

# BENZODIAZEPINES: HOW THEY WORK AND HOW TO WITHDRAW

(aka The Ashton Manual)

- Protocol for the Treatment of Benzodiazepine Withdrawal
- Medical research information from a benzodiazepine withdrawal clinic

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## CHAPTER I

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### BACKGROUND

For twelve years (1982-1994) I ran a Benzodiazepine Withdrawal Clinic for people wanting to come off their tranquillisers and sleeping pills. Much of what I know about this subject was taught to me by those brave and long-suffering men and women. By listening to the histories of over 300 "patients" and by closely following their progress (week-by-week and sometimes day-by-day), I gradually learned what long-term benzodiazepine use and subsequent withdrawal entails.

Most of the people attending the clinic had been taking benzodiazepines prescribed by their doctors for many years, sometimes over 20 years. They wished to stop because they did not feel well. They realised that the drugs, though effective when first prescribed, might now be actually making them feel ill. They had many symptoms, both physical and mental. Some were depressed and/or anxious; some had "irritable bowel", cardiac or neurological complaints. Many had undergone hospital investigations with full gastrointestinal, cardiological and neurological screens (nearly always with negative results). A number had been told (wrongly) that they had multiple sclerosis. Several had lost their jobs through recurrent illnesses.

The experiences of these patients have since been confirmed in many studies, by thousands of patients attending tranquilliser support groups in the UK and other parts of Europe, and by individuals vainly seeking help in the US. It is interesting that the patients themselves, and not the medical profession, were the first to realise that long-term use of benzodiazepines can cause problems.

### ABOUT THIS CHAPTER

Some readers may decide to go directly to the chapter on benzodiazepine withdrawal ([Chapter II](#)). However, those who wish to understand withdrawal symptoms and techniques (and therefore to cope better with the withdrawal process) are advised to become acquainted first with what benzodiazepines do in the body, how they work, how the body adjusts to chronic use, and why withdrawal symptoms occur. These issues are discussed in this chapter.

### THE BENZODIAZEPINES

**Potency.** A large number of benzodiazepines are available ([Table 1](#)). There are major differences in potency between different benzodiazepines, so that equivalent doses vary as much as 20-fold. For example, 0.5 milligrams (mg) of alprazolam (Xanax) is approximately equivalent to 10mg of diazepam (Valium). Thus a person on 6mg of alprazolam daily, a dose not uncommonly prescribed in the US, is taking the equivalent of about 120mg of diazepam, a very high dose. These differences in strength have not always been fully appreciated by doctors, and some would not agree with the equivalents given here. Nevertheless, people on potent benzodiazepines such as alprazolam, lorazepam (Ativan) or clonazepam (Klonopin) tend to be using relatively large doses. This difference in potency is important when switching from one benzodiazepine to another, for example changing to diazepam during the withdrawal, as described in the next [chapter](#).

**Speed of elimination.** Benzodiazepines also differ markedly in the speed at which they are metabolised (in the liver) and eliminated from the body (in the urine) ([Table 1](#)). For example, the "half-life" (time taken for the blood concentration to fall to half its initial value after a single dose) for triazolam (Halcion) is only 2-5 hours, while the half-life of diazepam is 20-100 hours, and that of an active metabolite of diazepam (desmethyldiazepam) is 36-200 hours. This means that half the active products of diazepam are still in the bloodstream up to 200 hours after a single dose. Clearly, with repeated daily dosing accumulation occurs and high concentrations can build up in the body (mainly in fatty tissues). As [Table 1](#) shows, there is a considerable variation between individuals in the rate at which they metabolise benzodiazepines.

Table 1. BENZODIAZEPINES AND SIMILAR DRUGS<sup>5</sup>

Benzodiazepines <sup>5</sup>	Half-life (hrs) <sup>1</sup> [active metabolite]	Market Aim <sup>2</sup>	Approximately Equivalent Oral dosages (mg) <sup>3</sup>
Alprazolam (Xanax)	6-12	a	0.5
Bromazepam (Lexotan, Lexomil)	10-20	a	5-6
Chlordiazepoxide (Librium)	5-30 [36-200]	a	25
Clobazam (Frisium)	12-60	a,e	20
Clonazepam (Klonopin, Rivotril)	18-50	a,e	0.5
Clorazepate (Tranxene)	[36-200]	a	15
Diazepam (Valium)	20-100 [36-200]	a	10
Estazolam (ProSom)	10-24	h	1-2
Flunitrazepam (Rohypnol)	18-26 [36-200]	h	1
Flurazepam (Dalmane)	[40-250]	h	15-30
Halazepam (Paxipam)	[30-100]	a	20
Ketazolam (Anxon)	2	a	15-30
Loprazolam (Dormonox)	6-12	h	1-2
Lorazepam (Ativan)	10-20	a	1
Lormetazepam (Noctamid)	10-12	h	1-2
Medazepam (Nobrium)	36-200	a	10
Nitrazepam (Mogadon)	15-38	h	10
Nordazepam (Nordaz, Calmday)	36-200	a	10
Oxazepam (Serax, Serenid, Serepax)	4-15	a	20
Prazepam (Centrax)	[36-200]	a	10-20
Quazepam (Doral)	25-100	h	20
Temazepam (Restoril, Normison, Euhypnos)	8-22	h	20
Triazolam (Halcion)	2	h	0.5
<b>Non- benzodiazepines with similar effects<sup>4,5</sup></b>			
Zaleplon (Sonata)	2	h	20
Zolpidem (Ambien, Stilnox)	2	h	20
Zopiclone (Zimovane, Imovane)	5-6	h	15

1. Half-life: time taken for blood concentration to fall to half its peak value after a single dose. Half-life of active metabolite shown in square brackets. This time may vary considerably between individuals.

2. Market aim: although all benzodiazepines have similar actions, they are usually marketed as anxiolytics (a), hypnotics (h) or anticonvulsants (e).
3. These equivalents do not agree with those used by some authors. They are firmly based on clinical experience but may vary between individuals.
4. These drugs are chemically different from benzodiazepines but have the same effects on the body and act by the same mechanisms.
5. All these drugs are recommended for short-term use only (2-4 weeks maximum).

**Duration of effects.** The speed of elimination of a benzodiazepine is obviously important in determining the duration of its effects. However, the duration of apparent action is usually considerably less than the half-life. With most benzodiazepines, noticeable effects usually wear off within a few hours. Nevertheless the drugs, as long as they are present, continue to exert subtle effects within the body. These effects may become apparent during continued use or may appear as withdrawal symptoms when dosage is reduced or the drug is stopped.

**Therapeutic actions of benzodiazepines.** Regardless of their potency, speed of elimination or duration of effects, the actions in the body are virtually the same for all benzodiazepines. This is true whether they are marketed as anxiolytics, hypnotics or anti-convulsants (Table 1). All benzodiazepines exert five major effects which are used therapeutically: anxiolytic, hypnotic, muscle relaxant, anticonvulsant and amnesic (impairment of memory) (Table 2).

**Table 2. THERAPEUTIC ACTIONS OF BENZODIAZEPINES (IN SHORT-TERM USE)**

<b>ACTION</b>	<b>CLINICAL USE</b>
<b>Anxiolytic</b> - relief of anxiety	Anxiety and panic disorders, phobias
<b>Hypnotic</b> - promotion of sleep	Insomnia
<b>Myorelaxant</b> - muscle relaxation	Muscle spasms, spastic disorders
<b>Anticonvulsant</b> - stop fits, convulsions	Fits due to drug poisoning, some forms of epilepsy
<b>Amnesia</b> - impair short-term memory	Premedication for operations, sedation for minor surgical procedures

**Other clinical uses, utilising combined effects:**

- Alcohol detoxification
- Acute psychosis with hyperexcitability and aggressiveness

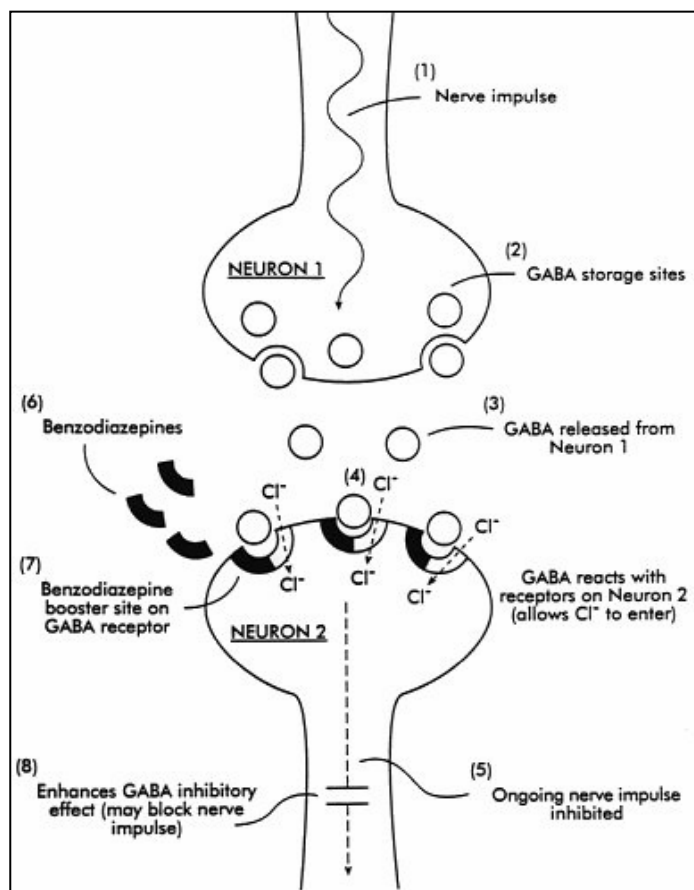
These actions, exerted by different benzodiazepines in slightly varying degrees, confer on the drugs some useful medicinal properties. Few drugs can compete with them in efficacy, rapid onset of action and low acute toxicity. In short-term use, benzodiazepines can be valuable, sometimes even life-saving, across a wide range of clinical conditions as shown in Table 2. Nearly all the disadvantages of benzodiazepines result from long-term use (regular use for more than a few weeks). The UK Committee on Safety of Medicines in 1988 recommended that benzodiazepines should in general be reserved for short-term use (2-4 weeks only).

**Mechanisms of action.** Anyone struggling to get off their benzodiazepines will be aware that the drugs have profound effects on the mind and body apart from the therapeutic actions. Directly or indirectly, benzodiazepines in fact influence almost every aspect of brain function. For those interested to know how and why, a short explanation follows of the mechanisms through which benzodiazepines are able to exert such widespread effects.

All benzodiazepines act by enhancing the actions of a natural brain chemical, GABA (gamma-aminobutyric acid). GABA is a neurotransmitter, an agent which transmits messages from one

brain cell (neuron) to another. The message that GABA transmits is an inhibitory one: it tells the neurons that it contacts to slow down or stop firing. Since about 40% of the millions of neurons all over the brain respond to GABA, this means that GABA has a general quietening influence on the brain: it is in some ways the body's natural hypnotic and tranquilliser. This natural action of GABA is augmented by benzodiazepines which thus exert an extra (often excessive) inhibitory influence on neurons (Fig. 1).

**Fig. 1. Diagram of mechanism of action of the natural neurotransmitter GABA (gamma-aminobutyric acid) and benzodiazepines on nerve cells (neurons) in the brain**



- (1,2) Nerve impulse causes release of GABA from storage sites on neuron 1
- (3) GABA released into space between neurons
- (4) GABA reacts with receptors on neuron 2; the reaction allows chloride ions (Cl<sup>-</sup>) to enter the neuron
- (5) This effect inhibits further progress of the nerve impulse
- (6,7) Benzodiazepines react with booster site on GABA receptors
- (8) This action enhances the inhibitory effects of GABA; the ongoing nerve impulse may be completely blocked

The way in which GABA sends its inhibitory message is by a clever electronic device. Its reaction with special sites (GABA-receptors) on the outside of the receiving neuron opens a channel, allowing negatively charged particles (chloride ions) to pass to the inside of the neuron. These negative ions "supercharge" the neuron making it less responsive to other neurotransmitters which would normally excite it. Benzodiazepines also react at their own special sites (benzodiazepine receptors), situated actually on the GABA-receptor. Combination of a benzodiazepine at this site acts as a booster to the actions of GABA, allowing more chloride ions to enter the neuron, making it even more resistant to excitation. Various subtypes

of benzodiazepine receptors have slightly different actions. One subtype (alpha 1) is responsible for sedative effects, another (alpha 2) for anti-anxiety effects, and both alpha 1 and alpha 2, as well as alpha 5, for anticonvulsant effects. All benzodiazepines combine, to a greater or lesser extent, with all these subtypes and all enhance GABA activity in the brain.

As a consequence of the enhancement of GABA's inhibitory activity caused by benzodiazepines, the brain's output of excitatory neurotransmitters, including norepinephrine (noradrenaline), serotonin, acetyl choline and dopamine, is reduced. Such excitatory neurotransmitters are necessary for normal alertness, memory, muscle tone and co-ordination, emotional responses, endocrine gland secretions, heart rate and blood pressure control and a host of other functions, all of which may be impaired by benzodiazepines. Other benzodiazepine receptors, not linked to GABA, are present in the kidney, colon, blood cells and adrenal cortex and these may also be affected by some benzodiazepines. These direct and indirect actions are responsible for the well-known adverse effects of dosage with benzodiazepines.

### **ADVERSE EFFECTS OF BENZODIAZEPINES**

**Oversedation.** Oversedation is a dose-related extension of the sedative/hypnotic effects of benzodiazepines. Symptoms include drowsiness, poor concentration, incoordination, muscle weakness, dizziness and mental confusion. When benzodiazepines are taken at night as sleeping pills, sedation may persist the next day as "hangover" effects, particularly with slowly eliminated preparations (Table 1). However, tolerance to the sedative effects usually develops over a week or two and anxious patients taking benzodiazepines during the day rarely complain of sleepiness although fine judgement and some memory functions may still be impaired.

Oversedation persists longer and is more marked in the elderly and may contribute to falls and fractures. Acute confusional states have occurred in the elderly even after small doses of benzodiazepines. Oversedation from benzodiazepines contributes to accidents at home and at work and studies from many countries have shown a significant association between the use of benzodiazepines and the risk of serious traffic accidents. People taking benzodiazepines should be warned of the risks of driving and of operating machinery.

**Drug interactions.** Benzodiazepines have additive effects with other drugs with sedative actions including other hypnotics, some antidepressants (e.g. amitriptyline [Elavil], doxepin [Adapin, Sinequan]), major tranquillisers or neuroleptics (e.g. prochlorperazine [Compazine], trifluoperazine [Stelazine]), anticonvulsants (e.g. phenobarbital, phenytoin [Dilantin], carbamazepine [Atretol, Tegretol]), sedative antihistamines (e.g. diphenhydramine [Benadryl], promethazine [Phenergan]), opiates (heroin, morphine, meperidine), and, importantly, alcohol. Patients taking benzodiazepines should be warned of these interactions. If sedative drugs are taken in overdose, benzodiazepines may add to the risk of fatality.

**Memory impairment.** Benzodiazepines have long been known to cause amnesia, an effect which is utilised when the drugs are used as premedication before major surgery or for minor surgical procedures. Loss of memory for unpleasant events is a welcome effect in these circumstances. For this purpose, fairly large single doses are employed and a short-acting benzodiazepine (e.g. midazolam) may be given intravenously.

Oral doses of benzodiazepines in the dosage range used for insomnia or anxiety can also cause memory impairment. Acquisition of new information is deficient, partly because of lack of concentration and attention. In addition, the drugs cause a specific deficit in "episodic" memory, the remembering of recent events, the circumstances in which they occurred, and their sequence in time. By contrast, other memory functions (memory for words, ability to remember a telephone number for a few seconds, and recall of long-term memories) are not impaired. Impairment of episodic memory may occasionally lead to memory lapses or "blackouts". It is claimed that in some instances such memory lapses may be responsible for uncharacteristic

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behaviours such as shop-lifting.

Benzodiazepines are often prescribed for acute stress-related reactions. At the time they may afford relief from the distress of catastrophic disasters, but if used for more than a few days they may prevent the normal psychological adjustment to such trauma. In the case of loss or bereavement they may inhibit the grieving process which may remain unresolved for many years. In other anxiety states, including panic disorder and agoraphobia, benzodiazepines may inhibit the learning of alternative stress-coping strategies, including cognitive behavioural treatment.

**Paradoxical stimulant effects.** Benzodiazepines occasionally cause paradoxical excitement with increased anxiety, insomnia, nightmares, hallucinations at the onset of sleep, irritability, hyperactive or aggressive behaviour, and exacerbation of seizures in epileptics. Attacks of rage and violent behaviour, including assault (and even homicide), have been reported, particularly after intravenous administration but also after oral administration. Less dramatic increases in irritability and argumentativeness are much more common and are frequently remarked upon by patients or by their families. Such reactions are similar to those sometimes provoked by alcohol. They are most frequent in anxious and aggressive individuals, children, and the elderly. They may be due to release or inhibition of behavioural tendencies normally suppressed by social restraints. Cases of "baby-battering", wife-beating and "grandma-bashing" have been attributed to benzodiazepines.

**Depression, emotional blunting.** Long-term benzodiazepine users, like alcoholics and barbiturate-dependent patients, are often depressed, and the depression may first appear during prolonged benzodiazepine use. Benzodiazepines may both cause and aggravate depression, possibly by reducing the brain's output of neurotransmitters such as serotonin and norepinephrine (noradrenaline). However, anxiety and depression often co-exist and benzodiazepines are frequently prescribed for mixed anxiety and depression. Sometimes the drugs seem to precipitate suicidal tendencies in such patients. Of the first 50 of the patients attending my withdrawal clinic (reported in 1987), ten had taken drug overdoses requiring hospital admission while on chronic benzodiazepine medication; only two of these had a history of depressive illness before they were prescribed benzodiazepines. The depression lifted in these patients after benzodiazepine withdrawal and none took further overdoses during the 10 months to 3.5 years follow-up period after withdrawal. In 1988 the Committee on Safety of Medicines in the UK recommended that "benzodiazepines should not be used alone to treat depression or anxiety associated with depression. Suicide may be precipitated in such patients".

"Emotional anaesthesia", the inability to feel pleasure or pain, is a common complaint of long-term benzodiazepine users. Such emotional blunting is probably related to the inhibitory effect of benzodiazepines on activity in emotional centres in the brain. Former long-term benzodiazepine users often bitterly regret their lack of emotional responses to family members - children and spouses or partners - during the period when they were taking the drugs. Chronic benzodiazepine use can be a cause of domestic disharmony and even marriage break-up.

**Adverse effects in the elderly.** Older people are more sensitive than younger people to the central nervous system depressant effects of benzodiazepines. Benzodiazepines can cause confusion, night wandering, amnesia, ataxia (loss of balance), hangover effects and "pseudodementia" (sometimes wrongly attributed to Alzheimer's disease) in the elderly and should be avoided wherever possible. Increased sensitivity to benzodiazepines in older people is partly because they metabolise drugs less efficiently than younger people, so that drug effects last longer and drug accumulation readily occurs with regular use. However, even at the same blood concentration, the depressant effects of benzodiazepines are greater in the elderly, possibly because they have fewer brain cells and less reserve brain capacity than younger people.

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For these reasons, it is generally advised that, if benzodiazepines are used in the elderly, dosage should be half that recommended for adults, and use (as for adults) should be short-term (2 weeks) only. In addition, benzodiazepines without active metabolites (e.g. oxazepam [Serax], temazepam [Restoril]) are tolerated better than those with slowly eliminated metabolites (e.g. chlordiazepoxide [Librium], nitrazepam [Mogadon]). Equivalent potencies of different benzodiazepines are approximately the same in older as in younger people ([Table 1](#)).

**Adverse effects in pregnancy.** Benzodiazepines cross the placenta, and if taken regularly by the mother in late pregnancy, even in therapeutic doses, can cause neonatal complications. The foetus and neonate metabolise benzodiazepines very slowly, and appreciable concentrations may persist in the infant up to two weeks after birth, resulting in the "floppy infant syndrome" of lax muscles, oversedation, and failure to suckle. Withdrawal symptoms may develop after about two weeks with hyperexcitability, high-pitched crying and feeding difficulties.

Benzodiazepines in therapeutic doses appear to carry little risk of causing major congenital malformations. However, chronic maternal use may impair foetal intrauterine growth and retard brain development. There is increasing concern that such children in later life may be prone to attention deficit disorder, hyperactivity, learning difficulties, and a spectrum of autistic disorders.

**Tolerance.** Tolerance to many of the effects of benzodiazepines develops with regular use: the original dose of the drug has progressively less effect and a higher dose is required to obtain the original effect. This has often led doctors to increase the dosage in their prescriptions or to add another benzodiazepine so that some patients have ended up taking two benzodiazepines at once.

However, tolerance to the various actions of benzodiazepines develops at variable rates and to different degrees. Tolerance to the hypnotic effects develops rapidly and sleep recordings have shown that sleep patterns, including deep sleep (slow wave sleep) and dreaming (which are initially suppressed by benzodiazepines), return to pre-treatment levels after a few weeks of regular benzodiazepine use. Similarly, daytime users of the drugs for anxiety no longer feel sleepy after a few days.

Tolerance to the anxiolytic effects develops more slowly but there is little evidence that benzodiazepines retain their effectiveness after a few months. In fact long-term benzodiazepine use may even aggravate anxiety disorders. Many patients find that anxiety symptoms gradually increase over the years despite continuous benzodiazepine use, and panic attacks and agoraphobia may appear for the first time after years of chronic use. Such worsening of symptoms during long-term benzodiazepine use is probably due to the development of tolerance to the anxiolytic effects, so that "withdrawal" symptoms emerge even in the continued presence of the drugs. However, tolerance may not be complete and chronic users sometimes report continued efficacy, which may be partly due to suppression of withdrawal effects. Nevertheless, in most cases such symptoms gradually disappear after successful tapering and withdrawal of benzodiazepines. Among [the first 50 patients](#) attending my clinic, 10 patients became agoraphobic for the first time while taking benzodiazepines. Agoraphobic symptoms abated dramatically within a year of withdrawal, even in patients who had been housebound, and none were incapacitated by agoraphobia at the time of follow-up (10 months to 3.5 years after withdrawal).

Tolerance to the anticonvulsant effects of benzodiazepines makes them generally unsuitable for long-term control of epilepsy. Tolerance to the motor effects of benzodiazepines can develop to a remarkable degree so that people on very large doses may be able to ride a bicycle and play ball games. However, complete tolerance to the effects on memory and cognition does not seem to occur. Many studies show that these functions remain impaired in chronic users, recovering slowly, though sometimes incompletely, after withdrawal.

Tolerance is a phenomenon that develops with many chronically used drugs (including alcohol,

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heroin and morphine and cannabis). The body responds to the continued presence of the drug with a series of adjustments that tend to overcome the drug effects. In the case of benzodiazepines, compensatory changes occur in the GABA and benzodiazepine receptors which become less responsive, so that the inhibitory actions of GABA and benzodiazepines are decreased. At the same time there are changes in the secondary systems controlled by GABA so that the activity of excitatory neurotransmitters tends to be restored. Tolerance to different effects of benzodiazepines may vary between individuals - probably as a result of differences in intrinsic neurological and chemical make-up which are reflected in personality characteristics and susceptibility to stress. The development of tolerance is one of the reasons people become dependent on benzodiazepines, and also sets the scene for the withdrawal syndrome, described in the next chapter.

**Dependence.** Benzodiazepines are potentially addictive drugs: psychological and physical dependence can develop within a few weeks or months of regular or repeated use. There are several overlapping types of benzodiazepine dependence.

**Therapeutic dose dependence.** People who have become dependent on therapeutic doses of benzodiazepines usually have several of the following characteristics.

1. They have taken benzodiazepines in prescribed "therapeutic" (usually low) doses for months or years.
2. They have gradually become to "need" benzodiazepines to carry out normal, day-to-day activities.
3. They have continued to take benzodiazepines although the original indication for prescription has disappeared.
4. They have difficulty in stopping the drug, or reducing dosage, because of withdrawal symptoms.
5. If on short-acting benzodiazepines (Table 1) they develop anxiety symptoms between doses, or get craving for the next dose.
6. They contact their doctor regularly to obtain repeat prescriptions.
7. They become anxious if the next prescription is not readily available; they may carry their tablets around with them and may take an extra dose before an anticipated stressful event or a night in a strange bed.
8. They may have increased the dosage since the original prescription.
9. They may have anxiety symptoms, panics, agoraphobia, insomnia, depression and increasing physical symptoms despite continuing to take benzodiazepines.

The number of people world-wide who are taking prescribed benzodiazepines is enormous. For example, in the US nearly 11 per cent of a large population surveyed in 1990 reported some benzodiazepine use the previous year. About 2 per cent of the adult population of the US (around 4 million people) appear to have used prescribed benzodiazepine hypnotics or tranquillisers regularly for 5 to 10 years or more. Similar figures apply in the UK, over most of Europe and in some Asian countries. A high proportion of these long-term users must be, at least to some degree, dependent. Exactly how many are dependent is not clear; it depends to some extent on how dependence is defined. However, many studies have shown that 50-100 per cent of long-term users have difficulty in stopping benzodiazepines because of withdrawal symptoms, which are described in Chapter III.

**Prescribed high dose dependence.** A minority of patients who start on prescribed benzodiazepines begin to "require" larger and larger doses. At first they may persuade their doctors to escalate the size of prescriptions, but on reaching the prescriber's limits, may contact several doctors or hospital departments to obtain further supplies which they self-prescribe. Sometimes this group combines benzodiazepine misuse with excessive alcohol consumption. Patients in this group tend to be highly anxious, depressed and may have personality difficulties. They may have a history of other sedative or alcohol misuse. They do not typically use illicit drugs but may obtain "street" benzodiazepines if other sources fail.

**Recreational benzodiazepine abuse.** Recreational use of benzodiazepines is a growing problem. A large proportion (30-90 per cent) of polydrug abusers world-wide also use benzodiazepines. Benzodiazepines are used in this context to increase the "kick" obtained from illicit drugs, particularly opiates, and to alleviate the withdrawal symptoms of other drugs of abuse (opiates, barbiturates, cocaine, amphetamines and alcohol). People who have been given benzodiazepines during alcohol detoxification sometimes become dependent on benzodiazepines and may abuse illicitly obtained benzodiazepines as well as relapsing into alcohol use. Occasionally high doses of benzodiazepines are used alone to obtain a "high".

Recreational use of diazepam, alprazolam, lorazepam, temazepam, triazolam, flunitrazepam and others has been reported in various countries. Usually the drugs are taken orally, often in doses much greater than those used therapeutically (e.g. 100mg diazepam or equivalent daily) but some users inject benzodiazepines intravenously. These high dose users develop a high degree of tolerance to benzodiazepines and, although they may use the drugs intermittently, some become dependent. Detoxification of these patients may present difficulties since withdrawal reactions can be severe and include convulsions.

The present population of recreational users may be relatively small, perhaps one tenth of that of long-term prescribed therapeutic dose users, but probably amounts to some hundreds of thousands in the US and Western Europe, and appears to be increasing. It is a chastening thought that medical overprescription of benzodiazepines, resulting in their presence in many households, made them easily available and undoubtedly aided their entry into the illicit drug scene. Present sources for illicit users are forged prescriptions, theft from drug stores, or illegal imports.

**Socioeconomic costs of long-term benzodiazepine use.** The socio-economic costs of the present high level of long-term benzodiazepine use are considerable, although difficult to quantify. Most of these have been mentioned above and are summarised in [Table 3](#). These consequences could be minimised if prescriptions for long-term benzodiazepines were decreased. Yet many doctors continue to prescribe benzodiazepines and patients wishing to withdraw receive little advice or support on how to go about it. The following [chapter](#) gives practical information on withdrawal which, it is hoped, will be of use both to long-term benzodiazepine users and to their physicians.

**TABLE 3. SOME SOCIOECONOMIC COSTS OF LONG-TERM BENZODIAZEPINE USE**

1. Increased risk of accidents - traffic, home, work.
2. Increased risk of fatality from overdose if combined with other drugs.
3. Increased risk of attempted suicide, especially in depression.
4. Increased risk of aggressive behaviour and assault.
5. Increased risk of shoplifting and other antisocial acts.
6. Contributions to marital/domestic disharmony and breakdown due to emotional and cognitive impairment.
7. Contributions to job loss, unemployment, loss of work through illness.
8. Cost of hospital investigations/consultations/admissions.
9. Adverse effects in pregnancy and in the new-born.
10. Dependence and abuse potential (therapeutic and recreational).
11. Costs of drug prescriptions.
12. Costs of litigation.

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### FURTHER READING

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