

PRODUCT MONOGRAPH



alprazolam tablets USP

0.25 mg, 0.5 mg and 1.0 mg tablets



alprazolam tablets USP

2 mg triscored tablets

Anxiolytic - Antipanic

Upjohn Canada ULC
17300, Trans-Canada Highway
Kirkland, Quebec
H9J 2M5

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alprazolam tablets USP



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PART I: HEALTH PROFESSIONAL INFORMATION

SUMMARY PRODUCT INFORMATION

Route of Administration	Dosage Form / Strength	Clinically Relevant Nonmedicinal Ingredients
oral	tablet 0.25 mg, 0.5 mg and 1.0 mg	colloidal silicon dioxide, corn starch, docusate sodium-sodium benzoate, lactose monohydrate, magnesium stearate 0.5 mg tablet: also contains yellow aluminum lake 1 mg tablet: also contains blue aluminum lake and erythrosine aluminum lake <i>For a complete listing see Dosage Forms, Composition and Packaging section.</i>
oral	triscored tablet 2 mg	colloidal silicon dioxide, corn starch, docusate sodium-sodium benzoate, lactose monohydrate, magnesium stearate <i>For a complete listing see Dosage Forms, Composition and Packaging section.</i>

INDICATIONS AND CLINICAL USE

Adults:

XANAX and XANAX TS (alprazolam) are indicated for the management of Anxiety Disorders or the short-term symptomatic relief of symptoms of excessive anxiety. Anxiety or tension associated with the stress of everyday life usually does not require treatment with an anxiolytic.

Generalized Anxiety Disorder

XANAX and XANAX TS are indicated for the treatment of Generalized Anxiety Disorder (GAD). GAD is characterized by unrealistic or excessive anxiety and worry (apprehensive expectation) about two or more life circumstances, for a period of six months or longer, during which the person has been bothered more days than not by these concerns. At least 6 of the following 18 symptoms are often present in these patients: *Motor Tension* (trembling, twitching, or feeling shaky; muscle tension, aches, or soreness; restlessness; easy fatigability); *Autonomic Hyperactivity* (shortness of breath or smothering sensations; palpitations or accelerated heart rate; sweating, or cold clammy hands; dry mouth; dizziness or lightheadedness; nausea, diarrhea, or other abdominal distress; flushes or chills; frequent urination; trouble swallowing or “lump in throat”); *Vigilance and Scanning* (feeling keyed up or on edge; exaggerated startle response; difficulty concentrating or “mind going blank” because of anxiety; trouble falling or staying asleep; irritability). These symptoms must not be secondary to another psychiatric disorder or caused by some organic factor.

Panic Disorder with/without Agoraphobia

XANAX and XANAX TS are also indicated for the management of Panic Disorder with or without Agoraphobia. Panic disorder is an illness characterized by recurrent panic attacks.

Panic attacks are discrete periods of intense fear or discomfort, with at least four of the following symptom: dyspnea; dizziness, unsteady feelings, or faintness; tachycardia; trembling or shaking; sweating; choking; nausea or abdominal distress; depersonalization or derealization; paresthesias; flushes or chills; chest pain or discomfort, fear of dying; fear of going crazy or of doing something uncontrolled.

Attacks are usually of a few minutes duration but can, more rarely, last up to a few hours.

The diagnosis of Panic Disorders requires that either four attacks must have occurred within a four- week period, or one or more attacks must have been followed by a period of at least one month of persistent fear of having another attack. The symptoms must not be attributable to known organic factors.

The panic attacks, at least initially, are unexpected. Later in the course of this disturbance certain situations, e.g., driving a car or being in a crowded place, may become associated with having a panic attack. These panic attacks are not triggered by situations in which the person is the focus of others' attention (as in social phobia).

During the natural course of the illness, the patient often develops symptoms of Agoraphobia. Agoraphobia is a fear of being in situations from which escape might be difficult or in which help might not be available in the event of an unexpected panic attack. As a result of this fear, the patient either restricts travel or needs a companion when away from home, or else endures agoraphobic situations despite intense anxiety. The severity varies from mild (able to travel to work or to shop), to severe (completely housebound).

Demonstrations of the effectiveness of alprazolam by systematic clinical studies are limited to four months duration for Anxiety Disorder and four to ten weeks duration for Panic Disorder; however, patients with Panic Disorder have been treated on an open basis for up to eight months without apparent loss of benefit. The physician should periodically reassess the usefulness of drug treatment in all patients.

Geriatrics (≥65 years of age):

Elderly patients may be especially sensitive to the effects of benzodiazepines and lower doses of XANAX and XANAX TS are recommended (see ACTION AND CLINICAL PHARMACOLOGY, Pharmacokinetics; WARNINGS AND PRECAUTIONS, Special Populations - Geriatrics; and DOSAGE AND ADMINISTRATION, Recommended Dose and Dosage Adjustment, Anxiety Disorders - Elderly and Debilitated Patients).

Long-term use of XANAX and XANAX TS should be avoided in elderly patients. Enhanced monitoring is recommended (see WARNINGS AND PRECAUTIONS, Falls and fractures; DOSAGE AND ADMINISTRATION, Dosing considerations).

Pediatrics (< 18 years of age):

XANAX and XANAX TS are not recommended for use in patients under the age of 18 years (see WARNINGS AND PRECAUTIONS, Special Populations - Pediatrics).

CONTRAINDICATIONS

XANAX and XANAX TS (alprazolam) are contraindicated in patients with known hypersensitivity to alprazolam or to any component of the product's formulation, or other benzodiazepines. XANAX and XANAX TS are also contraindicated in patients with myasthenia gravis, severe hepatic insufficiency, severe respiratory insufficiency, sleep apnea syndrome, or acute narrow angle glaucoma. However, XANAX and XANAX TS may be used in patients with open angle glaucoma who are receiving appropriate treatment.

Co-administration of XANAX and XANAX TS with ketoconazole and itraconazole are contraindicated because these medications significantly impair the metabolism of alprazolam by CYP3A4 (see DRUG INTERACTIONS, Drug-Drug Interactions).

WARNINGS AND PRECAUTIONS

Serious Warnings and Precautions

Addiction, Abuse and Misuse

The use of benzodiazepines, including XANAX and XANAX TS, can lead to abuse, misuse, addiction, physical dependence and withdrawal reactions. Abuse and misuse can result in overdose or death, especially when benzodiazepines are combined with other medicines, such as opioids, alcohol or illicit drugs.

- Assess each patient's risk prior to prescribing XANAX and XANAX TS
- Monitor all patients regularly for the development of these behaviours or conditions.
- XANAX and XANAX TS should be stored securely to avoid theft or misuse.

Withdrawal

Benzodiazepines, like XANAX and XANAX TS, can produce severe or life-threatening withdrawal symptoms.

- Avoid abrupt discontinuation or rapid dose reduction of XANAX and XANAX TS.
- Terminate treatment with XANAX and XANAX TS by gradually tapering the dosage schedule under close monitoring.

(see WARNINGS AND PRECAUTIONS, Dependence/Tolerance)

Risks from Concomitant use with Opioids

Concomitant use of XANAX and XANAX TS and opioids may result in profound sedation, respiratory depression, coma, and death (see WARNINGS AND PRECAUTIONS, General, Concomitant use with opioids).

- Reserve concomitant prescribing of these drugs for use in patients for whom alternative treatment options are not possible.
- Limit dosages and durations to the minimum required.
- Follow patients for signs and symptoms of respiratory depression and sedation.

General

XANAX and XANAX TS (alprazolam) are not effective in patients with Personality Disorders. XANAX and XANAX TS are not recommended for the management of Mood or Psychotic Disorders.

Concomitant use with opioids:

Concomitant use of benzodiazepines, including XANAX and XANAX TS, and opioids may result in profound sedation, respiratory depression, coma, and death. Because of these risks, reserve concomitant prescribing of these drugs for use in patients for whom alternative treatment options are not possible (see SERIOUS WARNINGS AND PRECAUTIONS BOX, Risks from Concomitant use with Opioids; DRUG INTERACTIONS, Serious Drug Interactions).

Observational studies have demonstrated that concomitant use of opioid analgesics and benzodiazepines increases the risk of drug-related mortality compared to use of opioid analgesics alone. Because of similar pharmacological properties, it is reasonable to expect similar risk with the concomitant use of other CNS depressant drugs with benzodiazepines.

If a decision is made to prescribe XANAX and XANAX TS concomitantly with opioids, prescribe the lowest effective dosages and minimum durations of concomitant use. In patients already receiving an opioid analgesic, prescribe a lower initial dose of XANAX and XANAX TS than indicated, and titrate based on clinical response. If an opioid analgesic is initiated in a patient already taking XANAX and XANAX TS, prescribe a lower initial dose of the opioid analgesic, and titrate based on clinical response. Follow patients closely for signs and symptoms of respiratory depression and sedation (see OVERDOSAGE).

Advise both patients and caregivers about the risks of respiratory depression and sedation when XANAX and XANAX TS is used with opioids.

Advise patients not to drive or operate heavy machinery until the effects of concomitant use of the opioid have been determined.

Dependence/Tolerance

Use of benzodiazepines, such as XANAX and XANAX TS, can lead to abuse, misuse, addiction, physical dependence (including tolerance) and withdrawal reactions. Abuse and misuse can result in overdose or death, especially when benzodiazepines are combined with other medicines, such as opioids, alcohol, or illicit drugs.

The risk of dependence increases with higher doses and longer term use but can occur with short-term use at recommended therapeutic doses. The risk of dependence is greater in patients with a history of psychiatric disorders and/or substance (including alcohol) use disorder.

- Discuss the risks of treatment with XANAX and XANAX TS with the patient, considering alternative (including non-drug) treatment options.
- Carefully evaluate each patient's risk of abuse, misuse and addiction, considering their medical condition and concomitant drug use, prior to prescribing XANAX and XANAX TS. In individuals prone to substance use disorder, XANAX and XANAX TS should only be administered if deemed medically necessary, employing extreme caution and close supervision.
- XANAX and XANAX TS should always be prescribed at the lowest effective dose for the shortest duration possible.
- All patients receiving benzodiazepines should be routinely monitored for signs and symptoms of misuse and abuse. If a substance use disorder is suspected, evaluate the patient and refer them for substance abuse treatment, as appropriate.

Dependence and Withdrawal Reactions, Including Seizures: Physical dependence with withdrawal symptoms may occur with benzodiazepine discontinuation and can be severe (e.g., seizures) if benzodiazepines are suddenly discontinued or upon rapid dose decrease (see DOSAGE AND ADMINISTRATION, Recommended Dose and Dosage Adjustment - Discontinuation). Even after relatively short-term use (e.g., for several weeks) at the doses recommended for the treatment of transient anxiety and anxiety disorder (ie, 0.75 to 3.0 mg per day), there is some risk of dependence, as withdrawal symptoms, including seizures, have been reported. Post-marketing surveillance data suggest that the risk of dependence and its severity appear to be greater in patients treated with relatively high doses (above 4 mg per day) and for long periods (more than 8-12 weeks).

Withdrawal

Benzodiazepines, such as XANAX and XANAX TS, can produce withdrawal signs and symptoms, ranging from mild to severe and even life threatening, following abrupt discontinuation or rapid dose reduction. Other factors that may precipitate withdrawal are switching from a long-acting to a short-acting benzodiazepine, decreasing blood levels of the drug or administration of an antagonist. The risk of withdrawal is higher with higher dosages and/or prolonged use, but can occur with short-term use at recommended therapeutic doses.

The onset of withdrawal signs and symptoms can range from hours to weeks following drug cessation and occur even with tapered dosage. Some symptoms can persist for months. Since symptoms are often similar to those for which the patient is being treated, it may difficult to distinguish from a relapse of the patient's condition.

Severe or life-threatening signs and symptoms of withdrawal include catatonia, delirium tremens, depression, dissociative effects (e.g. hallucinations), mania, psychosis, seizures (including status epilepticus) and suicidal ideation and behaviour.

Other withdrawal signs and symptoms include abdominal cramps, cognitive impairment, diarrhea, dysphoria, extreme anxiety or panic attacks, headache, hypersensitivity to light, noise and physical contact, insomnia, irritability, muscle pain or stiffness, paresthesia, restlessness, sweating, tension, tremors and vomiting. There is also a possibility of rebound anxiety or rebound insomnia.

- Abrupt discontinuation should be avoided and treatment - even if only of short duration - should be terminated by gradually tapering the dosage schedule under close monitoring.
- Tapering should be tailored to the specific patient. Special attention should be given to patients with a history of seizure.
- If a patient experiences withdrawal signs and symptoms, consider postponing the taper or raising the benzodiazepine to the previous dosage prior to proceeding with a gradual taper.
- Inform patients of risk of discontinuing abruptly, reducing dosage rapidly or switching medications.
- Stress the importance of consulting with their health care professional in order to discontinue safely.
- Patients experiencing withdrawal signs and symptoms should seek immediate medical

attention.

(see SERIOUS WARNINGS AND PRECAUTIONS BOX, Addiction, Abuse and Misuse, Withdrawal; DOSAGE AND ADMINISTRATION, Dosing Considerations)

Status Epilepticus and its Treatment: The medical event voluntary reporting system shows that withdrawal seizures have been reported in association with the discontinuation of XANAX. In most cases, only a single seizure was reported; however, multiple seizures and status epilepticus were reported as well. Ordinarily, the treatment of status epilepticus of any etiology involves use of intravenous benzodiazepines plus phenytoin or barbiturates, maintenance of a patent airway and adequate hydration. For additional details regarding therapy, consultation with an appropriate specialist may be considered.

Withdrawal and Rebound in Treating Panic Disorder: Because the management of Panic Disorder often requires the use of average daily doses of XANAX above 3 mg, the risk of dependence among Panic Disorder patients may be higher than that among those treated for less severe anxiety. Randomized placebo-controlled discontinuation studies showed a high rate of rebound and withdrawal symptoms in patients treated with XANAX compared to placebo-treated patients.

Relapse or return of illness was defined as a return of symptoms characteristic of Panic Disorder (primarily panic attacks) to levels approximately equal to those seen at baseline before active treatment was initiated. *Rebound* refers to a return of symptoms of Panic Disorder to a level substantially greater in frequency, or more severe in intensity, than seen at baseline. *Withdrawal* symptoms were identified as those which were generally not characteristic of Panic Disorder and which occurred for the first time more frequently during discontinuation than at baseline.

In a controlled clinical trial in which 63 patients were randomized to XANAX and where withdrawal symptoms were specifically sought, the following were identified as symptoms of withdrawal: heightened sensory perception, impaired concentration, dysosmia, clouded sensorium, paresthesias, muscle cramps, muscle twitch, diarrhea, blurred vision, appetite decrease and weight loss. Other symptoms, such as anxiety and insomnia, were frequently seen during discontinuation, but it could not be determined if they were due to return of illness, rebound or withdrawal.

In a larger database comprised of both controlled and uncontrolled studies in which 641 patients received XANAX, discontinuation-emergent symptoms which occurred at a rate of over 5% in patients treated with XANAX and at a greater rate than the placebo-treated group were as follows:

Discontinuation-emergent symptom		Incidence
Body System	Event	Percentage of XANAX-treated patients reporting event N = 641
Neurologic	Insomnia	29.5
	Lightheadedness	19.3
	Abnormal involuntary movement	17.3
	Headache	17.0
	Muscular twitching	6.9
	Impaired coordination	6.6
	Muscle tone disorders	5.9
	Weakness	5.8
Psychiatric	Anxiety	19.2
	Fatigue and tiredness	18.4
	Irritability	10.5
	Cognitive disorder	10.3
	Memory impairment	5.5
	Depression	5.1
	Confusional state	5.0
Gastrointestinal	Nausea/vomiting	16.5
	Diarrhea	13.6
	Decreased salivation	10.6
Metabolic-Nutritional	Weight Loss	13.3
	Decreased appetite	12.8
Dermatological	Sweating	14.4
Cardiovascular	Tachycardia	12.2
Special Senses	Blurred vision	10.0

From the studies cited, it has not been determined whether these symptoms are clearly related to the dose and duration of therapy with XANAX in patients with Panic Disorder. In two controlled trials of six to eight weeks duration where the ability of patients to discontinue medication was measured, 71%-93% of patients treated with XANAX tapered completely off therapy compared to 89%-96% of placebo treated patients. The ability of patients to completely discontinue therapy with XANAX after long-term therapy has not been reliably determined.

Seizures attributable to XANAX were seen after drug discontinuance or dose reduction in 8 of 1980 patients with Panic Disorder or in patients participating in clinical trials where doses of XANAX greater than 4 mg daily for over 3 months were permitted. Five of these cases clearly occurred during abrupt dose reduction, or discontinuation from daily doses of 2 to 10 mg. Three cases occurred in situations where there was not a clear relationship to abrupt dose reduction or discontinuation. In one instance, seizure occurred after discontinuation from a single dose of 1 mg after tapering at a rate of 1 mg every three days, from 6 mg daily. In two other instances, the relationship to taper is indeterminate; in both of these cases the patients had been receiving doses of 3 mg daily prior to seizure. The duration of use in the above 8 cases ranged from 4 to 22 weeks. There have been occasional voluntary reports of patients developing seizures while apparently tapering gradually from XANAX. The risk of seizure seems to be greatest

24-72 hours after discontinuation. (see DOSAGE AND ADMINISTRATION, Recommended Dose and Dosage Adjustment - Discontinuation; ADVERSE REACTIONS, Post-Market Adverse Drug Reactions).

Treating Interdose Symptoms in Panic Disorder

Interdose Symptoms: Early morning anxiety and emergence of anxiety symptoms between doses of XANAX have been reported in patients with Panic Disorder taking prescribed maintenance doses of XANAX. These symptoms may reflect the development of tolerance or a time interval between doses which is longer than the duration of clinical action of the administered dose. In either case, it is presumed that the prescribed dose is not sufficient to maintain plasma levels above those needed to prevent relapse, rebound or withdrawal symptoms over the entire course of the inter-dosing interval. In these situations, it is recommended that the same total daily dose be given, divided as more frequent administrations (See DOSAGE AND ADMINISTRATION).

Psychiatric

Depression and Suicide: Panic-related disorders have been associated with primary and secondary major depressive disorders and increased reports of suicide among untreated patients. Therefore, the same precaution that is exercised with the use of any psychotropic drug in treating depressed patients or those in whom there is reason to suspect concealed suicidal ideation or plans must be exercised when using the higher doses of XANAX and XANAX TS in treating patients with panic-related disorders. Prescriptions for XANAX and XANAX TS should be written for the smallest quantity of drug consistent with good patient management.

Mania: Episodes of hypomania and mania have been reported in association with the use of XANAX in patients with depression. New onset hypomania or mania were also reported with alprazolam treatment in the absence of a history of significant psychiatric disorders or concomitant medications.

Hepatic

Hepatic Impairment: If treatment is necessary in patients with impaired hepatic function, therapy should be initiated at a very low dose and the dosage increased only to the extent that it is compatible with the degree of residual function of these organs. Such patients should be followed closely and have periodic laboratory assessments. (see DOSAGE AND ADMINISTRATION and ACTION AND CLINICAL PHARMACOLOGY).

Renal

Renal Impairment: If treatment is necessary in patients with renal function, therapy should be initiated at a very low dose and the dosage increased only to the extent that it is compatible with the degree of residual function of these organs. Such patients should be followed closely and have periodic laboratory assessments. (see and DOSAGE AND ADMINISTRATION and ACTION AND CLINICAL PHARMACOLOGY).

Falls and fractures

There have been reports of falls and fractures among benzodiazepine users due to adverse reactions such as sedation, dizziness and ataxia. The risk is increased in those taking concomitant sedatives (including alcoholic beverages), the elderly or debilitated patients.

Special Populations

Pregnant Women: XANAX and XANAX TS are not recommended for use during pregnancy.

Teratogenic Effects: Benzodiazepines can potentially cause fetal harm when administered to pregnant women. Because of experience with other members of the benzodiazepine class, alprazolam is assumed to be capable of causing an increased risk of congenital abnormalities when administered to a pregnant woman during the first trimester. Because use of these drugs is rarely a matter of urgency, the administration of XANAX or XANAX TS is rarely justified in women of child-bearing potential. Women of child-bearing potential should be warned to consult their physician regarding the discontinuation of the drug due to the potential hazard to the fetus if they are pregnant or intend to become pregnant. (see TOXICOLOGY)

Nonteratogenic effects: It should be considered that the child born of a mother who is receiving benzodiazepines may be at some risk for withdrawal symptoms from the drug during the postnatal period. Also, neonatal flaccidity and respiratory problems have been reported in children born of mothers who have been receiving benzodiazepines during late third trimester of pregnancy or during labour.

XANAX and XANAX TS have no established use in labour or delivery.

Nursing Women: Studies in rats have indicated that alprazolam and its metabolites are secreted into the milk. Levels of benzodiazepines, including alprazolam, in breast milk are low. Therefore, nursing should not be undertaken while a patient is receiving XANAX or XANAX TS.

Pediatrics (< 18 years of age): The safety and efficacy of XANAX and XANAX TS in patients under the age of 18 years have not been established. XANAX and XANAX TS are not recommended for use in patients under the age of 18 years. (see TOXICOLOGY)

Geriatrics (≥ 65 years of age): Long-term use of XANAX and XANAX TS should be avoided in elderly or debilitated patients who may be more sensitive to benzodiazepines. There is an increased risk of cognitive impairment, delirium, falls, fractures, hospitalizations and motor vehicle accidents in these users. Enhanced monitoring is recommended in this population. Elderly and debilitated patients have been found to be prone to the CNS depressant activity of benzodiazepines, even after low doses. Manifestations of this CNS depressant activity include ataxia, over sedation and hypotension. Therefore, medication should be administered with caution to these patients, particularly if a drop in blood pressure might lead to cardiac

complications. Initial doses should be low and increments should be made gradually, depending on the response of the patient, in order to avoid over sedation, neurological impairment and other possible adverse reactions. (see DOSAGE AND ADMINISTRATION, Special Populations - Geriatrics and ACTION AND CLINICAL PHARMACOLOGY, Pharmacokinetics).

Use in Patients with Concomitant Illness

It is recommended that the dosage be limited to the smallest effective dose to preclude the development of ataxia or oversedation which may be a particular problem in elderly or debilitated patients (see DOSAGE AND ADMINISTRATION). The usual precautions in treating patients with impaired renal, hepatic, or pulmonary function should be observed. There have been rare reports of death in patients with severe pulmonary disease shortly after the initiation of treatment with XANAX Tablets. A decreased systemic alprazolam elimination rate (eg, increased plasma half-life) has been observed in both alcoholic liver disease patients and obese patients receiving XANAX Tablets (see CLINICAL PHARMACOLOGY).

Monitoring and Laboratory Tests

If XANAX or XANAX TS is administered for repeated cycles of therapy, periodic blood counts and liver function tests are advisable.

Information for Patients

To assure safe and effective use of XANAX and XANAX TS, the physician should provide the patient with the following guidance.

1. Inform your physician about any alcohol consumption and medicine you are taking now, including medication you may buy without a prescription. Alcohol should generally not be used during treatment with benzodiazepines.
2. Not recommended for use in pregnancy. Therefore, inform your physician if you are pregnant, if you are planning to have a child, or if you become pregnant while you are taking this medication.
3. Inform your physician if you are nursing.
4. Until you experience how this medication affects you, do not drive a car or operate potentially dangerous machinery, etc.
5. Do not increase the dose even if you think the medication "does not work anymore" without consulting your physician. Benzodiazepines, even when used as recommended, may produce emotional and/or physical dependence.
6. Do not stop taking this medication abruptly or decrease the dose without consulting your physician, since withdrawal symptoms can occur.
7. Some patients may find it very difficult to discontinue treatment with XANAX or XANAX

TS due to severe emotional and physical dependence. Discontinuation symptoms, including possible seizures, may occur following discontinuation from any dose, but the risk may be increased with extended use at doses greater than 4 mg/day, especially if discontinuation is too abrupt. It is important that you seek advice from your physician to discontinue treatment in a careful and safe manner. Proper discontinuation will help to decrease the possibility of withdrawal reactions that can range from mild reactions to severe reactions such as seizure.

ADVERSE REACTIONS

Adverse Drug Reaction Overview

Side effects to XANAX or XANAX TS (alprazolam) if they occur, are generally observed at the beginning of therapy and usually disappear upon continued medication or decreased dosage.

As with all benzodiazepines, paradoxical reactions such as stimulation, agitation, rage, aggressive or hostile behaviour, increased muscle spasticity, sleep disturbances, hallucinations and other adverse behavioural effects may occur in rare instances and in a random fashion. Should these occur, use of the drug should be discontinued.

Clinical Trial Adverse Drug Reactions

Because clinical trials are conducted under very specific conditions the adverse reaction rates observed in the clinical trials may not reflect the rates observed in practice and should not be compared to the rates in the clinical trials of another drug. Adverse drug reaction information from clinical trials is useful for identifying drug-related adverse events and for approximating rates.

The data cited in the following two tables are estimates of untoward clinical event incidence among patients who participated under the following clinical conditions:

- For the Anxiety Disorders Table: relatively short duration (i.e., four weeks) placebo-controlled clinical studies with dosages up to 4 mg/day of XANAX (for the management of anxiety disorders or for the short-term relief of the symptoms of anxiety)
- For the Panic Disorders Table: short-term (up to ten weeks) placebo-controlled clinical studies with dosages up to 10 mg/day of XANAX in patients with panic disorder, with or without agoraphobia.

ANXIETY DISORDERS

Treatment-emergent	symptom incidence	% of patients	reporting
Body System	Event	XANAX N=565	Placebo N=505
Central Nervous System	Drowsiness	41.0	21.6
	Lightheadedness	20.8	19.3
	Depression	13.9	18.1
	Headache	12.9	19.6
	Confusion	9.9	10.0
	Insomnia	8.9	18.4
	Nervousness	4.1	10.3
	Syncope	3.1	4.0
	Dizziness	1.8	0.8
	Akathisia	1.6	1.2
Gastrointestinal	Dry mouth	14.7	13.3
	Constipation	10.4	11.4
	Diarrhea	10.1	10.3
	Nausea/vomiting	9.6	12.8
	Increased salivation	4.2	2.4
Cardiovascular	Tachycardia/ Palpitations	7.7	15.6
	Hypotension	4.7	2.2
Sensory	Blurred vision	6.2	6.2
Musculoskeletal	Rigidity	4.2	5.3
	Tremor	4.0	8.8
Cutaneous	Dermatitis/allergy	3.8	3.1
Other	Nasal congestion	7.3	9.3
	Weight gain	2.7	2.7
	Weight loss	2.3	3.0

PANIC DISORDERS

Treatment-emergent	symptom incidence	% of patients	reporting
Body System	Event	XANAX N=1388	Placebo N=1231
Central Nervous System	Drowsiness	76.8	42.7
	Fatigue & Tiredness	48.6	42.3
	Impaired Coordination	40.1	17.9
	Irritability	33.1	30.1
	Memory Impairment	33.1	22.1
	Lightheadedness/Dizziness	29.8	36.9
	Insomnia	29.4	41.8
	Headache	29.2	35.6
	Cognitive Disorder	28.8	20.5
	Dysarthria	23.3	6.3
	Anxiety	16.6	24.9
	Abnormal Involuntary Movement	14.8	21.0
	Decreased Libido	14.4	8.0
	Depression	13.8	14.0
	Confusional State	10.4	8.2
	Muscular Twitching	7.9	11.8
	Increased Libido	7.7	4.1
	Change in Libido (Not Specified)	7.1	5.6
	Weakness	7.1	8.4
	Muscle Tone Disorders	6.3	7.5
	Syncope	3.8	4.8
	Akathisia	3.0	4.3
	Agitation	2.9	2.6
	Disinhibition	2.7	1.5
	Paresthesia	2.4	3.2
	Talkativeness	2.2	1.0
	Vasomotor Disturbances	2.0	2.6
	Derealization	1.9	1.2
	Dream Abnormalities	1.8	1.5
	Fear	1.4	1.0
	Feeling Warm	1.3	0.5
Gastrointestinal	Decreased Salivation	32.8	34.2
	Constipation	26.2	15.4
	Nausea/vomiting	22.0	31.8
	Diarrhea	20.6	22.8
	Abdominal Distress	18.3	21.5
	Increased Salivation	5.6	4.4
Cardio-Respiratory	Nasal Congestion	17.4	16.5
	Tachycardia	15.4	26.8
	Chest Pain	10.6	18.1
	Hyperventilation	9.7	14.5
	Upper Respiratory Infection	4.3	3.7
Sensory	Blurred vision	21.0	21.4
	Tinnitus	6.6	10.4

Treatment-emergent	symptom incidence	% of patients	reporting
Body System	Event	XANAX N=1388	Placebo N=1231
Musculoskeletal	Muscular Cramps	2.4	2.4
	Muscle Stiffness	2.2	3.3
Cutaneous	Sweating	15.1	23.5
	Rash	10.8	8.1
Other	Increased Appetite	32.7	22.8
	Decreased Appetite	27.8	24.1
	Weight Gain	27.2	17.9
	Weight Loss	22.6	16.5
	Micturition Difficulties	12.2	8.6
	Menstrual Disorders	10.4	8.7
	Sexual Dysfunction	7.4	3.7
	Edema	4.9	5.6
	Incontinence	1.5	0.6
	Infection	1.3	1.7

Less Common Clinical Trial Adverse Drug Reactions (<1%)

In addition to the relatively common (i.e., greater than 1%) untoward events listed in the tables, the following events have been reported to occur with alprazolam and other benzodiazepines: seizures, loss of coordination, concentration difficulties, memory impairment/transient amnesia, hallucinations, depersonalization, taste alterations, dystonia, irritability, anorexia, fatigue, sedation, slurred speech, musculoskeletal weakness, changes in libido, menstrual irregularities, incontinence, urinary retention, abnormal hepatic function, elevated hepatic enzymes, elevated bilirubin, jaundice, pruritus, diplopia and hyperprolactinemia. Increased intraocular pressure has been rarely reported.

Post-Market Adverse Drug Reactions

Various adverse events have been reported in association with the use of XANAX since market introduction. The majority of these reactions were reported through the medical event voluntary reporting system. Because of the spontaneous nature of the reporting of medical events and the lack of controls, a causal relationship to the use of XANAX cannot be readily determined. Events include: drug abuse, drug dependence, drug withdrawal syndrome, gastrointestinal disorder, hypomania, mania, hepatitis, angioedema, peripheral edema, liver enzyme elevations, hepatic failure, Stevens-Johnson syndrome, gynecomastia, galactorrhea, aggression, anger, libido disorder, psychomotor hyperactivity, dystonia, autonomic nervous system imbalance, dermatitis, and photosensitivity reaction.

In some of the spontaneous case reports of adverse behavioural effects such as stimulation, agitation, concentration difficulties, confusion and hallucinations, patients were receiving other CNS drugs concomitantly and/or were described as having underlying psychiatric conditions. Patients with borderline personality disorder, a prior history of violent or aggressive behaviour, or alcohol or substance abuse may be at risk for such events. Instances of irritability, hostility

and intrusive thoughts have been reported during discontinuation of alprazolam in patients with post-traumatic stress disorder.

Injury, Poisoning and Procedural Complications: There have been reports of falls and fractures in benzodiazepine users due to adverse reactions such as sedation, dizziness and ataxia. The risk is increased in those taking concomitant sedatives (including alcoholic beverages), the elderly and debilitated patients.

Dependence/Withdrawal: Development of physical dependence and withdrawal following discontinuation of therapy has been observed with benzodiazepines such as XANAX and XANAX TS. Severe and life-threatening symptoms have been reported. (see SERIOUS WARNINGS AND PRECAUTIONS BOX, Addiction, Abuse and Misuse; WARNINGS AND PRECAUTIONS, Dependence/Tolerance)

Withdrawal seizures have been reported for patients taking XANAX alone.

DRUG INTERACTIONS

Serious Drug Interactions

Concomitant use of XANAX and XANAX TS and opioids may result in profound sedation, respiratory depression, coma and death.

- Reserve concomitant prescribing of these drugs for use in patients for whom alternative treatment options are not possible.
 - Limit dosages and durations to the minimum required.
 - Follow patients for signs and symptoms of respiratory depression and sedation.
- (see WARNINGS AND PRECAUTIONS, General, Risks from Concomitant use with Opioids)

Drug-Drug Interactions

Pharmacodynamic Drug-Drug Interactions

CNS – Acting Drugs

Benzodiazepines, including alprazolam, may potentiate or produce additive central nervous system depressant effects when combined with other psychotropic medication, alcohol, narcotics, barbiturates, antihistamines or anticonvulsants. Therefore, if XANAX or XANAX TS (alprazolam) is to be combined with other drugs acting on the CNS, careful consideration should be given to the pharmacology of the agents involved because of the possible additive or potentiating effects. Patients should also be advised against the simultaneous use of other CNS depressant drugs and should be cautioned not to take alcohol during the administration of XANAX or XANAX TS.

Opioids

Due to additive CNS depressant effect, the concomitant use of benzodiazepines, including XANAX and XANAX TS, and opioids increases the risk of profound sedation, respiratory

depression, coma, and death. Reserve concomitant prescribing of these drugs for use in patients for whom alternative treatment options are inadequate. Limit dosages and durations of concomitant use of benzodiazepines and opioids to the minimum required. Follow patients closely for respiratory depression and sedation (WARNINGS AND PRECAUTIONS -Risks from concomitant use of opioids and benzodiazepines).

Pharmacokinetic Drug-Drug Interactions

CYP3A Inhibitors

Pharmacokinetic interactions can occur when alprazolam is administered along with drugs that interfere with its metabolism. Compounds which inhibit certain hepatic enzymes (particularly cytochrome P450 3A4) may increase the concentration of alprazolam and enhance its activity. Data from clinical studies with alprazolam, *in vitro* studies with alprazolam, and clinical studies with drugs metabolized similarly to alprazolam provide evidence for varying degrees of interaction and possible interaction with alprazolam for a number of drugs.

Antifungal agents

Ketoconazole and itraconazole are potent inhibitors of CYP3A. The co-administration of alprazolam with ketoconazole, itraconazole, or other azole-type antifungals is not recommended (see CONTRAINDICATIONS). This is based on results of drug interaction studies of triazolam and midazolam, benzodiazepines metabolized similarly to alprazolam, with ketoconazole and itraconazole. In addition, an *in vitro* study showed ketoconazole to be a potent inhibitor of alprazolam metabolism.

Caution and consideration of dose reduction is recommended when alprazolam is co-administered with nefazodone, fluvoxamine, and cimetidine.

Nefazodone

When XANAX (1 mg bid) and nefazodone (200 mg bid) were co-administered to steady state, peak concentrations, AUC and half-life values for XANAX increased by approximately 2 fold. Nefazodone plasma concentrations were unaffected by XANAX, although levels of the mCPP metabolite were increased. The concomitant use of XANAX and nefazodone was also associated with an increase in psychomotor impairment presumably due to increased XANAX plasma concentrations.

If XANAX is co-administered with nefazodone, a reduction in the XANAX dosage may be appropriate; no dosage adjustment is required for nefazodone. The interactive effects of higher doses of these agents, such as the dosage levels of XANAX used in panic disorder, have not been studied.

Fluvoxamine

When alprazolam 1.0 mg and fluvoxamine (50 mg qd for 3 days followed by 100 mg qd for 7 days) were co-administered the AUC of alprazolam was approximately doubled, the C_{max} of alprazolam increased by about 50% and the half life of alprazolam increased from 19.8 hours to 33.9 hours. C_{max} and AUC of fluvoxamine were decreased by about 25%. Psychomotor performance tests on day 10 showed significant decreases in performance.

Cimetidine

In healthy volunteers, a single 1 mg dose of alprazolam was administered with and without concurrent administration of cimetidine (300 mg) every 6 hours. Cimetidine significantly impaired the clearance of alprazolam and prolonged its half-life. Cimetidine significantly reduced total metabolic clearance (1.05 versus 1.66 mL/min/kg). Co-administration of alprazolam and cimetidine resulted in an approximate doubling of the C_{max} of alprazolam and a statistically significant increase in the AUC of alprazolam. The half-life of alprazolam increased from 12.2 hours to 14.2 hours.

Oral contraceptives

The effect of oral contraceptives on the pharmacokinetics of a single 1 mg dose of alprazolam was studied in healthy women. Alprazolam clearance was lower in subjects taking oral contraceptives (0.95 mL/min/kg) than in the control group (1.21 mL/min/kg) while its half-life was prolonged (12.4 hours versus 9.6 hours). Caution is recommended when alprazolam is co-administered with oral contraceptives.

HIV Protease Inhibitors

Interactions involving HIV protease inhibitors (e.g., ritonavir) and alprazolam are complex and time dependent. Low doses of ritonavir resulted in a large impairment of alprazolam clearance, prolonged its elimination half-life and enhanced clinical effects. However, upon extended exposure to ritonavir, CYP3A induction offset this inhibition. This interaction will require a dose-adjustment or discontinuation of alprazolam.

CYP3A Inducers

Carbamazepine

A pharmacokinetic interaction has been noted between alprazolam and carbamazepine; significant reductions in alprazolam concentration have been noted after carbamazepine treatment has been initiated. Pharmacokinetic interactions between alprazolam and phenytoin have not been observed.

Other Drugs

Imipramine and desipramine

The steady state plasma concentrations of imipramine and desipramine have been reported to be increased an average of 31% and 20%, respectively, by the concomitant administration of alprazolam tablets in doses up to 4 mg/day. The clinical significance of these changes is unknown.

Warfarin

Alprazolam 0.5 mg, administered 3 times a day for 14 days, did not affect prothrombin times or plasma warfarin levels in male volunteers administered sodium warfarin orally.

Caution is recommended when alprazolam is co-administered with fluoxetine, propoxyphene, diltiazem, or macrolide antibiotics such as erythromycin and troleandomycin.

Digoxin

Increased digoxin concentrations have been reported when alprazolam was given, especially in elderly (>65 years of age). Patients who receive alprazolam and digoxin should therefore be monitored for signs and symptoms related to digoxin toxicity.

Drug-Food Interactions

Alcohol should not be ingested during treatment with XANAX or XANAX TS (see also CNS-Acting Drugs, above)

Drug-Lifestyle Interactions

Driving and Hazardous Activities: Because of its central nervous system depressant effect, patients receiving XANAX or XANAX TS should be cautioned not to undertake activities requiring mental alertness, judgment and physical coordination such as driving or operating machinery.

This is particularly true in the early phases of dose adjustment, and until it has been established that they do not become drowsy or dizzy while taking XANAX or XANAX TS.

Alcohol and other CNS-depressant drugs: Alcohol or central nervous system depressant drugs should not be ingested during treatment with XANAX or XANAX TS.

DOSAGE AND ADMINISTRATION

Dosing Considerations

- XANAX and XANAX TS should always be prescribed at the lowest effective dose for the shortest duration possible.
- XANAX and XANAX TS can produce withdrawal signs and symptoms or rebound phenomena following abrupt discontinuation or rapid dose reduction (see **SERIOUS WARNINGS AND PRECAUTIONS BOX**, Withdrawal; **WARNINGS AND PRECAUTIONS**, Dependence/Tolerance). Abrupt discontinuation should be avoided and treatment - even if only of short duration - should be terminated by gradually tapering the dosage schedule under close monitoring.
- Tapering should be tailored to the specific patient. Special attention should be given to patients with a history of seizure. (see **DOSAGE AND ADMINISTRATION**, Recommended Dose and Dosage Adjustment, Discontinuation)
- If a patient experiences withdrawal signs and symptoms, consider postponing the taper or raising the benzodiazepine to the previous dosage prior to proceeding with a gradual taper.
- Geriatric patients in particular may be more sensitive to benzodiazepines (see **WARNINGS AND PRECAUTIONS**, Falls and Fractures).
- Long-term use of XANAX and XANAX TS should be avoided in elderly patients. Enhanced monitoring is recommended, recommended.
- Dosage should be individualized for maximal benefit. The risk of dependence may increase with dose and duration of treatment, therefore, the lowest possible effective dose and

duration should be used and the need for continued treatment reassessed frequently. In general, patients who have not previously received psychotropic medication will require somewhat lower doses than those previously treated with minor tranquilizers, antidepressants, or hypnotics.

- Both XANAX and XANAX TS are immediate-release formulations. XANAX TS is scored in three places (“tri-scored”) and can be broken into 4 equal parts of 0.5 mg each.

Recommended Dose and Dosage Adjustment

Anxiety Disorders

Adults:

The initial adult dosage of XANAX (alprazolam) is 0.25 mg given 2 or 3 times daily. If required, increases may be made in 0.25 mg increments according to the severity of symptoms and patient response. It is recommended that the evening dose be increased before the daytime doses. Very severe manifestations of anxiety may require larger initial daily doses. The optimal dosage is one that permits symptomatic control of excessive anxiety without impairment of mental and motor function. Exceptionally, it may be necessary to increase dosage to a maximum of 3.0 mg daily, given in divided doses.

Elderly or Debilitated Patients: It is recommended that the general principle of using the lowest effective dose be followed, especially in elderly or debilitated patients to preclude the development of ataxia or oversedation. The initial dosage is 0.125 mg given 2 or 3 times daily. If necessary, this dosage may be increased gradually depending on patient tolerance and response.

Hepatic or Renal Impairment: In patients with advanced liver or renal disease, the usual dose is 0.125 to 0.25 mg, given two or three times daily. This may be gradually increased if needed and tolerated.

Panic Disorders

The usual starting dose is 0.5 mg to 1.0 mg at bedtime or 0.5 mg three times daily. The dose should be adjusted until the patient is free of panic attacks. Dosage adjustments should be in increments no greater than 1 mg every three to four days. Interdose symptoms, presumed to reflect insufficient plasma levels, may be lessened by using the same dose, but a schedule that provides for administration 3 or 4 times per day.

In controlled trials conducted to establish the efficacy of XANAX in Panic Disorders, doses in the range of 1 to 10 mg daily were used. The mean dosage employed was approximately 5 to 6 mg daily. Among the approximately 1700 patients participating in the Panic Disorder development program, about 300 received maximum XANAX doses of greater than 7 mg per day, including approximately 100 patients who received maximum dosages of greater than 9 mg per day. Occasional patients required as much as 10 mg per day to receive a successful response.

Because the management of Panic Disorder often requires the use of average daily doses of XANAX above 3 mg, the risk of rebound and withdrawal symptoms may be higher than in

patients treated for anxiety. (See also **WARNINGS AND PRECAUTIONS, Withdrawal and Rebound in Treating Panic Disorder**)

The necessary duration of treatment for Panic Disorder is unknown at this time. After a period of extended freedom from panic attacks, a supervised tapered discontinuation may be attempted.

Discontinuation:

To discontinue treatment in patients taking XANAX and XANAX TS, the dosage should be reduced slowly in keeping with good medical practice. It is suggested that the daily dosage of XANAX or XANAX TS be decreased by no more than 0.5 mg every 3 days. Some patients may require an even slower dosage reduction. A decrease of 0.5 mg every 2 to 3 weeks is more appropriate when a dose of 6 mg daily or more has been administered even for only a few months. Once a dose of 2 mg daily is achieved, the dose should be decreased by 0.25 mg per 2 to 3 weeks. The ability of patients to completely discontinue therapy with XANAX after long-term therapy has not been reliably determined. (see also **WARNINGS AND PRECAUTIONS, Dependence/Tolerance**)

OVERDOSAGE

Symptoms

Overdose of XANAX or XANAX TS (alprazolam) is manifested as an extension of its pharmacologic activity. Thus, varying degrees of CNS depression effects such as somnolence, confusion, drowsiness, slurred speech, impaired coordination, diminished reflexes, respiratory depression and coma may ensue. As in the management of overdose with any drug, the possibility of multiple drug ingestion should be considered.

Serious sequela are rare unless other drugs and/or ethanol are concomitantly ingested. Death has been reported in association with overdoses of alprazolam by itself, as it has with other benzodiazepines. In addition, fatalities have been reported in patients who have overdosed with a combination of a single benzodiazepine, including alprazolam, and alcohol; alcohol levels seen in some of these patients have been lower than those usually associated with alcohol-induced fatality.

Treatment

Vomiting may be induced if the patient is fully awake. Vital signs should be monitored and general supportive measures should be employed as indicated. Gastric lavage should be instituted as soon as possible. Intravenous fluids may be administered and an adequate airway should be maintained.

Experiments in animals have indicated that cardiopulmonary collapse can occur with massive intravenous doses of alprazolam. This could be reversed with positive mechanical respiration and the intravenous infusion of levarterenol. Animal experiments with alprazolam and related compounds have suggested that hemodialysis and forced diuresis are probably of little value.

Treatment of overdosage is primarily supportive of respiratory and cardiovascular function.

Flumazenil, a benzodiazepine receptor antagonist, may be used as an adjunct to the management of respiratory and cardiovascular function associated with overdose.

For management of a suspected drug overdose, contact your regional Poison Control Centre.

ACTION AND CLINICAL PHARMACOLOGY

Mechanism of Action

Alprazolam, a triazolo 1,4 benzodiazepine analog, binds with high affinity to the GABA benzodiazepine receptor complex. Considerable evidence suggests that the central pharmacologic/therapeutic actions of alprazolam are mediated via interaction with this receptor complex.

Pharmacokinetics

Absorption: Orally administered alprazolam is readily absorbed in man. Plasma levels are proportional to the dose given; over the dose range of 0.5 to 3 mg, peak levels of 8.0 to 37 ng/mL were observed. The mean elimination half-life of alprazolam is about 11 hours in healthy adults. With multiple doses, given 3 times daily, steady state is reached within 7 days.

Metabolism / Excretion:

Alprazolam is extensively metabolized in humans, primarily by cytochrome P450 3A4 (CYP3A4). Degradation of alprazolam occurs mainly by oxidation yielding the primary metabolites α hydroxy-alprazolam and a benzophenone derivative. The α hydroxy-metabolite is further transformed to demethylalprazolam. Both α hydroxy-alprazolam and demethylalprazolam are active and appear to have half-lives similar to alprazolam but their plasma levels are low. Alprazolam metabolites are excreted primarily in the urine.

Special Populations and Conditions

The table below summarizes some pharmacokinetic parameters in healthy adults and healthy elderly subjects (mean age 70 years, range 62 to 78 years), as well as in obese subjects and in patients with impaired hepatic or renal function. Clearance was decreased and half-lives were increased in all special patient populations except in patients on hemodialysis. Time to peak plasma concentration was increased in patients with liver disease and CAPD.

Alprazolam pharmacokinetics in special patient populations following the administration of single oral doses. Values are means with the ranges in parentheses.						
Parameter	Patient Population					
	Adults	Elderly	Obese	Alcoholic Liver Disease	End Stage Renal Disease	
					Hemodialysis	CAPD ^a
No.	16	16	12	17	7	5
Dose (mg)	1.0	1.0	1.0	1.0	0.5	0.5
C _{max} (ng/mL)	17.9 (8.5-29.5)	22.9 (12.4-36.3)	not reported	17.3 (8.6-26.0)	8.1 (5.9-14.4)	8.6 (6.8-10.5)
T _{max} (hr)	1.6 (0.25-6.0)	0.9 (0.5-2.0)	not reported	3.3 (0.5-8.0)	1.1 (0.5-2.0)	3.0 (0.5-6.0)
C ₁ (mL/min/kg)	1.33 (0.90-2.23)	0.86 (0.40-1.84)	0.59 (not available)	0.56 (0.17-1.46)	not reported	not reported
t _{1/2} (hr)	11.0 (6.3-15.8)	16.3 (9.0-26.9)	21.8 (9.9-40.5)	19.7 (5.8-65.3)	11.2 (7.1-19.1)	19.2 (8.8-33.8)
Unbound fraction in plasma (%)	29.0 (25.0-32.8)	29.8 (25.0-35.4)	30.3 (26.4-35.4)	23.2 (16.9-32.8)	27.6 (22.7-30.7)	30.9 (28.0-34.2)

^aCAPD: Continuous Ambulatory Peritoneal Dialysis
C_{max}: peak plasma concentration
T_{max}: time of peak concentration
C₁: total clearance
t_{1/2}: elimination half-life

STORAGE AND STABILITY

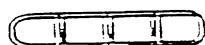
XANAX and XANAX TS (alprazolam) should be stored at controlled room temperature (15 - 30°C).

DOSAGE FORMS, COMPOSITION AND PACKAGING

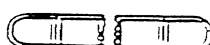
XANAX (alprazolam) is available in 0.25 mg (white, single score, embossed with “UPJOHN 29”), 0.5 mg (light orange, single score, embossed with “UPJOHN 55”) and 1 mg (lavender, single score, embossed with “UPJOHN 90”) tablets in bottles of 100 and 1000.

XANAX TS is available in white 2 mg triscored tablets (3 scores), with the number “U94” on one side and can be broken into 4 equal parts of 0.5 mg each, in bottles of 100 tablets.

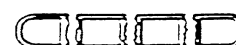
complete 2 mg tablet



two 1 mg segments



four 0.5 mg segments



Each 0.25 mg tablet of XANAX contains 0.25 mg alprazolam and includes the following

inactive ingredients: colloidal silicon dioxide, corn starch, docusate sodium-sodium benzoate, lactose monohydrate and magnesium stearate.

Each 0.5 mg tablet of XANAX contains 0.5 mg alprazolam and includes the following inactive ingredients: colloidal silicon dioxide, corn starch, docusate sodium-sodium benzoate, lactose monohydrate, magnesium stearate and yellow aluminum lake.

Each 1 mg tablet of XANAX contains 1 mg alprazolam and includes the following inactive ingredients: blue aluminum lake, colloidal silicon dioxide, corn starch, docusate sodium-sodium benzoate, erythrosine aluminum lake, lactose monohydrate and magnesium stearate.

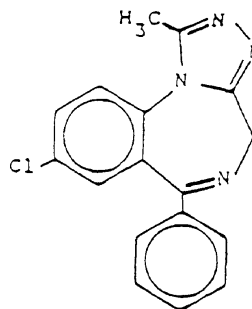
Each 2 mg tablet of XANAX TS contains 2 mg alprazolam and includes the following inactive ingredients: colloidal silicon dioxide, corn starch, docusate sodium-sodium benzoate, lactose monohydrate and magnesium stearate.

PART II: SCIENTIFIC INFORMATION

PHARMACEUTICAL INFORMATION

Drug Substance

Proper name:	alprazolam
Chemical name:	(1) 4 <i>H</i> -[1,2,4]Triazolo[4,3- <i>a</i>][1,4]benzodiazepine, 8-chloro-1-methyl-6-phenyl-; (2) 8-Chloro-1-methyl-6-phenyl-4 <i>H</i> -s-triazolo [4,3- <i>a</i>][1,4]benzodiazepine
Molecular formula and molecular mass:	C ₁₇ H ₁₃ ClN ₄ and 308.76
Structural formula:	



Physicochemical properties:	Alprazolam is a white crystalline powder, soluble in methanol or ethanol but with no appreciable solubility in water and a melting point of 225-231°C.
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CLINICAL TRIALS

In a placebo-controlled, 8-week trial, which included 526 patients with diagnoses of Panic Disorder with or without Agoraphobia, alprazolam in a dosage range of 1 to 10 mg per day (with a mean daily dosage of 5.7 ± 2.27 mg at the end of the treatment period) was found effective in blocking or attenuating panic attacks and reducing phobic avoidance.

DETAILED PHARMACOLOGY

The anxiolytic activity of alprazolam was demonstrated in various tests in the mouse, rat, cat and monkey. Although alprazolam appeared qualitatively similar to diazepam, it was about 3 to 5 times more potent on an overall basis. In the mouse, alprazolam prolonged hypoxic survival, reduced rearing in the open-field test, and reduced footshock or isolation-induced aggression. Pentylenetetrazol induced seizures were antagonized by alprazolam in the mouse, rat and cat. Alprazolam attenuated conflict behaviour in rats and reduced plasma corticosteroid levels in stressed rats. In the cat and monkey alprazolam produced increased beta activity in the EEG similar to diazepam.

Alprazolam had CNS depressant relaxation activity in all species tested. These effects were observed over a large range of doses giving the compound an extremely flat dose response curve. Except at near lethal doses, little change was observed in physiological measures such as heart rate, respiratory rate and body temperature.

In mice, alprazolam potentiated the actions of pentobarbital, chlorprothixene, ethanol and γ butyrolactone. Alprazolam promoted sleep in the monkey at doses that caused observable motor incoordination.

As with other benzodiazepines, direct physical dependence was induced when large doses of alprazolam were administered on a continuing basis to rats and mice. Alprazolam had weak but measurable reinforcing properties and showed very poor cross-dependence in pheno-barbital-dependent animals.

Alprazolam increased the toxicity of glutethimide, methaqualone, pentobarbital, chlorpromazine, thioridazine, phenytoin and d-amphetamine in the mouse. Attempts to eliminate alprazolam by hemodialysis in nephrectomized dogs were unsuccessful.

Alprazolam readily entered the CNS in mice and rats. Alprazolam had no apparent effect on the cholinergic system. Brain levels of dopamine and serotonin were only slightly elevated in mice treated with alprazolam. When catecholamine synthesis was blocked, dopamine utilization was slowed. Alprazolam decreased the incorporation of tyrosine into brain dopamine and norepinephrine of rats.

Cardiopulmonary studies in the dog showed that supratherapeutic intravenous doses of alprazolam decreased blood pressure by a modest amount but had little effect on other cardiovascular measures. Respiratory function was modestly decreased in these studies.

In rats, large doses of alprazolam and diazepam tended to prolong prothrombin times and lower plasma warfarin levels.

Pharmacokinetics

When alprazolam was administered orally as a compressed tablet formulation, the average time of peak plasma concentration in several studies ranged from 0.9 to 2.4 hours. Based on urinary ^{14}C excretion after oral alprazolam- ^{14}C , the minimal drug absorption was 79%. Over a dosage range of 0.5 mg dose to 2.0 mg, serum alprazolam levels were proportional to dose. Average peak serum levels of alprazolam ranged from 8.0 ng/mL for a 0.5 mg dose to 26.5 ng/mL for a 2.0 mg dose. Average elimination half-life values in several studies ranged from 9.5 to 15.0 hr., based on serum levels fit to a one-compartment model.

Protein binding studies with human serum, at 37°C showed that over a concentration range of 30 to 1000 ng/mL, alprazolam binding was independent of concentration and amounted to 80%; alprazolam was 68% bound to human serum albumin.

Alprazolam serum levels increased after daily three times a day dosing and reached steady-state levels within 7 days.

Drug-related materials were excreted predominantly in the urine. After a 2.0 mg dose of alprazolam- ^{14}C , average recoveries of ^{14}C in urine and feces were 79% and 7%, respectively. Average renal clearance of alprazolam was 371 mL/hr compared to a normal glomerular filtration rate of 7500 mL/hr. Renal excretion apparently involves glomerular filtration with extensive reabsorption.

Alprazolam was extensively metabolized and evidence was obtained for 29 metabolites in urine. Three pathways of metabolism have been identified: (1) oxidation of the 1-methyl group to yield the major metabolite, α -hydroxyalprazolam, followed by further oxidation and decarboxylation to yield 1-demethylalprazolam, (2) oxidation of the C-4 methylene to yield 4-hydroxyalprazolam, and (3) cleavage of the 5,6 azomethine bond with subsequent oxidation to yield a 3-hydroxymethyl-5-methyl-triazolyl-substituted benzophenone. These metabolites of alprazolam are present in only very low levels in the plasma, thus precluding rigorous pharmacokinetic treatment of the data. However, their excretion half-lives are likely to be similar to that of alprazolam.

Tissue distribution of alprazolam- ^{14}C was studied in mice by whole body-slice autoradiography after 2.2 mg/kg oral and intravenous doses. Drug-related material penetrated the central nervous system rapidly and was widely distributed in other tissues without long-term retention. In pregnant mice, low levels of drug-related materials were observed in the fetus. Following a 0.3 mg/kg oral dose of alprazolam- ^{14}C in lactating rats, average drug equivalent levels of 17 and 18 ng/mL were found in milk 6 and 12 hours, respectively, after dosing.

Special Populations

Changes in the absorption, distribution, metabolism, and excretion of benzodiazepines have been reported in a variety of disease states including alcoholism, impaired hepatic function, and impaired renal function. Changes have also been demonstrated in geriatric patients. A mean half-life of alprazolam of 16.3 hours has been observed in healthy elderly subjects (range: 9.0–26.9 hours, n=16) compared to 11.0 hours (range: 6.3–15.8 hours, n=16) in healthy adult subjects. In patients with alcoholic liver disease the half-life of alprazolam ranged between 5.8 and 65.3 hours (mean: 19.7 hours, n=17) as compared to between 6.3 and 26.9 hours (mean=11.4 hours, n=17) in healthy subjects. In an obese group of subjects the half-life of alprazolam ranged between 9.9 and 40.4 hours (mean=21.8 hours, n=12) as compared to between 6.3 and 15.8 hours (mean=10.6 hours, n=12) in healthy subjects.

TOXICOLOGY

Acute Toxicity

In studies in mice, the LD₅₀ of intraperitoneal alprazolam was found to be 500 to 682 mg/kg. In studies in the rat, the oral LD₅₀ and intraperitoneal LD₅₀ ranged from 331 to 2171 mg/kg and 409 to 819 mg/kg, respectively. Signs of toxicity were rapid sleep induction and convulsions.

Subacute and Chronic Toxicity

Rat:

Alprazolam was administered orally to rats at a dosage of 300 mg/kg/day for 6 days. Depression and ataxia were observed in all treated rats and ulcers were found in 4 of 5 treated female rats.

In two 1-month studies (0, 10, 30, 100 and 300 mg/kg/day oral alprazolam), depression and ataxia resulting in decreased food consumption and lower body weights were observed at all dose levels. Stomach ulcers were observed at 100 and 300 mg/kg/day, and at 300 mg/kg/day hemorrhages from the stomach lesions resulted in lower hematocrit and hemoglobin levels and the presence of nucleated red blood cells in blood smears. Multinucleated giant cells in the testicular tubules (2 of 4 males) and degeneration of the testicular tubular cells (4 of 4 males) were observed at the 300 mg/kg/day dose level.

In two-3 month studies (0, 10, 30 and 100 mg/kg/day oral alprazolam) depression and ataxia were seen at all dose levels. Atrophy of the thymus, stomach ulcers and reduced hemoglobin, hematocrit and red blood cell counts secondary to hemorrhages from these stomach lesions, were observed in the 100 mg/kg/day group. In one study, testicular atrophy (15 of 15 males) and a reduced number of spermatozoa in the epididymis (11 of 15 males) were observed at the 100 mg/kg/day dose. In the other study, atrophy of a few testicular tubules (1 of 2 males) and multinucleated giant cells in the tubules (2 of 2 males) were observed at this dose.

In a 2-year study (0, 3, 10 and 30 mg/kg/day oral alprazolam), treatment was associated with dose and time-related convulsions at 10 and 30 mg/kg/day. A significantly shorter survival period for males and females at 30 mg/kg/day and for males at 10 mg/kg/day was observed. Atrophy of the testes and decreased mature spermatozoa in the epididymis were seen in 18 of 44 males at the 30 mg/kg/day dose level. There was a significant positive dose trend of telangiectasis in females. Telangiectasis appeared grossly as sporadic red spots, about 1 mm in diameter. Histologically, the hepatic sinusoids were dilated and filled with blood. A tendency for a dose related increase in the number of cataracts (females) and corneal vascularisation (males) was observed. These lesions did not appear until after 11 months of treatment.

Dog:

Dogs were administered alprazolam orally for 10 days at dose levels of 10 to 300 mg/kg/day. Sedation and ataxia were seen at all dose levels and cholesterol, glucose, alkaline phosphatase and SGPT were slightly elevated.

In a three-month study, alprazolam was administered orally to dogs at dosage levels of 0, 1, 10 and 100 mg/kg/day. Incoordination and ataxia were seen at the 10 and 100 mg/kg/day dose.

In the high dose group (100 mg/kg/day) alkaline phosphatase was elevated, red blood cell count, hematocrit and hemoglobin were reduced and an increased number of foci in the liver containing degenerate hepatocytes with neutrophils and lymphocytes were observed. Convulsions occurred in 2 of 4 dogs at this dose level.

In a twelve-month study, dogs were administered alprazolam orally at doses of 0, 0.3, 1.0, 3, 10 and 30 mg/kg/day. A slight to moderate impairment of coordination was noted in dogs treated with 3, 10 and 30 mg/kg/day. Convulsions occurred in all dogs at the 10 and 30 mg/kg/day dose level and in 4 of 6 dogs at the 3 mg/kg/day dose level. At the end of the treatment, the dogs were put on a 5-day withdrawal to evaluate drug dependence liability. Some inappetence and weight loss were encountered following drug withdrawal. Body temperature had dose-related increases. All of the 10 and 30 mg/kg/day dogs that were alive during the withdrawal period convulsed, while only 1 of 5 dogs receiving 3 mg/kg/day convulsed.

Reproductive And Teratologic Studies

Alprazolam was given by gastric intubation to pregnant rats on gestation days 6 through 15 at 5, 10, 30 and 100 mg/kg/day. All fetuses at 100 mg/kg/day were resorbed. There was a dose related incidence of resorptions and a decrease in pup weights. The incidence of missing metacarpals at the 10 and 30 mg/kg/day doses and agenesis of sternebrae at the 5 and 10 mg/kg/day doses were significantly increased. However, there was no evidence of skeletal immaturity and all bones were present in two week old pups from dams that were allowed to deliver and nurse the offspring for that period. Cardiovascular abnormalities were observed in 4 of the 35 animals in one study at 30 mg/kg/day. These were not observed in two other studies at the same dose.

Alprazolam was administered at 2 and 5 mg/kg/day in the diet of female rats for 14 days prior to mating and throughout the subsequent pregnancy and for 21 days post-parturition. A slight increase in the average number of resorptions per litter was noted at the 5 mg/kg/day level and a slight increase in the average number of dead pups per litter was observed at both dose levels. Pup weights at birth were lower and postnatal survival was slightly decreased at the 5 mg/kg/day dose. Treatment of male rats at 2 and 5 mg/kg/day for 60 days prior to mating resulted in a decrease in the percentage of dams conceiving at the 5 mg/kg/day dose.

Pregnant rabbits were administered alprazolam by gastric intubation at 10 and 30 mg/kg/day on gestation days 6 through 18. The 30 mg/kg/day level resulted in the death of 6 of 27 rabbits. The majority of fetuses were resorbed and those which survived had a lower birth weight. A dose-related increase in the number of animals with extra ribs was observed. A low incidence of rib malformations and fused vertebrae and sternbrae were noted in treated animals. The majority of the fetuses at the 30 mg/kg/day level had no ossification centers for the phalanges of the first digit on the forepaw and/or missing metacarpals on the same digit. Short tails and the reduction in the number of caudal vertebrae were observed at both dose levels. Five of 21 fetuses at the 30 mg/kg/day level had asymmetrical caudal vertebrae.

Pregnant rabbits were administered alprazolam by gastric intubation at 2 and 5 mg/kg/day on gestation days 6 through 18. An increase in the incidence rates of extra ribs was observed at the 5 mg/kg/day dose and first metacarpal agenesis and first proximal phalanx agenesis on the forelimb was observed at both dose levels. Fused ribs and vertebrae were noted at the 2 mg/kg/day level and vertebrae fusion and malposition were noted at the 5 mg/kg/day level.

Pregnant rabbits were administered alprazolam by gastric intubation at 2 and 5 mg/kg/day on gestation days 6 through 18. In this study, the does were allowed to kindle and nurse the pups for 4 days. There were no consistent drug or dose-related anomalies observed in the gross visceral and skeletal examinations.

Developmental Neurotoxicity

Nonclinical research has shown that administration of anesthetic and sedation drugs that block N-methyl-D-aspartate (NDMA) receptors and/or potentiate gamma-aminobutyric acid (GABA) activity can increase neuronal cell death in the brain and result in long term deficits in cognition and behaviour of juvenile animals when administered during the period of peak brain development. Based on comparisons across nonclinical species, the window of vulnerability of the brain to these effects is believed to correlate with human exposures in the third trimester of pregnancy through the first year of life, but may extend to approximately 3 years of age. While there is limited information of this effect with alprazolam, since the mechanism of action includes potentiation of GABA activity, a similar effect may occur. The relevance of these nonclinical findings to human use is unknown.

REFERENCES

1. Abernethy DR, Greenblatt DJ, Divoll M, et al. The influence of obesity on the pharmacokinetics of oral alprazolam and triazolam. *Clin Pharmacokinet* 1984;9:177-83.
2. Abernathy DR, Greenblatt DJ, Morse DS, Shader RI. Interaction of propoxyphene with diazepam, alprazolam and lorazepam. *Br J Clin Pharmac* 1985;19:51-7.
3. Aden GC, Thein SG. Alprazolam compared to diazepam and placebo in the treatment of anxiety. *J Clin Psychiatry* 1980;41:245-8.
4. Arana GW, Epstein S, Molloy M, Greenblatt DJ. Carbamazepine-induced reduction of plasma alprazolam concentrations: a clinical case report. *J Clin Psychiatry* 1988;49:11.
5. Andersch S, Rosenberg NK, Kullingsjo H, et al. Efficacy and safety of alprazolam, imipramine and placebo in treating panic disorder. A Scandinavian multicenter study. *Acta Psychiat Scand* 1991;Suppl 365:18-27.
6. Backman JT, Olkkola KT, Aranko K, Himberg J, Neuvonen PJ. Dose of midazolam should be reduced during diltiazem and verapamil treatments. *Br J Clin Pharmac* 1994;37:221-5.
7. Baldessarini RJ. Drugs and the treatment of psychiatric disorders: psychosis and anxiety. In Goodman and Gilman's *The Pharmacologic Basis of Therapeutics*, 9th edition. Hardman JG, Gilman AG, Limbird LE eds. McGraw-Hill, New York, 1995.
8. Ballenger JC. Efficacy of benzodiazepines in panic disorder and agoraphobia. *J Psychiatry Res* 1990;24(Suppl 2):15-25.
9. Ballenger JC, Burrows GD, DuPont RL, et al. Alprazolam in panic disorder and agoraphobia: results from a multicenter trial. I. Efficacy in short-term treatment. *Arch Gen Psychiatry* 1988;45:413-22.
10. Bayer M et al. Treatment of Benzodiazepine overdose with flumazenil – The Flumazenil in benzodiazepine intoxication multicenter study group. *Clin Ther* 1992; 14:978-995.
11. Dehlin O, Kullingsjo H, Liden A. Pharmacokinetics of alprazolam in geriatric patients with neurotic depression. *Pharmacol Toxicol* 1991;68:121-4.
12. DuPont RL. Thinking about stopping treatment for panic disorder. *J Clin Psychiatry* 1990;51(Suppl A):38-45.

13. Fabre LF, McLendon DM. A double blind study comparing the efficacy and safety of alprazolam with diazepam and placebo in anxious out-patients. *Curr Ther Res* 1979;25:519-26.
14. Fawcett JA, Kravitz HM. Alprazolam: pharmacokinetics, clinical efficacy, and mechanism of action. *Pharmacotherapy* 1982;2:243-54.
15. Fleishaker JC, Hulst LK. A pharmacokinetic and pharmacodynamic evaluation of the combined administration of alprazolam and fluvoxamine. *Eur J Clin Pharmacol* 1994;46:35-9.
16. Greenblatt DJ, Divoll M, Abernethy DR, et al. Alprazolam kinetics in the elderly. *Arch Gen Psychiatry* 1983;40:287-90.
17. Greenblatt DJ, Preskorn SH, Cotreau MM, Horst WD, Harmatz JS. Fluoxetine impairs clearance of alprazolam but not of clonazepam. *Clin Pharmacol Ther* 1992;52:479-86.
18. Greenblatt DJ, von Moltke LL, Harmatz JS, Durol ALB et al. Alprazolam-ritonavir interaction: Implication for product labelling. *Clin Pharm & Ther* 2000; 67:335-341.
19. Greenblatt DJ et. Al. Extensive Impairment of Triazolam and alprazolam clearance by short-term low dose ritonavir: The clinical dilemma of concurrent inhibition and induction. *J Clin Psychopharm* 1999; 19:293-296.
20. Hobbs WR, Rall TW, Verdoorn TA. Hypnotics and Sedatives; ethanol. In Goodman and Gilman's *The Pharmacologic Basis of Therapeutics*, 9th edition. Hardman JG, Gilman AG, Limbird LE eds. McGraw-Hill, New York, 1995.
21. Itil TM. Discrimination between some hypnotic and anxiolytic drugs by computer-analyzed sleep. In: Williams RL, Karacan I. eds. *Pharmacology of sleep*. New York: John Wiley and Sons, 1976:225-38
22. Itil TM, Polvan N, Egilmez S, et al. Anxiolytic effects of a new triazolobenzodiazepine, U-31,889. *Curr Ther Res* 1973;15:603-15.
23. Itil TM, Saletu B, Marasa J, Mucciardi AN. Digital computer analyzed awake and sleep EEG (sleep prints) in predicting the effects of a triazolobenzodiazepine (U-31,889). *Pharmakopsychiatrie Neuropsychopharmakol* 1972;5:225-40.
24. Juhl RP, Van Thiel DH, Dittert LW. Alprazolam pharmacokinetics in alcoholic liver disease. *J Clin Pharmacol* 1984;24:113-19.
25. Kroboth PD, McAuley JW, Smith RB. Alprazolam in the Elderly; Pharmacokinetics and pharmacodynamics during multiple dosing. *Psychopharmacology* 1990;100:477-84.

26. Lydiard RB, Lesser IM, Ballenger JC, et al. A fixed-dose study of Y alprazolam 2 mg, alprazolam 6 mg, and placebo in panic disorder. *J Clin Psychopharmacol* 1992;12:96-103.
27. Maletzky BM. Anxiolytic efficacy of alprazolam compared to diazepam and placebo. *J Int Med Res* 1980;8:139-43.
28. McElhatton PR. The effects of benzodiazepine use during pregnancy and lactation. *Repro Tox Review* 1994; 8:461-475.
29. Noyes R, DuPont RL, Pecknold JC, et al. Alprazolam in panic disorder and agoraphobia: results from a multicenter trial. II. Patient acceptance, side effects and safety. *Arch Gen Psychiatry* 1988;45:423-8.
30. Noyes, R, Garvey MJ, Cook B, et al. Controlled discontinuation of benzodiazepine treatment for patients with panic disorder. *Am J Psychiatry* 1991;148:517-23.
31. Oo CY, Kuhn RJ, Desai N, Wright CE and McNamara PJ. Pharmacokinetics in lactating women: prediction of alprazolam transfer into milk. *Br J Clin Pharm* 1995;40:231-236.
32. Patrias JM, DiPiro JT, Cheung RPF, Townsend RJ. Effect of alprazolam on phenytoin pharmacokinetics. *Drug Intell Clin Pharm* 1987;21:2A32
33. Pecknold JC, Swinson RP, Kuch K, Lewis CP. Alprazolam in panic disorder and agoraphobia: results from a multicenter trial. III. Discontinuation effects. *Arch Gen Psychiatry* 1988;45:429-36.
34. Pecknold JC, Swinson RP. Taper withdrawal studies with alprazolam in patients with panic disorder and agoraphobia. *Psychopharmacol Bull* 1986;22:173-6.
35. Phillips JP, Antal EJ, Smith RB. A pharmacokinetic drug interaction between erythromycin and triazolam. *J Clin Psychopharmacol* 1986;6:297-99.
36. Pourbaix S, Desager JP, Hulhoven R, Smith RB, Harvengt C. Pharmacokinetic consequences of long term coadministration of cimetidine and triazolobenzodiazepines, alprazolam and triazolam, in healthy subjects. *Int J Clin Pharmacol Ther Toxicol* 1985;23:447-51.
37. Rudzik AD, Hester JB, Tang AH, et al. Triazolobenzodiazepines, a new class of central nervous system-depressant compounds. In: Garattini S, Mussini E, Randall LO, eds. *The Benzodiazepines*. New York: Raven Press, 1973:284-97.
38. Schmith VD, Piraino B, Smith RB Kroboth PD. Alprazolam in end-stage renal disease: I. Pharmacokinetics. *J Clin Pharmacol* 1991;31:571-79.

39. Shioiri T, Kita N and Takahashi S. Two cases of alprazolam-induced hyperprolactinemia in patients with panic disorder. *Int Clin Psychopharm* 1996; 11:149-152.
40. Stoehr GP, Kroboth PD, Juhl RP, et al. Effect of oral contraceptives on triazolam, temazepam, alprazolam and lorazepam kinetics. *Clin Pharmacol Ther* 1984;36:683-90.
41. Varhe A, Olkkola KT, Neuvonen PJ. Oral triazolam is potentially hazardous to patients receiving systemic antimycotics ketoconazole or itraconazole. *Clin Pharmacol Ther* 1994;56:601-7.
42. Von Moltke LL, Greenblatt DJ, et al. Inhibitors of alprazolam metabolism *in vitro*: effect of serotonin-reuptake-inhibitor antidepressants, ketoconazole and quinidine. *Br J Clin Pharmacol* 1994;38:23-31.
43. Warner MD, Peabody DA, Boutros NN, et al. Alprazolam and withdrawal seizures. *J Nerv Ment Dis* 1990;178:208-9.
44. Warot D, Bergougnan L, Lamiable D, et al. Troleandomycin-triazolam interaction in healthy volunteers: pharmacokinetic and psychometric evaluation. *Eur J Clin Pharmacol* 1987;32:389-93.
45. Zemishlany Z, McQueeney R, Gabriel SM, Davidson M. Neuroendocrine and monoaminergic responses to acute administration of alprazolam in normal subjects. *Neuropsychobiology* 1990; 23:124-128.

PART III: CONSUMER INFORMATION



This leaflet is part III of a three-part "Product Monograph" published when **XANAX® AND XANAX TS®** (alprazolam tablets) was approved for sale in Canada and is designed specifically for Consumers. This leaflet is a summary and will not tell you everything about **XANAX® AND XANAX TS®**. Contact a member of your healthcare team if you have any questions about the drug.

ABOUT THIS MEDICATION

What the medication is used for:

XANAX has been prescribed to you by your doctor to relieve your symptoms of the following conditions:

- Generalized anxiety disorder (excessive anxiety or worry)
- Panic disorder (repeated, unexpected panic attacks of extreme fear and worry about these attacks)

If you are 65 years or older, talk to your doctor before starting XANAX or XANAX TS. XANAX or XANAX TS may not be an effective treatment for you and you may be more sensitive to experiencing side effects.

What it does:

XANAX contains the active ingredient alprazolam, which belongs to a group of medicines known as benzodiazepines. XANAX has sedative properties which help in the treatment of anxiety and panic.

When it should not be used:

Do not take XANAX if you:

- are allergic to the group of medicines known as benzodiazepines (examples: clonazepam, chlordiazepoxide, diazepam, or flurazepam).
- are allergic to XANAX or any of the ingredients listed in the section "**What the nonmedicinal ingredients are**".
- have acute narrow angle glaucoma, a condition associated with increased pressure in the eye that may cause loss of sight.
- have myasthenia gravis, a chronic disease characterized by weakness of the skeletal muscles.
- have a liver condition.
- have lung disease or breathing problems.
- have a sleep disorder that causes pauses in breathing or shallow breathing while sleeping (sleep apnea).
- are taking ketoconazole (e.g., Nizoral) or itraconazole (e.g., Sporanox), medicines used to treat fungal infections.

XANAX should not be used in patients under 18 years of age.

What the medicinal ingredient is:

alprazolam

What the nonmedicinal ingredients are:

All tablets contain lactose monohydrate, docusate sodium-sodium benzoate, colloidal silicon dioxide, corn starch, magnesium stearate.

The 0.5 mg tablet also contains yellow aluminum lake.

The 1 mg tablet also contains blue aluminum lake and erythrosine aluminum lake.

What dosage forms it comes in:

XANAX 0.25 mg tablet: white in color, single scored on one side and engraved with "Upjohn 29" on the other.

XANAX 0.5 mg tablet: light orange in color, single scored on one side and engraved with "Upjohn 55" on the other.

XANAX 1 mg tablet: lavender in color, single scored on one side and engraved with "Upjohn 90" on the other.

XANAX TS 2 mg tablet: white in color, capsule shaped, tri-scored on one side and engraved with "U94" on the other. This can be broken into 4 individual 0.5 mg tablets.

WARNINGS AND PRECAUTIONS

Serious Warnings and Precautions

Addiction, Abuse and Misuse: Even if you take XANAX and XANAX TS as prescribed, you are at risk for abuse, misuse and addiction. This can result in overdose or death, especially if it is taken with:

- opioids
- alcohol or
- illicit drugs

Your doctor should:

- talk to you about the risks of treatment with XANAX and XANAX TS as well as other treatment (including non-drug) options
- assess your risk for these behaviours before prescribing XANAX and XANAX TS
- monitor you while you are taking XANAX and XANAX TS for the signs and symptoms of misuse and abuse. If you feel like you are craving XANAX or XANAX TS, or not using it as directed, talk to your doctor right away.

Store XANAX and XANAX TS in a secure place to avoid theft or misuse.

Withdrawal: If you suddenly stop taking XANAX and XANAX TS, lower your dose too fast, or switch to another medication, you can experience severe or life-threatening withdrawal symptoms (see the withdrawal section below).

Always contact your doctor before stopping, or lowering your dose of XANAX and XANAX TS or changing your medicine.

XANAX and XANAX TS with Opioids: Taking XANAX and XANAX TS with opioid medicines can cause:

- severe drowsiness
- decreased awareness
- breathing problems
- coma
- death

Withdrawal

Always contact your doctor before stopping or reducing your dosage of XANAX. If you suddenly stop your treatment, lower your dose too fast, or switch to another medication, you can experience withdrawal symptoms that can range from mild symptoms to severe or life threatening. Some of your withdrawal symptoms can last for months after you stop XANAX and XANAX TS.

Your risk of going through withdrawal is higher if you are taking XANAX and XANAX TS for a long time or at high doses. However, symptoms can still occur if you are taking XANAX and XANAX TS as directed for a short period of time or slowly reducing the dose.

The symptoms of withdrawal often resemble the condition that you are being treated for. After stopping your treatment, it may be hard to tell if you are experiencing withdrawal or a return of your condition (relapse).

Tell your doctor **right away** if you experience any symptoms of withdrawal after changing or stopping your treatment.

Severe symptoms of withdrawal include:

- feeling like you cannot move or respond (catatonia)
- severe confusion, shivering, irregular heart rate and excessive sweating (delirium tremens)
- feeling depressed
- feeling disconnected from reality (dissociation)
- seeing or hearing things that are not there (hallucinations)
- overactive behaviour and thoughts (mania)
- believing in things that are not true (psychosis)
- convulsions (seizures), including some that do not stop
- thoughts or actions of suicide

Therefore, always follow the treatment as prescribed by your doctor.

For other symptoms of withdrawal, see the **Serious side effects and what to do about them** table (below).

To reduce your chances of going through withdrawal:

- always contact your doctor before stopping or reducing your dose of XANAX and XANAX TS or changing medications
- always follow your doctor's instructions on how to reduce your dose carefully and safely
- tell your doctor **right away** if you experience any unusual symptoms after changing or stopping your treatment

Dependence

Benzodiazepines such as XANAX have caused dependence (addiction) and withdrawal symptoms can occur when treatment is stopped suddenly. The risk of dependence (addiction) increases with higher doses and longer duration of treatment, or after suddenly stopping treatment.

BEFORE you use XANAX talk to your doctor or pharmacist if you:

- have ever had a problem with:
 - substance use, including prescribed or illegal drugs, or
 - alcohol
- have ever had seizures or convulsions (violent uncontrollable shaking of the body with or without loss of consciousness)
- have a lung, liver or kidney condition.
- have a history of alcohol or drug abuse.
- have a history of depression and/or suicide attempts.
- are pregnant, think you may be pregnant, or are planning to become pregnant.
- are breast feeding.
- regularly drink alcohol.
- have lactose intolerance.

Mental alertness

XANAX can cause drowsiness and affect your ability to be alert. You should not perform activities that require mental alertness such as driving or operating machinery until you know how this drug will affect you. This effect of XANAX may be made worse if you take alcoholic drinks. If your doctor has increased your dose or if you have changed the timings of when you take your medication this may also change how the drug affects you.

Risk of memory loss

Memory loss has been reported. This has occurred in people taking the usual doses.

Falls and Fractures: Benzodiazepines like XANAX and XANAX TS can cause you to feel sleepy, dizzy and affect your balance. This increases the risks of falling, which can cause fractures or other fall related-injuries, especially if you:

- take other sedatives
- consume alcohol
- are elderly or
- have a condition that causes weakness or frailty

Worsening of side effects with alcohol and other drugs

XANAX may have more pronounced sedative effects when taken with alcohol or other drugs that can make you sleep, such as: narcotic pain relievers, sleeping pills, antihistamines, medications to control seizures, antidepressants or antipsychotics. **Do not** take XANAX if you drink alcohol. **Do not** use XANAX with these other medications without first discussing with your doctor.

XANAX and XANAX TS with Opioids: Taking XANAX and XANAX TS with opioid medicines can cause severe drowsiness and breathing problems.

Tell your doctor if you:

- are taking opioid medicines
- are prescribed an opioid medicine after you start taking XANAX and XANAX TS

Do NOT drive or operate heavy machinery or do tasks that require special attention until you know how taking an opioid medicine and XANAX and XANAX TS affects you.

Pregnancy

Some benzodiazepines have been linked to birth defects when taken during the early months of pregnancy. Babies born to mothers who have taken benzodiazepines during the last weeks of pregnancy or during labour have been known to have overly relaxed muscles and breathing problems, and may also have withdrawal symptoms after birth.

Do not take this medicine if you are pregnant (or think you may be pregnant), unless advised by your doctor. Consult with your doctor before taking XANAX if you are planning to become pregnant.

Breast feeding

XANAX may pass into breast milk. Therefore, if you are breast feeding, this medicine should be avoided.

INTERACTIONS WITH THIS MEDICATION

Serious Drug Interactions

Taking XANAX or XANAX TS and opioids may cause:

- severe drowsiness
- trouble breathing
- coma
- death

Tell your doctor if you are taking any other medicines including any that you have bought from a pharmacy, supermarket or health food store without a prescription.

XANAX may have more pronounced side effects when taken with alcohol or other drugs that affect the central nervous system. **Do not** drink alcohol while taking XANAX. **Do not** use XANAX with the following other medicines without first discussing with your doctor:

- narcotic pain relievers (opioids, e.g., morphine, codeine) (see **Serious Warnings and Precautions** box)
- sleeping pills
- antihistamines (medicines used for relief of allergy symptoms)
- anticonvulsants (medications used to control seizures)
- antidepressants (medicines used to treat anxiety or depression)
- antipsychotics (medicines used to treat mental illnesses such as schizophrenia)

XANAX should not be taken with ketoconazole or itraconazole (medicines used to treat fungal infections) because these medicines can cause an increase in the amount of XANAX in your blood and can enhance side effects.

Other medicines that can affect the amount of XANAX in your blood include cimetidine, fluvoxamine, carbamazepine, HIV protease inhibitors, and birth control pills.

Talk to your doctor if you are using XANAX with digoxin, as XANAX may affect the amount of digoxin in your blood.

Always tell your doctor about any other medicines you are taking or plan to take.

PROPER USE OF THIS MEDICATION

Always take the tablets exactly as your doctor tells you to. Your doctor will prescribe a suitable dose for you. The dose your doctor prescribes will depend on your illness and how you respond to the medicine. The table below shows the different doses that your doctor may prescribe according to your illness.

	Usual Daily Dose
Anxiety disorders	0.25 mg, two to three times per day. Maximum 3 mg/day.
Panic disorders	0.5 mg, three times per day. Maximum 10 mg/day.

The total daily dose should be taken as advised by your doctor.

Do not change the prescribed dose yourself.

If you think the effect of your medicine is too weak or too strong, talk to your doctor.

Your doctor will slowly decrease your dose and will tell you when to stop taking the medicine. Always follow your doctor's instructions on how to lower your dose carefully and safely to avoid experiencing withdrawal symptoms.

Because elderly patients can be more sensitive to the effects of alprazolam, lower doses may be prescribed.

Because elderly patients can be more sensitive to the effects of XANAX, lower doses may be prescribed.

Overdose:

Contact your doctor, regional Poison Control Centre or pharmacist immediately if you suspect you have taken an overdose or someone else accidentally takes your XANAX. If you are unable to contact them, go to a hospital emergency department for medical help, even though you may not feel sick. Show the doctor your bottle of tablets.

SIDE EFFECTS AND WHAT TO DO ABOUT THEM

Like all medications XANAX can cause some side effects. For most patients, these side effects are likely to be minor and temporary as your body adjusts to the medicine. However, some may be serious. Consult your doctor or pharmacist as soon as you can if you do not feel well while taking XANAX.

The most common side effects are:

- Feeling drowsy or tired, especially at the start of treatment.

- Dizziness
- Loss of some balance and coordination
- Falls and fractures
- Memory problems
- Constipation
- Slurred speech

Less common possible side effects are:

- Agitation
- Changes in sex drive (increased or decreased)
- Changes in weight (gain or loss)
- Increased appetite
- Difficulty urinating
- Bladder control problems

In rare cases, XANAX can affect liver function, and disorders such as hepatitis or liver failure may occur. Your doctor will monitor your blood for effects of XANAX on your liver.

Elderly patients may be especially susceptible to side effects. Excessive drowsiness or loss of balance may increase the risk of falls and fractures in elderly patients.

All patients should be cautious about performing hazardous activities that require complete mental alertness, such as operating machinery or driving a car.

Withdrawal-related side effects:

If treatment is stopped suddenly or there is a large decrease in dose, symptoms of withdrawal may occur, including: restlessness and trouble sleeping. In severe cases of withdrawal, symptoms may include: irritability, nervousness, trouble sleeping, diarrhea, stomach pains, vomiting, sweating, tremors, numbness and tingling of the extremities, hallucinations (seeing or hearing things that are not there), being unusually sensitive to light, noise and physical contact and seizures.

SERIOUS SIDE EFFECTS, HOW OFTEN THEY HAPPEN AND WHAT TO DO ABOUT THEM				
Symptom/effect		Talk with your doctor or pharmacist		Stop taking drug and seek immediate emergency help
		Only if severe	In all cases	
Rare	Unusual behavioural problems (aggression, rage), sudden anxiety or excitation, restlessness, agitation, irritability; hallucinations (see or hear things that are not there) or delusions, severe sleep disturbances, nightmares, inappropriate behaviour		✓	
	Allergic reactions (red skin, skin rashes, hives, itching, swelling			✓

SERIOUS SIDE EFFECTS, HOW OFTEN THEY HAPPEN AND WHAT TO DO ABOUT THEM				
Symptom/effect		Talk with your doctor or pharmacist		Stop taking drug and seek immediate emergency help
		Only if severe	In all cases	
	of the lips, face, tongue, throat, trouble breathing, wheezing, shortness of breath)			
	Depression. Symptoms may include: Difficulty sleeping, changes in weight, feelings of worthlessness, guilt, regret, helplessness or hopelessness, withdrawal from social situations, family gatherings and activities with friends, reduced libido (sex drive), and thoughts of death or suicide		✓	
	Hepatitis, liver failure (yellow skin and eyes, nausea, vomiting, pain in upper right abdomen, loss of appetite, dark-colored urine)			✓
	Serious skin reactions (rash that may be severe, red skin, blistering of the lips, eyes or mouth, peeling skin)			✓
	Increased pressure in the eyes (change in side vision, sudden severe pain in the eye, decreased or cloudy vision, seeing rainbow-like halos around lights, eyes feeling swollen)			✓
Unknown	Overdose: extreme sleepiness, confusion, slurred speech, slow reflexes, slow shallow breathing, coma, loss of balance and coordination, uncontrolled rolling of the eyes, and low blood pressure.			✓
	Respiratory Depression: slow, shallow or weak breathing.			✓
	Withdrawal: Severe symptoms include: Catatonia: feeling like you cannot move or		✓	

SERIOUS SIDE EFFECTS, HOW OFTEN THEY HAPPEN AND WHAT TO DO ABOUT THEM

Symptom/effect	Talk with your doctor or pharmacist		Stop taking drug and seek immediate emergency help
	Only if severe	In all cases	
respond Delirium Tremens: severe confusion, shivering, irregular heartrate and excessive sweating Feeling depressed Dissociation: feeling disconnected from reality Hallucinations: seeing or hearing things that are not there Mania: overactive behaviour and thoughts Psychosis: believing in things that are not true Convulsions: (seizures – including some that do not stop); loss of consciousness with uncontrollable shaking Thoughts or actions of suicide Other symptoms include: Stomach cramps; trouble remembering or concentrating; diarrhea; feeling uneasy or restless; severe anxiety or panic-attacks; headache; sensitivity to light, noise or physical contact; shaking; vomiting; trouble sleeping; feeling irritable; muscle pain or stiffness; a burning or prickling feeling in the hands, arms, legs or feet; sweating.			

This is not a complete of side effects. For any unexpected effects while taking XANAX, contact your doctor or pharmacist.

HOW TO STORE IT

XANAX should be stored at controlled room temperature (15 - 30°C).

Keep out of the reach of children.

REPORTING SUSPECTED SIDE EFFECTS

You can report any suspected adverse reactions associated with the use of health products to the Canada Vigilance Program by one of the following 3 ways:

- Report online at www.canada.ca/en/health-canada/services/drugs-health-products/medeffect-canada/adverse-reaction-reporting.html
- Call toll-free at 1-866-234-2345
- Complete a Canada Vigilance Reporting Form and:
 - Fax toll-free to 1-866-678-6789, or
 - Mail to: Canada Vigilance Program
Health Canada
Postal Locator 1908C
Ottawa, ON K1A 0K9

Postage paid labels, Canada Vigilance Reporting Form and the adverse reaction reporting guidelines are available on the MedEffect™ Canada Web site at

- www.canada.ca/en/health-canada/services/drugs-health-products/medeffect-canada/adverse-reaction-reporting.html

NOTE: Should you require information related to the management of side effects, contact your health professional. The Canada Vigilance Program does not provide medical advice.

MORE INFORMATION

This document plus the full Product Monograph, prepared for health professionals can be found at: <http://www.Pfizer.ca> or by contacting Upjohn Canada ULC Medical Information at 1-800-463-6001.

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