DESCRIPTION:
Xylocaine (lidocaine HCl) injections are sterile, nonpyrogenic, aqueous solutions that contain a local anesthetic agent with or without epinephrine and are administered parenterally by injection. See INDICATIONS for specific uses.

Xylocaine solutions contain lidocaine HCl, which is chemically designated as acetamide, 2-diethylamino)-N-(2,6-dimethylphenyl)-, monohydrochloride and has the molecular wt. 270.8. Lidocaine HCl (C9H18N2O2 • HCl) has the following structural formula:

![Structural formula of lidocaine HCl](image)

Epinephrine is (-)-3, 4-Dihydroxy-alpha-[(methylamino) methyl] benzyl alcohol and has the molecular wt. 183.21. Epinephrine (C9H13NO3) has the following structural formula:

![Structural formula of epinephrine](image)

Dosage forms listed as Xylocaine-MPF indicate single dose solutions that are Methyl Paraben Free (MPF).

Xylocaine MPF is a sterile, nonpyrogenic, isotonic solution containing sodium chloride. Xylocaine in multiple dose vials. Each mL also contains 1 mg methylparaben as an antiseptic preservative. The pH of these solutions is adjusted to approximately 6.5 (5.0 to 7.0) with sodium hydroxide and/or hydrochloric acid.

Xylocaine MFP with Epinephrine is a sterile, nonpyrogenic, isotonic solution containing sodium chloride. Each mL contains lidocaine hydrochloride and epinephrine, with 0.5 mg sodium metabisulfite as an antioxidant and 0.2 mg citric acid as a stabilizer. Xylocaine with Epinephrine in multiple dose vials. Each mL also contains 1 mg methylparaben as an antiseptic preservative. The pH of these solutions is adjusted to approximately 4.5 (3.3 to 5.5) with sodium hydroxide and/or hydrochloric acid. Filled under nitrogen.

CLINICAL PHARMACOLOGY:
Mechanism of Action:

Lidocaine HCl stabilizes the neuronal membrane by inhibiting the ionic fluxes required for the initiation and conduction of impulses thereby effecting local anesthetic action.

Hemodynamics:
Excessive blood levels may cause changes in cardiac output, total peripheral resistance, and mean arterial pressure. With central neural blockade these changes may be attributable to block of autonomic fibers, a direct depressant effect of the local anesthetic agent on various components of the cardiovascular system, and/or the beta-adrenergic receptor stimulating action of epinephrine when present. The net effect is normally a modest hypotension when the recommended dosages are not exceeded.

Pharmacokinetics and Metabolism:

Information derived from diverse formulations, concentrations and usages reveals that lidocaine HCl is completely absorbed following parenteral administration, its rate of absorption depending, for example, upon various factors such as the site of administration and the presence or absence of a vasoconstrictor agent. Except for intravascular administration, the highest blood levels are obtained following intercostal nerve block and the lowest after subcutaneous administration.

The plasma binding of lidocaine HCl is dependent on drug concentration, and the fraction bound decreases with increasing concentration. At concentrations of 1 to 4 mcg of free base per mL 80 to 90 percent of lidocaine HCl is protein bound. Binding is also dependent on the plasma concentration of the alpha-1-acid glycoprotein.

Lidocaine HCl crosses the blood-brain and placental barriers, presumably by passive diffusion.

Lidocaine HCl is metabolized rapidly by the liver, and metabolites and unchanged drug are excreted by the kidneys. Biotransformation includes oxidative N-dealkylation, ring hydroxylation, cleavage of the amide linkage, and conjugation. N-dealkylation, a major pathway of biotransformation, yields the metabolites monoethylglycinexylidide and glycine xylidide.

The pharmacological/toxicological actions of these metabolites are similar to, but less potent than, those of lidocaine HCl. Approximately 90% of lidocaine HCl administered is excreted in the form of various metabolites, and less than 10% is excreted unchanged. The primary metabolite in urine is a conjugate of 4-hydroxy-2,6-dimethoxymethylene.

The elimination half-life of lidocaine HCl following an intravenous bolus injection is typically 1.5 to 2 hours. Because of the rapid rate at which lidocaine HCl is metabolized, any condition that affects liver function may alter lidocaine HCl kinetics. The half-life may be prolonged two-fold or more in patients with liver dysfunction. Renal dysfunction does not affect lidocaine HCl kinetics but may increase the accumulation of metabolites.

Factors such as acidosis and the use of CNS stimulants and depressants affect the CNS levels of lidocaine HCl required to produce overt systemic effects. Objective adverse manifestations become increasingly apparent with increasing venous plasma levels above 6 mcg free base per mL. In the normal monkey arterial blood levels of 18 to 21 mcg/mL have been shown to be threshold for convulsive activity.

INDICATIONS AND USAGE:

Xylocaine (lidocaine HCl) Injections are indicated for production of local or regional anesthesia by infiltration techniques such as percutaneous injection and intravenous regional anesthesia by peripheral nerve block techniques such as brachial plexus and intercostal and by central neural techniques such as lumbar and caudal epidural blocks, when the accepted procedures for these techniques as described in standard textbooks are observed.

CONTRAINDICATIONS:

Lidocaine HCl is contraindicated in patients with a known history of hypersensitivity to local anesthetics of the amide type.

WARNINGS:

XYLOCAINE INJECTIONS FOR INFLATION AND NERVE BLOCK SHOULD BE EMPLOYED ONLY BY CLINICIANS WHO ARE WELL VERSED IN DIAGNOSIS AND MANAGEMENT OF DOSE-RELATED TOXICITY AND OTHER ACUTE EMERGENCIES THAT MIGHT RESULT FROM THE BLOCK TO BE EMPLOYED AND THEN ONLY AFTER ENSURING THE IMMEDIATE AVAILABILITY OF OXYGEN, OTHER RESUSCITATIVE DRUGS, CARDIOPULMONARY EQUIPMENT AND THE PERSONNEL NEEDED FOR PROPER MANAGEMENT OF TOXIC REACTIONS AND RELATED EMERGENCIES (see also ADVERSE REACTIONS AND PRECAUTIONS). DELAY IN PROPER MANAGEMENT OF DOSE-RELATED TOXICITY, UNDERVENTILATION FROM ANY CAUSE AND/OR ALTERED SENSITIVITY MAY LEAD TO THE DEVELOPMENT OF ACIDOSIS, CARDIAC ARREST AND, POSSIBLY, DEATH.

Intra-articular infusions of local anesthetics following arthroscopic and other surgical procedures is an unapproved use, and there have been post-marketing reports of choroiditis in patients receiving such infusions. The majority of reported cases of choroiditis have involved the shoulder joint; cases of gleno-humeral choroiditis have been described in pediatric and adult patients following intra-articular infusions of local anesthetics with and without epinephrine for periods of 48 to 72 hours. There is insufficient information to determine whether shorter infusion periods are not associated with these findings. The time of onset of symptoms, such as joint pain and loss of motion, can be variable, but may begin as early as the 2nd month after surgery. Currently, there is no effective treatment for choroiditis; patients who experienced choroiditis have required additional diagnostic and therapeutic procedures and some required arthroplasty or shoulder replacement.

To avoid intravascular injection, aspiration should be performed before the local anesthetic solution is injected. The needle must be repositioned until no return of blood can be elicited by aspiration. Note, however, that the absence of blood in the syringe does not guarantee that intravascular injection has been avoided.

Local anesthetic solutions containing antimicrobial preservatives (eg, methylparaben) should not be used for epidural or spinal anesthesia because the preservative N-dealkylation of these agents has not been established with regard to intrathecal injection, either intentional or accidental.

Xylocaine with epinephrine solutions contain sodium metabisulfite, a sulfite that may cause
allergic-type reactions including anaphylactic symptoms and life-threatening or less severe asthmatic episodes in certain susceptible people. The prevalence of a family history of other allergic reactions such as asthma, hay fever, or eczema is predictive of allergic reactions to lidocaine hydrochloride (see ADVERSE REACTIONS). In the case of severe reaction, discontinue the use of the drug.

PRECAUTIONS: General

The safety and effectiveness of lidocaine HCl depend on proper dosage, correct technique, adequate duration of the anesthesia, and on the readiness for and immediate availability of emergency equipment. Standard textbooks should be consulted for specific technical and precautions for local anesthesia procedures in general.

Resuscitative equipment, oxygen, and other resuscitative drugs should be immediately available. When using indwelling catheter techniques. During the administration of epidural anesthesia, it is recommended that a test dose be administered in order to alert the patient and the observer for central nervous system toxicity and cardiovascular toxicity, as well as signs of unintended intravascular injection. When clinical conditions permit, consideration should be given to employing local anesthetic solutions containing epinephrine for the test dose because circulatory changes compatible with epinephrine may also serve as a warning sign of unintended intravascular injection. An intravascular injection is still possible even if aspiration tests are negative. Reported overdoses of lidocaine HCl may cause significant increases in blood levels with each repeated dose because of slow accumulation of the drug or its metabolites. Tolerance to elevated blood levels varies with the status of the patient. Debilitated, elderly, elderly, acutely ill patients and children should be given reduced doses commensurate with their age and physical condition. Lidocaine HCl should also be withdrawn with caution in patients with severe shock or heart block.

Lumbar and caudal epidural anesthesia should be performed on the careful observations with the following conditions: existing neurological disease, spinal deformities, septicemia, and sepsis.

Local anesthetic solutions containing a vasoconstrictor should be used cautiously and in calculated amounts. Large doses of the body supplied by end arteries or having otherwise compromised blood supply. Patients with cardiovascular disease and those with hypertensive vascular disease may exhibit exaggerated cardiovascular responses. Ischemic injury or necrosis may result. Preparations containing a vasoconstrictor should be used with caution in patients following the administration of potent general anesthetic agents, since cardiac arrhythmias may occur under such conditions.

Careful and constant monitoring of cardiovascular and respiratory (adequacy of ventilation) vital signs and the patient's state of consciousness should be accomplished after each local anesthetic injection. It should be kept in mind at all times, especially in elderly patients, dizziness, blurred vision, tremors, depression or drowsiness may be early warning signs of central nervous system toxicity.

Since amide-type local anesthetics are metabolized by the liver, Xylocaine Injection should be used with caution in patients with hepatic disease. Patients with severe hepatic disease, because of their inability to metabolize lidocaine hydrochloride, are at increased risk of developing toxic plasma concentrations. Xylocaine Injection should also be used with caution in patients with impaired cardiovascular function since they may be less able to compensate for functional changes associated with the lidocaine hydrochloride and A-V conduction prolonged by these drugs.

Many drugs used during the conduct of anesthesia are considered potential triggering agents for familial malignant hypothermia. Since it is now known that amide-type local anesthetics may trigger this reaction and since the need for supplemental general anesthesia cannot be predicted in advance, it is suggested that a standard protocol for the management of malignant hyperthermia should be available. Explanations of tachycardia, tachypnea, labile blood pressure and metabolic acidosis may precede temperature elevation. Successful outcome is dependent on early diagnosis, prompt discontinuance of the suspected triggering agent(s) and institution of the following supportive measures: oxygen therapy, indicated supportive measures and the dantrolene sodium intravenous package insert before using). Proper tourniquet technique, as described in publications and textbooks, is essential in the performance of intravenous regional anesthesia. Solutions containing epinephrine or other vasoconstrictors should not be used for this technique.

Lidocaine HCl should be used with caution in persons with known sensitivity to drug sensitivities, including allergy to para-aminobenzoic acid derivatives (procaine, tetracaine, benzoic acid, etc.) have not shown cross-sensitivity with lidocaine HCl.

Use in the Head and Neck Area

Small doses of local anesthetics injected into the head and neck area, including retrobulbar, dental and stellate ganglion blocks, may produce adverse reactions similar to systemic toxicity seen with unintentional intravascular injections of larger doses. Confusion, convulsions, respira-
tory depression and/or respiratory arrest, and cardiovascular stimulation or depression have been reported following lidocaine HCl may be due to intra-arterial injection of the local anesthetic with resultant ischemia and/or hemorrhage. Patients receiving these blocks should have their circulation and respiration monitored and be constantly alert to the availability of appropriate equipment and personnel for treating adverse reactions should be immediately available. Dosage recommendations have not been established (see DOSAGE AND ADMINISTRATION).

Information for Patients

When appropriate, patients should be informed in advance that (a) the sensation of loss of sensation and motor activity, usually in the lower half of the body, following proper administration of epinephrine containing local anesthetic solutions should be anticipated; (b) the sensitivity to epinephrine may be due to intra-arterial injection of the local anesthetic with resultant ischemia and/or hemorrhage. Patients receiving these blocks should have their circulation and respiration monitored and be constantly alert to the availability of appropriate equipment and personnel for treating adverse reactions should be immediately available. Dosage recommendations have not been established (see DOSAGE AND ADMINISTRATION).

Clinically Significant Drug Interactions

The administration of local anesthetic solutions containing epinephrine or norepinephrine to patients receiving monoamine oxidase inhibitors or tricyclic antidepressants may produce severe, prolonged hypertension.

Phenothiazines and butyrophenones may reduce or reverse the pressor effect of epinephrine.

Concurrent use of these agents should generally be avoided. In situations when concurrent therapy is necessary, careful patient monitoring is essential.

Concurrent administration of vasopressor drugs (for the treatment of hypotension related to obstetric complications) and lidocaine HCl may cause severe, persistent hypertension or cerebrovascular accidents.

Drug/Laboratory Test Interactions

The intramuscular injection of lidocaine HCl may result in an increase in creatine phosphokinase levels. Thus, the use of this enzyme determination, without isoenzyme separation, as a diagnostic test for the presence of acute myocardial infarction may be compromised by the intramuscular injection of lidocaine HCl.

Carcinogenesis, Mutagenesis, Impairment of Fertility

Studies of lidocaine HCl in animals to evaluate the carcinogenic potential of the effect on fertility have not been conducted.

Pregnancy

Teratogenic Effects: Pregnancy Category B. Reproduction studies performed in rats at doses up to 6.6 times the human dose and have revealed no evidence of harm to the fetus caused by lidocaine HCl. There, however, no adequate and well-controlled studies in pregnant women. Animal reproduction studies are not predictive of human response. General consideration should be given to this fact before lidocaine HCl is administered to women of childbearing potential, especially during early pregnancy when maximum organogenesis takes place.

Labor and Delivery

Local anesthetics rapidly cross the placenta and when used for epidural, paracervical, pudendal or caudal blocks in late pregnancy, cause varying degrees of maternal, fetal and neonatal toxicity (see CLINICAL PHARMACOLOGY, Pharma-
cokinetics and Dosage Form). The potential for toxicity depends upon the procedure performed, the type and amount of drug used, and the technique of drug administration. Adverse reactions in the parturient, fetus and neonate involve alterations of the central nervous system, peripheral vascular tone and cardiac function. Maternal hypotension has resulted from regional anesthesia. Local anesthetic potency is decreased by vasodilation by blocking sympathetic nerves. Elec- tron monitoring of the patient’s leading segment on her left side will help prevent decreases in blood pressure. The fetal heart rate also should be monitored continuously, and electronic fetal monitoring is highly advisable.

Epidural, spinal, paracervical, or pudendal anesthetics may alter the forces of parturition through changes in uterine contractility or maternal expulsive efforts. Animal studies have demonstrated that the local anesthetic block is associated with a decrease in the mean duration of first stage labor and facilitation of cervical dilatation. However, epidural and epidural anesthesia have also been reported to prolong the second stage of labor by removing the parturient’s reflex urge to bear down or by interfering with motor function. The use of obstetrical anesthesia may increase the need for forceps assistance.

The use of some local anesthetic drug products during labor and delivery may be followed by diminished muscle strength and tone for the first day or two of life. The long-term significance of this is unknown. Fetal bradycardia may occur in 20 to 30 percent of patients receiving paracervical nerve block anesthesia with the amide-type local anesthetics are not associated with fetal acidosis. Fetal heart rate should always be monitored during paracervical anesthesia. The physician should weigh the possible advantages against risks when considering a paracervical block in pregnant, toxemic, premature, of pregnancy, and for epidural anesthesia. Adherence to recommended dosage is of the utmost importance in obstetrical paracervical blocks. Failure to achieve at least a 5AV (whether or not a single dose) with recommended doses should arouse suspicion of intravascular or fetal intracranial injection. Cases compatible with unintended fetal intracranial injection of local anesthetic solution have been reported following intentional paracervical or pudendal block. Blood levels so affected present with unexplained neonatal depression at birth, which correlates with high anesthetic serum levels. Seizures within six hours. Prompt use of supportive measures combined with forced urinary retention for forceps assistance has been used successfully to manage this complication.

Case reports of maternal convulsions and cardiovascular collapse following the use of some local anesthetics for paracervical block in early pregnancy (as late as 16 weeks) suggest that systemic absorption under these circumstances may be rapid. The Recommenda- tions in the use of intracervical injection of local anesthetics should not be exceeded. Injection may be made slowly and with frequent aspiration. Allow a 5-minute interval between sides.

Nursing Mothers

It is not known whether this drug is excreted in human milk. Because many drugs are excreted in human milk, caution should be exercised when lidocaine HCl is administered to a nursing woman.

Pediatric Use

Dosages in children should be reduced, commensurate with age, body weight and physical condition, see DOSAGE AND ADMINISTRATION.

ADVERSE REACTIONS: Systemic

Adverse experiences following the administration of lidocaine HCl are similar in nature to those observed with other amide-type local anesthetic agents. These adverse experiences are, in general, dose-related and may result from high plasma levels or from the consequences of rapid absorption or inadvertent intravascular injection, or may result from a hypersensitivity, idiosyncracy or diminished tolerance to the drug in the patient. Serious adverse experiences are generally systemic in nature. The following types are considered most commonly reported. Central Nervous System

CNS manifestations are excitatory and/or depressant and may be characterized by light-headedness, nervousness, restlessness, dizziness, euphoria, confusion, dizziness, drowsiness, tinnitus, blurred or double vision, vomiting, sensations of heat, cold or numbness, twitching, tremors, convulsions, unconsciousness,
respiratory depression and arrest. The excitatory manifestations may be very brief or may not occur at all, in which case the first manifestation of toxicity may be drowsiness merging into unconsciousness and respiratory arrest.

DOSAGE AND ADMINISTRATION: Following the administration of lidocaine HCl is usually an early sign of a high blood level of the drug and may occur as a consequence of rapid absorption.

Cardiovascular System: Cardiac arrest in lidocaine manifests are usually depressant and are characterized by bradycardia, hypotension, and cardiovascular collapse, which may lead to cardiac arrest.

Allergic: Allergic reactions are characterized by cutaneous lesions, urticaria, edema or anaphylactoid reactions which may occur as a result of sensitivity either to local anesthetic agents or to the methyliparaben used as a preservative. Multiple dose vials of injectable reactions, including anaphylactic reactions, may occur as a result of sensitivity to lidocaine, but anaphylactic reactions should be anticipated. They should be managed by conventional means. The detection of sensitivity by skin testing is often difficult.

There have been no reports of cross sensitivity between lidocaine hydrochloride and procaine hydrochloride between lidocaine hydrochloride and quinidine.

Neurologic: The incidences of adverse reactions associated with the use of local anesthetics may be related to the toxic effects of local anesthetic administration and are also dependent upon the particular drug involved, the patient and the procedural site. Regardless of the type of local anesthetic procedures performed, the incidences of adverse reactions are low, in that the vast majority of more than 100,000 patients who have received lidocaine HCl for surgical anesthesia, the incidences of adverse reactions were reported to be about 3 percent for positional headaches, hypotension and backache; 2 percent for shivering; and less than 1 percent each for peripheral nerve symptoms, nausea, respiratory inadequacy and dizziness. None of these observations, however, may be related to local anesthetic techniques, with or without a contribution from the local anesthetic.

Inadvertent intravascular administration of local anesthetic, accidental or unintentional penetration of the subarachnoid space by the catheter may occur. Should an adverse effect occur, it is important to note the time and location of administration and for purposes of comparison, the type of anesthetic used. Some of the adverse effects may be partially or completely category of each test dose. The rapid "epinephrine response" within 45 seconds, consisting of an increase in heart rate and systolic blood pressure, circumstantial and nervousness in the unsedated patient. The sedated patient may exhibit only a pulse rate increase of 20 or more beats per minute for 15 or more seconds. Patients on beta blockers may not manifest changes in heart rate, but blood pressure will rise. Cardiac arrhythmia may also rise in systolic blood pressure. Adequate time should be allowed for onset of anesthesia after administration of each test dose. The injection of a large volume of Xylocaine Injection through the catheter should be avoided, and, when feasible, fractional doses should be administered.

In the event of the known injection of a large volume of local anesthetic into the subarachnoid space, after suitable resuscitation and if necessary in the presence of the anesthesiologist and using the recovery of the drug by draining a moderate amount of cerebrospinal fluid (such as 10 mL) from the epidural catheter.

MAXIMUM RECOMMENDED DOSAGES: Adults: For normal healthy adults, the individual maximum recommended dose of lidocaine HCl with epinephrine should not exceed 7 mg/kg (3.5 mg/lb) of body weight, and in general it is recommended that the maximum total dose not exceed 500 mg. When used without epinephrine the maximum individual dose should not exceed 4 mg/kg or 200 mg. In general it is recommended that the maximum total dose does not exceed 300 mg. For continuous epidural or caudal anesthesia the maximum recommended dosage should not be administered at intervals of less than 90 minutes. When continuous lumbar or caudal epidural anesthesia is used for non-obstetrical procedures, more drug may be administered if required to produce adequate anesthesia.

The maximum recommended dose per 90 minute period of lidocaine hydrochloride for paracervical block in obstetric patients is 100 mg and in non-obstetrical patients is 200 mg total. One half of the total dose is usually deposited in each side of the vaginal canal. Inject slowly, five minutes between sides (see also discussion of paracervical block in PRECAUTIONS).

For intravenous regional anesthesia, the dose administered should not exceed 4 mg/kg in adults.

Children: It is difficult to recommend a maximum dose of any drug for children, since this varies as a function of age and weight. For children over 3 years of age who have a normal weight for their age and normal body development, the maximum dose is determined by the child’s age and weight. For example, in a child of 5 years weighing 50 lbs the dose of lidocaine HCl should not exceed 75 mg (1.5 mg/lb) or 0.3 mg/kg. In children receiving additional more dilute solutions (ie, 0.25 to 0.5%) and total doses not to exceed 3 mg/kg (1.4 mg/lb) and recommended for induction of intravenous regional anesthesia in children.

In order to guard against systemic toxicity, the most effective concentration effective dose should be used at all times. In
some cases it will be necessary to dilute available concentrations with 0.9% sodium chloride injection in order to obtain the required final concentration. NOTE: Parenteral drug products should be inspected visually for particulate matter and discoloration prior to administration whenever the solution and container permit. The injection is not to be used if its color is pinkish or darker than slightly yellow or if it contains a precipitate.

### Table 1: Recommended Dosages

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Xylocaine (lidocaine hydrochloride) Injection (without epinephrine)</th>
<th>Conc (%)</th>
<th>Vol (mL)</th>
<th>Total Dose (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infiltration</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percutaneous</td>
<td>0.5 or 1</td>
<td>1 to 60</td>
<td>5 to 300</td>
<td></td>
</tr>
<tr>
<td>Intravenous regional</td>
<td>0.5</td>
<td>10 to 60</td>
<td>50 to 300</td>
<td></td>
</tr>
<tr>
<td>Peripheral Nerve Blocks, eg.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brachial</td>
<td>1.5</td>
<td>15 to 20</td>
<td>225 to 300</td>
<td></td>
</tr>
<tr>
<td>Dental</td>
<td>2</td>
<td>1 to 5</td>
<td>20 to 100</td>
<td></td>
</tr>
<tr>
<td>Intercostal</td>
<td>1</td>
<td>3</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Paravertebral</td>
<td>1</td>
<td>3 to 5</td>
<td>30 to 50</td>
<td></td>
</tr>
<tr>
<td>Pudendal (each side)</td>
<td>1</td>
<td>10</td>
<td>100</td>
<td></td>
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<tr>
<td>Paracervical</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obstetrical analgesia</td>
<td>1</td>
<td>10</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Sympathetic Nerve Blocks, eg.</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Cervical (stellate ganglion)</td>
<td>1</td>
<td>5</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Lumbar</td>
<td>1</td>
<td>5 to 10</td>
<td>50 to 100</td>
<td></td>
</tr>
<tr>
<td>Central Neural Blocks</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Epidural*</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Thoracic</td>
<td>1</td>
<td>20 to 30</td>
<td>200 to 300</td>
<td></td>
</tr>
<tr>
<td>Lumbar</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analgesia</td>
<td>1</td>
<td>25 to 30</td>
<td>250 to 300</td>
<td></td>
</tr>
<tr>
<td>Anesthesia</td>
<td>1.5</td>
<td>15 to 20</td>
<td>225 to 300</td>
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<tr>
<td>Caudal</td>
<td>2</td>
<td>10 to 15</td>
<td>200 to 300</td>
<td></td>
</tr>
<tr>
<td>Obstetrical analgesia</td>
<td>1</td>
<td>20 to 30</td>
<td>200 to 300</td>
<td></td>
</tr>
<tr>
<td>Surgical anesthesia</td>
<td>1.5</td>
<td>15 to 20</td>
<td>225 to 300</td>
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</tbody>
</table>

*Dose determined by number of dermatomic to be anesthetized (2 to 3 mL/dermatome).

**THE ABOVE SUGGESTED CONCENTRATIONS AND VOLUMES SERVE ONLY AS A GUIDE. OTHER VOLUMES AND CONCENTRATIONS MIGHT BE USED PROVIDED THE TOTAL MAXIMUM RECOMMENDED DOSE IS NOT EXCEEDED.**

### STERILIZATION, STORAGE AND TECHNICAL PROCEDURES:

Disinfecting agents containing heavy metals, which cause release of respective ions (mercury, zinc, copper, etc.) should not be used for skin or mucous membrane disinfection as they have been related to incidents of swelling and edema. When chemical disinfection of multidose vials is desired, either isopropyl alcohol (91%) or ethyl alcohol (70%) is recommended. Many commercially available brands of rubbing alcohol, as well as solutions of ethyl alcohol not of USP grade, contain denaturants which are injurious to rubber and therefore are not to be used.

**Dosage forms listed as Xylocaine-MPF indicate single dose solutions that are Methyl Paraben Free (MPF).**

### HOW SUPPLIED:

<table>
<thead>
<tr>
<th>Xylocaine-MPF</th>
<th>Xylocaine</th>
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<tbody>
<tr>
<td></td>
<td>Xylocaine (lidocaine HCl) Concentration</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>0.5%</td>
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<tr>
<td>0.5%</td>
<td>1:200,000</td>
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<tr>
<td>1%</td>
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<td>1.5%</td>
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<tr>
<td>1.5%</td>
<td>1:200,000</td>
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<td>2%</td>
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<td>2%</td>
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<td>2%</td>
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</tbody>
</table>

All solutions should be stored at 20° to 25°C (68° to 77°F) [see USP Controlled Room Temperature].

Protect from light.
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Fresenius Kabi USA, LLC
Lake Zurich, IL 60047

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