

## HIGHLIGHTS OF PRESCRIBING INFORMATION

These highlights do not include all the information needed to use AVINZA safely and effectively. See full prescribing information for AVINZA.

AVINZA® (morphine sulfate) extended-release capsules, for oral use, CII

Initial U.S. Approval: 1941

**WARNING: ABUSE POTENTIAL, LIFE-THREATENING RESPIRATORY DEPRESSION, ACCIDENTAL EXPOSURE, and INTERACTION WITH ALCOHOL**

See full prescribing information for complete boxed warning.

- AVINZA contains pellets of morphine sulfate, a Schedule II controlled substance. Monitor for signs of misuse, abuse, and addiction during AVINZA therapy. (5.1, 9)
- Fatal respiratory depression may occur, with highest risk at initiation and with dose increases. Instruct patients on proper administration of AVINZA capsules to reduce the risk. (5.2)
- Accidental ingestion of AVINZA can result in fatal overdose of morphine, especially in children. (5.3)
- Instruct patients not to consume alcoholic beverages or use prescription or non-prescription products containing alcohol while taking AVINZA because of the risk of increased, and potentially fatal, plasma morphine levels. (5.4)

### RECENT MAJOR CHANGES

Boxed Warning	7/2012
Indications and Usage (1)	7/2012
Dosage and Administration (2)	7/2012
Contraindications (4)	7/2012
Warnings and Precautions (5)	7/2012

### INDICATIONS AND USAGE

AVINZA is an opioid agonist product indicated for the management of moderate to severe pain when a continuous, around-the-clock opioid analgesic is needed for an extended period of time. (1)

#### Limitations of Use

- AVINZA is not for use:
  - As an as-needed (prn) analgesic (1)
  - For pain that is mild or not expected to persist for an extended period of time (1)
  - For acute pain (1)
  - For postoperative pain, unless the patient is already receiving chronic opioid therapy prior to surgery, or if the postoperative pain is expected to be moderate to severe and persist for an extended period of time (1)
- AVINZA 90 mg and 120 mg capsules are only for patients in whom tolerance to an opioid of comparable potency is established. (1)

### DOSAGE AND ADMINISTRATION

- Individualize dosing based on patient's prior analgesic treatment experience, and titrate as needed to provide adequate analgesia and minimize adverse reactions. (2.1, 2.2, 2.3)
- Instruct patients to swallow AVINZA capsules intact, or to sprinkle the capsule contents on applesauce and immediately swallow without chewing. (2.4)

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- Do not abruptly discontinue AVINZA in a physically dependent patient. (2.5, 5.12)

### DOSAGE FORMS AND STRENGTHS

Capsules (morphine sulfate: 30 mg, 45 mg, 60 mg, 75 mg, 90 mg, 120 mg (morphine sulfate) (3)

### CONTRAINDICATIONS

- Significant respiratory depression (4)
- Acute or severe bronchial asthma (4)
- Known or suspected paralytic ileus (4)
- Hypersensitivity to morphine (4)

### WARNINGS AND PRECAUTIONS

- Elderly, cachectic, and debilitated patients, and patients with chronic pulmonary disease: Monitor closely because of increased risk of respiratory depression. (5.5, 5.6)
- Interaction with CNS depressants: Consider dose reduction of one or both drugs because of additive effects. (5.7, 7.2)
- Hypotensive effect: Monitor during dose initiation and titration (5.8)
- Patients with head injury or increased intracranial pressure: Monitor for sedation and respiratory depression. Avoid use of AVINZA in patients with impaired consciousness or coma susceptible to intracranial effects of CO<sub>2</sub> retention. (5.9)

### ADVERSE REACTIONS

Most common adverse reactions (≥10%) are constipation, nausea, somnolence, vomiting and headache. (6.1)

To report SUSPECTED ADVERSE REACTIONS, contact Pfizer Inc. at 1-800-438-1985 or FDA at 1-800-FDA-1088 or [www.fda.gov/medwatch](http://www.fda.gov/medwatch)

### DRUG INTERACTIONS

- Mixed agonist/antagonist opioid analgesics: Avoid use with AVINZA because they may reduce analgesic effect of AVINZA or precipitate withdrawal symptoms. (5.12, 7.3)
- Muscle relaxants: Avoid use with AVINZA because of increased risk of respiratory depression. (7.4)
- Monoamine oxidase inhibitors (MAOIs): Avoid AVINZA in patients taking MAOIs or within 14 days of stopping such treatment. (7.5)

### USE IN SPECIFIC POPULATIONS

- Pregnancy: Based on animal data, may cause fetal harm. (8.1)
- Nursing mothers: Morphine has been detected in human milk. Closely monitor infants of nursing women receiving AVINZA. (8.3)

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Revised: 11/2012

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## FULL PRESCRIBING INFORMATION

### **WARNING: ABUSE POTENTIAL, LIFE-THREATENING RESPIRATORY DEPRESSION, ACCIDENTAL EXPOSURE, and INTERACTION WITH ALCOHOL**

#### **Abuse Potential**

AVINZA<sup>®</sup> contains pellets of morphine sulfate, an opioid agonist and Schedule II controlled substance with an abuse liability similar to other opioid agonists, legal or illicit [see *Warnings and Precautions (5.1)*]. Assess each patient's risk for opioid abuse or addiction prior to prescribing AVINZA. The risk for opioid abuse is increased in patients with a personal or family history of substance abuse (including drug or alcohol abuse or addiction) or mental illness (e.g., major depressive disorder). Routinely monitor all patients receiving AVINZA for signs of misuse, abuse, and addiction during treatment [see *Drug Abuse and Dependence (9)*].

#### **Life-threatening Respiratory Depression**

Respiratory depression, including fatal cases, may occur with use of AVINZA, even when the drug has been used as recommended and not misused or abused [see *Warnings and Precautions (5.2)*]. Proper dosing and titration are essential and AVINZA should only be prescribed by healthcare professionals who are knowledgeable in the use of potent opioids for the management of chronic pain. Monitor for respiratory depression, especially during initiation of AVINZA or following a dose increase. Instruct patients to swallow AVINZA capsules whole or to sprinkle the contents of the capsule on applesauce and swallow immediately without chewing. Crushing, dissolving, or chewing the pellets within the capsule can cause rapid release and absorption of a potentially fatal dose of morphine.

#### **Accidental Exposure**

Accidental ingestion of AVINZA, especially in children, can result in a fatal overdose of morphine [see *Warnings and Precautions (5.3)*].

#### **Interaction with Alcohol**

The co-ingestion of alcohol with AVINZA may result in an increase of plasma levels and potentially fatal overdose of morphine [see *Warnings and Precautions (5.4)*]. Instruct patients not to consume alcoholic beverages or use prescription or non-prescription products that contain alcohol while on AVINZA therapy.

## 1 INDICATIONS AND USAGE

AVINZA is indicated for the management of moderate to severe pain when a continuous, around-the-clock opioid analgesic is needed for an extended period of time.

#### **Limitations of Use**

AVINZA is not for use:

- As an as-needed (prn) analgesic
- For pain that is mild or not expected to persist for an extended period of time
- For acute pain

- For postoperative pain unless the patient is already receiving chronic opioid therapy prior to surgery or if the postoperative pain is expected to be moderate to severe and persist for an extended period of time.

AVINZA 90 mg and 120 mg capsules are only for patients in whom tolerance to an opioid of comparable potency is established. Patients considered opioid-tolerant are those taking at least 60 mg of morphine daily, at least 30 mg of oral oxycodone daily, at least 8 mg of oral hydromorphone daily, or an equianalgesic dose of another opioid for a week or longer.

## **2 DOSAGE AND ADMINISTRATION**

### **2.1 Initial Dosing**

Initiate the dosing regimen for each patient individually, taking into account the patient's prior analgesic treatment experience. Monitor patients closely for respiratory depression, especially within the first 24-72 hours of initiating therapy with AVINZA [*see Warnings and Precautions (5.2)*].

Consider the following factors when selecting an initial dose of AVINZA:

- Total daily dose, potency, and any prior opioid the patient has been taking previously;
- Reliability of the relative potency estimate used to calculate the equivalent dose of morphine needed (Note: potency estimates may vary with the route of administration);
- Patient's degree of opioid experience and opioid tolerance;
- General condition and medical status of the patient;
- Concurrent medication;
- Type and severity of the patient's pain.

AVINZA is administered at a frequency of once daily (every 24 hours).

#### Use of AVINZA as the First Opioid Analgesic

Initiate AVINZA therapy with the 30 mg capsule once daily (at 24-hour intervals). Adjust the dose of AVINZA in increments not greater than 30 mg every 4 days.

#### Conversion from Other Oral Morphine Formulations to AVINZA

Patients receiving other oral morphine formulations may be converted to AVINZA by administering the patient's total daily oral morphine dose as AVINZA once-daily. AVINZA should not be given more frequently than every 24 hours.

#### Conversion from Parenteral Morphine or Other Non-Morphine Opioids (Parenteral or Oral) to AVINZA

While there are useful tables of oral and parenteral equivalents, there is substantial inter-patient variability in the relative potency of different opioid drugs and formulations. As such, it is safer to underestimate a patient's 24-hour oral morphine dose and provide rescue medication (e.g., immediate-release morphine) than to overestimate the 24-hour oral morphine dose and manage an adverse reaction. Consider the following general points:

*Parenteral to oral morphine ratio:* Between 2 to 6 mg of oral morphine may be required to provide analgesia equivalent to 1 mg of parenteral morphine. Typically, a dose of morphine that is approximately three times the previous daily parenteral morphine requirement is sufficient.

*Other parenteral or oral non-morphine opioids to oral morphine sulfate:* Specific recommendations are not available because of a lack of systematic evidence for these types of analgesic substitutions. Published relative potency data are available, but such ratios are approximations. In general, begin with half of the estimated daily morphine requirement as the initial dose, managing inadequate analgesia by supplementation with immediate-release morphine.

The first dose of AVINZA may be taken with the last dose of any immediate-release opioid medication due to the extended-release characteristics of the AVINZA formulation.

### **2.2 Titration and Maintenance of Therapy**

Individually titrate AVINZA to a dose that provides adequate analgesia and minimizes adverse reactions. Continually reevaluate patients receiving AVINZA to assess the maintenance of pain control and the relative incidence of adverse reactions. During chronic therapy, especially for non-cancer-related pain (or pain associated with other terminal illnesses), periodically reassess the continued need for the use of opioid analgesics.

If the level of pain increases, attempt to identify the source of increased pain, while adjusting the AVINZA dose to decrease the level of pain. Because steady-state plasma concentrations are approximated within 2 to 3 days, AVINZA dosage adjustments may be done every 3 to 4 days. Patients who experience breakthrough pain may require dosage adjustment or rescue medication with a small dose of an immediate-release medication.

The daily dose of AVINZA must be limited to a maximum of 1600 mg/day. AVINZA doses of over 1600 mg/day contain a quantity of fumaric acid that has not been demonstrated to be safe, and which may result in serious renal toxicity.

If signs of excessive opioid-related adverse reactions are observed, the next dose may be reduced. Adjust the dose to obtain an appropriate balance between management of pain and opioid-related adverse reactions.

### **2.3 Discontinuation of AVINZA**

When a patient no longer requires therapy with AVINZA, use a gradual downward titration of the dose every 2 to 4 days, to prevent signs and symptoms of withdrawal in the physically-dependent patient. Do not abruptly discontinue AVINZA.

### **2.4 Administration of AVINZA**

Instruct patients to swallow AVINZA capsules intact. The pellets in the capsules are not to be crushed, dissolved, or chewed due to the risk of rapid release and absorption of a potentially fatal dose of morphine [*see Warnings and Precautions (5.2)*].

Alternatively, the contents of the AVINZA capsules (pellets) may be sprinkled over applesauce and then swallowed. This method is appropriate only for patients able to reliably swallow the applesauce without chewing. Other foods have not been tested and should not be substituted for applesauce. Instruct the patient to:

- Sprinkle the pellets onto a small amount of applesauce and consume immediately without chewing.
- Rinse the mouth to ensure all pellets have been swallowed.
- Discard any unused portion of the AVINZA capsules after the contents have been sprinkled on applesauce.

Do not administer AVINZA pellets through a nasogastric or gastric tubes.

## **3 DOSAGE FORMS AND STRENGTHS**

AVINZA contains white to off-white color pellets, have an outer opaque capsule with colors as identified below and are available in six dose strengths:

Each 30 mg capsule has a yellow opaque cap with “AVINZA” printed on it and a white opaque body printed with “30” and “505”.

Each 45 mg capsule has a light blue opaque cap with “AVINZA” printed on it and a white opaque body printed with “45” and “509”.

Each 60 mg capsule has a bluish-green opaque cap with “AVINZA” printed on it and a white opaque body printed with “60” and “506”.

Each 75 mg capsule has an orange opaque cap with “AVINZA” printed on it and a white opaque body printed with “75” and “510”.

Each 90 mg capsule has a red opaque cap with “AVINZA” printed on it and a white opaque body printed with “90” and “507”.

Each 120 mg capsule has a blue-violet opaque cap with “AVINZA” printed on it and a white opaque body printed with “120” and “508”.

## **4 CONTRAINDICATIONS**

AVINZA is contraindicated in patients with:

- Significant respiratory depression
- Acute or severe bronchial asthma in an unmonitored setting or in the absence of resuscitative equipment
- Known or suspected paralytic ileus
- Hypersensitivity (e.g., anaphylaxis) to morphine [*see Adverse Reactions (6.1)*]

## **5 WARNINGS AND PRECAUTIONS**

### **5.1 Abuse Potential**

AVINZA contains morphine, an opioid agonist and a Schedule II controlled substance. Morphine can be abused in a manner similar to other opioid agonists, legal or illicit. Opioid agonists are sought by drug abusers and people with addiction disorders and are subject to criminal diversion. Consider these risks when prescribing or dispensing AVINZA in situations where there is concern about increased risks of misuse, abuse, or diversion. Concerns about abuse, addiction, and diversion should not, however, prevent the proper management of pain.

Assess each patient’s risk for opioid abuse or addiction prior to prescribing AVINZA. The risk for opioid abuse is increased in patients with a personal or family history of substance abuse (including drug or alcohol abuse or addiction) or mental illness (e.g., major depression). Patients at increased risk may still be appropriately treated with modified-release opioid formulations; however these patients will require intensive monitoring for signs of misuse, abuse, or addiction. Routinely monitor all patients receiving opioids for signs of misuse, abuse, and addiction because these drugs carry a risk for addiction even under appropriate medical use.

Misuse or abuse of AVINZA by crushing, chewing, snorting, or injecting the dissolved product will result in the uncontrolled delivery of the opioid and pose a significant risk that could result in overdose and death [see *Overdosage (10)*].

Contact local state professional licensing board or state controlled substances authority for information on how to prevent and detect abuse or diversion of this product.

## **5.2 Life Threatening Respiratory Depression**

Respiratory depression is the primary risk of AVINZA. Respiratory depression, if not immediately recognized and treated, may lead to respiratory arrest and death. Respiratory depression from opioids is manifested by a reduced urge to breathe and a decreased rate of respiration, often associated with a “sighing” pattern of breathing (deep breaths separated by abnormally long pauses). Carbon dioxide (CO<sub>2</sub>) retention from opioid-induced respiratory depression can exacerbate the sedating effects of opioids. Management of respiratory depression may include close observation, supportive measures, and use of opioid antagonists, depending on the patient’s clinical status [see *Overdosage (10)*].

While serious, life-threatening, or fatal respiratory depression can occur at any time during the use of AVINZA, the risk is greatest during the initiation of therapy or following a dose increase. Closely monitor patients for respiratory depression when initiating therapy with AVINZA and following dose increases. Instruct patients against use by individuals other than the patient for whom AVINZA was prescribed and to keep AVINZA out of the reach of children, as such inappropriate use may result in fatal respiratory depression.

To reduce the risk of respiratory depression, proper dosing and titration of AVINZA are essential [see *Dosage and Administration (2.2, 2.3)*]. Overestimating the AVINZA dose when converting patients from another opioid product can result in fatal overdose with the first dose. Respiratory depression has also been reported with use of modified-release opioids when used as recommended and not misused or abused.

To further reduce the risk of respiratory depression, consider the following:

- Proper dosing and titration are essential and AVINZA should only be prescribed by healthcare professionals who are knowledgeable in the use of potent opioids for the management of chronic pain. AVINZA 90 mg and 120 mg capsules are for use in opioid-tolerant patients only. Ingestion of this strength of AVINZA capsules or of the pellets within the capsule may cause fatal respiratory depression when administered to patients not already tolerant to high doses of opioids.
- Instruct patients to swallow AVINZA capsules intact or to sprinkle the capsule contents on applesauce and swallow immediately without chewing. The pellets in the capsules are not to be crushed, dissolved, or chewed as the resulting morphine dose may be fatal, particularly in opioid-naïve individuals.
- AVINZA is contraindicated in patients with respiratory depression and in patients with conditions that increase the risk of life-threatening respiratory depression [see *Contraindications (4)*].

## **5.3 Accidental Exposure**

Accidental consumption of AVINZA, especially in children, can result in a fatal overdose of morphine.

## **5.4 Interaction with Alcohol**

The co-ingestion of alcohol with AVINZA can result in an increase of morphine plasma levels and potentially fatal overdose of morphine. Instruct patients not to consume alcoholic beverages or use prescription or non-prescription products containing alcohol while on AVINZA therapy [see *Clinical Pharmacology (12.3)*].

## **5.5 Elderly, Cachectic, and Debilitated Patients**

Respiratory depression is more likely to occur in elderly, cachectic, or debilitated patients as they may have altered pharmacokinetics due to poor fat stores, muscle wasting, or altered clearance compared to younger, healthier patients. Therefore, monitor such patients closely, particularly when initiating and titrating AVINZA and when AVINZA is given concomitantly with other drugs that depress respiration [see *Warnings and Precautions (5.2)*].

## **5.6 Use in Patients with Chronic Pulmonary Disease**

Monitor patients with significant chronic obstructive pulmonary disease or cor pulmonale, and patients having a substantially decreased respiratory reserve, hypoxia, hypercapnia, or pre-existing respiratory depression for respiratory depression, particularly when initiating therapy and titrating with AVINZA, as in these patients, even usual therapeutic doses of AVINZA may decrease respiratory drive to the point of apnea [see *Warnings and Precautions (5.2)*]. Consider the use of alternative non-opioid analgesics in these patients if possible.

## **5.7 Interactions with CNS Depressants and Illicit Drugs**

Hypotension, profound sedation, coma, or respiratory depression may result if AVINZA is used concomitantly with other CNS depressants (e.g., sedatives, anxiolytics, hypnotics, neuroleptics, other opioids). When considering the use of AVINZA in a patient taking a CNS depressant, assess the duration of use of the CNS depressant and the patient's response, including the degree of tolerance that has developed to CNS depression. Additionally, consider the patient's use, if any, of alcohol or illicit drugs that cause CNS depression. If AVINZA therapy is to be initiated in a patient taking a CNS depressant, start with a lower AVINZA dose than usual and monitor patients for signs of sedation and respiratory depression and consider using a lower dose of the concomitant CNS depressant [see *Drug Interactions (7.2)*].

### **5.8 Hypotensive Effect**

AVINZA may cause severe hypotension including orthostatic hypotension and syncope in ambulatory patients. There is an increased risk in patients whose ability to maintain blood pressure has already been compromised by a reduced blood volume or concurrent administration of certain CNS depressant drugs (e.g. phenothiazines or general anesthetics) [see *Drug Interactions (7.2)*]. Monitor these patients for signs of hypotension after initiating or titrating the dose of AVINZA. In patients with circulatory shock, AVINZA may cause vasodilation that can further reduce cardiac output and blood pressure. Avoid the use of AVINZA in patients with circulatory shock.

### **5.9 Use in Patients with Head Injury or Increased Intracranial Pressure**

Monitor patients taking AVINZA who may be susceptible to the intracranial effects of CO<sub>2</sub> retention (e.g., those with evidence of increased intracranial pressure or brain tumors) for signs of sedation and respiratory depression, particularly when initiating therapy with AVINZA. AVINZA may reduce respiratory drive, and the resultant CO<sub>2</sub> retention can further increase intracranial pressure. Opioids may also obscure the clinical course in a patient with a head injury.

Avoid the use of AVINZA in patients with impaired consciousness or coma.

### **5.10 Use in Patients with Gastrointestinal Conditions**

AVINZA is contraindicated in patients with paralytic ileus. Avoid the use of AVINZA in patients with other GI obstruction.

The morphine in AVINZA may cause spasm of the sphincter of Oddi. Monitor patients with biliary tract disease, including acute pancreatitis, for worsening symptoms. Opioids may cause increases in the serum amylase.

### **5.11 Use in Patients with Convulsive or Seizure Disorders**

The morphine in AVINZA may aggravate convulsions in patients with convulsive disorders, and may induce or aggravate seizures in some clinical settings. Monitor patients with a history of seizure disorders for worsened seizure control during AVINZA therapy.

### **5.12 Avoidance of Withdrawal**

Avoid the use of mixed agonist/antagonist analgesics (i.e., pentazocine, nalbuphine, and butorphanol) in patients who have received or are receiving a course of therapy with a opioid agonist analgesic, including AVINZA. In these patients, mixed agonist/antagonist analgesics may reduce the analgesic effect and/or may precipitate withdrawal symptoms.

When discontinuing AVINZA, gradually taper the dose [see *Dosage and Administration (2.3)*]. Do not abruptly discontinue AVINZA.

### **5.13 Driving and Operating Machinery**

AVINZA may impair the mental or physical abilities needed to perform potentially hazardous activities such as driving a car or operating machinery. Warn patients not to drive or operate dangerous machinery unless they are tolerant to the effects of AVINZA and know how they will react to the medication.

## **6 ADVERSE REACTIONS**

The following serious adverse reactions and/or conditions are discussed elsewhere in the labeling:

- Respiratory Depression [see *Warnings and Precautions (5.2)*]
- Chronic Pulmonary Disease [see *Warnings and Precautions (5.6)*]
- Head Injuries and Increased Intracranial Pressure [see *Warnings and Precautions (5.9)*]
- Interactions with Other CNS Depressants [see *Warnings and Precautions (5.7)*]
- Hypotensive Effect [see *Warnings and Precautions (5.8)*]
- Gastrointestinal Effects [see *Warnings and Precautions (5.10)*]
- Seizures [see *Warnings and Precautions (5.11)*]

The most common adverse reactions with AVINZA include constipation, nausea and somnolence.

### **6.1 Clinical Studies Experience**

Because clinical trials are conducted under widely varying conditions, adverse reaction rates observed in the clinical trials of a drug cannot be directly compared with rates in the clinical trials of another drug and may not reflect the rates observed in practice.

In controlled and open-label clinical studies, 560 patients with chronic malignant or non-malignant pain were treated with AVINZA. The most common serious adverse events reported with administration of AVINZA were vomiting, nausea, death, dehydration, dyspnea, and sepsis. (Deaths occurred in patients treated for pain due to underlying malignancy.) Serious adverse events caused by morphine include respiratory depression, apnea, and to a lesser degree, circulatory depression, respiratory arrest, shock and cardiac arrest.

The most common adverse events (seen in greater than 10%) reported by patients treated with AVINZA during the clinical trials at least once during therapy were constipation, nausea, somnolence, vomiting, and headache. Adverse events occurring in 5-10% of study patients were peripheral edema, diarrhea, abdominal pain, infection, urinary tract infection, accidental injury, flu syndrome, back pain, rash, sweating, fever, insomnia, depression, paresthesia, anorexia, dry mouth, asthenia and dyspnea. Other less common side effects expected from opioid analgesics, including morphine, or seen in fewer than 5% of patients taking AVINZA in the clinical trials were:

*Body as a Whole:* malaise, withdrawal syndrome.

*Cardiovascular System:* bradycardia, hypertension, hypotension, palpitations, syncope, tachycardia.

*Digestive System:* biliary pain, dyspepsia, dysphagia, gastroenteritis, abnormal liver function tests, rectal disorder, thirst.

*Hemic and Lymphatic System:* anemia, thrombocytopenia.

*Metabolic and Nutritional Disorders:* edema, weight loss.

*Musculoskeletal:* skeletal muscle rigidity.

*Nervous System:* abnormal dreams, abnormal gait, agitation, amnesia, anxiety, ataxia, confusion, convulsions, coma, delirium, euphoria, hallucinations, lethargy, nervousness, abnormal thinking, tremor, vasodilation, vertigo.

*Respiratory System:* hiccup, hypoventilation, voice alteration.

*Skin and Appendages:* dry skin, urticaria.

*Special Senses:* amblyopia, eye pain, taste perversion.

*Urogenital System:* abnormal ejaculation, dysuria, impotence, decreased libido, oliguria, urinary retention.

Anaphylaxis has been reported with ingredients contained in AVINZA. Advise patients how to recognize such a reaction and when to seek medical attention.

## **7 DRUG INTERACTIONS**

### **7.1 Alcohol**

Concomitant use of alcohol with AVINZA can result in an increase of morphine plasma levels and potentially fatal overdose of morphine. Instruct patients not to consume alcoholic beverages or use prescription or non-prescription products containing alcohol while on AVINZA therapy [see *Clinical Pharmacology (12.3)*].

### **7.2 CNS Depressants**

Concurrent use of AVINZA and other central nervous system (CNS) depressants including sedatives, hypnotics, general anesthetics, antiemetics, phenothiazines, other tranquilizers, and alcohol, can increase the risk of respiratory depression, hypotension, profound sedation, or coma. Monitor patients receiving CNS depressants and AVINZA for signs of respiratory depression and hypotension. When such combined therapy is contemplated, reduce the initial dose of one or both agents.

### **7.3 Mixed Agonist/Antagonist Opioid Analgesics**

Mixed agonist/antagonist analgesics (i.e., pentazocine, nalbuphine and butorphanol) may reduce the analgesic effect of AVINZA or may precipitate withdrawal symptoms in these patients. Avoid the use of agonist/antagonist analgesics in patients receiving AVINZA.

### **7.4 Muscle Relaxants**

Morphine may enhance the neuromuscular blocking action of skeletal muscle relaxants and produce an increased degree of respiratory depression. Monitor patients receiving muscle relaxants and AVINZA for signs of respiratory depression that may be greater than otherwise expected.

### **7.5 Monoamine Oxidase Inhibitors (MAOIs)**

The effects of morphine may be potentiated by MAOIs. Monitor patients on concurrent therapy with an MAOI and AVINZA for increased respiratory and central nervous system depression. MAOIs have been reported to potentiate the effects of morphine anxiety,

confusion, and significant depression of respiration or coma. AVINZA should not be used in patients taking MAOIs or within 14 days of stopping such treatment.

## **7.6 Cimetidine**

Cimetidine can potentiate morphine-induced respiratory depression. There is a report of confusion and severe respiratory depression when a patient undergoing hemodialysis was concurrently administered morphine and cimetidine. Monitor patients for respiratory depression when AVINZA and cimetidine are used concurrently.

## **7.7 Diuretics**

Morphine can reduce the efficacy of diuretics by inducing the release of antidiuretic hormone. Morphine may also lead to acute retention of urine by causing spasm of the sphincter of the bladder, particularly in men with enlarged prostates.

## **7.8 Anticholinergics**

Anticholinergics or other medications with anticholinergic activity when used concurrently with opioid analgesics may result in increased risk of urinary retention and/or severe constipation, which may lead to paralytic ileus. Monitor patients for signs of urinary retention or reduced gastric motility when AVINZA is used concurrently with anticholinergic drugs.

## **7.9 P-Glycoprotein (PGP) Inhibitors**

PGP inhibitors (e.g. quinidine) may increase the absorption/exposure of morphine sulfate by about two-fold. Therefore, monitor patients for signs of respiratory and central nervous system depression when AVINZA is used concurrently with PGP inhibitors.

# **8 USE IN SPECIFIC POPULATIONS**

## **8.1 Pregnancy**

### Teratogenic Effects (Pregnancy Category C)

No formal studies to assess the teratogenic effects of morphine in animals have been conducted. It is also not known whether morphine can cause fetal harm when administered to a pregnant woman or can affect reproductive capacity. Morphine should be given to a pregnant woman only if clearly needed.

In humans, the frequency of congenital anomalies has been reported to be no greater than expected among the children of 70 women who were treated with morphine during the first four months of pregnancy or in 448 women treated with morphine anytime during pregnancy. Furthermore, no malformations were observed in the infant of a woman who attempted suicide by taking an overdose of morphine and other medication during the first trimester of pregnancy.

Several literature reports indicate that morphine administered subcutaneously during the early gestational period in mice and hamsters produced neurological, soft tissue and skeletal abnormalities. With one exception, the effects that have been reported were following doses that were maternally toxic and the abnormalities noted were characteristic of those observed when maternal toxicity is present. In one study, following subcutaneous infusion of doses greater than or equal to 0.15 mg/kg to mice, exencephaly, hydronephrosis, intestinal hemorrhage, split supraoccipital, malformed sternbrae, and malformed xiphoid were noted in the absence of maternal toxicity. In the hamster, morphine sulfate given subcutaneously on gestation day 8 produced exencephaly and cranioschisis. In rats treated with subcutaneous infusions of morphine during the period of organogenesis, no teratogenicity was observed. No maternal toxicity was observed in this study, however, increased mortality and growth retardation were seen in the offspring. In two studies performed in the rabbit, no evidence of teratogenicity was reported at subcutaneous doses up to 100 mg/kg.

### Nonteratogenic Effects

Infants born to mothers who have taken opioids chronically may exhibit neonatal withdrawal syndrome [see *Use in Specific Populations* (8.6)], reversible reduction in brain volume, small size, decreased ventilatory response to CO<sub>2</sub> and increased risk of sudden infant death syndrome. Morphine sulfate should be used by a pregnant woman only if the need for opioid analgesia clearly outweighs the potential risks to the fetus.

Controlled studies of chronic *in utero* morphine exposure in pregnant women have not been conducted. Published literature has reported that exposure to morphine during pregnancy in animals is associated with reduction in growth and a host of behavioral abnormalities in the offspring. Morphine treatment during gestational periods of organogenesis in rats, hamsters, guinea pigs and rabbits resulted in the following treatment-related embryotoxicity and neonatal toxicity in one or more studies: decreased litter size, embryo-fetal viability, fetal and neonatal body weights, absolute brain and cerebellar weights, delayed motor and sexual maturation, and increased neonatal mortality, cyanosis and hypothermia. Decreased fertility in female offspring, and decreased plasma and testicular levels of luteinizing hormone and testosterone, decreased testes weights, seminiferous tubule shrinkage, germinal cell aplasia, and decreased spermatogenesis in male offspring were also observed. Decreased litter size and viability were observed in the offspring of male rats administered morphine (25 mg/kg, IP) for 1 day prior to mating. Behavioral abnormalities resulting from

chronic morphine exposure of fetal animals included altered reflex and motor skill development, mild withdrawal, and altered responsiveness to morphine persisting into adulthood.

## **8.2 Labor and Delivery**

AVINZA is not for use in women during and immediately prior to labor, when use of shorter acting analgesics or other analgesic techniques are more appropriate. Occasionally, opioid analgesics may prolong labor by temporarily reducing the strength, duration and frequency of uterine contractions. However these effects are not consistent and may be offset by an increased rate of cervical dilatation, which tends to shorten labor.

Opioids cross the placenta and may produce respiratory depression and psycho-physiologic effects in neonates. Closely observe neonates whose mothers received opioid analgesics during labor for signs of respiratory depression. An opioid antagonist, such as naloxone, should be available for reversal of opioid-induced respiratory depression in the neonate in such situations.

## **8.3 Nursing Mothers**

Morphine is excreted in breast milk, with a milk to plasma morphine AUC ratio of approximately 2.5:1. The amount of morphine received by the infant varies depending on the maternal plasma concentration, the amount of milk ingested by the infant, and the extent of first pass metabolism. Closely monitor infants of nursing women receiving AVINZA.

Withdrawal symptoms can occur in breast-feeding infants when maternal administration of morphine is stopped.

Because of the potential for adverse reactions in nursing infants from AVINZA, a decision should be made whether to discontinue nursing or discontinue the drug, taking into account the importance of the drug to the mother.

## **8.4 Pediatric Use**

The safety and effectiveness of AVINZA in pediatric patients below the age of 18 have not been established.

## **8.5 Geriatric Use**

The pharmacokinetics of AVINZA have not been studied in elderly patients. In clinical studies of AVINZA, 100 patients who received AVINZA were age 65 and over, including 37 patients over the age of 74. No overall differences in safety were observed between these subjects and younger subjects. [see *Clinical Pharmacology* (12.3)].

## **8.6 Neonatal Opioid Withdrawal Syndrome**

Chronic maternal use of morphine during pregnancy can affect the fetus with subsequent withdrawal signs. Neonatal withdrawal syndrome presents as irritability, hyperactivity and abnormal sleep pattern, high pitched cry, tremor, vomiting, diarrhea and failure to gain weight. The onset, duration and severity of neonatal withdrawal syndrome vary based on the drug used, duration of use, the dose of last maternal use, and rate of elimination of drug by the newborn. Neonatal opioid withdrawal syndrome, unlike opioid withdrawal syndrome in adults, may be life-threatening and should be treated according to protocols developed by neonatology experts.

## **9 DRUG ABUSE AND DEPENDENCE**

### **9.1 Controlled Substance**

AVINZA contains morphine, a Schedule II controlled substance with a high potential for abuse similar to other opioids including fentanyl, hydromorphone, methadone, oxycodone, and oxymorphone. AVINZA can be abused and is subject to misuse, addiction, and criminal diversion [see *Warnings and Precautions* (5.1)].

The high drug content in extended- release formulations adds to the risk of adverse outcomes from abuse and misuse.

### **9.2 Abuse**

All patients treated with opioids require careful monitoring for signs of abuse and addiction, since use of opioid analgesic products carries the risk of addiction even under appropriate medical use.

Drug abuse is the intentional non-therapeutic use of an over-the-counter or prescription drug, even once, for its rewarding psychological or physiological effects. Drug abuse includes, but is not limited to, the following examples: the use of a prescription or over-the counter drug to get "high", or the use of steroids for performance enhancement and muscle build up.

Drug addiction is a cluster of behavioral, cognitive, and physiological phenomena that develop after repeated substance use and include: a strong desire to take the drug, difficulties in controlling its use, persisting in its use despite harmful consequences, a higher priority given to drug use than to other activities and obligations, increased tolerance, and sometimes a physical withdrawal.

"Drug seeking" behavior is very common to addicts and drug abusers. Drug-seeking tactics include emergency calls or visits near the end of office hours, refusal to undergo appropriate examination, testing or referral, repeated claims of loss of prescriptions, tampering with prescriptions and reluctance to provide prior medical records or contact information for other treating physician(s). "Doctor shopping" (visiting multiple prescribers) to obtain additional prescriptions is common among drug abusers and people suffering from untreated addiction. Preoccupation with achieving adequate pain relief can be appropriate behavior in a patient with poor pain control.

Abuse and addiction are separate and distinct from physical dependence and tolerance. Physicians should be aware that addiction may not be accompanied by concurrent tolerance and symptoms of physical dependence in all addicts. In addition, abuse of opioids can occur in the absence of true addiction.

AVINZA, like other opioids, can be diverted for non-medical use into illicit channels of distribution. Careful record-keeping of prescribing information, including quantity, frequency, and renewal requests as required by state law, is strongly advised.

Proper assessment of the patient, proper prescribing practices, periodic re-evaluation of therapy, and proper dispensing and storage are appropriate measures that help to reduce abuse of opioid drugs.

#### *Risks Specific to Abuse of AVINZA*

AVINZA is for oral use only. Abuse of AVINZA poses a risk of overdose and death. This risk is increased with concurrent abuse of AVINZA with alcohol and other substances. Taking cut, broken, chewed, crushed, or dissolved AVINZA enhances drug release and increases the risk of overdose and death.

Due to the presence of talc as one of the excipients in AVINZA, parenteral abuse can be expected to result in local tissue necrosis, infection, pulmonary granulomas, and increased risk of endocarditis and valvular heart injury. Parenteral drug abuse is commonly associated with transmission of infectious diseases such as hepatitis and HIV.

### **9.3 Dependence**

Both tolerance and physical dependence can develop during chronic opioid therapy. Tolerance is the need for increasing doses of opioids to maintain a defined effect such as analgesia (in the absence of disease progression or other external factors). Tolerance may occur to both the desired and undesired effects of drugs, and may develop at different rates for different effects.

Physical dependence results in withdrawal symptoms after abrupt discontinuation or a significant dose reduction of a drug. Withdrawal also may be precipitated through the administration of drugs with opioid antagonist activity, e.g., naloxone, nalmefene, or mixed agonist/antagonist analgesics (pentazocine, butorphanol, buprenorphine, nalbuphine). Physical dependence may not occur to a clinically significant degree until after several days to weeks of continued opioid usage.

AVINZA should not be abruptly discontinued [*see Dosage and Administration (2.3)*]. If AVINZA is abruptly discontinued in a physically-dependent patient, an abstinence syndrome may occur. Some or all of the following can characterize this syndrome: restlessness, lacrimation, rhinorrhea, yawning, perspiration, chills, myalgia, and mydriasis. Other signs and symptoms also may develop, including: irritability, anxiety, backache, joint pain, weakness, abdominal cramps, insomnia, nausea, anorexia, vomiting, diarrhea, or increased blood pressure, respiratory rate, or heart rate.

Infants born to mothers physically dependent on opioids will also be physically dependent and may exhibit respiratory difficulties and withdrawal symptoms [*see Use in Specific Populations (8.2, 8.6)*].

## **10 OVERDOSAGE**

### ***Clinical Presentation***

Acute overdosage with morphine is manifested by respiratory depression, somnolence progressing to stupor or coma, skeletal muscle flaccidity, cold and clammy skin, constricted pupils, and, in some cases, pulmonary edema, bradycardia, hypotension, and death. Marked mydriasis rather than miosis may be seen due to severe hypoxia in overdose situations.

### ***Treatment of Overdose***

In case of overdose, priorities are the re-establishment of a patent and protected airway and institution of assisted or controlled ventilation if needed. Employ other supportive measures (including oxygen, vasopressors) in the management of circulatory shock and pulmonary edema as indicated. Cardiac arrest or arrhythmias will require advanced life support techniques.

The opioid antagonists, naloxone or nalmefene, are specific antidotes to respiratory depression resulting from opioid overdose. Opioid antagonists should not be administered in the absence of clinically significant respiratory or circulatory depression secondary to morphine overdose. Such agents should be administered cautiously to persons who are known, or suspected to be physically dependent on AVINZA. In such cases, an abrupt or complete reversal of opioid effects may precipitate an acute withdrawal syndrome.

Because the duration of reversal would be expected to be less than the duration of action of morphine in AVINZA, carefully monitor the patient until spontaneous respiration is reliably re-established. AVINZA will continue to release morphine and add to the morphine load for 36 to 48 hours or longer following ingestion necessitating prolonged monitoring. If the response to opioid antagonists is suboptimal or not sustained, additional antagonist should be administered as directed in the product's prescribing information.

In an individual physically dependent on opioids, administration of the usual dose of the antagonist will precipitate an acute withdrawal syndrome. The severity of the withdrawal symptoms experienced will depend on the degree of physical dependence and the dose of the antagonist administered. If a decision is made to treat serious respiratory depression in the physically dependent patient, administration of the antagonist should be begun with care and by titration with smaller than usual doses of the antagonist.

## 11 DESCRIPTION

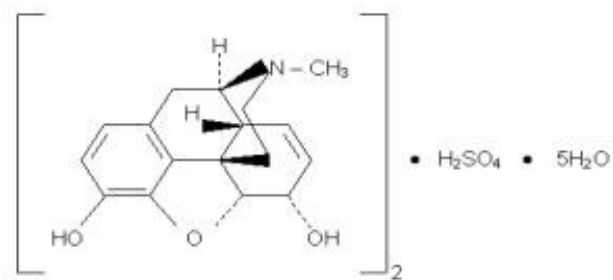
AVINZA capsules are for oral use and contain pellets of morphine sulfate. Morphine sulfate is an agonist at the mu-opioid receptor.

Each AVINZA Capsule contains either 30, 45, 60, 75, 90, or 120 mg of morphine sulfate, USP and the following inactive ingredients: ammoniomethacrylate copolymers, NF, fumaric acid, NF, povidone, USP, sodium lauryl sulfate, NF, sugar starch spheres, NF, and talc, USP.

The capsule shell contains black ink, gelatin, titanium dioxide, D&C yellow No. 10 (30 mg), FD&C blue No. 2 (45 mg), FD&C green No. 3 (60 mg), FDA iron oxide and FDA yellow iron oxide (75 mg), FD&C red No. 40 (90 mg), FD&C red No. 3 (120 mg), and FD&C blue No. 1 (120 mg).

The chemical name of morphine sulfate is 7,8-didehydro-4,5 alpha-epoxy-17-methylmorphinan-3,6 alpha-diol sulfate (2:1) (salt) pentahydrate with a molecular weight of 758. The empirical formula is  $(C_{17}H_{19}NO_3)_2 \cdot H_2SO_4 \cdot 5H_2O$ .

Morphine sulfate is an odorless, white, crystalline powder. It is soluble in water and slightly soluble in alcohol, but is practically insoluble in chloroform or ether. The octanol:water partition coefficient of morphine is 1.42 at physiologic pH and the  $pK_a$  is 7.9 for the tertiary nitrogen (the majority is ionized at pH 7.4). Its structural formula is:



## 12 CLINICAL PHARMACOLOGY

### 12.1 Mechanism of Action

Morphine sulfate, an opioid agonist, is relatively selective for the mu receptor, although it can interact with other opioid receptors at higher doses. In addition to analgesia, the widely diverse effects of morphine include drowsiness, changes in mood, respiratory depression, decreased gastrointestinal motility, nausea, vomiting, and alterations of the endocrine and autonomic nervous system.

Morphine produces both its therapeutic and its adverse effects by interaction with one or more classes of specific opioid receptors located throughout the body. Morphine acts as a full agonist, binding with and activating opioid receptors at sites in the periaqueductal and peri-ventricular grey matter, the ventro-medial medulla and the spinal cord to produce analgesia.

### 12.2 Pharmacodynamics

#### Plasma Level-Analgesia Relationships

While plasma morphine-efficacy relationships can be demonstrated in non-tolerant individuals, they are influenced by a wide variety of factors and are not generally useful as a guide to the clinical use of morphine. The effective dose in opioid-tolerant patients may be 10-50 times as great (or greater) than the appropriate dose for opioid-naïve individuals. Dosages of morphine should be chosen and must be titrated on the basis of clinical evaluation of the patient and the balance between therapeutic and adverse effects.

#### CNS Depressant/Alcohol Interaction

Additive pharmacodynamic effects may be expected when AVINZA is used in conjunction with alcohol, other opioids, or illicit drugs that cause central nervous system depression.

#### Effects on the Central Nervous System

The principal therapeutic action of morphine is analgesia. Other therapeutic effects of morphine include anxiolysis, euphoria, and feelings of relaxation. Although the precise mechanism of the analgesic action is unknown, specific CNS opiate receptors and endogenous compounds with morphine-like activity have been identified throughout the brain and spinal cord and are likely to play a role in the expression and perception of analgesic effects. In common with other opioids, morphine causes respiratory depression, in part by a direct effect on the brainstem respiratory centers. Morphine and related opioids depress the cough reflex by direct effect on the cough center in the medulla. Antitussive effects may occur with doses lower than those usually required for analgesia. Morphine causes miosis, even in total darkness. Pinpoint pupils are a sign of opioid overdose; however, when asphyxia is present during opioid overdose, marked mydriasis occurs.

#### Effects on the Gastrointestinal Tract and Other Smooth Muscle

Gastric, biliary, and pancreatic secretions are decreased by morphine. Morphine causes a reduction in motility and is associated with an increase in tone in the antrum of the stomach and duodenum. Digestion of food in the small intestine is delayed and propulsive contractions are decreased. Propulsive peristaltic waves in the colon are decreased, while tone is increased to the point of spasm. The end result may be constipation. Morphine can cause a marked increase in biliary tract pressure as a result of spasm of the sphincter of Oddi. Morphine may also cause spasm of the sphincter of the urinary bladder.

#### Effects on the Cardiovascular System

In therapeutic doses, morphine does not usually exert major effects on the cardiovascular system. Morphine produces peripheral vasodilation which may result in orthostatic hypotension and fainting. Release of histamine can occur, which may play a role in opioid-induced hypotension. Manifestations of histamine release and/or peripheral vasodilation may include pruritus, flushing, red eyes, and sweating.

#### Effects on the Endocrine System

Opioids inhibit the secretion of ACTH, cortisol, and luteinizing hormone (LH) in humans. They also stimulate prolactin, growth hormone (GH) secretion, and pancreatic secretion of insulin and glucagon. Chronic use of opioids may influence the hypothalamic-pituitary-gonadal axis, leading to hormonal changes that may manifest as symptoms of hypogonadism.

#### Effects on the Immune System

Opioids have been shown to have a variety of effects on components of the immune system in *in vitro* and animal models. The clinical significance of these findings is unknown. Overall, the effects of opioids appear to be modestly immunosuppressive.

### 12.3 Pharmacokinetics

#### Absorption

AVINZA consists of two components, an immediate release component and an extended-release component.

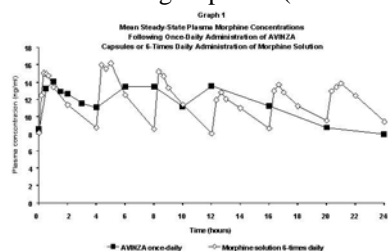
The oral bioavailability of morphine is less than 40% and shows large inter-individual variability due to extensive pre-systemic metabolism.

Following single-dose oral administration of a 60 mg dose of AVINZA under fasting conditions, morphine concentrations of approximately 3 to 6 ng/ml were achieved within 30 minutes after dosing and maintained for the 24-hour dosing interval. The pharmacokinetics of AVINZA were shown to be dose-proportional over a single oral dose range of 30 to 120 mg in healthy volunteers and a multiple oral dose range of at least 30 to 180 mg in patients with chronic moderate to severe pain.

**Food Effect:** When a 60 mg dose of AVINZA was administered immediately following a high fat meal, peak morphine concentrations and AUC values were similar to those observed when the dose of AVINZA was administered in a fasting state, although achievement of initial concentrations was delayed by approximately 1 hour under fed conditions. Therefore, AVINZA can be administered without regard to food. When the contents of AVINZA were administered by sprinkling on applesauce, the rate and extent of morphine absorption were found to be bioequivalent to the same dose when administered as an intact capsule.

**Steady State:** Steady-state plasma concentrations of morphine are achieved 2 to 3 days after initiation of once-daily administration of AVINZA.

AVINZA 60 mg Capsules (once-daily) and 10 mg morphine oral solution (6 times daily) were equally bioavailable.



A once-daily dose of AVINZA provided similar  $C_{max}$ ,  $C_{min}$ , and AUC values and peak-trough fluctuations (% FL,  $C_{max}-C_{min}/C_{av}$ ) compared to 6-times daily administration of the same total daily dose of morphine oral solution (Table 1).

**Table 1 Pharmacokinetic Data Mean ± SD**

Parameter	AVINZA Capsules Once-Daily	Morphine Oral Solution
		6-Times Daily
AUC (ng/ml.h)	273.25 ± 81.24	279.11 ± 63.00
$C_{max}$ (ng/ml)	18.65 ± 7.13	19.96 ± 4.82
$C_{min}$ (ng/ml)	6.98 ± 2.44	6.61 ± 2.15
% FL	106.38 ± 78.14	116.22 ± 26.67

### **Distribution**

Once absorbed, morphine is distributed to skeletal muscle, kidneys, liver, intestinal tract, lungs, spleen and brain. Although the primary site of action is the CNS, only small quantities cross the blood-brain barrier. Morphine also crosses the placental membranes and has been found in breast milk [*see Use in Specific Populations (8.1, 8.3)*]. The volume of distribution of morphine is approximately 1 to 6 L/kg, and morphine is 20 to 35% reversibly bound to plasma proteins.

### **Metabolism**

The major pathways of morphine metabolism include glucuronidation to produce metabolites including morphine-3-glucuronide, M3G (about 50%) and morphine-6-glucuronide, M6G (about 5 to 15%) and sulfation in the liver to produce morphine-3-etheral sulfate. A small fraction (less than 5%) of morphine is demethylated. M6G has been shown to have analgesic activity but crosses the blood-brain barrier poorly, while M3G has no significant analgesic activity.

### **Excretion**

Approximately 10% of a morphine dose is excreted unchanged in the urine. Elimination of morphine is primarily via hepatic metabolism to glucuronide metabolites M3G and M6G which are then renally excreted. A small amount of the glucuronide metabolites is excreted in the bile and there is some minor enterohepatic recycling. Seven to 10% of administered morphine is excreted in the feces. The mean adult plasma clearance of morphine is about 20 – 30 mL/minute/kg. The effective terminal half life of morphine after IV administration is reported to be approximately 2 hours. The terminal elimination half-life of morphine following single dose of AVINZA administration is approximately 24 hrs.

### **Special Populations**

#### Geriatric Patients

The pharmacokinetics of AVINZA have not been studied in elderly patients.

#### Pediatric Patients

The pharmacokinetics of AVINZA have not been studied in pediatric patients below the age of 18. The range of dose strengths available may not be appropriate for treatment of very young pediatric patients. Sprinkling on applesauce is **NOT** a suitable alternative for these patients.

#### Gender

A gender analysis of pharmacokinetic data from healthy subjects taking AVINZA indicated that morphine concentrations were similar in males and females.

#### Race

Chinese subjects given intravenous morphine had a higher clearance when compared to Caucasian subjects (1852 +/- 116 ml/min compared to 1495 +/- 80 ml/min).

#### Hepatic Impairment

Morphine pharmacokinetics are altered in individuals with cirrhosis. Clearance was found to decrease with a corresponding increase in half-life. The M3G and M6G to morphine plasma AUC ratios also decreased in these subjects, indicating diminished metabolic activity. Adequate studies of the pharmacokinetics of morphine in patients with severe hepatic impairment have not been conducted.

#### Renal Impairment

Morphine pharmacokinetics are altered in patients with renal failure. The AUC is increased and clearance is decreased and the metabolites, M3G and M6G, may accumulate to much higher plasma levels in patients with renal failure as compared to patients with normal renal function. Adequate studies of the pharmacokinetics of morphine in patients with severe renal impairment have not been conducted.

#### Drug Interaction/Alcohol Interaction

In *in vitro* studies of the dissolution of AVINZA 30 mg mixed with 900 mL of buffer solutions containing ethanol (20% and 40%), the amount of morphine released increased in an alcohol concentration-dependent manner. While the relevance of *in vitro* lab tests regarding AVINZA to the clinical setting remains to be determined, this acceleration of release may correlate with *in vivo* rapid release of the total morphine dose, which could result in the absorption of a potentially fatal dose of morphine.

### 13 NONCLINICAL TOXICOLOGY

#### 13.1 Carcinogenesis, Mutagenesis, Impairment of Fertility

**Carcinogenesis:** Studies in animals to evaluate the carcinogenic potential of morphine sulfate have not been conducted.

**Mutagenesis:** No formal studies to assess the mutagenic potential of morphine have been conducted. In the published literature, morphine was found to be mutagenic *in vitro* increasing DNA fragmentation in human T-cells. Morphine was reported to be mutagenic in the *in vivo* mouse micronucleus assay and positive for the induction of chromosomal aberrations in mouse spermatids and murine lymphocytes. Mechanistic studies suggest that the *in vivo* clastogenic effects reported with morphine in mice may be related to increases in glucocorticoid levels produced by morphine in this species. In contrast to the above positive findings, *in vitro* studies in the literature have also shown that morphine did not induce chromosomal aberrations in human leukocytes or translocations or lethal mutations in *Drosophila*.

**Impairment of Fertility:** No formal nonclinical studies to assess the potential of morphine to impair fertility have been conducted. Several nonclinical studies from the literature have demonstrated adverse effects on male fertility in the rat from exposure to morphine. One study in which male rats were administered morphine sulfate subcutaneously prior to mating (up to 30 mg/kg twice daily) and during mating (20 mg/kg twice daily) with untreated females, a number of adverse reproductive effects including reduction in total pregnancies, higher incidence of pseudopregnancies, and reduction in implantation sites were seen. Studies from the literature have also reported changes in hormonal levels (i.e., testosterone, luteinizing hormone, serum corticosterone) following treatment with morphine. These changes may be associated with the reported effects on fertility in the rat.

### 14 CLINICAL STUDIES

AVINZA was studied in a double-blind, placebo-controlled, fixed-dose, parallel group trial in 295 patients with moderate to severe pain due to osteoarthritis. These patients had either a prior sub-optimal response to acetaminophen, NSAID therapy, or previously received intermittent opioid analgesic therapy. Thirty-milligrams AVINZA capsules administered once-daily, either in the morning or the evening, were more effective than placebo in reducing pain.

**Table 2 Change from Baseline in WOMAC OA Index Pain VAS Subscale Score**

	Placebo	AVINZA QAM	AVINZA QPM
Overall LS Mean	-36.23	-75.26 <sup>a</sup>	-75.39 <sup>a</sup>
Std. Error	11.482	11.305	11.747

a) P<0.05; REPEATED MEASURES ANALYSIS

This study was not designed to assess the effects of AVINZA on the course of the osteoarthritis.

### 16 HOW SUPPLIED/STORAGE AND HANDLING

**30 mg Capsule:** size 3 capsule, yellow cap and white, opaque body imprinted AVINZA 30 mg and 505.

NDC 60793-605-01: Bottles of 100 capsules.

**45 mg Capsule:** size 3 capsule, light blue cap and white, opaque body imprinted AVINZA 45 mg and 509.

NDC 60793-603-01: Bottles of 100 capsules.

**60 mg Capsule:** size 3 capsule, bluish-green cap and white, opaque body imprinted AVINZA 60 mg and 506.

NDC 60793-606-01: Bottles of 100 capsules.

**75 mg Capsule:** size 1 capsule, orange cap and white, opaque body imprinted AVINZA 75 mg and 510.

NDC 60793-604-01: Bottles of 100 capsules.

**90 mg Capsule:** size 1 capsule, red cap and white, opaque body imprinted AVINZA 90 mg and 507.

NDC 60793-607-01: Bottles of 100 capsules.

**120 mg Capsule:** size 1 capsule, blue-violet cap and white, opaque body imprinted AVINZA 120 mg and 508.

NDC 60793-608-01: Bottles of 100 capsules.

Store at 25°C (77°F); excursions permitted to 15-30°C (59-86°F). [see USP Controlled Room Temperature]

Protect from light and moisture.

Dispense in a tight, light-resistant container as defined in USP.

CAUTION: DEA Order Form Required.

## **17 PATIENT COUNSELING INFORMATION**

See FDA-approved patient labeling (*Medication Guide*)

### *Abuse Potential*

Inform patients that AVINZA contains morphine, a Schedule II controlled substance that is subject to abuse. Instruct patients not to share AVINZA with others and to take steps to protect AVINZA from theft or misuse.

### *Life-threatening Respiratory Depression*

Discuss the risk of respiratory depression with patients, explaining that the risk is greatest when starting AVINZA or when the dose is increased. Advise patients how to recognize respiratory depression and to seek medical attention if they are experiencing breathing difficulties.

### *Accidental Exposure*

Instruct patients to take steps to store AVINZA securely. Accidental exposure, especially in children, may result in serious harm or death. Advise patients to dispose of unused AVINZA by flushing the capsules down the toilet.

### *Risks from Concomitant Use of Alcohol and other CNS Depressants*

Inform patients that the concomitant use of alcohol with AVINZA can increase the risk of life-threatening respiratory depression. Instruct patients not to consume alcoholic beverages, as well as prescription and over-the-counter drug products that contain alcohol, during treatment with AVINZA.

Inform patients that potentially serious additive effects may occur if AVINZA is used with other CNS depressants, and not to use such drugs unless supervised by a health care provider.

### *Important Administration Instructions*

Instruct patients how to properly take AVINZA, including the following:

- Swallowing AVINZA capsules whole or sprinkling the capsule contents on applesauce and then swallowing immediately without chewing
- Not crushing, chewing, or dissolving the pellets in the capsules
- Using AVINZA exactly as prescribed to reduce the risk of life-threatening adverse reactions (e.g., respiratory depression)
- Not discontinuing AVINZA without first discussing the need for a tapering regimen with the prescriber

### *Hypotension*

Inform patients that AVINZA may cause orthostatic hypotension and syncope. Instruct patients how to recognize symptoms of low blood pressure and how to reduce the risk of serious consequences should hypotension occur (e.g., sit or lie down, carefully rise from a sitting or lying position).

### *Driving or Operating Heavy Machinery*

Inform patients that AVINZA may impair the ability to perform potentially hazardous activities such as driving a car or operating heavy machinery. Advise patients not to perform such tasks until they know how they will react to the medication.

### *Constipation*

Advise patients of the potential for severe constipation, including management instructions and when to seek medical attention.

### *Anaphylaxis*

Inform patients that anaphylaxis has been reported with ingredients contained in AVINZA. Advise patients how to recognize such a reaction and when to seek medical attention.

### *Pregnancy*

Advise female patients that AVINZA can cause fetal harm and to inform the prescriber if they are pregnant or plan to become pregnant.

Manufactured for:

King Pharmaceuticals, Inc.

Bristol, TN 37620

AVINZA<sup>®</sup> Information Service: 1-800-776-3637

Utilizing technology developed by:

Alkermes Pharma Ireland Limited.

Monksland, Athlone

Co Westmeath, Ireland

**This label may not be the latest approved by FDA.  
For current labeling information, please visit <https://www.fda.gov/drugsatfda>**

AVINZA<sup>®</sup> is a registered trademark of King Pharmaceuticals Research and Development, Inc.  
SODAS<sup>®</sup> is a registered trademark of Alkermes Pharma Ireland Limited.

This product's label may have been updated. For current full prescribing information please visit [www.pfizer.com](http://www.pfizer.com).

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