, Schipper AM. Chemical dependency and the physician. *Mayo Clin Proc* 2009; **84**: 625–31
10. The Australia and New Zealand College of Anaesthetists. Welfare of Anaesthetists Special Interest Group 2015: ANZCA RD 26: The Role of the Welfare Officer. Accessed 22 April 2015
11. The General Medical Council. *Good Medical Practice* 2013; Domain 2–Safety and Quality: Paragraph 25c
12. The Shipman Inquiry. The Fifth Report, 2004; 23.43: 868–71. Available from http://webarchive.nationalarchives.gov.uk/20090808154959/http://www.the-shipman-inquiry.org.uk/5r_page.asp?id=4782 (accessed 25 January 2015)
13. Domino KB, Hornbein TF, Polissar NL et al. Risk factors for relapse in health care professionals with substance use disorders. *J Am Med Assoc* 2005; **293**: 1453–60
14. Earley PH. *Earley Consultancy; the Medical Professionals Addiction Recovery Inventory (MPARI)*. Available from <http://www.earleyconsultancy.com/portal/mpari/mpari-history-part-one>, <http://www.earleyconsultancy.com/portal/mpari/mpari-history-part-two> (accessed 26 January 2015)