PALIPERIDONE - paliperidone tablet, film coated, extended release
Mylan Institutional Inc.

HIGHLIGHTS OF PRESCRIBING INFORMATION
These highlights do not include all the information needed to use paliperidone extended-release tablets safely and effectively. See full prescribing information for paliperidone extended-release tablets.

WARNING: INCREASED MORTALITY IN ELDERLY PATIENTS WITH DEMENTIA-RELATED PSYCHOSIS
See full prescribing information for complete boxed warning.
Elderly patients with dementia-related psychosis treated with antipsychotic drugs are at an increased risk of death. Paliperidone extended-release tablets are not approved for use in patients with dementia-related psychosis. (5.1)

INDICATIONS AND USAGE
Paliperidone extended-release tablets are an atypical antipsychotic agent indicated for
Treatment of schizophrenia (1.1)
- Adults: Efficacy was established in three 6-week trials and one maintenance trial. (14.1)
- Adolescents (ages 12 to 17): Efficacy was established in one 6-week trial. (14.1)
Treatment of schizoaffective disorder as monotherapy and as an adjunct to mood stabilizers and/or antidepressants. (1.2)
- Efficacy was established in two 6-week trials in adult patients (14.2)

DOSAGE AND ADMINISTRATION

<table>
<thead>
<tr>
<th>Indication</th>
<th>Initial Dose</th>
<th>Recommended Dose</th>
<th>Maximum Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schizophrenia – adults</td>
<td>6 mg/day</td>
<td>3 to 12 mg/day</td>
<td>12 mg/day</td>
</tr>
<tr>
<td>Schizophrenia – adolescents</td>
<td>Weight &lt; 51 kg</td>
<td>3 mg/day</td>
<td>6 mg/day</td>
</tr>
<tr>
<td>Schizophrenia – adolescents</td>
<td>Weight ≥ 51 kg</td>
<td>3 mg/day</td>
<td>12 mg/day</td>
</tr>
<tr>
<td>Schizoaffective disorder –</td>
<td>6 mg/day</td>
<td>3 to 12 mg/day</td>
<td>12 mg/day</td>
</tr>
</tbody>
</table>

- Tablet should be swallowed whole and should not be chewed, divided, or crushed. (2.3)

DOSAGE FORMS AND STRENGTHS
Tablets: 1.5 mg, 3 mg, 6 mg and 9 mg (3)

CONTRAINDICATIONS
Known hypersensitivity to paliperidone, risperidone, or to any components in the formulation. (4)

WARNINGS AND PRECAUTIONS
- Cerebrovascular Adverse Reactions: An increased incidence of cerebrovascular adverse reactions (e.g., stroke, transient ischemic attack, including fatalities) has been seen in elderly patients with dementia-related psychoses treated with atypical antipsychotics. (5.2)
- Neuroleptic Malignant Syndrome: Manage with immediate discontinuation of drug and close monitoring. (5.3)
- QT Prolongation: Increase in QT interval, avoid use with drugs that also increase QT interval and in patients with risk factors for prolonged QT interval. (5.4)
- Tardive Dyskinesia: Discontinue drug if clinically appropriate. (5.5)
- Metabolic Changes: Atypical antipsychotic drugs have been associated with metabolic changes that may increase cardiovascular/cerebrovascular risk. These metabolic changes include hyperglycemia, dyslipidemia, and weight gain. (5.6)
  - Hyperglycemia and Diabetes Mellitus: Monitor patients for symptoms of hyperglycemia including polydipsia, polyuria, polyphagia, and weakness. Monitor glucose regularly in patients with diabetes or at risk for diabetes. (5.6)
  - Dyslipidemia: Undesirable alterations have been observed in patients treated with atypical antipsychotics. (5.6)
Weight Gain: Significant weight gain has been reported. Monitor weight gain. (5.6)

Hyperprolactinemia: Prolactin elevations occur and persist during chronic administration. (5.7)

Gastrointestinal Narrowing: Obstructive symptoms may result in patients with gastrointestinal disease. (5.8)

Orthostatic Hypotension and Syncope: Use with caution in patients with known cardiovascular or cerebrovascular disease and patients predisposed to hypotension. (5.9)

Leukopenia, Neutropenia, and Agranulocytosis: Has been reported with antipsychotics, including paliperidone extended-release tablets. Patients with a history of a clinically significant low white blood cell count (WBC) or a drug-induced leukopenia/neutropenia should have their complete blood count (CBC) monitored frequently during the first few months of therapy and discontinuation of paliperidone extended-release tablets should be considered at the first sign of a clinically significant decline in WBC in the absence of other causative factors. (5.10)

Potential for Cognitive and Motor Impairment: Use caution when operating machinery. (5.11)

Seizures: Use cautiously in patients with a history of seizures or with conditions that lower the seizure threshold. (5.12)

Suicide: Closely supervise high-risk patients. (5.14)

ADVERSE REACTIONS

Commonly observed adverse reactions (incidence ≥ 5% and at least twice that for placebo) were (6)

- Adults with schizophrenia: extrapyramidal symptoms, tachycardia, and akathisia.
- Adolescents with schizophrenia: somnolence, akathisia, tremor, dystonia, cogwheel rigidity, anxiety, weight increased, and tachycardia.
- Adults with schizoaffective disorder: extrapyramidal symptoms, somnolence, dyspepsia, constipation, weight increased, and nasopharyngitis.

To report SUSPECTED ADVERSE REACTIONS, contact Mylan Pharmaceuticals Inc. at 1-877-446-3679 (1-877-4-INFO-RX) or FDA at 1-800-FDA-1088 or www.fda.gov/medwatch.

DRUG INTERACTIONS

- Centrally-acting drugs: Due to CNS effects, use caution in combination. Avoid alcohol. (7.1)
- Drugs that may cause orthostatic hypotension: An additive effect may be observed when co-administered with paliperidone extended-release tablets. (7.1)
- Strong CYP3A4/P-glycoprotein (P-gp) inducers: It may be necessary to increase the dose of paliperidone when a strong inducer of both CYP3A4 and P-gp (e.g., carbamazepine) is co-administered. Conversely, on discontinuation of the strong inducer, it may be necessary to decrease the dose of paliperidone extended-release tablets. (7.2)
- Co-administration of divalproex sodium increased C_max and AUC of paliperidone extended-release tablets by approximately 50%. Adjust dose of paliperidone if necessary based on clinical assessment. (7.2)

USE IN SPECIFIC POPULATIONS

- Renal Impairment: Dosing must be individualized according to renal function status. (2.5)
- Elderly: Same as for younger adults (adjust dose according to renal function status). (2.4)
- Nursing Mothers: The benefits of breastfeeding should be weighed against the unknown risks of infant exposure to paliperidone. (8.3)
- Pediatric Use: Safety and effectiveness in the treatment of schizophrenia not established in patients less than 12 years of age. Safety and effectiveness in the treatment of schizoaffective disorder not established in patients less than 18 years of age. (8.4)

See 17 for PATIENT COUNSELING INFORMATION.

Revised: 6/2016

FULL PRESCRIBING INFORMATION: CONTENTS*

WARNING: INCREASED MORTALITY IN ELDERLY PATIENTS WITH DEMENTIA-RELATED PSYCHOSIS

1 INDICATIONS AND USAGE
   1.1 Schizophrenia
   1.2 Schizoaffective Disorder

2 DOSAGE AND ADMINISTRATION
   2.1 Schizophrenia
   2.2 Schizoaffective Disorder
   2.3 Administration Instructions
2.4 Use with Risperidone
2.5 Dosage in Special Populations

3 DOSAGE FORMS AND STRENGTHS
4 CONTRAINDICATIONS
5 WARNINGS AND PRECAUTIONS
  5.1 Increased Mortality in Elderly Patients with Dementia-Related Psychosis
  5.2 Cerebrovascular Adverse Reactions, Including Stroke, in Elderly Patients with Dementia-Related Psychosis
  5.3 Neuroleptic Malignant Syndrome
  5.4 QT Prolongation
  5.5 Tardive Dyskinesia
  5.6 Metabolic Changes
  5.7 Hyperprolactinemia
  5.8 Potential for Gastrointestinal Obstruction
  5.9 Orthostatic Hypotension and Syncope
  5.10 Leukopenia, Neutropenia, and Agranulocytosis
  5.11 Potential for Cognitive and Motor Impairment
  5.12 Seizures
  5.13 Dysphagia
  5.14 Suicide
  5.15 Priapism
  5.16 Thrombotic Thrombocytopenic Purpura (TTP)
  5.17 Body Temperature Regulation
  5.18 Antiemetic Effect
  5.19 Use in Patients with Concomitant Illness
  5.20 Monitoring: Laboratory Tests

6 ADVERSE REACTIONS
  6.1 Overall Adverse Reaction Profile
  6.2 Commonly-Observed Adverse Reactions in Double-Blind, Placebo-Controlled Clinical Trials – Schizophrenia in Adults and Adolescents
  6.3 Commonly-Observed Adverse Reactions in Double-Blind, Placebo-Controlled Clinical Trials – Schizoaffective Disorder in Adults
  6.4 Discontinuations Due to Adverse Reactions
  6.5 Dose-Related Adverse Reactions
  6.6 Demographic Differences
  6.7 Extrapyramidal Symptoms (EPS)
  6.8 Laboratory Test Abnormalities
  6.9 Other Adverse Reactions Observed During Premarketing Evaluation of Paliperidone Extended-Release Tablets
  6.10 Postmarketing Experience
  6.11 Adverse Reactions Reported with Risperidone

7 DRUG INTERACTIONS
  7.1 Potential for Paliperidone Extended-Release Tablets to Affect Other Drugs
  7.2 Potential for Other Drugs to Affect Paliperidone Extended-Release Tablets

8 USE IN SPECIFIC POPULATIONS
  8.1 Pregnancy
  8.3 Nursing Mothers
  8.4 Pediatric Use
  8.5 Geriatric Use
  8.6 Renal Impairment
  8.7 Hepatic Impairment

9 DRUG ABUSE AND DEPENDENCE
  9.1 Controlled Substance
WARNING: INCREASED MORTALITY IN ELDERLY PATIENTS WITH DEMENTIA-RELATED PSYCHOSIS

Elderly patients with dementia-related psychosis treated with antipsychotic drugs are at an increased risk of death. Analyses of 17 placebo-controlled trials (modal duration of 10 weeks), largely in patients taking atypical antipsychotic drugs, revealed a risk of death in drug-treated patients of between 1.6 to 1.7 times the risk of death in placebo-treated patients. Over the course of a typical 10-week controlled trial, the rate of death in drug-treated patients was about 4.5%, compared to a rate of about 2.6% in the placebo group. Although the causes of death were varied, most of the deaths appeared to be either cardiovascular (e.g., heart failure, sudden death) or infectious (e.g., pneumonia) in nature. Observational studies suggest that, similar to atypical antipsychotic drugs, treatment with conventional antipsychotic drugs may increase mortality. The extent to which the findings of increased mortality in observational studies may be attributed to the antipsychotic drug as opposed to some characteristic(s) of the patients is not clear. Paliperidone extended-release tablets are not approved for the treatment of patients with dementia-related psychosis. [See Warnings and Precautions (5.1).]
1.1 Schizophrenia

Paliperidone extended-release tablets are indicated for the treatment of schizophrenia [see Clinical Studies (14.1)].

The efficacy of paliperidone extended-release tablets in schizophrenia was established in three 6-week trials in adults and one 6-week trial in adolescents, as well as one maintenance trial in adults.

1.2 Schizoaffective Disorder

Paliperidone extended-release tablets are indicated for the treatment of schizoaffective disorder as monotherapy and an adjunct to mood stabilizers and/or antidepressant therapy [see Clinical Studies (14.2)].

The efficacy of paliperidone extended-release tablets in schizoaffective disorder was established in two 6-week trials in adults.

2 DOSAGE AND ADMINISTRATION

2.1 Schizophrenia

Adults

The recommended dose of paliperidone extended-release tablets for the treatment of schizophrenia in adults is 6 mg administered once daily. Initial dose titration is not required. Although it has not been systematically established that doses above 6 mg have additional benefit, there was a general trend for greater effects with higher doses. This must be weighed against the dose-related increase in adverse reactions. Thus, some patients may benefit from higher doses, up to 12 mg/day, and for some patients, a lower dose of 3 mg/day may be sufficient. Dose increases above 6 mg/day should be made only after clinical reassessment and generally should occur at intervals of more than 5 days. When dose increases are indicated, increments of 3 mg/day are recommended. The maximum recommended dose is 12 mg/day.

In a longer-term study, paliperidone extended-release tablets have been shown to be effective in delaying time to relapse in patients with schizophrenia who were stabilized on paliperidone extended-release tablets for 6 weeks [see Clinical Studies (14)]. Paliperidone extended-release tablets should be prescribed at the lowest effective dose for maintaining clinical stability and the physician should periodically re-evaluate the long-term usefulness of the drug in individual patients.

Adolescents (12 to 17 years of age)

The recommended starting dose of paliperidone extended-release tablets for the treatment of schizophrenia in adolescents 12 to 17 years of age is 3 mg administered once daily. Initial dose titration is not required. Dose increases, if considered necessary, should be made only after clinical reassessment and should occur at increments of 3 mg/day at intervals of more than 5 days. Prescribers should be mindful that, in the adolescent schizophrenia study, there was no clear enhancement to efficacy at the higher doses, i.e., 6 mg for subjects weighing less than 51 kg and 12 mg for subjects weighing 51 kg or greater, while adverse events were dose-related.

2.2 Schizoaffective Disorder

The recommended dose of paliperidone extended-release tablets for the treatment of schizoaffective disorder in adults is 6 mg administered once daily. Initial dose titration is not required. Some patients may benefit from lower or higher doses within the recommended dose range of 3 mg to 12 mg once daily. A general trend for greater effects was seen with higher doses. This trend must be weighed against dose-related increase in adverse reactions. Dosage adjustment, if indicated, should occur only after clinical reassessment. Dose increases, if indicated, generally should occur at intervals of more than 4 days. When dose increases are indicated, increments of 3 mg/day are recommended. The
maximum recommended dose is 12 mg/day.

2.3 Administration Instructions
Paliperidone extended-release tablets can be taken with or without food.
Paliperidone extended-release tablets must be swallowed whole with the aid of liquids. Tablets should not be chewed, divided, or crushed. The medication is contained within a nonabsorbable shell designed to release the drug at a controlled rate. The tablet shell, along with insoluble core components, is eliminated from the body; patients should not be concerned if they occasionally notice in their stool something that looks like a tablet.

2.4 Use with Risperidone
Concomitant use of paliperidone extended-release tablets with risperidone has not been studied. Since paliperidone is the major active metabolite of risperidone, consideration should be given to the additive paliperidone exposure if risperidone is co-administered with paliperidone extended-release tablets.

2.5 Dosage in Special Populations

Renal Impairment
Dosing must be individualized according to the patient’s renal function status. For patients with mild renal impairment (creatinine clearance ≥ 50 mL/min to < 80 mL/min), the recommended initial dose of paliperidone extended-release tablets is 3 mg once daily. The dose may then be increased to a maximum of 6 mg once daily based on clinical response and tolerability. For patients with moderate to severe renal impairment (creatinine clearance ≥ 10 mL/min to < 50 mL/min), the recommended initial dose of paliperidone extended-release tablets is 1.5 mg once daily, which may be increased to a maximum of 3 mg once daily after clinical reassessment. As paliperidone extended-release tablets have not been studied in patients with creatinine clearance below 10 mL/min, use is not recommended in such patients. [See Clinical Pharmacology (12.3).]

Hepatic Impairment
For patients with mild to moderate hepatic impairment, (Child-Pugh Classification A and B), no dose adjustment is recommended [see Clinical Pharmacology (12.3)]. Paliperidone extended-release tablets have not been studied in patients with severe hepatic impairment.

Elderly
Because elderly patients may have diminished renal function, dose adjustments may be required according to their renal function status. In general, recommended dosing for elderly patients with normal renal function is the same as for younger adult patients with normal renal function. For patients with moderate to severe renal impairment (creatinine clearance 10 mL/min to < 50 mL/min), the maximum recommended dose of paliperidone extended-release tablets is 3 mg once daily [see Renal Impairment above].

3 DOSAGE FORMS AND STRENGTHS
Paliperidone extended-release tablets are available in the following strengths and colors: 1.5 mg (brown), 3 mg (white), 6 mg (light beige), and 9 mg (pink). All tablets are round and are imprinted with M over PD1, M over PD3, M over PD6, or M over PD9, respectively.

4 CONTRAINDICATIONS
Hypersensitivity reactions, including anaphylactic reactions and angioedema, have been observed in patients treated with risperidone and paliperidone. Paliperidone is a metabolite of risperidone and is
therefore contraindicated in patients with a known hypersensitivity to either paliperidone or risperidone, or to any of the excipients in paliperidone extended-release tablets.

5 WARNINGS AND PRECAUTIONS

5.1 Increased Mortality in Elderly Patients with Dementia-Related Psychosis

Elderly patients with dementia-related psychosis treated with antipsychotic drugs are at an increased risk of death. Paliperidone extended-release tablets are not approved for the treatment of dementia-related psychosis [see Boxed Warning].

5.2 Cerebrovascular Adverse Reactions, Including Stroke, in Elderly Patients with Dementia-Related Psychosis

In placebo-controlled trials with risperidone, aripiprazole, and olanzapine in elderly subjects with dementia, there was a higher incidence of cerebrovascular adverse reactions (cerebrovascular accidents and transient ischemic attacks) including fatalities compared to placebo-treated subjects. Paliperidone extended-release tablets were not marketed at the time these studies were performed. Paliperidone extended-release tablets are not approved for the treatment of patients with dementia-related psychosis [see also Boxed Warning and Warnings and Precautions (5.1)].

5.3 Neuroleptic Malignant Syndrome

A potentially fatal symptom complex sometimes referred to as Neuroleptic Malignant Syndrome (NMS) has been reported in association with antipsychotic drugs, including paliperidone. Clinical manifestations of NMS are hyperpyrexia, muscle rigidity, altered mental status, and evidence of autonomic instability (irregular pulse or blood pressure, tachycardia, diaphoresis, and cardiac dysrhythmia). Additional signs may include elevated creatine phosphokinase, myoglobinuria (rhabdomyolysis), and acute renal failure.

The diagnostic evaluation of patients with this syndrome is complicated. In arriving at a diagnosis, it is important to identify cases in which the clinical presentation includes both serious medical illness (e.g., pneumonia, systemic infection, etc.) and untreated or inadequately treated extrapyramidal signs and symptoms (EPS). Other important considerations in the differential diagnosis include central anticholinergic toxicity, heat stroke, drug fever, and primary central nervous system pathology.

The management of NMS should include: (1) immediate discontinuation of antipsychotic drugs and other drugs not essential to concurrent therapy; (2) intensive symptomatic treatment and medical monitoring; and (3) treatment of any concomitant serious medical problems for which specific treatments are available. There is no general agreement about specific pharmacological treatment regimens for uncomplicated NMS. If a patient appears to require antipsychotic drug treatment after recovery from NMS, reintroduction of drug therapy should be closely monitored, since recurrences of NMS have been reported.

5.4 QT Prolongation

Paliperidone causes a modest increase in the corrected QT (QTc) interval. The use of paliperidone should be avoided in combination with other drugs that are known to prolong QTc including Class 1A (e.g., quinidine, procainamide) or Class III (e.g., amiodarone, sotalol) antiarrhythmic medications, antipsychotic medications (e.g., chlorpromazine, thioridazine), antibiotics (e.g., gatifloxacin, moxifloxacin), or any other class of medications known to prolong the QTc interval. Paliperidone should also be avoided in patients with congenital long QT syndrome and in patients with a history of cardiac arrhythmias.

Certain circumstances may increase the risk of the occurrence of torsade de pointes and/or sudden death in association with the use of drugs that prolong the QTc interval, including (1) bradycardia; (2)
hypokalemia or hypomagnesemia; (3) concomitant use of other drugs that prolong the QTc interval; and
(4) presence of congenital prolongation of the QT interval.

The effects of paliperidone on the QT interval were evaluated in a double-blind, active-controlled
(moxifloxacin 400 mg single dose), multicenter QT study in adults with schizophrenia and
schizoaffective disorder, and in three placebo- and active-controlled 6-week, fixed-dose efficacy trials
in adults with schizophrenia.

In the QT study (n = 141), the 8 mg dose of immediate-release oral paliperidone (n = 50) showed a mean
placebo-subtracted increase from baseline in QTcLD of 12.3 msec (90% CI: 8.9; 15.6) on day 8 at 1.5
hours post-dose. The mean steady-state peak plasma concentration for this 8 mg dose of paliperidone
immediate-release was more than twice the exposure observed with the maximum recommended 12 mg
dose of paliperidone extended-release tablets (C_{max,ss} = 113 ng/mL and 45 ng/mL, respectively, when
administered with a standard breakfast). In this same study, a 4 mg dose of the immediate-release oral
formulation of paliperidone, for which C_{max,ss} = 35 ng/mL, showed an increased placebo-subtracted
QTcLD of 6.8 msec (90% CI: 3.6; 10.1) on day 2 at 1.5 hours post-dose. None of the subjects had a
change exceeding 60 msec or a QTcLD exceeding 500 msec at any time during this study.

For the three fixed-dose efficacy studies in subjects with schizophrenia, electrocardiogram (ECG)
measurements taken at various time points showed only one subject in the paliperidone extended-release
tablets 12 mg group had a change exceeding 60 msec at one time-point on Day 6 (increase of 62 msec).
No subject receiving paliperidone extended-release tablets had a QTcLD exceeding 500 msec at any
time in any of these three studies.

5.5 Tardive Dyskinesia

A syndrome of potentially irreversible, involuntary, dyskinetic movements may develop in patients
treated with antipsychotic drugs. Although the prevalence of the syndrome appears to be highest among
the elderly, especially elderly women, it is impossible to predict which patients will develop the
syndrome. Whether antipsychotic drug products differ in their potential to cause tardive dyskinesia is
unknown.

The risk of developing tardive dyskinesia and the likelihood that it will become irreversible appear to
increase as the duration of treatment and the total cumulative dose of antipsychotic drugs administered to
the patient increase, but the syndrome can develop after relatively brief treatment periods at low doses,
although this is uncommon.

There is no known treatment for established tardive dyskinesia, although the syndrome may remit,
partially or completely, if antipsychotic treatment is withdrawn. Antipsychotic treatment itself may
suppress (or partially suppress) the signs and symptoms of the syndrome and may thus mask the
underlying process. The effect of symptomatic suppression on the long-term course of the syndrome is
unknown.

Given these considerations, paliperidone extended-release tablets should be prescribed in a manner that
is most likely to minimize the occurrence of tardive dyskinesia. Chronic antipsychotic treatment should
generally be reserved for patients who suffer from a chronic illness that is known to respond to
antipsychotic drugs. In patients who do require chronic treatment, the smallest dose and the shortest
duration of treatment producing a satisfactory clinical response should be sought. The need for
continued treatment should be reassessed periodically.

If signs and symptoms of tardive dyskinesia appear in a patient treated with paliperidone extended-
release tablets, drug discontinuation should be considered. However, some patients may require
treatment with paliperidone extended-release tablets despite the presence of the syndrome.

5.6 Metabolic Changes

Atypical antipsychotic drugs have been associated with metabolic changes that may increase
cardiovascular/cerebrovascular risk. These metabolic changes include hyperglycemia, dyslipidemia,
and body weight gain. While all of the drugs in the class have been shown to produce some metabolic changes, each drug has its own specific risk profile.

**Hyperglycemia and Diabetes Mellitus**

Hyperglycemia and diabetes mellitus, in some cases extreme and associated with ketoacidosis or hyperosmolar coma or death, have been reported in patients treated with all atypical antipsychotics. These cases were, for the most part, seen in postmarketing clinical use and epidemiologic studies, not in clinical trials, and there have been few reports of hyperglycemia or diabetes in trial subjects treated with paliperidone extended-release tablets. Assessment of the relationship between atypical antipsychotic use and glucose abnormalities is complicated by the possibility of an increased background risk of diabetes mellitus in patients with schizophrenia and the increasing incidence of diabetes mellitus in the general population. Given these confounders, the relationship between atypical antipsychotic use and hyperglycemia-related adverse events is not completely understood. However, epidemiological studies suggest an increased risk of treatment-emergent hyperglycemia-related adverse events in patients treated with the atypical antipsychotics. Because paliperidone extended-release tablets were not marketed at the time these studies were performed, it is not known if paliperidone extended-release tablets are associated with this increased risk.

Patients with an established diagnosis of diabetes mellitus who are started on atypical antipsychotics should be monitored regularly for worsening of glucose control. Patients with risk factors for diabetes mellitus (e.g., obesity, family history of diabetes) who are starting treatment with atypical antipsychotics should undergo fasting blood glucose testing at the beginning of treatment and periodically during treatment. Any patient treated with atypical antipsychotics should be monitored for symptoms of hyperglycemia including polydipsia, polyuria, polyphagia, and weakness. Patients who develop symptoms of hyperglycemia during treatment with atypical antipsychotics should undergo fasting blood glucose testing. In some cases, hyperglycemia has resolved when the atypical antipsychotic was discontinued; however, some patients required continuation of anti-diabetic treatment despite discontinuation of the suspect drug.

Pooled data from the three placebo-controlled, 6-week, fixed-dose studies in adult subjects with schizophrenia are presented in Table 1a.

<table>
<thead>
<tr>
<th>Serum Glucose Change from baseline</th>
<th>Placebo</th>
<th>Paliperidone Extended-release Tablets</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n = 322</td>
<td>Mean change from baseline (mg/dL)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 mg/day</td>
</tr>
<tr>
<td>Serum Glucose</td>
<td>0.8</td>
<td>-0.7</td>
</tr>
<tr>
<td>Proportion of Patients with Shifts</td>
<td>5.1%</td>
<td>3.2%</td>
</tr>
</tbody>
</table>

In the uncontrolled, longer-term open-label extension studies, paliperidone extended-release tablets were associated with a mean change in glucose of +3.3 mg/dL at Week 24 (n = 570) and +4.6 mg/dL at Week 52 (n = 314).

Data from the placebo-controlled 6-week study in adolescent subjects (12 to 17 years of age) with schizophrenia are presented in Table 1b.
### Table 1b. Change in Fasting Glucose from a Placebo-Controlled 6-Week Study in Adolescent Subjects (12 to 17 years of age) with Schizophrenia

<table>
<thead>
<tr>
<th>Paliperidone Extended-release Tablets</th>
<th>Placebo</th>
<th>1.5 mg/day</th>
<th>3 mg/day</th>
<th>6 mg/day</th>
<th>12 mg/day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean change from baseline (mg/dL)</td>
<td>n = 41</td>
<td>n = 44</td>
<td>n = 11</td>
<td>n = 28</td>
<td>n = 32</td>
</tr>
<tr>
<td>Serum Glucose Change from baseline</td>
<td>0.8</td>
<td>-1.4</td>
<td>-1.8</td>
<td>-0.1</td>
<td>5.2</td>
</tr>
<tr>
<td><strong>Proportion of Patients with Shifts</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Serum Glucose Normal to High</td>
<td>3%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>11%</td>
</tr>
<tr>
<td>(&lt; 100 mg/dL to ≥ 126 mg/dL)</td>
<td>(1/32)</td>
<td>(0/34)</td>
<td>(0/9)</td>
<td>(0/20)</td>
<td>(3/27)</td>
</tr>
</tbody>
</table>

**Dyslipidemia**

Undesirable alterations in lipids have been observed in patients treated with atypical antipsychotics.

Pooled data from the three placebo-controlled, 6-week, fixed-dose studies in adult subjects with schizophrenia are presented in Table 2a.

### Table 2a: Change in Fasting Lipids from Three Placebo-Controlled, 6-Week, Fixed-Dose Studies in Adult Subjects with Schizophrenia

<table>
<thead>
<tr>
<th>Paliperidone Extended-release Tablets</th>
<th>Placebo</th>
<th>3 mg/day</th>
<th>6 mg/day</th>
<th>9 mg/day</th>
<th>12 mg/day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean change from baseline (mg/dL)</td>
<td>n = 331</td>
<td>n = 120</td>
<td>n = 216</td>
<td>n = 236</td>
<td>n = 231</td>
</tr>
<tr>
<td><strong>Cholesterol</strong></td>
<td>-6.3</td>
<td>-4.4</td>
<td>-2.4</td>
<td>-5.3</td>
<td>-4</td>
</tr>
<tr>
<td>Change from baseline</td>
<td>n = 322</td>
<td>n = 116</td>
<td>n = 210</td>
<td>n = 231</td>
<td>n = 225</td>
</tr>
<tr>
<td><strong>LDL</strong></td>
<td>-3.2</td>
<td>0.5</td>
<td>-0.8</td>
<td>-3.9</td>
<td>-2</td>
</tr>
<tr>
<td>Change from baseline</td>
<td>n = 331</td>
<td>n = 119</td>
<td>n = 216</td>
<td>n = 234</td>
<td>n = 230</td>
</tr>
<tr>
<td><strong>HDL</strong></td>
<td>0.3</td>
<td>-0.4</td>
<td>0.5</td>
<td>0.8</td>
<td>1.2</td>
</tr>
<tr>
<td>Change from baseline</td>
<td>n = 331</td>
<td>n = 120</td>
<td>n = 216</td>
<td>n = 236</td>
<td>n = 231</td>
</tr>
<tr>
<td><strong>Triglycerides</strong></td>
<td>-22.3</td>
<td>-18.3</td>
<td>-12.6</td>
<td>-10.6</td>
<td>-15.4</td>
</tr>
</tbody>
</table>

**Proportion of Patients with Shifts**

| **Cholesterol**                      | 2.6%    | 2.8%     | 5.6%     | 4.1%     | 3.1%     |
| Normal to High (< 200 mg/dL to ≥ 240 mg/dL) | (5/194) | (2/71)   | (7/125)  | (6/147)  | (4/130)  |
| **LDL**                              | 1.9%    | 0%       | 5%       | 3.7%     | 0%       |
| Normal to High (< 100 mg/dL to ≥ 160 mg/dL) | (2/105) | (0/44)   | (3/60)   | (3/81)   | (0/69)   |
| **HDL**                              | 22%     | 16.3%    | 29.1%    | 23.4%    | 20%      |
| Normal to Low (≥ 40 mg/dL to < 40 mg/dL) | (44/200) | (13/80)  | (39/134) | (32/137) | (27/135) |
| **Triglycerides**                    | 5.3%    | 11%      | 8.8%     | 8.7%     | 4.3%     |
| Normal to High (< 150 mg/dL to ≥ 200 mg/dL) | (11/208) | (9/82)   | (12/136) | (13/150) | (6/139)  |

In the uncontrolled, longer-term open-label extension studies, paliperidone extended-release tablets were associated with a mean change in (a) total cholesterol of -1.5 mg/dL at Week 24 (n = 573) and -1.5
mg/dL at Week 52 (n = 317), (b) triglycerides of -6.4 mg/dL at Week 24 (n = 573) and -10.5 mg/dL at Week 24 (n = 573); (c) LDL of -1.9 mg/dL at Week 24 (n = 557) and -2.7 mg/dL at Week 52 (n = 297); and (d) HDL of +2.2 mg/dL at Week 24 (n = 568) and +3.6 mg/dL at Week 52 (n = 302).

Data from the placebo-controlled 6-week study in adolescent subjects (12 to 17 years of age) with schizophrenia are presented in Table 2b.

**Table 2b. Change in Fasting Lipids from a Placebo-Controlled 6-Week Study in Adolescent Subjects (12 to 17 years of age) with Schizophrenia**

<table>
<thead>
<tr>
<th></th>
<th>Placebo</th>
<th>1.5 mg/day</th>
<th>3 mg/day</th>
<th>6 mg/day</th>
<th>12 mg/day</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mean change from baseline (mg/dL)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cholesterol</td>
<td>n = 39</td>
<td>n = 45</td>
<td>n = 11</td>
<td>n = 28</td>
<td>n = 32</td>
</tr>
<tr>
<td>Change from baseline</td>
<td>-7.8</td>
<td>-3.3</td>
<td>12.7</td>
<td>3</td>
<td>-1.5</td>
</tr>
<tr>
<td>LDL</td>
<td>n = 37</td>
<td>n = 40</td>
<td>n = 9</td>
<td>n = 27</td>
<td>n = 31</td>
</tr>
<tr>
<td>Change from baseline</td>
<td>-4.1</td>
<td>-3.1</td>
<td>7.2</td>
<td>2.4</td>
<td>0.6</td>
</tr>
<tr>
<td>HDL</td>
<td>n = 37</td>
<td>n = 41</td>
<td>n = 9</td>
<td>n = 27</td>
<td>n = 31</td>
</tr>
<tr>
<td>Change from baseline</td>
<td>-1.9</td>
<td>0</td>
<td>1.3</td>
<td>1.4</td>
<td>0</td>
</tr>
<tr>
<td>Triglycerides</td>
<td>n = 39</td>
<td>n = 44</td>
<td>n = 11</td>
<td>n = 28</td>
<td>n = 32</td>
</tr>
<tr>
<td>Change from baseline</td>
<td>-8.9</td>
<td>3.2</td>
<td>17.6</td>
<td>-5.4</td>
<td>3.9</td>
</tr>
</tbody>
</table>

**Proportion of Patients with Shifts**

|                      |          |            |          |          |           |
| Cholesterol          | 7%       | 4%         | 0%       | 6%       | 11%       |
| Normal to High       | (2/27)   | (1/26)     | (0/6)    | (1/18)   | (2/19)    |
| (< 170 mg/dL to ≥ 200 mg/dL) |          |            |          |          |           |
| LDL                  | 3%       | 4%         | 14%      | 0%       | 9%        |
| Normal to High       | (1/32)   | (1/25)     | (1/7)    | (0/22)   | (2/22)    |
| (< 110 mg/dL to ≥ 130 mg/dL) |          |            |          |          |           |
| HDL                  | 14%      | 7%         | 29%      | 13%      | 23%       |
| Normal to Low        | (4/28)   | (2/30)     | (2/7)    | (3/23)   | (5/22)    |
| (≥ 40 mg/dL to < 40 mg/dL) |          |            |          |          |           |
| Triglycerides        | 3%       | 5%         | 13%      | 8%       | 7%        |
| Normal to High       | (1/34)   | (2/38)     | (1/8)    | (2/26)   | (2/28)    |
| (< 150 mg/dL to ≥ 200 mg/dL) |          |            |          |          |           |

**Weight Gain**

Weight gain has been observed with atypical antipsychotic use. Clinical monitoring of weight is recommended.

**Schizophrenia Trials**

Data on mean changes in body weight and the proportion of subjects meeting a weight gain criterion of ≥ 7% of body weight from the three placebo-controlled, 6-week, fixed-dose studies in adult subjects are presented in Table 3a.

**Table 3a: Mean Change in Body Weight (kg) and the Proportion of Subjects with ≥ 7% Gain in Body Weight from Three Placebo-Controlled, 6-Week, Fixed-Dose Studies in Adult Subjects with Schizophrenia**

<table>
<thead>
<tr>
<th></th>
<th>Placebo</th>
<th>3 mg/day</th>
<th>6 mg/day</th>
<th>9 mg/day</th>
<th>12 mg/day</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mean change from baseline (kg)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cholesterol</td>
<td>n = 39</td>
<td>n = 45</td>
<td>n = 11</td>
<td>n = 28</td>
<td>n = 32</td>
</tr>
<tr>
<td>Change from baseline</td>
<td>-7.8</td>
<td>-3.3</td>
<td>12.7</td>
<td>3</td>
<td>-1.5</td>
</tr>
<tr>
<td>LDL</td>
<td>n = 37</td>
<td>n = 40</td>
<td>n = 9</td>
<td>n = 27</td>
<td>n = 31</td>
</tr>
<tr>
<td>Change from baseline</td>
<td>-4.1</td>
<td>-3.1</td>
<td>7.2</td>
<td>2.4</td>
<td>0.6</td>
</tr>
<tr>
<td>HDL</td>
<td>n = 37</td>
<td>n = 41</td>
<td>n = 9</td>
<td>n = 27</td>
<td>n = 31</td>
</tr>
<tr>
<td>Change from baseline</td>
<td>-1.9</td>
<td>0</td>
<td>1.3</td>
<td>1.4</td>
<td>0</td>
</tr>
<tr>
<td>Triglycerides</td>
<td>n = 39</td>
<td>n = 44</td>
<td>n = 11</td>
<td>n = 28</td>
<td>n = 32</td>
</tr>
<tr>
<td>Change from baseline</td>
<td>-8.9</td>
<td>3.2</td>
<td>17.6</td>
<td>-5.4</td>
<td>3.9</td>
</tr>
</tbody>
</table>
In the uncontrolled, longer-term open-label extension studies, paliperidone extended-release tablets were associated with a mean change in weight of +1.4 kg at Week 24 (n = 63) and +2.6 kg at Week 52 (n = 302).

Weight gain in adolescent subjects with schizophrenia was assessed in a 6-week, double-blind, placebo-controlled study and an open-label extension with a median duration of exposure to paliperidone extended-release tablets of 182 days. Data on mean changes in body weight and the proportion of subjects meeting a weight gain criterion of ≥ 7% of body weight [see Clinical Studies (14.1)] from the placebo-controlled 6-week study in adolescent subjects (12 to 17 years of age) are presented in Table 3b.

Table 3b. Mean Change in Body Weight (kg) and the Proportion of Subjects with ≥ 7% Gain in Body Weight from a Placebo-Controlled 6-Week Study in Adolescent Subjects (12 to 17 years of age) with Schizophrenia

<table>
<thead>
<tr>
<th>Weight (kg) Change from baseline</th>
<th>Placebo</th>
<th>1.5 mg/day</th>
<th>3 mg/day</th>
<th>6 mg/day</th>
<th>12 mg/day</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n = 51</td>
<td>n = 54</td>
<td>n = 16</td>
<td>n = 45</td>
<td>n = 34</td>
</tr>
<tr>
<td>Weight Gain ≥ 7% increase from baseline</td>
<td>2%</td>
<td>6%</td>
<td>19%</td>
<td>7%</td>
<td>18%</td>
</tr>
</tbody>
</table>

In the open-label long-term study the proportion of total subjects treated with paliperidone extended-release tablets with an increase in body weight of ≥ 7% from baseline was 33%. When treating adolescent patients with paliperidone extended-release tablets, weight gain should be assessed against that expected with normal growth. When taking into consideration the median duration of exposure to paliperidone extended-release tablets in the open-label study (182 days) along with expected normal growth in this population based on age and gender, an assessment of standardized scores relative to normative data provides a more clinically relevant measure of changes in weight. The mean change from open-label baseline to endpoint in standardized score for weight was 0.1 (4% above the median for normative data). Based on comparison to the normative data, these changes are not considered to be clinically significant.

Schizoaffective Disorder Trials

In the pooled data from the two placebo-controlled, 6-week studies in adult subjects with schizoaffective disorder, a higher percentage of paliperidone extended-release tablets-treated subjects (5%) had an increase in body weight of ≥ 7% compared with placebo-treated subjects (1%). In the study that examined high- and low-dose groups, the increase in body weight of ≥ 7% was 3% in the low-dose group, 7% in the high-dose group, and 1% in the placebo group.

5.7 Hyperprolactinemia

Like other drugs that antagonize dopamine D2 receptors, paliperidone elevates prolactin levels and the elevation persists during chronic administration. Paliperidone has a prolactin-elevating effect similar to that seen with risperidone, a drug that is associated with higher levels of prolactin than other antipsychotic drugs.
Hyperprolactinemia, regardless of etiology, may suppress hypothalamic GnRH, resulting in reduced pituitary gonadotrophin secretion. This, in turn, may inhibit reproductive function by impairing gonadal steroidogenesis in both female and male patients. Galactorrhea, amenorrhea, gynecomastia, and impotence have been reported in patients receiving prolactin-elevating compounds. Long-standing hyperprolactinemia when associated with hypogonadism may lead to decreased bone density in both female and male subjects.

Tissue culture experiments indicate that approximately one-third of human breast cancers are prolactin dependent in vitro, a factor of potential importance if the prescription of these drugs is considered in a patient with previously detected breast cancer. An increase in the incidence of pituitary gland, mammary gland, and pancreatic islet cell neoplasia (mammary adenocarcinomas, pituitary and pancreatic adenomas) was observed in the risperidone carcinogenicity studies conducted in mice and rats [see Nonclinical Toxicology (13.1)] . Neither clinical studies nor epidemiologic studies conducted to date have shown an association between chronic administration of this class of drugs and tumorigenesis in humans, but the available evidence is too limited to be conclusive.

5.8 Potential for Gastrointestinal Obstruction

Because the paliperidone extended-release tablet is non-deformable and does not appreciably change in shape in the gastrointestinal tract, paliperidone extended-release tablets should ordinarily not be administered to patients with pre-existing severe gastrointestinal narrowing (pathologic or iatrogenic, for example: esophageal motility disorders, small bowel inflammatory disease, “short gut” syndrome due to adhesions or decreased transit time, past history of peritonitis, cystic fibrosis, chronic intestinal pseudoobstruction, or Meckel’s diverticulum). There have been rare reports of obstructive symptoms in patients with known strictures in association with the ingestion of drugs in non-deformable controlled-release formulations. Because of the controlled-release design of the tablet, paliperidone extended-release tablets should only be used in patients who are able to swallow the tablet whole [see Dosage and Administration (2.3) and Patient Counseling Information (17.8)] .

A decrease in transit time, e.g., as seen with diarrhea, would be expected to decrease bioavailability and an increase in transit time, e.g., as seen with gastrointestinal neuropathy, diabetic gastroparesis, or other causes, would be expected to increase bioavailability. These changes in bioavailability are more likely when the changes in transit time occur in the upper GI tract.

5.9 Orthostatic Hypotension and Syncope

Paliperidone can induce orthostatic hypotension and syncope in some patients because of its alpha-blocking activity. In pooled results of the three placebo-controlled, 6-week, fixed-dose trials in subjects with schizophrenia, syncope was reported in 0.8% (7/850) of subjects treated with paliperidone extended-release tablets (3 mg, 6 mg, 9 mg, 12 mg) compared to 0.3% (1/355) of subjects treated with placebo. Paliperidone extended-release tablets should be used with caution in patients with known cardiovascular disease (e.g., heart failure, history of myocardial infarction or ischemia, conduction abnormalities), cerebrovascular disease, or conditions that predispose the patient to hypotension (e.g., dehydration, hypovolemia, and treatment with antihypertensive medications). Monitoring of orthostatic vital signs should be considered in patients who are vulnerable to hypotension.

5.10 Leukopenia, Neutropenia, and Agranulocytosis

Class Effect

In clinical trial and/or postmarketing experience, events of leukopenia/neutropenia have been reported temporally related to antipsychotic agents, including paliperidone extended-release tablets. Agranulocytosis has also been reported.

Possible risk factors for leukopenia/neutropenia include pre-existing low white blood cell count (WBC) and history of drug-induced leukopenia/neutropenia. Patients with a history of a clinically
significant low WBC or a drug-induced leukopenia/neutropenia should have their complete blood count (CBC) monitored frequently during the first few months of therapy and discontinuation of paliperidone extended-release tablets should be considered at the first sign of a clinically significant decline in WBC in the absence of other causative factors.

Patients with clinically significant neutropenia should be carefully monitored for fever or other symptoms or signs of infection and treated promptly if such symptoms or signs occur. Patients with severe neutropenia (absolute neutrophil count < 1000/mm$^3$) should discontinue paliperidone extended-release tablets and have their WBC followed until recovery.

5.11 Potential for Cognitive and Motor Impairment

Somnolence was reported in subjects treated with paliperidone extended-release tablets [see Adverse Reactions (6.1, 6.2)]. Antipsychotics, including paliperidone extended-release tablets, have the potential to impair judgment, thinking, or motor skills. Patients should be cautioned about performing activities requiring mental alertness, such as operating hazardous machinery or operating a motor vehicle, until they are reasonably certain that paliperidone therapy does not adversely affect them.

5.12 Seizures

During premarketing clinical trials in subjects with schizophrenia (the three placebo-controlled, 6-week, fixed-dose studies and a study conducted in elderly schizophrenic subjects), seizures occurred in 0.22% of subjects treated with paliperidone extended-release tablets (3 mg, 6 mg, 9 mg, 12 mg) and 0.25% of subjects treated with placebo. Like other antipsychotic drugs, paliperidone extended-release tablets should be used cautiously in patients with a history of seizures or other conditions that potentially lower the seizure threshold. Conditions that lower the seizure threshold may be more prevalent in patients 65 years or older.

5.13 Dysphagia

Esophageal dysmotility and aspiration have been associated with antipsychotic drug use. Aspiration pneumonia is a common cause of morbidity and mortality in patients with advanced Alzheimer’s dementia. Paliperidone extended-release tablets and other antipsychotic drugs should be used cautiously in patients at risk for aspiration pneumonia.

5.14 Suicide

The possibility of suicide attempt is inherent in psychotic illnesses, and close supervision of high-risk patients should accompany drug therapy. Prescriptions for paliperidone extended-release tablets should be written for the smallest quantity of tablets consistent with good patient management in order to reduce the risk of overdose.

5.15 Priapism

Drugs with alpha-adrenergic blocking effects have been reported to induce priapism. Priapism has been reported with paliperidone extended-release tablets during postmarketing surveillance. Severe priapism may require surgical intervention.

5.16 Thrombotic Thrombocytopenic Purpura (TTP)

No cases of TTP were observed during clinical studies with paliperidone. Although cases of TTP have been reported in association with risperidone administration, the relationship to risperidone therapy is unknown.

5.17 Body Temperature Regulation

Disruption of the body’s ability to reduce core body temperature has been attributed to antipsychotic agents. Appropriate care is advised when prescribing paliperidone extended-release tablets to patients...
who will be experiencing conditions which may contribute to an elevation in core body temperature, e.g., exercising strenuously, exposure to extreme heat, receiving concomitant medication with anticholinergic activity, or being subject to dehydration.

5.18 Antiemetic Effect

An antiemetic effect was observed in preclinical studies with paliperidone. This effect, if it occurs in humans, may mask the signs and symptoms of overdosage with certain drugs or of conditions such as intestinal obstruction, Reye’s syndrome, and brain tumor.

5.19 Use in Patients with Concomitant Illness

Clinical experience with paliperidone extended-release tablets in patients with certain concomitant illnesses is limited [see Clinical Pharmacology (12.3)].

Patients with Parkinson’s Disease or Dementia with Lewy Bodies are reported to have an increased sensitivity to antipsychotic medication. Manifestations of this increased sensitivity include confusion, obtundation, postural instability with frequent falls, extrapyramidal symptoms, and clinical features consistent with the neuroleptic malignant syndrome.

Paliperidone extended-release tablets have not been evaluated or used to any appreciable extent in patients with a recent history of myocardial infarction or unstable heart disease. Patients with these diagnoses were excluded from premarketing clinical trials. Because of the risk of orthostatic hypotension with paliperidone extended-release tablets, caution should be observed in patients with known cardiovascular disease [see Warnings and Precautions (5.9)].

5.20 Monitoring: Laboratory Tests

No specific laboratory tests are recommended.

6 ADVERSE REACTIONS

6.1 Overall Adverse Reaction Profile

The following adverse reactions are discussed in more detail in other sections of the labeling:

- Increased mortality in elderly patients with dementia-related psychosis [see Boxed Warning and Warnings and Precautions (5.1)]
- Cerebrovascular adverse reactions, including stroke, in elderly patients with dementia-related psychosis [see Warnings and Precautions (5.2)]
- Neuroleptic malignant syndrome [see Warnings and Precautions (5.3)]
- QT prolongation [see Warnings and Precautions (5.4)]
- Tardive dyskinesia [see Warnings and Precautions (5.5)]
- Metabolic changes [see Warnings and Precautions (5.6)]
- Hyperprolactinemia [see Warnings and Precautions (5.7)]
- Potential for gastrointestinal obstruction [see Warnings and Precautions (5.8)]
- Orthostatic hypotension and syncope [see Warnings and Precautions (5.9)]
- Leukopenia, neutropenia, and agranulocytosis [see Warnings and Precautions (5.10)]
- Potential for cognitive and motor impairment [see Warnings and Precautions (5.11)]
- Seizures [see Warnings and Precautions (5.12)]
- Dysphagia [see Warnings and Precautions (5.13)]
- Suicide [see Warnings and Precautions (5.14)]
- Priapism [see Warnings and Precautions (5.15)]
- Thrombotic thrombocytopenic purpura (TTP) [see Warnings and Precautions (5.16)]
- Disruption of body temperature regulation [see Warnings and Precautions (5.17)]
- Antiemetic effect [see Warnings and Precautions (5.18)]
Increased sensitivity in patients with Parkinson’s disease or those with dementia with Lewy bodies [see Warnings and Precautions (5.19)]

Diseases or conditions that could affect metabolism or hemodynamic responses [see Warnings and Precautions (5.19)]

The most common adverse reactions in clinical trials in adult subjects with schizophrenia (reported in 5% or more of subjects treated with paliperidone extended-release tablets and at least twice the placebo rate in any of the dose groups) were extrapyramidal symptoms, tachycardia, and akathisia. The most common adverse reactions in clinical trials in adult patients with schizoaffective disorder (reported in 5% or more of subjects treated with paliperidone extended-release tablets and at least twice the placebo rate) were extrapyramidal symptoms, somnolence, dyspepsia, constipation, weight increased, and nasopharyngitis.

The most common adverse reactions that were associated with discontinuation from clinical trials in adult subjects with schizophrenia (causing discontinuation in 2% of paliperidone extended-release tablets-treated subjects) were nervous system disorders. The most common adverse reactions that were associated with discontinuation from clinical trials in adult subjects with schizoaffective disorder were gastrointestinal disorders, which resulted in discontinuation in 1% of paliperidone extended-release tablets-treated subjects. [See Adverse Reactions (6.4)].

The safety of paliperidone extended-release tablets was evaluated in 1,205 adult subjects with schizophrenia who participated in three placebo-controlled, 6-week, double-blind trials, of whom 850 subjects received paliperidone extended-release tablets at fixed doses ranging from 3 mg to 12 mg once daily. The information presented in this section was derived from pooled data from these three trials. Additional safety information from the placebo-controlled phase of the long-term maintenance study, in which subjects received paliperidone extended-release tablets at daily doses within the range of 3 mg to 15 mg (n = 104), is also included.

The safety of paliperidone extended-release tablets was evaluated in 150 adolescent subjects 12 to 17 years of age with schizophrenia who received paliperidone extended-release tablets in the dose range of 1.5 mg to 12 mg/day in a 6-week, double-blind, placebo-controlled trial.

The safety of paliperidone extended-release tablets was also evaluated in 622 adult subjects with schizoaffective disorder who participated in two placebo-controlled, 6-week, double-blind trials. In one of these trials, 206 subjects were assigned to one of two dose levels of paliperidone extended-release tablets: 6 mg with the option to reduce to 3 mg (n = 108) or 12 mg with the option to reduce to 9 mg (n = 98) once daily. In the other study, 214 subjects received flexible doses of paliperidone extended-release tablets (3 mg to 12 mg once daily). Both studies included subjects who received paliperidone extended-release tablets either as monotherapy or as an adjunct to mood stabilizers and/or antidepressants. Adverse events during exposure to study treatment were obtained by general inquiry and recorded by clinical investigators using their own terminology. Consequently, to provide a meaningful estimate of the proportion of individuals experiencing adverse events, events were grouped in standardized categories using MedDRA terminology.

Throughout this section, adverse reactions are reported. Adverse reactions are adverse events that were considered to be reasonably associated with the use of paliperidone extended-release tablets (adverse drug reactions) based on the comprehensive assessment of the available adverse event information. A causal association for paliperidone extended-release tablets often cannot be reliably established in individual cases. Further, because clinical trials are conducted under widely varying conditions, adverse reaction rates observed in the clinical trials of a drug cannot be directly compared to rates in the clinical trials of another drug and may not reflect the rates observed in clinical practice.

6.2 Commonly-Observed Adverse Reactions in Double-Blind, Placebo-Controlled Clinical Trials – Schizophrenia in Adults and Adolescents

Adult Patients with Schizophrenia
Table 4 enumerates the pooled incidences of adverse reactions reported in the three placebo-controlled, 6-week, fixed-dose studies in adults, listing those that occurred in 2% or more of subjects treated with paliperidone extended-release tablets in any of the dose groups, and for which the incidence in paliperidone extended-release tablets-treated subjects in any of the dose groups was greater than the incidence in subjects treated with placebo.

Table 4: Adverse Reactions Reported by ≥ 2% of Paliperidone Extended-Release Tablets-Treated Adult Subjects with Schizophrenia in Three Short-Term, Fixed-Dose, Placebo-Controlled Clinical Trials *

<table>
<thead>
<tr>
<th>Body System or Organ Class</th>
<th>Percentage of Patients with adverse reactions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Placebo (N = 355) 3 mg once daily (N = 127) 6 mg once daily (N = 235) 9 mg once daily (N = 246) 12 mg once daily (N = 242)</td>
</tr>
<tr>
<td><strong>Total percentage of subjects with adverse reactions</strong></td>
<td>37 48 47 53 59</td>
</tr>
<tr>
<td><strong>Cardiac disorders</strong></td>
<td></td>
</tr>
<tr>
<td>Atroventricular block first degree</td>
<td>1 2 0 2 1</td>
</tr>
<tr>
<td>Bundle branch block</td>
<td>2 3 1 3 &lt; 1</td>
</tr>
<tr>
<td>Sinus arrhythmia</td>
<td>0 2 1 1 &lt; 1</td>
</tr>
<tr>
<td>Tachycardia</td>
<td>7 14 12 12 14</td>
</tr>
<tr>
<td><strong>Gastrointestinal disorders</strong></td>
<td></td>
</tr>
<tr>
<td>Abdominal pain upper</td>
<td>1 1 3 2 2</td>
</tr>
<tr>
<td>Dry mouth</td>
<td>1 2 3 1 3</td>
</tr>
<tr>
<td>Salivary hypersecretion</td>
<td>&lt; 1 0 &lt; 1 1 4</td>
</tr>
<tr>
<td><strong>General disorders</strong></td>
<td></td>
</tr>
<tr>
<td>Asthenia</td>
<td>1 2 &lt; 1 2 2</td>
</tr>
<tr>
<td>Fatigue</td>
<td>1 2 1 2 2</td>
</tr>
<tr>
<td><strong>Nervous system disorders</strong></td>
<td></td>
</tr>
<tr>
<td>Akathisia</td>
<td>4 4 3 8 10</td>
</tr>
<tr>
<td>Dizziness</td>
<td>4 6 5 4 5</td>
</tr>
<tr>
<td>Extrapyramidal symptoms</td>
<td>8 10 7 20 18</td>
</tr>
<tr>
<td>Headache</td>
<td>12 11 12 14 14</td>
</tr>
<tr>
<td>Somnolence</td>
<td>7 6 9 10 11</td>
</tr>
<tr>
<td><strong>Vascular disorders</strong></td>
<td></td>
</tr>
<tr>
<td>Orthostatic hypotension</td>
<td>1 2 1 2 4</td>
</tr>
</tbody>
</table>

* Table includes adverse reactions that were reported in 2% or more of subjects in any of the paliperidone extended-release tablets dose groups and which occurred at greater incidence than in the placebo group. Data are pooled from three studies; one study included once daily paliperidone extended-release tablets doses of 3 mg and 9 mg, the second study included 6 mg, 9 mg, and 12 mg, and the third study included 6 mg and 12 mg [see Clinical Studies (14)]. Extrapyramidal symptoms includes the terms dyskinesia, dystonia, extrapyramidal disorder, hypertonia, muscle rigidity, oculogyration, parkinsonism, and tremor. Somnolence includes the terms sedation and somnolence. Tachycardia includes the terms tachycardia, sinus tachycardia, and heart rate increased. Adverse reactions for which the paliperidone extended-release tablets incidence was equal to or less than placebo are not listed in the table, but included the following: vomiting.

Adolescent Patients with Schizophrenia
Table 5 lists the adverse reactions reported in a fixed-dose, placebo-controlled study in adolescent subjects 12 to 17 years of age with schizophrenia, listing those that occurred in 2% or more of subjects treated with paliperidone extended-release tablets in any of the dose groups, and for which the incidence in paliperidone extended-release tablets-treated subjects in any of the dose groups was greater than the incidence in subjects treated with placebo.

<table>
<thead>
<tr>
<th>Body System or Organ Class</th>
<th>Placebo (N = 51)</th>
<th>1.5 mg once daily (N = 54)</th>
<th>3 mg once daily (N = 16)</th>
<th>6 mg once daily (N = 45)</th>
<th>12 mg once daily (N = 35)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dictionary-Derived Term</td>
<td>Percentage of Patients with adverse reactions</td>
<td>43</td>
<td>37</td>
<td>50</td>
<td>58</td>
</tr>
<tr>
<td><strong>Cardiac disorders</strong></td>
<td>Tachycardia</td>
<td>0</td>
<td>0</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td><strong>Eye disorders</strong></td>
<td>Vision blurred</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Gastrointestinal disorders</strong></td>
<td>Dry mouth</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Salivary hypersecretion</td>
<td>0</td>
<td>2</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Swollen tongue</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Vomiting</td>
<td>10</td>
<td>0</td>
<td>6</td>
<td>11</td>
</tr>
<tr>
<td><strong>General disorders</strong></td>
<td>Asthenia</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Fatigue</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td><strong>Infections and infestations</strong></td>
<td>Nasopharyngitis</td>
<td>2</td>
<td>4</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td><strong>Investigations</strong></td>
<td>Weight increased</td>
<td>0</td>
<td>7</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td><strong>Nervous system disorders</strong></td>
<td>Akathisia</td>
<td>0</td>
<td>4</td>
<td>6</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Dizziness</td>
<td>0</td>
<td>2</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Extrapyramidal symptoms</td>
<td>0</td>
<td>4</td>
<td>19</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>Headache</td>
<td>4</td>
<td>9</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Lethargy</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Somnolence</td>
<td>4</td>
<td>9</td>
<td>13</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Tongue paralysis</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Psychiatric disorders</strong></td>
<td>Anxiety</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td><strong>Reproductive system and breast disorders</strong></td>
<td>Amenorrhea</td>
<td>0</td>
<td>0</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Galactorrhea</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Gynecomastia</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Respiratory, thoracic and</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
mediastinal disorders

| Epistaxis | 0 | 0 | 0 | 2 | 0 |

* Table includes adverse reactions that were reported in 2% or more of subjects in any of the paliperidone extended-release tablets dose groups and which occurred at greater incidence than in the placebo group. Extrapyramidal symptoms includes the terms oculogyric crisis, muscle rigidity, musculoskeletal stiffness, nuchal rigidity, torticollis, trismus, bradykinesia, cogwheel rigidity, dyskinesia, dystonia, extrapyramidal disorder, hypertonia, hypokinesia, muscle contractions involuntary, parkinsonian gait, parkinsonism, tremor, and restlessness. Somnolence includes the terms somnolence, sedation, and hypersomnia. Insomnia includes the terms insomnia and initial insomnia. Tachycardia includes the terms tachycardia, sinus tachycardia, and heart rate increased. Hypertension includes the terms hypertension and blood pressure increased. Gynecomastia includes the terms gynecomastia and breast swelling.

6.3 Commonly-Observed Adverse Reactions in Double-Blind, Placebo-Controlled Clinical Trials – Schizoaffective Disorder in Adults

Table 6 enumerates the pooled incidences of adverse reactions reported in the two placebo-controlled 6-week studies in adult subjects, listing those that occurred in 2% or more of subjects treated with paliperidone extended-release tablets and for which the incidence in paliperidone extended-release tablets-treated subjects was greater than the incidence in subjects treated with placebo.

Table 6: Adverse Drug Reactions Reported by ≥ 2% of Paliperidone Extended-Release Tablets-Treated Adult Subjects with Schizoaffective Disorder in Two Double-Blind, Placebo-Controlled Clinical Trials

<table>
<thead>
<tr>
<th>Body System or Organ Class</th>
<th>Placebo (N = 202)</th>
<th>Paliperidone Extended-release Tablets 3 mg to 6 mg once daily fixed-dose range (N = 108)</th>
<th>Paliperidone Extended-release Tablets 9 mg to 12 mg once daily fixed-dose range (N = 98)</th>
<th>Paliperidone Extended-release Tablets 3 mg to 12 mg once daily flexible dose (N = 214)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total percentage of subjects with adverse reactions</td>
<td>32</td>
<td>48</td>
<td>50</td>
<td>43</td>
</tr>
<tr>
<td>Cardiac disorders</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Tachycardia</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Gastrointestinal disorders</td>
<td>Constipation</td>
<td>2</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Abdominal discomfort/abdominal pain upper</td>
<td>6</td>
<td>8</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>Nausea</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Stomach discomfort</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>&lt; 1</td>
</tr>
<tr>
<td>General disorders</td>
<td>Ashtenia</td>
<td>1</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Infections and Infestations</td>
<td>Nasopharyngitis</td>
<td>0</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Rhinitis</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Upper respiratory tract infection</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Condition</td>
<td>Monotherapy</td>
<td>Paliperidone Extended-Release Tablets</td>
<td>Adjunctive Therapy</td>
<td>Placebo</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>-------------</td>
<td>--------------------------------------</td>
<td>--------------------</td>
<td>---------</td>
</tr>
<tr>
<td>Weight increased</td>
<td>1</td>
<td>5</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Metabolism and nutrition disorders</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decreased appetite</td>
<td>&lt; 1</td>
<td>1</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Increased appetite</td>
<td>&lt; 1</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Musculoskeletal and connective tissue disorders</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Back pain</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Myalgia</td>
<td>&lt; 1</td>
<td>2</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Nervous system disorders</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Akathisia</td>
<td>4</td>
<td>4</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Dysarthria</td>
<td>0</td>
<td>1</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Extrapyramidal symptoms</td>
<td>8</td>
<td>20</td>
<td>17</td>
<td>12</td>
</tr>
<tr>
<td>Somnolence</td>
<td>5</td>
<td>12</td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td>Psychiatric disorders</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sleep disorder</td>
<td>&lt; 1</td>
<td>2</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Respiratory, thoracic and mediastinal disorders</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cough</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Pharyngolaryngeal pain</td>
<td>&lt; 1</td>
<td>0</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

**Monotherapy Versus Adjunctive Therapy**

The designs of the two placebo-controlled, 6-week, double-blind trials in adult subjects with schizoaffective disorder included the option for subjects to receive antidepressants (except monoamine oxidase inhibitors) and/or mood stabilizers (lithium, valproate, or lamotrigine). In the subject population evaluated for safety, 230 (55%) subjects received paliperidone extended-release tablets as monotherapy and 190 (45%) subjects received paliperidone extended-release tablets as an adjunct to mood stabilizers and/or antidepressants. When comparing these two subpopulations, only nausea occurred at a greater frequency (≥ 3% difference) in subjects receiving paliperidone extended-release tablets as monotherapy.

**6.4 Discontinuations Due to Adverse Reactions**

**Schizophrenia Trials**

The percentages of subjects who discontinued due to adverse reactions in the three schizophrenia placebo-controlled, 6-week, fixed-dose studies in adults were 3% and 1% in paliperidone extended-release tablets-treated and placebo-treated subjects, respectively. The most common reasons for discontinuation were nervous system disorders (2% and 0% in paliperidone extended-release tablets- and placebo-treated subjects, respectively).

Among the adverse reactions in the 6-week, fixed-dose, placebo-controlled study in adolescents with schizophrenia, only dystonia led to discontinuation (< 1% of paliperidone extended-release tablets-treated subjects).

**Schizoaffective Disorder Trials**

The percentages of subjects who discontinued due to adverse reactions in the two schizoaffective disorder placebo-controlled 6-week studies in adults were 1% and < 1% in paliperidone extended-release tablets- and placebo-treated subjects, respectively. The most common reasons for discontinuation were gastrointestinal disorders (1% and 0% in paliperidone extended-release tablets- and placebo-treated subjects, respectively).
6.5 Dose-Related Adverse Reactions

**Schizophrenia Trials**

Based on the pooled data from the three placebo-controlled, 6-week, fixed-dose studies in adult subjects with schizophrenia, among the adverse reactions that occurred with a greater than 2% incidence in the subjects treated with paliperidone extended-release tablets, the incidences of the following adverse reactions increased with dose: somnolence, orthostatic hypotension, akathisia, dystonia, extrapyramidal disorder, hypertonia, parkinsonism, and salivary hypersecretion. For most of these, the increased incidence was seen primarily at the 12 mg dose, and, in some cases, the 9 mg dose.

In the 6-week, fixed-dose, placebo-controlled study in adolescents with schizophrenia, among the adverse reactions that occurred with > 2% incidence in the subjects treated with paliperidone extended-release tablets, the incidences of the following adverse reactions increased with dose: tachycardia, akathisia, extrapyramidal symptoms, somnolence, and headache.

**Schizoaffective Disorder Trials**

In a placebo-controlled, 6-week, high- and low-dose study in adult subjects with schizoaffective disorder, akathisia, dystonia, dysarthria, myalgia, nasopharyngitis, rhinitis, cough, and pharyngolaryngeal pain occurred more frequently (i.e., a difference of at least 2%) in subjects who received higher doses of paliperidone extended-release tablets compared with subjects who received lower doses.

6.6 Demographic Differences

An examination of population subgroups in the three placebo-controlled, 6-week, fixed-dose studies in adult subjects with schizophrenia and in the two placebo-controlled, 6-week studies in adult subjects with schizoaffective disorder did not reveal any evidence of clinically relevant differences in safety on the basis of gender or race alone; there was also no difference on the basis of age [see Use in Specific Populations (8.5)].

6.7 Extrapyramidal Symptoms (EPS)

Pooled data from the three placebo-controlled, 6-week, fixed-dose studies in adult subjects with schizophrenia provided information regarding treatment-emergent EPS. Several methods were used to measure EPS: (1) the Simpson-Angus global score (mean change from baseline) which broadly evaluates Parkinsonism, (2) the Barnes Akathisia Rating Scale global clinical rating score (mean change from baseline) which evaluates akathisia, (3) use of anticholinergic medications to treat emergent EPS (Table 7), and (4) incidence of spontaneous reports of EPS (Table 8). For the Simpson-Angus Scale, spontaneous EPS reports and use of anticholinergic medications, there was a dose-related increase observed for the 9 mg and 12 mg doses. There was no difference observed between placebo and paliperidone extended-release tablets 3 mg and 6 mg doses for any of these EPS measures.

### Table 7: Treatment-Emergent Extrapyramidal Symptoms (EPS) Assessed by Incidence of Ratings Scales and Use of Anticholinergic Medication – Schizophrenia Studies in Adults

<table>
<thead>
<tr>
<th>EPS Group</th>
<th>Placebo (N = 355)</th>
<th>3 mg once daily (N = 127)</th>
<th>6 mg once daily (N = 235)</th>
<th>9 mg once daily (N = 246)</th>
<th>12 mg once daily (N = 242)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parkinsonism*</td>
<td>9</td>
<td>11</td>
<td>3</td>
<td>15</td>
<td>14</td>
</tr>
<tr>
<td>Akathisia†</td>
<td>6</td>
<td>6</td>
<td>4</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>Use of anticholinergic</td>
<td>10</td>
<td>10</td>
<td>9</td>
<td>22</td>
<td>22</td>
</tr>
</tbody>
</table>


Table 8: Treatment-Emergent Extrapyramidal Symptoms (EPS)-Related Adverse Events by MedDRA Preferred Term – Schizophrenia Studies in Adults

<table>
<thead>
<tr>
<th>EPS Group</th>
<th>Placebo (N = 355)</th>
<th>3 mg once daily (N = 127)</th>
<th>6 mg once daily (N = 235)</th>
<th>9 mg once daily (N = 246)</th>
<th>12 mg once daily (N = 242)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall percentage of patients with EPS-related AE</td>
<td>11</td>
<td>13</td>
<td>10</td>
<td>25</td>
<td>26</td>
</tr>
<tr>
<td>Dyskinesia</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>Dystonia</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Hyperkinesia</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Parkinsonism</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>Tremor</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>3</td>
</tr>
</tbody>
</table>

Dyskinesia group includes: Dyskinesia, extrapyramidal disorder, muscle twitching, tardive dyskinesia
Dystonia group includes: Dystonia, muscle spasms, oculogyration, trismus
Hyperkinesia group includes: Akathisia, hyperkinesia
Parkinsonism group includes: Bradykinesia, cogwheel rigidity, drooling, hypertonia, hypokinesia, muscle rigidity, musculoskeletal stiffness, parkinsonism
Tremor group includes: Tremor

Compared to data from the studies in adult subjects with schizophrenia, pooled data from the two placebo-controlled 6-week studies in adult subjects with schizoaffective disorder showed similar types and frequencies of EPS as measured by rating scales, anticholinergic medication use, and spontaneous reports of EPS-related adverse events. For subjects with schizoaffective disorder, there was no dose-related increase in EPS observed for parkinsonism with the Simpson-Angus scale or akathisia with the Barnes Akathisia Rating Scale. There was a dose-related increase observed with spontaneous EPS reports of hyperkinesia and dystonia and in the use of anticholinergic medications.

Table 9 shows the EPS data from the pooled schizoaffective disorder trials.

Table 9: Treatment-Emergent Extrapyramidal Symptoms (EPS)-Related Adverse Events by MedDRA Preferred Term – Schizoaffective Disorder Studies in Adults

<table>
<thead>
<tr>
<th>EPS Group</th>
<th>Placebo (N = 202)</th>
<th>3 mg to 6 mg once daily fixed-dose range (N = 108)</th>
<th>9 mg to 12 mg once daily fixed-dose range (N = 98)</th>
<th>3 mg to 12 mg once daily flexible dose (N = 214)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall percentage of patients with EPS-related AE</td>
<td>11</td>
<td>23</td>
<td>22</td>
<td>17</td>
</tr>
</tbody>
</table>
Dyskinesia group includes: Dyskinesia, muscle twitching
Dystonia group includes: Dystonia, muscle spasms, oculogyration
Hyperkinesia group includes: Akathisia, hyperkinesia, restlessness
Parkinsonism group includes: Bradykinesia, drooling, hypertonia, muscle rigidity, muscle tightness, musculoskeletal stiffness, parkinsonian gait, parkinsonism
Tremor group includes: Tremor

The incidences of EPS-related adverse events in the adolescent schizophrenia studies showed a similar dose-related pattern to those in the adult studies. There were notably higher incidences of dystonia, hyperkinesia, tremor, and parkinsonism in the adolescent population as compared to the adult studies (Table 10).

Table 10. Treatment-Emergent Extrapyramidal Symptoms (EPS)-Related Adverse Events by MedDRA Preferred Term – Schizophrenia Studies in Adolescent Subjects

<table>
<thead>
<tr>
<th>EPS Group</th>
<th>Placebo (N = 51)</th>
<th>1.5 mg once daily (N = 54)</th>
<th>3 mg once daily (N = 16)</th>
<th>6 mg once daily (N = 45)</th>
<th>12 mg once daily (N = 35)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall percentage of patients with EPS-related AE</td>
<td>0</td>
<td>6</td>
<td>25</td>
<td>22</td>
<td>40</td>
</tr>
<tr>
<td>Hyperkinesia</td>
<td>0</td>
<td>4</td>
<td>6</td>
<td>11</td>
<td>17</td>
</tr>
<tr>
<td>Dystonia</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>11</td>
<td>14</td>
</tr>
<tr>
<td>Tremor</td>
<td>0</td>
<td>2</td>
<td>6</td>
<td>7</td>
<td>11</td>
</tr>
<tr>
<td>Parkinsonism</td>
<td>0</td>
<td>0</td>
<td>6</td>
<td>2</td>
<td>14</td>
</tr>
<tr>
<td>Dyskinesia</td>
<td>0</td>
<td>2</td>
<td>6</td>
<td>2</td>
<td>6</td>
</tr>
</tbody>
</table>

Dystonia group includes: Akathisia
Dystonia group includes: Dystonia, muscle contracture, oculogyric crisis, tongue paralysis, torticollis
Tremor group includes: Tremor
Parkinsonism group includes: Cogwheel rigidity, extrapyramidal disorder, muscle rigidity
Dyskinesia group includes: Dyskinesia, muscle contractions involuntary

**Dystonia**

**Class Effect**

Symptoms of dystonia, prolonged abnormal contractions of muscle groups, may occur in susceptible individuals during the first few days of treatment. Dystonic symptoms include: spasm of the neck muscles, sometimes progressing to tightness of the throat, swallowing difficulty, difficulty breathing, and/or protrusion of the tongue. While these symptoms can occur at low doses, they occur more frequently and with greater severity with high potency and at higher doses of first generation antipsychotic drugs. An elevated risk of acute dystonia is observed in males and younger age groups.

6.8 Laboratory Test Abnormalities
In the pooled data from the three placebo-controlled, 6-week, fixed-dose studies in adult subjects with schizophrenia and from the two placebo-controlled, 6-week studies in adult subjects with schizoaffective disorder, between-group comparisons revealed no medically important differences between paliperidone extended-release tablets and placebo in the proportions of subjects experiencing potentially clinically significant changes in routine serum chemistry, hematology, or urinalysis parameters. Similarly, there were no differences between paliperidone extended-release tablets and placebo in the incidence of discontinuations due to changes in hematology, urinalysis, or serum chemistry, including mean changes from baseline in fasting glucose, insulin, c-peptide, triglyceride, HDL, LDL, and total cholesterol measurements. However, paliperidone extended-release tablets were associated with increases in serum prolactin [see Warnings and Precautions (5.7)].

6.9 Other Adverse Reactions Observed During Premarketing Evaluation of Paliperidone Extended-Release Tablets

The following additional adverse reactions occurred in < 2% of paliperidone extended-release tablets-treated subjects in the above schizophrenia and schizoaffective disorder clinical trial datasets. The following also includes additional adverse reactions reported at any frequency by paliperidone extended-release tablets-treated subjects who participated in other clinical studies.

**Cardiac Disorders:** bradycardia, palpitations

**Eye Disorders:** eye movement disorder

**Gastrointestinal Disorders:** flatulence

**General Disorders:** edema

**Immune System Disorders:** anaphylactic reaction

**Infections and Infestations:** urinary tract infection

**Investigations:** alanine aminotransferase increased, aspartate aminotransferase increased

**Musculoskeletal and Connective Tissue Disorders:** arthralgia, pain in extremity

**Nervous System Disorders:** opisthotonus

**Psychiatric Disorders:** agitation, insomnia, nightmare

**Reproductive System and Breast Disorders:** breast discomfort, menstruation irregular, retrograde ejaculation

**Respiratory, Thoracic and Mediastinal Disorders:** nasal congestion

**Skin and Subcutaneous Tissue Disorders:** pruritus, rash

**Vascular Disorders:** hypertension

The safety of paliperidone extended-release tablets was also evaluated in a long-term trial designed to assess the maintenance of effect with paliperidone extended-release tablets in adults with schizophrenia [see Clinical Studies (14)]. In general, adverse reaction types, frequencies, and severities during the initial 14-week open-label phase of this study were comparable to those observed in the 6-week, placebo-controlled, fixed-dose studies. Adverse reactions reported during the long-term double-blind phase of this study were similar in type and severity to those observed in the initial 14-week open-label phase.

6.10 Postmarketing Experience

The following adverse reactions have been identified during postapproval use of paliperidone extended-release tablets, because these reactions were reported voluntarily from a population of uncertain size, it is not possible to reliably estimate their frequency: angioedema, ileus, priapism, swollen tongue, tardive dyskinesia, urinary incontinence, urinary retention.
6.11 Adverse Reactions Reported with Risperidone

Paliperidone is the major active metabolite of risperidone. Adverse reactions reported with risperidone can be found in the ADVERSE REACTIONS section of the risperidone package insert.

7 DRUG INTERACTIONS

7.1 Potential for Paliperidone Extended-Release Tablets to Affect Other Drugs

Given the primary CNS effects of paliperidone [see Adverse Reactions (6.1, 6.2)], paliperidone extended-release tablets should be used with caution in combination with other centrally acting drugs and alcohol. Paliperidone may antagonize the effect of levodopa and other dopamine agonists.

Because of its potential for inducing orthostatic hypotension, an additive effect may be observed when paliperidone extended-release tablets are administered with other therapeutic agents that have this potential [see Warnings and Precautions (5.9)].

Paliperidone is not expected to cause clinically important pharmacokinetic interactions with drugs that are metabolized by cytochrome P450 isozymes. In vitro studies in human liver microsomes showed that paliperidone does not substantially inhibit the metabolism of drugs metabolized by cytochrome P450 isozymes, including CYP1A2, CYP2A6, CYP2C8/9/10, CYP2D6, CYP2E1, CYP3A4, and CYP3A5. Therefore, paliperidone is not expected to inhibit clearance of drugs that are metabolized by these metabolic pathways in a clinically relevant manner. Paliperidone is also not expected to have enzyme inducing properties.

Paliperidone is a weak inhibitor of P-glycoprotein (P-gp) at high concentrations. No in vivo data are available and the clinical relevance is unknown.

Pharmacokinetic interaction between lithium and paliperidone is unlikely.

In a drug interaction study, co-administration of paliperidone extended-release tablets (12 mg once daily for 5 days) with divalproex sodium extended-release tablets (500 mg to 2000 mg once daily) did not affect the steady-state pharmacokinetics (AUC and Cmax) of valproate in 13 patients stabilized on valproate. In a clinical study, subjects on stable doses of valproate had comparable valproate average plasma concentrations when paliperidone extended-release tablets 3 to 15 mg/day were added to their existing valproate treatment.

7.2 Potential for Other Drugs to Affect Paliperidone Extended-Release Tablets

Paliperidone is not a substrate of CYP1A2, CYP2A6, CYP2C9, and CYP2C19, so that an interaction with inhibitors or inducers of these isozymes is unlikely. While in vitro studies indicate that CYP2D6 and CYP3A4 may be minimally involved in paliperidone metabolism, in vivo studies do not show decreased elimination by these isozymes and they contribute to only a small fraction of total body clearance. In vitro studies have shown that paliperidone is a P-gp substrate.

Co-administration of paliperidone extended-release tablets 6 mg once daily with carbamazepine, a strong inducer of both CYP3A4 and P-glycoprotein (P-gp), at 200 mg twice daily caused a decrease of approximately 37% in the mean steady-state Cmax and AUC of paliperidone. This decrease is caused, to a substantial degree, by a 35% increase in renal clearance of paliperidone. A minor decrease in the amount of drug excreted unchanged in the urine suggests that there was little effect on the CYP metabolism or bioavailability of paliperidone during carbamazepine co-administration. On initiation of carbamazepine, the dose of paliperidone extended-release tablets should be re-evaluated and increased if necessary. Conversely, on discontinuation of carbamazepine, the dose of paliperidone extended-release tablets should be re-evaluated and decreased if necessary.

Paliperidone is metabolized to a limited extent by CYP2D6 [see Clinical Pharmacology (12.3)]. In an interaction study in healthy subjects in which a single 3 mg dose of paliperidone extended-release tablets was administered concomitantly with 20 mg per day of paroxetine (a potent CYP2D6 inhibitor),
paliperidone exposures were on average 16% (90% CI: 4, 30) higher in CYP2D6 extensive metabolizers. Higher doses of paroxetine have not been studied. The clinical relevance is unknown.

Co-administration of a single dose of paliperidone extended-release tablets 12 mg with divalproex sodium extended-release tablets (two 500 mg tablets once daily) resulted in an increase of approximately 50% in the C_{max} and AUC of paliperidone. Dosage reduction for paliperidone extended-release tablets should be considered when paliperidone extended-release tablets are co-administered with valproate after clinical assessment.

Pharmacokinetic interaction between lithium and paliperidone is unlikely.

8 USE IN SPECIFIC POPULATIONS

8.1 Pregnancy

Teratogenic Effects. Pregnancy Category C

There are no adequate and well controlled studies of paliperidone extended-release tablets in pregnant women.

Use of first generation antipsychotic drugs during the last trimester of pregnancy has been associated with extrapyramidal symptoms in the neonate. These symptoms are usually self-limited. It is not known whether paliperidone, when taken near the end of pregnancy, will lead to similar neonatal signs and symptoms.

In animal reproduction studies, there were no increases in fetal abnormalities when pregnant rats and rabbits were treated during the period of organogenesis with up to 8 times the maximum recommended human dose of paliperidone (on a mg/m^2 basis).

In rat reproduction studies with risperidone, which is extensively converted to paliperidone in rats and humans, there were increases in pup deaths seen at oral doses which are less than the maximum recommended human dose of risperidone on a mg/m^2 basis (see risperidone package insert).

Non-Teratogenic Effects

Neonates exposed to antipsychotic drugs during the third trimester of pregnancy are at risk for extrapyramidal and/or withdrawal symptoms following delivery. There have been reports of agitation, hypertonia, hypotonia, tremor, somnolence, respiratory distress, and feeding disorder in these neonates. These complications have varied in severity; while in some cases symptoms have been self-limited, in other cases neonates have required intensive care unit support and prolonged hospitalization.

Paliperidone extended-release tablets should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.

8.3 Nursing Mothers

Paliperidone is excreted in human breast milk. The known benefits of breastfeeding should be weighed against the unknown risks of infant exposure to paliperidone.

8.4 Pediatric Use

Safety and effectiveness of paliperidone extended-release tablets in the treatment of schizophrenia were evaluated in 150 adolescent subjects 12 to 17 years of age with schizophrenia who received paliperidone extended-release tablets in the dose range of 1.5 mg to 12 mg/day in a 6-week, double-blind, placebo-controlled trial.

Safety and effectiveness of paliperidone extended-release tablets for the treatment of schizophrenia in patients < 12 years of age have not been established. Safety and effectiveness of paliperidone extended-release tablets for the treatment of schizoaffective disorder in patients < 18 years of age have not been
In a study in which juvenile rats were treated with oral paliperidone from days 24 to 73 of age, a reversible impairment of performance in a test of learning and memory was seen, in females only, with a no-effect dose of 0.63 mg/kg/day, which produced plasma levels (AUC) of paliperidone similar to those in adolescents. No other consistent effects on neurobehavioral or reproductive development were seen up to the highest dose tested (2.5 mg/kg/day), which produced plasma levels of paliperidone 2 to 3 times those in adolescents.

Juvenile dogs were treated for 40 weeks with oral risperidone, which is extensively metabolized to paliperidone in animals and humans, at doses of 0.31, 1.25, or 5 mg/kg/day. Decreased bone length and density were seen with a no-effect dose of 0.31 mg/kg/day, which produced plasma levels (AUC) of risperidone plus paliperidone which were similar to those in children and adolescents receiving the maximum recommended human dose of risperidone. In addition, a delay in sexual maturation was seen at all doses in both males and females. The above effects showed little or no reversibility in females after a 12-week drug-free recovery period.

The long-term effects of paliperidone extended-release tablets on growth and sexual maturation have not been fully evaluated in children and adolescents.

8.5 Geriatric Use

The safety, tolerability, and efficacy of paliperidone extended-release tablets were evaluated in a 6-week placebo-controlled study of 114 elderly subjects with schizophrenia (65 years of age and older, of whom 21 were 75 years of age and older). In this study, subjects received flexible doses of paliperidone extended-release tablets (3 mg to 12 mg once daily). In addition, a small number of subjects 65 years of age and older were included in the 6-week placebo-controlled studies in which adult schizophrenic subjects received fixed doses of paliperidone extended-release tablets (3 mg to 15 mg once daily) [see Clinical Studies (14)]. There were no subjects ≥ 65 years of age in the schizoaffective disorder studies.

Overall, of the total number of subjects in schizophrenia clinical studies of paliperidone extended-release tablets (n = 1,796), including those who received paliperidone extended-release tablets or placebo, 125 (7%) were 65 years of age and older and 22 (1.2%) were 75 years of age and older. No overall differences in safety or effectiveness were observed between these subjects and younger subjects, and other reported clinical experience has not identified differences in response between the elderly and younger patients, but greater sensitivity of some older individuals cannot be ruled out.

This drug is known to be substantially excreted by the kidney and clearance is decreased in patients with moderate to severe renal impairment [see Clinical Pharmacology (12.3)], who should be given reduced doses. Because elderly patients are more likely to have decreased renal function, care should be taken in dose selection, and it may be useful to monitor renal function [see Dosage and Administration (2.5)].

8.6 Renal Impairment

Dosing must be individualized according to the patient’s renal function status [see Dosage and Administration (2.5)].

8.7 Hepatic Impairment

No dosage adjustment is required in patients with mild to moderate hepatic impairment. Paliperidone extended-release tablets have not been studied in patients with severe hepatic impairment.

9 DRUG ABUSE AND DEPENDENCE

9.1 Controlled Substance

Paliperidone is not a controlled substance.
9.2 Abuse
Paliperidone has not been systematically studied in animals or humans for its potential for abuse. It is not possible to predict the extent to which a CNS-active drug will be misused, diverted, and/or abused once marketed. Consequently, patients should be evaluated carefully for a history of drug abuse, and such patients should be observed closely for signs of paliperidone extended-release tablets misuse or abuse (e.g., development of tolerance, increases in dose, drug-seeking behavior).

9.3 Dependence
Paliperidone has not been systematically studied in animals or humans for its potential for tolerance or physical dependence.

10 OVERDOSAGE

10.1 Human Experience
While experience with paliperidone overdose is limited, among the few cases of overdose reported in pre-marketing trials, the highest estimated ingestion of paliperidone extended-release tablets was 405 mg. Observed signs and symptoms included extrapyramidal symptoms and gait unsteadiness. Other potential signs and symptoms include those resulting from an exaggeration of paliperidone’s known pharmacological effects, i.e., drowsiness and somnolence, tachycardia and hypotension, and QT prolongation. Torsade de pointes and ventricular fibrillation have been reported in a patient in the setting of overdose.

Paliperidone is the major active metabolite of risperidone. Overdose experience reported with risperidone can be found in the OVERDOSAGE section of the risperidone package insert.

10.2 Management of Overdosage
There is no specific antidote to paliperidone, therefore, appropriate supportive measures should be instituted and close medical supervision and monitoring should continue until the patient recovers. Consideration should be given to the extended-release nature of the product when assessing treatment needs and recovery. Multiple drug involvement should also be considered.

In case of acute overdose, establish and maintain an airway and ensure adequate oxygenation and ventilation. Gastric lavage (after intubation if patient is unconscious) and administration of activated charcoal together with a laxative should be considered.

The possibility of obtundation, seizures, or dystonic reaction of the head and neck following overdose may create a risk of aspiration with induced emesis.

Cardiovascular monitoring should commence immediately, including continuous electrocardiographic monitoring for possible arrhythmias. If antiarrhythmic therapy is administered, disopyramide, procainamide, and quinidine carry a theoretical hazard of additive QT-prolonging effects when administered in patients with an acute overdose of paliperidone. Similarly the alpha-blocking properties of bretylium might be additive to those of paliperidone, resulting in problematic hypotension.

Hypotension and circulatory collapse should be treated with appropriate measures, such as intravenous fluids and/or sympathomimetic agents (epinephrine and dopamine should not be used, since beta stimulation may worsen hypotension in the setting of paliperidone-induced alpha blockade). In cases of severe extrapyramidal symptoms, anticholinergic medication should be administered.

11 DESCRIPTION
Paliperidone, the active ingredient in paliperidone extended-release tablets, is a psychotropic agent belonging to the chemical class of benzisoxazole derivatives. Paliperidone extended-release tablets
contain a racemic mixture of (+)- and (-)-paliperidone. The chemical name is (9 RS)-3-[2-[4-(6-Fluoro-1,2-benzisoxazol-3-yl)piperidin-1-yl]ethyl]-9-hydroxy-2-methyl-6,7,8,9-tetrahydro-4 H-pyrido[1,2-a]pyrimidin-4-one. Its molecular formula is C_{23}H_{27}FNO_{4} and its molecular weight is 426.49. The structural formula is:

![Structural formula of Paliperidone]

Paliperidone is sparingly soluble in 0.1N HCl and methylene chloride; practically insoluble in water, 0.1N NaOH, and hexane; and slightly soluble in N,N-dimethylformamide.

Paliperidone extended-release tablets are available in 1.5 mg (brown), 3 mg (white), 6 mg (light beige), and 9 mg (pink) strengths. Paliperidone extended-release tablets utilize osmotic drug-release technology [see Description (11.1)].

Inactive ingredients are butylated hydroxytoluene, cellulose acetate, colloidal silicon dioxide, hydroxypropyl cellulose, hypromellose, polyethylene glycol, polyethylene oxide, red iron oxide, sodium chloride, sodium stearyl fumarate, talc, titanium dioxide and yellow iron oxide.

The 1.5 mg tablet also contains black iron oxide and polydextrose. The 3 mg tablet also contains polyvinyl alcohol. The 6 mg tablet also contains black iron oxide, FD&C Blue No. 1 Aluminum Lake and polyvinyl alcohol. The 9 mg tablet also contains FD&C Blue No. 1 Aluminum Lake and polyvinyl alcohol.

The imprinting ink contains the following: black iron oxide, hypromellose and propylene glycol.

### 11.1 Delivery System Components and Performance

Paliperidone extended-release tablets contain a bi-layer core tablet that consists of a drug layer containing the entire amount of active ingredient in a hydrophilic polymer matrix and a push layer that contains an osmotic agent in a hydrophilic, swell-able polymer matrix. The bi-layer core tablet is coated with a release-controlling semi-permeable membrane (SPM). The SPM allows water permeation into the core without allowing components to quickly dissipate from the core. A laser-drilled aperture is present on the drug layer side of the SPM-coated tablet and is necessary for delivery. The tablets contain a water soluble cosmetic over-coating that is imprinted with an identifier. Once ingested, the cosmetic over-coating rapidly dissipates in the gastrointestinal tract. The SPM allows water to penetrate into the core as the osmotic agent in the push layer provides a driving force for water influx. Once hydrated, the swell-able polymer matrix in the push layer (high molecular weight polyethylene oxide) expands, exerting a pressure on the drug layer portion of the core tablet which forces it out of the laser-drilled aperture in a plug-flow fashion. After an initial lag time (about 2 to 4 hours), water influx into the core reaches a steady-state and the drug layer is released from the laser-drilled aperture at a constant rate for approximately 20 to 24 hours. As the release rate is controlled by the rate of water influx into the core (SPM permeability), the delivery is independent of pH or gastrointestinal motility. The biologically inert tablet core (ghost), containing residual push layer components, remains intact and is eliminated in the feces. Drug absorption is controlled by a combination of drug release from the tablet and subsequent dissolution in the gastrointestinal tract.
12 CLINICAL PHARMACOLOGY

12.1 Mechanism of Action

Paliperidone is the major active metabolite of risperidone. The mechanism of action of paliperidone, as with other drugs having efficacy in schizophrenia, is unknown, but it has been proposed that the drug’s therapeutic activity in schizophrenia is mediated through a combination of central dopamine Type 2 (D2) and serotonin Type 2 (5HT \textsubscript{2A}) receptor antagonism.

12.2 Pharmacodynamics

Paliperidone is a centrally active dopamine Type 2 (D2) antagonist and with predominant serotonin Type 2 (5HT \textsubscript{2A}) activity. Paliperidone is also active as an antagonist at \(\alpha_1\) and \(\alpha_2\) adrenergic receptors and \(\mathrm{H}_1\) histaminergic receptors, which may explain some of the other effects of the drug. Paliperidone has no affinity for cholinergic muscarinic or \(\beta_1\) - and \(\beta_2\)-adrenergic receptors. The pharmacological activity of the (+)- and (-)-paliperidone enantiomers is qualitatively and quantitatively similar in vitro.

12.3 Pharmacokinetics

Following a single dose, the plasma concentrations of paliperidone gradually rise to reach peak plasma concentration (C\textsubscript{max}) approximately 24 hours after dosing. The pharmacokinetics of paliperidone following paliperidone extended-release tablets administration are dose-proportional within the available dose range. The terminal elimination half-life of paliperidone is approximately 23 hours.

Steady-state concentrations of paliperidone are attained within 4 to 5 days of dosing with paliperidone extended-release tablets in most subjects. The mean steady-state peak:trough ratio for a paliperidone dose of 9 mg was 1.7 with a range of 1.2 to 3.1.

Following administration of paliperidone extended-release tablets, the (+) and (-) enantiomers of paliperidone interconvert, reaching an AUC (+) to (-) ratio of approximately 1.6 at steady-state.

Absorption and Distribution

The absolute oral bioavailability of paliperidone following paliperidone extended-release tablets administration is 28%.

Administration of a 12 mg paliperidone extended-release tablet to healthy ambulatory subjects with a standard high-fat/high-caloric meal gave mean C\textsubscript{max} and AUC values of paliperidone that were increased by 60% and 54%, respectively, compared with administration under fasting conditions. Clinical trials establishing the safety and efficacy of paliperidone extended-release tablets were carried out in subjects without regard to the timing of meals. While paliperidone extended-release tablets can be taken without regard to food, the presence of food at the time of paliperidone extended-release tablets administration may increase exposure to paliperidone [see Dosage and Administration (2.3)]

Based on a population analysis, the apparent volume of distribution of paliperidone is 487 L. The plasma protein binding of racemic paliperidone is 74%.

Metabolism and Elimination

Although in vitro studies suggested a role for CYP2D6 and CYP3A4 in the metabolism of paliperidone, in vivo results indicate that these isozymes play a limited role in the overall elimination of paliperidone [see Drug Interactions (7)]

One week following administration of a single oral dose of 1 mg immediate-release \textsuperscript{14}C-paliperidone to five healthy volunteers, 59% (range 51% to 67%) of the dose was excreted unchanged into urine, 32% (26% to 41%) of the dose was recovered as metabolites, and 6% to 12% of the dose was not recovered. Approximately 80% of the administered radioactivity was recovered in urine and 11% in the feces. Four primary metabolic pathways have been identified in vivo, none of which could be shown to account for more than 10% of the dose: dealkylation, hydroxylation, dehydrogenation, and
benzisoxazole scission.

Population pharmacokinetic analyses found no difference in exposure or clearance of paliperidone between extensive metabolizers and poor metabolizers of CYP2D6 substrates.

**Special Populations**

**Renal Impairment**

The dose of paliperidone extended-release tablets should be reduced in patients with moderate or severe renal impairment [see Dosage and Administration (2.5)]. The disposition of a single dose paliperidone 3 mg extended-release tablet was studied in adult subjects with varying degrees of renal function. Elimination of paliperidone decreased with decreasing estimated creatinine clearance. Total clearance of paliperidone was reduced in subjects with impaired renal function by 32% on average in mild (CrCl = 50 mL/min to < 80 mL/min), 64% in moderate (CrCl = 30 mL/min to < 50 mL/min), and 71% in severe (CrCl = 10 mL/min to < 30 mL/min) renal impairment, corresponding to an average increase in exposure (AUC) of 1.5-fold, 2.6-fold, and 4.8-fold, respectively, compared to healthy subjects. The mean terminal elimination half-life of paliperidone was 24 hours, 40 hours, and 51 hours in subjects with mild, moderate, and severe renal impairment, respectively, compared with 23 hours in subjects with normal renal function (CrCl ≥ 80 mL/min).

**Hepatic Impairment**

In a study in adult subjects with moderate hepatic impairment (Child-Pugh class B), the plasma concentrations of free paliperidone were similar to those of healthy subjects, although total paliperidone exposure decreased because of a decrease in protein binding. Consequently, no dose adjustment is required in patients with mild or moderate hepatic impairment. Paliperidone has not been studied in patients with severe hepatic impairment.

**Adolescents (12 to 17 years of age)**

Paliperidone systemic exposure in adolescents weighing ≥ 51 kg (≥ 112 lbs) was similar to that in adults. In adolescents weighing < 51 kg (< 112 lbs), a 23% higher exposure was observed; this is considered not to be clinically significant. Age did not influence the paliperidone exposure.

**Elderly**

No dosage adjustment is recommended based on age alone. However, dose adjustment may be required because of age-related decreases in creatinine clearance [see Renal Impairment above and Dosage and Administration (2.1, 2.5)].

**Race**

No dosage adjustment is recommended based on race. No differences in pharmacokinetics were observed in a pharmacokinetic study conducted in Japanese and Caucasians.

**Gender**

No dosage adjustment is recommended based on gender. No differences in pharmacokinetics were observed in a pharmacokinetic study conducted in men and women.

**Smoking**

No dosage adjustment is recommended based on smoking status. Based on in vitro studies utilizing human liver enzymes, paliperidone is not a substrate for CYP1A2; smoking should, therefore, not have an effect on the pharmacokinetics of paliperidone.

13 NONCLINICAL TOXICOLOGY
13.1 Carcinogenesis, Mutagenesis, Impairment of Fertility

**Carcinogenesis**

Carcinogenicity studies of paliperidone have not been performed.

Carcinogenicity studies of risperidone, which is extensively converted to paliperidone in rats, mice, and humans, were conducted in Swiss albino mice and Wistar rats. Risperidone was administered in the diet at daily doses of 0.63 mg/kg, 2.5 mg/kg, and 10 mg/kg for 18 months to mice and for 25 months to rats. A maximum tolerated dose was not achieved in male mice. There were statistically significant increases in pituitary gland adenomas, endocrine pancreas adenomas, and mammary gland adenocarcinomas. The no-effect dose for these tumors was less than or equal to the maximum recommended human dose of risperidone on a mg/m² basis (see risperidone package insert). An increase in mammary, pituitary, and endocrine pancreas neoplasms has been found in rodents after chronic administration of other antipsychotic drugs and is considered to be mediated by prolonged dopamine D₂ antagonism and hyperprolactinemia. The relevance of these tumor findings in rodents in terms of human risk is unknown [see Warnings and Precautions (5.7)].

**Mutagenesis**

No evidence of genotoxic potential for paliperidone was found in the Ames reverse mutation test, the mouse lymphoma assay, or the in vivo rat micronucleus test.

**Impairment of Fertility**

In a study of fertility, the percentage of treated female rats that became pregnant was not affected at oral doses of paliperidone of up to 2.5 mg/kg/day. However, pre- and post-implantation loss was increased, and the number of live embryos was slightly decreased, at 2.5 mg/kg, a dose that also caused slight maternal toxicity. These parameters were not affected at a dose of 0.63 mg/kg, which is half of the maximum recommended human dose on a mg/m² basis.

The fertility of male rats was not affected at oral doses of paliperidone of up to 2.5 mg/kg/day, although sperm count and sperm viability studies were not conducted with paliperidone. In a subchronic study in Beagle dogs with risperidone, which is extensively converted to paliperidone in dogs and humans, all doses tested (0.31 mg/kg to 5 mg/kg) resulted in decreases in serum testosterone and in sperm motility and concentration. Serum testosterone and sperm parameters partially recovered, but remained decreased after the last observation (two months after treatment was discontinued).

### 14 CLINICAL STUDIES

14.1 Schizophrenia

**Adults**

The acute efficacy of paliperidone extended-release tablets (3 mg to 15 mg once daily) was established in three placebo-controlled and active-controlled (olanzapine), 6-week, fixed-dose trials in non-elderly adult subjects (mean age of 37) who met DSM-IV criteria for schizophrenia. Studies were carried out in North America, Eastern Europe, Western Europe, and Asia. The doses studied among these three trials included 3 mg/day, 6 mg/day, 9 mg/day, 12 mg/day, and 15 mg/day. Dosing was in the morning without regard to meals.

Efficacy was evaluated using the Positive and Negative Syndrome Scale (PANSS), a validated multi-item inventory composed of five factors to evaluate positive symptoms, negative symptoms, disorganized thoughts, uncontrolled hostility/excitement, and anxiety/depression. Efficacy was also evaluated using the Personal and Social Performance (PSP) scale. The PSP is a validated clinician-rated scale that measures personal and social functioning in the domains of socially useful activities (e.g., work and study), personal and social relationships, self-care, and disturbing and aggressive behaviors.
In all three studies (n = 1,665), paliperidone extended-release tablets were superior to placebo on the PANSS at all doses. Mean effects at all doses were fairly similar, although the higher doses in all studies were numerically superior. Paliperidone extended-release tablets were also superior to placebo on the PSP in these trials.

An examination of population subgroups did not reveal any evidence of differential responsiveness on the basis of gender, age (there were few patients over 65), or geographic region. There were insufficient data to explore differential effects based on race.

In a longer-term trial, adult outpatients meeting DSM-IV criteria for schizophrenia who had clinically responded (defined as PANSS score ≤ 70 or ≤ 4 on pre-defined PANSS subscales, as well as having been on a stable fixed dose of paliperidone extended-release tablets for the last 2 weeks of an 8-week run-in phase) were entered into a 6-week open-label stabilization phase where they received paliperidone extended-release tablets (doses ranging from 3 mg to 15 mg once daily). After the stabilization phase, patients were randomized in a double-blind manner to either continue on paliperidone extended-release tablets at their achieved stable dose, or to placebo, until they experienced a relapse of schizophrenia symptoms. Relapse was pre-defined as significant increase in PANSS (or pre-defined PANSS subscales), hospitalization, clinically significant suicidal or homicidal ideation, or deliberate injury to self or others. An interim analysis of the data showed a significantly longer time to relapse in patients treated with paliperidone extended-release tablets compared to placebo, and the trial was stopped early because maintenance of efficacy was demonstrated.

Adolescents

The efficacy of paliperidone extended-release tablets in adolescent subjects with schizophrenia was established in a randomized, double-blind, parallel-group, placebo-controlled, 6-week study using a fixed-dose weight-based treatment group design over the dose range of 1.5 to 12 mg/day. The study was carried out in the US, India, Romania, Russia, and Ukraine, and involved subjects 12 to 17 years of age meeting DSM-IV criteria for schizophrenia, with diagnosis confirmation using the Kiddie Schedule for Affective Disorders and Schizophrenia-Present and Lifetime Version (K-SADSPCL).

Eligible subjects were randomly assigned to 1 of 4 treatment groups: a placebo group or paliperidone extended-release tablets Low, Medium, or High dose groups. Doses were administered based on body weight to minimize the risk of exposing lower-weight adolescents to high doses of paliperidone extended-release tablets. Subjects weighing between 29 kg and less than 51 kg at the baseline visit were randomly assigned to receive placebo or 1.5 mg (Low dose), 3 mg (Medium dose), or 6 mg (High dose) of paliperidone extended-release tablets daily, and subjects weighing at least 51 kg at the baseline visit were randomly assigned to receive placebo or 1.5 mg (Low dose), 6 mg (Medium dose), or 12 mg (High dose) of paliperidone extended-release tablets daily. Dosing was in the morning without regard to meals.

Efficacy was evaluated using PANSS. Overall, this study demonstrated the efficacy of paliperidone extended-release tablets in adolescents with schizophrenia in the dose range of 3 to 12 mg/day. Doses within this broad range were shown to be effective, however, there was no clear enhancement to efficacy at the higher doses, i.e., 6 mg for subjects weighing less than 51 kg and 12 mg for subjects weighing 51 kg or greater. Although paliperidone was adequately tolerated within the dose range of 3 to 12 mg/day, adverse events were dose-related.

14.2 Schizoaffective Disorder

Adults

The acute efficacy of paliperidone extended-release tablets (3 mg to 12 mg once daily) in the treatment of schizoaffective disorder was established in two placebo-controlled, 6-week trials in non-elderly adult subjects. Enrolled subjects 1) met DSM-IV criteria for schizoaffective disorder, as confirmed by the Structured Clinical Interview for DSM-IV Disorders, 2) had a Positive and Negative Syndrome
Scale (PANSS) total score of at least 60, and 3) had prominent mood symptoms as confirmed by a score of at least 16 on the Young Mania Rating Scale and/or Hamilton Rating Scale for Depression. The population included subjects with schizoaffective bipolar and depressive types. In one of these trials, efficacy was assessed in 211 subjects who received flexible doses of paliperidone extended-release tablets (3 mg to 12 mg once daily). In the other study, efficacy was assessed in 203 subjects who were assigned to one of two dose levels of paliperidone extended-release tablets: 6 mg with the option to reduce to 3 mg (n = 105) or 12 mg with the option to reduce to 9 mg (n = 98) once daily. Both studies included subjects who received paliperidone extended-release tablets either as mono therapy [no mood stabilizers and/or antidepressants (55%)] or as an adjunct to mood stabilizers and/or antidepressants (45%). The most commonly used mood stabilizers were valproate and lithium. The most commonly used antidepressants were SSRIs and SNRIs. Paliperidone extended-release tablets were dosed in the morning without regard to meals. Studies were carried out in the United States, Eastern Europe, Russia, and Asia.

Efficacy was evaluated using the PANSS, a validated multi-item inventory composed of five factors to evaluate positive symptoms, negative symptoms, disorganized thoughts, uncontrolled hostility/excitement, and anxiety/depression. As secondary outcomes, mood symptoms were evaluated using the Hamilton Depression Rating Scale (HAM-D-21) and the Young Mania Rating Scale (YMRS).

The paliperidone extended-release tablets group in the flexible-dose study (dosed between 3 and 12 mg/day, mean modal dose of 8.6 mg/day) and the higher dose group of paliperidone extended-release tablets in the two dose-level study (12 mg/day with option to reduce to 9 mg/day) were each superior to placebo in the PANSS. Numerical improvements in mood symptoms were also observed, as measured by the HAM-D-21 and YMRS. In the lower dose group of the two dose-level study (6 mg/day with option to reduce to 3 mg/day), paliperidone extended-release tablets were not significantly different from placebo as measured by the PANSS.

Taking the results of both studies together, paliperidone extended-release tablets improved the symptoms of schizoaffective disorder at endpoint relative to placebo when administered either as monotherapy or as an adjunct to mood stabilizers and/or antidepressants. An examination of population subgroups did not reveal any evidence of differential responsiveness on the basis of gender, age, or geographic region. There were insufficient data to explore differential effects based on race.

**16 HOW SUPPLIED/STORAGE AND HANDLING**

Paliperidone Extended-release Tablets are available containing 3 mg or 6 mg of paliperidone.

The 3 mg tablets are white, film-coated, round, unscored tablets imprinted with M over PD3 in black ink on one side of the tablet and blank on the other side. They are available as follows:

NDC 42292-026-20 – Unit dose blister packages of 100 (10 cards of 10 tablets each).

The 6 mg tablets are light beige, film-coated, round, unscored tablets imprinted with M over PD6 in black ink on one side of the tablet and blank on the other side. They are available as follows:

NDC 42292-027-20 – Unit dose blister packages of 100 (10 cards of 10 tablets each).

*Storage and Handling: Store at 20° to 25°C (68° to 77°F). [See USP Controlled Room Temperature.]*

*Protect from moisture.*

**17 PATIENT COUNSELING INFORMATION**

Physicians are advised to discuss the following issues with patients for whom they prescribe paliperidone extended-release tablets.

**17.1 Orthostatic Hypotension**
Patients should be advised that there is risk of orthostatic hypotension, particularly at the time of initiating treatment, re-initiating treatment, or increasing the dose [see Warnings and Precautions (5.9)].

17.2 Interference with Cognitive and Motor Performance
As paliperidone extended-release tablets have the potential to impair judgment, thinking, or motor skills, patients should be cautioned about operating hazardous machinery, including automobiles, until they are reasonably certain that paliperidone extended-release tablets therapy does not affect them adversely [see Warnings and Precautions (5.11)].

17.3 Pregnancy
Patients should be advised to notify their physician if they become pregnant or intend to become pregnant during treatment with paliperidone extended-release tablets [see Use in Specific Populations (8.1)].

17.4 Nursing
Caution should be exercised when paliperidone extended-release tablets are administered to a nursing woman. The known benefits of breastfeeding should be weighed against the unknown risks of infant exposure to paliperidone [see Use in Specific Populations (8.3)].

17.5 Concomitant Medication
Patients should be advised to inform their physicians if they are taking, or plan to take, any prescription or over-the-counter drugs, as there is a potential for interactions [see Drug Interactions (7)].

17.6 Alcohol
Patients should be advised to avoid alcohol while taking paliperidone extended-release tablets [see Drug Interactions (7.1)].

17.7 Heat Exposure and Dehydration
Patients should be advised regarding appropriate care in avoiding overheating and dehydration [see Warnings and Precautions (5.17)].

17.8 Administration
Patients should be informed that paliperidone extended-release tablets should be swallowed whole with the aid of liquids. Tablets should not be chewed, divided, or crushed. The medication is contained within a nonabsorbable shell designed to release the drug at a controlled rate. The tablet shell, along with insoluble core components, is eliminated from the body; patients should not be concerned if they occasionally notice something that looks like a tablet in their stool [see Dosage and Administration (2.3)].

Manufactured by:
Mylan Pharmaceuticals Inc.
Morgantown, WV 26505 U.S.A.

Distributed by:
Mylan Institutional Inc.
Rockford, IL 61103 U.S.A.

S-12351
6/16

PRINCIPAL DISPLAY PANEL – 3 mg
Paliperidone
Extended-release
Tablets
3 mg

100 Tablets (10 x 10)

Each film-coated tablet contains:
Paliperidone 3 mg

Usual Dosage: See accompanying prescribing information.

Tablets should be swallowed whole.
Do not divide, crush, or chew.
Paliperidone extended-release tablets should be taken once daily.

Store at 20° to 25°C (68° to 77°F).
[See USP Controlled Room Temperature.]
Protect from moisture.

Manufactured by:
Mylan Pharmaceuticals Inc.
Morgantown, WV 26505 U.S.A.

Rx only
S-12352

Packaged and Distributed by:
Mylan Institutional Inc.
Rockford, IL 61103 U.S.A.

This unit dose package is not child resistant.
For institutional use only.
Keep this and all drugs out of the reach of children.
This container provides light-resistance.
See window for lot number and expiration date.
Paliperidone Extended-release Tablets
3 mg
Tablets should be swallowed whole.
Do not divide, crush, or chew.
Paliperidone extended-release tablets should be taken once daily.

Each film-coated tablet contains:
Paliperidone 3 mg
Usual Dosage: See accompanying prescribing information.
Tablets should be swallowed whole. Do not divide, crush, or chew. Paliperidone extended-release tablets should be taken once daily.
Store at 20° to 25°C (68° to 77°F).
[See USP Controlled Room Temperature.]
Protect from moisture.
Manufactured by:
Mylan Pharmaceuticals Inc.
Morgantown, WV 26505 U.S.A.
PRINCIPAL DISPLAY PANEL – 6 mg
NDC 42292-027-20

Paliperidone
Extended-release
Tablets
6 mg

100 Tablets (10 x 10)

Each film-coated tablet contains:
Paliperidone 6 mg

Usual Dosage: See accompanying prescribing information.

Tablets should be swallowed whole.
Do not divide, crush, or chew.
Paliperidone extended-release tablets should be taken once daily.

Store at 20° to 25°C (68° to 77°F).
[See USP Controlled Room Temperature.]
Protect from moisture.

Manufactured by:
Mylan Pharmaceuticals Inc.
Morgantown, WV 26505 U.S.A.

Rx only

S-12354

Packaged and Distributed by:

Mylan Institutional Inc.
Rockford, IL 61103 U.S.A.

This unit dose package is not child resistant.
For institutional use only.
Keep this and all drugs out of the reach of children.
This container provides light-resistance.
See window for lot number and expiration date.
**PALIPERIDONE**
paliperidone tablet, film coated, extended release

### Product Information

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<thead>
<tr>
<th>Product Type</th>
<th>HUMAN PRESCRIPTION DRUG</th>
<th>Item Code (Source)</th>
<th>NDC:42292-026(NDC:0378-3979)</th>
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<tbody>
<tr>
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### Active Ingredient/Active Moiety

<table>
<thead>
<tr>
<th>Ingredient Name</th>
<th>Basis of Strength</th>
<th>Strength</th>
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<tbody>
<tr>
<td>PALIPERIDONE</td>
<td>PALIPERIDONE</td>
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<table>
<thead>
<tr>
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<tr>
<td>BUTYLATED HYDROXYTOLUENE</td>
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<tr>
<td>CELLULOSE ACETATE</td>
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Product Characteristics

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<th>Value</th>
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<td>Flavor</td>
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Packaging

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<th>Package Description</th>
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<th>Marketing End Date</th>
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<td>09/20/2016</td>
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Marketing Information

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<td>ANDA203802</td>
<td>09/20/2016</td>
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PALIPERIDONE

capiperidone tablet, film coated, extended release

Product Information

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Active Ingredient/Active Moiety

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<tbody>
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# Inactive Ingredients

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# Product Characteristics

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# Labeler

- Mylan Institutional Inc. (039615992)

Revised: 9/2016