

DDAVP® Nasal Spray (desmopressin acetate)

5. We have included a convenient check-off chart to assist you in keeping track of medication doses used. This will help assure that you receive 50 “full doses” of medication. Please note that the bottle has been filled with extra solution to accommodate the initial priming activity.

DDAVP Nasal Spray 50-Dose Check-off

①	②	③	④	⑤
⑥	⑦	⑧	⑨	⑩
⑪	⑫	⑬	⑭	⑮
⑯	⑰	⑱	⑲	⑳
㉑	㉒	㉓	㉔	㉕
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㊻	㊼	㊽	㊾	㊿

1. Retain with medication or affix in convenient location.
2. Starting with dose #1, check off after each administration.
3. Discard medication after 50 doses.

Store at Controlled Room Temperature 20 to 25°C (68 to 77°F) [see USP].

STORE BOTTLE IN UPRIGHT POSITION.

Manufactured for:
Ferring Pharmaceuticals Inc.
Parsippany, NJ 07054 USA
Origin Sweden
Rev. 04/2015
XXXXXXXXXX

DDAVP® Nasal Spray (desmopressin acetate)

Several publications of desmopressin acetate's use in the management of diabetes insipidus during pregnancy are available; these include a few anecdotal reports of congenital anomalies and low birth weight babies. However, no causal connection between these events and desmopressin acetate has been established. A fifteen year Swedish epidemiologic study of the use of desmopressin acetate in pregnant women with diabetes insipidus found the rate of birth defects to be no greater than that in the general population; however, the statistical power of this study is low. As opposed to preparations containing natural hormones, desmopressin acetate in antidiuretic doses has no uterotropic action and the physician will have to weigh the therapeutic advantages against the possible risks in each case.

Nursing Mothers: There have been no controlled studies in nursing mothers. A single study in a post-partum woman demonstrated a marked change in plasma, but little if any change in assayable DDAVP in breast milk following an intranasal dose of 10 mcg. 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 DDAVP is administered to a nursing woman.

Pediatric Use: *Central Cranial Diabetes Insipidus:* DDAVP Nasal Spray has been used in children with diabetes insipidus. Use in infants and children will require careful fluid intake restriction to prevent possible hyponatremia and water intoxication. (See **WARNINGS**.) The dose must be individually adjusted to the patient with attention in the very young to the danger of an extreme decrease in plasma osmolality with resulting convulsions. Dose should start at 0.05 mL or less.

Since the spray cannot deliver less than 0.1 mL (10 mcg), smaller doses should be administered using the rhinal tube delivery system. Do not use the nasal spray in pediatric patients requiring less than 0.1 mL (10 mcg) per dose.

Geriatric Use: Clinical studies of DDAVP Nasal Spray did not include sufficient numbers of subjects aged 65 and over to determine whether they respond differently from younger subjects. Other reported clinical experience has not identified differences in responses between the elderly and younger subjects. In general, dose selection for an elderly patient should be cautious, usually starting at the low end of the dosing range, reflecting the greater frequency of decreased hepatic, renal, or cardiac function, and of concomitant disease or drug therapy.

This drug is known to be substantially excreted by the kidney, and the risk of toxic reactions to this drug may be greater in patients with impaired renal function. Because elderly patients are more likely to have decreased renal function, care should be taken in dose selection, and it may be useful to monitor renal function. DDAVP is contraindicated in patients with moderate to severe renal impairment (defined as a creatinine clearance below 50ml/min). (See **CLINICAL PHARMACOLOGY**, Human Pharmacokinetics and **CONTRAINDICATIONS**.)

Use of DDAVP Nasal Spray in geriatric patients will require careful fluid intake restriction to prevent possible hyponatremia and water intoxication. (See **WARNINGS**.)

There are reports of an occasional change in response with time, usually greater than 6 months. Some patients may show a decreased responsiveness, others a shortened duration of effect. There is no evidence this effect is due to the development of binding antibodies but may be due to a local inactivation of the peptide.

ADVERSE REACTIONS

Infrequently, high dosages of intranasal DDAVP have produced transient headache and nausea. Nasal congestion, rhinitis and flushing have also been reported occasionally along with mild abdominal cramps. These symptoms disappeared with reduction in dosage. Nosebleed, sore throat, cough and upper respiratory infections have also been reported.

The following table lists the percentage of patients having adverse experiences without regard to relationship to study drug from the pooled pivotal study data for nocturnal enuresis.

ADVERSE REACTION	PLACEBO (N=59) %	DDAVP 20 mcg (N=60) %	DDAVP 40 mcg (N=61) %
BODY AS A WHOLE			
Abdominal Pain	0	2	2
Asthenia	0	0	2
Chills	0	0	2
Headache	0	2	5
NERVOUS SYSTEM			
Dizziness	0	0	3
RESPIRATORY SYSTEM			
Epistaxis	2	3	0
Nostril Pain	0	2	0
Rhinitis	2	8	3
DIGESTIVE SYSTEM			
Gastrointestinal Disorder	0	2	0
Nausea	0	0	2
SPECIAL SENSES			
Conjunctivitis	0	2	0
Edema Eyes	0	2	0
Lachrymation Disorder	0	0	2

Post Marketing: There have been rare reports of hyponatremic convulsions associated with concomitant use with the following medications: oxybutinin and imipramine.

See **WARNINGS** for the possibility of water intoxication and hyponatremia.

OVERDOSAGE

Signs of overdose may include confusion, drowsiness, continuing headache, problems with passing urine and rapid weight gain due to fluid retention. (See **WARNINGS**.) In case of overdose, the dose should be reduced, frequency of administration decreased, or the drug withdrawn according to the severity of the condition. There is no known specific antidote for desmopressin acetate or DDAVP Nasal Spray.

An oral LD₅₀ has not been established. An intravenous dose of 2 mg/kg in mice demonstrated no effect.

DOSAGE AND ADMINISTRATION

Central Cranial Diabetes Insipidus: DDAVP Nasal Spray dosage must be determined for each individual patient and adjusted according to the diurnal pattern of response. Response should be estimated by two parameters: adequate duration of sleep and adequate, not excessive, water turnover. Patients with nasal congestion and blockage have often responded well to intranasal DDAVP. The usual dosage range in adults is 0.1 to 0.4 mL daily, either as a single dose or divided into two or three doses. Most adults require 0.2 mL daily in two divided doses. The morning and evening doses should be separately adjusted for an adequate diurnal rhythm of water turnover. For children aged 3 months to 12 years, the usual dosage range is 0.05 to 0.3 mL daily, either as a single dose or divided into two doses. About 1/4 to 1/3 of patients can be controlled by a single daily dose of DDAVP administered intranasally. Fluid restriction should be observed. (See **WARNINGS**, **PRECAUTIONS**, Pediatric Use and Geriatric Use.)

The nasal spray pump can only deliver doses of 0.1 mL (10 mcg) or multiples of 0.1 mL. If doses other than these are required, the rhinal tube delivery system may be used.

The spray pump must be primed prior to the first use. To prime pump, press down four times. The bottle will now deliver 10 mcg of drug per spray. Discard DDAVP Nasal Spray after 50 sprays since the amount delivered thereafter per spray may be substantially less than 10 µg of drug.

Geriatric Use: This drug is known to be substantially excreted by the kidney, and the risk of toxic reactions to this drug may be greater in patients with impaired renal function. Because elderly patients are more likely to have decreased renal function, care should be taken in dose selection, and it may be useful to monitor renal function. (See **CLINICAL PHARMACOLOGY**, Human Pharmacokinetics, **CONTRAINDICATIONS**, and **PRECAUTIONS**, Geriatric Use.)

HOW SUPPLIED

DDAVP Nasal Spray is available in a 5-mL bottle with spray pump delivering 50 sprays of 10 mcg (NDC 55566-2500-0). Desmopressin acetate is also available as DDAVP Rhinal Tube, a refrigerated product with 2.5 mL per bottle, packaged with two rhinal tube applicators per carton (NDC 55566-2400-0).

Store at Controlled Room Temperature 20 to 25°C (68 to 77°F) [see USP]. STORE BOTTLE IN UPRIGHT POSITION.

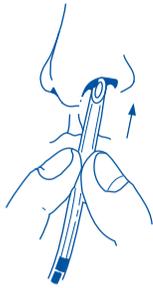
Keep out of the reach of children.

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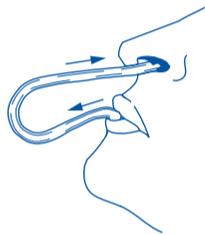
**DDAVP®
Rhinal Tube
(desmopressin acetate)**

5. Hold the tube with the fingers approximately $\frac{3}{4}$ inch from the end and insert into a nostril until the tips of the fingers reach the nostril.



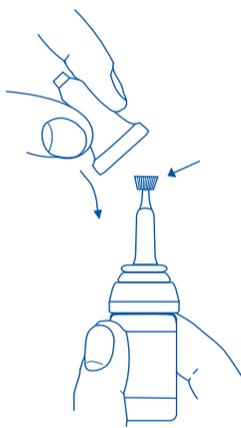
6. Put the other end of the tube into the mouth. Hold the breath, tilt the head back and then blow with a short, strong puff through the tube so that the solution reaches the right place in the nasal cavity. Through this procedure, medication is limited to the nasal cavity and the preparation does not pass down into the throat.

In very young patients, it may be necessary for an adult to blow the solution into the child's nose. In such cases, the tube will not need to be put into the nose as far as in the older child or adult. The tube should be placed in the nose gently just far enough so that the solution does not run out. A baby must be held firmly and securely.



7. After use, reseal dropper tip and close the bottle with the plastic cap. Wash the tube in water and shake thoroughly, until no more water is left. The tube can then be used for the next application.

**IMPORTANT:
Replace Knurled Seal**



Store refrigerated 2 to 8°C (36 to 46°F). When traveling, closed bottles will maintain stability for 3 weeks when stored at controlled room temperature, 20 to 25°C (68 to 77°F).

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**DDAVP®
Rhinal Tube
(desmopressin acetate)**

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Nursing Mothers: There have been no controlled studies in nursing mothers. A single study in postpartum women demonstrated a marked change in plasma, but little if any change in assayable DDAVP (desmopressin acetate) in breast milk following an intranasal dose of 10 mcg. 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 DDAVP is administered to a nursing woman.

Pediatric Use: *Central Cranial Diabetes Insipidus:* DDAVP Rhinal Tube has been used in pediatric patients with diabetes insipidus. Use in infants and pediatric patients will require careful fluid intake restriction to prevent possible hyponatremia and water intoxication. Fluid restriction should be discussed with the patient and/or guardian. (See **WARNINGS**.) The dose must be individually adjusted to the patient with attention in the very young to the danger of an extreme decrease in plasma osmolality with resulting convulsions. Dose should start at 0.05 mL or less.

There are reports of an occasional change in response with time, usually greater than 6 months. Some patients may show a decreased responsiveness, others a shortened duration of effect. There is no evidence this effect is due to the development of binding antibodies but may be due to a local inactivation of the peptide.

Geriatric Use: Clinical studies of DDAVP Rhinal Tube did not include sufficient numbers of subjects aged 65 and over to determine whether they respond differently from younger subjects. Other reported clinical experience has not identified differences in responses between elderly and younger patients. In general, dose selection for an elderly patient should be cautious, usually starting at the low end of the dosing range, reflecting the greater frequency of decreased hepatic, renal, or cardiac function, and of concomitant disease or other drug therapy.

This drug is known to be substantially excreted by the kidney, and the risk of toxic reactions to this drug may be greater in patients with impaired renal function. Because elderly patients are more likely to have decreased renal function, care should be taken in dose selection, and it may be useful to monitor renal function. DDAVP is contraindicated in patients with moderate to severe renal impairment (defined as a creatinine clearance below 50 mL/min). (See **CLINICAL PHARMACOLOGY**, Human Pharmacokinetics and **CONTRAINDICATIONS**.)

Use of DDAVP Rhinal Tube in geriatric patients will require careful fluid intake restrictions to prevent possible hyponatremia and water intoxication. Fluid restriction should be discussed with the patient. (See **WARNINGS**.)

ADVERSE REACTIONS

Infrequently, high dosages of intranasal DDAVP have produced transient headache and nausea. Nasal congestion, rhinitis and flushing have also been reported occasionally along with mild abdominal cramps. These symptoms disappeared with reduction in dosage. Nosebleed, sore throat, cough and upper respiratory infections have also been reported.

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ADVERSE REACTION	PLACEBO	DDAVP	DDAVP
	(N=59)	20 mcg	40 mcg
	%	(N=60)	(N=61)
	%	%	%
BODY AS A WHOLE			
Abdominal Pain	0	2	2
Asthenia	0	0	2
Chills	0	0	2
Headache	0	2	5
NERVOUS SYSTEM			
Dizziness	0	0	3
RESPIRATORY SYSTEM			
Epistaxis	2	3	0
Nostril Pain	0	2	0
Rhinitis	2	8	3
DIGESTIVE SYSTEM			
Gastrointestinal Disorder	0	2	0
Nausea	0	0	2
SPECIAL SENSES			
Conjunctivitis	0	2	0
Edema Eyes	0	2	0
Lachrymation Disorder	0	0	2

Post Marketing: There have been rare reports of hyponatremic convulsions associated with concomitant use with the following medications: oxybutin and imipramine.

See **WARNINGS** for the possibility of water intoxication and hyponatremia.

OVERDOSAGE

Signs of overdose may include confusion, drowsiness, continuing headache, problems with passing urine and rapid weight gain due to fluid retention. (See **WARNINGS**.) In case of overdose, the dose should be reduced, frequency of administration decreased, or the drug withdrawn according to the severity of the condition. There is no known specific antidote for desmopressin acetate or DDAVP Rhinal Tube.

An oral LD₅₀ has not been established. An intravenous dose of 2 mg/kg in mice demonstrated no effect.

DOSE AND ADMINISTRATION

Central Cranial Diabetes Insipidus: This drug is administered into the nose through a soft, flexible plastic rhinal tube which has four graduation marks on it that measure 0.2, 0.15, 0.1, 0.05 and 0.025 mL. DDAVP Rhinal Tube dosage must be determined for each individual patient and adjusted according to the diurnal pattern of response. Response should be estimated by two parameters: adequate duration of sleep and adequate, not excessive, water turnover. Patients with nasal congestion and blockage have often responded well to intranasal DDAVP. The usual dosage range in adults is 0.1 to 0.4 mL daily, either as a single dose or divided into two or three doses. Most adults require 0.2 mL daily in two divided doses. The morning and evening doses should be separately adjusted for an adequate diurnal rhythm of water turnover. For children aged 3 months to 12 years, the usual dosage range is 0.05 to 0.3 mL daily, either as a single dose or divided into two doses. About 1/4 to 1/3 of patients can be controlled by a single daily dose of DDAVP administered intranasally. Fluid restriction should be observed. (See **WARNINGS**, **PRECAUTIONS**, Pediatric Use and Geriatric Use.)

Geriatric Use: This drug is known to be substantially excreted by the kidney, and the risk of toxic reactions to this drug may be greater in patients with impaired renal function. Because elderly patients are more likely to have decreased renal function, care should be taken in dose selection, and it may be useful to monitor renal function. (See **CLINICAL PHARMACOLOGY**, Human Pharmacokinetics, **CONTRAINDICATIONS**, and **PRECAUTIONS**, Geriatric Use.)

HOW SUPPLIED

DDAVP Rhinal Tube is available in a 2.5 mL bottle, packaged with two rhinal tube applicators per carton (NDC 55566-2400-0). Also available in a 5.0 mL pump bottle with spray pump delivering 50 doses of 10 mcg (NDC 55566-2500-0).

Store refrigerated 2 to 8°C (36 to 46°F). When traveling, closed bottles will maintain stability for 3 weeks when stored at controlled room temperature, 20 to 25°C (68 to 77°F).

Keep out of the reach of children.

Manufactured for:
Ferring Pharmaceuticals Inc.
Parsippany, NJ 07054 USA
Origin Sweden

Rev. 04/2015
XXXXXXXXXX

DDAVP® Injection

desmopressin acetate

4 mcg/mL



DDAVP® N
(desmopressin acetate)
4 mcg/mL

Rx only

DESCRIPTION

DDAVP® Injection (desmopressin acetate) 4 mcg/mL is a synthetic analogue of the natural pituitary hormone 8-arginine vasopressin (ADH), an antidiuretic hormone affecting renal water conservation. It is chemically defined as follows:

Mol. Wt. 1183.34

Empirical Formula: $C_{46}H_{64}N_{14}O_{12}S_2 \cdot C_2H_4O_2 \cdot 3H_2O$



1-(3-mercaptopropionic acid)-8-D-arginine vasopressin monoacetate (salt) trihydrate.

DDAVP Injection 4 mcg/mL is provided as a sterile, aqueous solution for injection.

Each mL provides:

Desmopressin acetate	4 mcg
Sodium chloride	9 mcg
Hydrochloric acid to adjust pH to 4	

The 10 mL vial contains chlorobutanol as a preservative (5 mg/mL).

CLINICAL PHARMACOLOGY

DDAVP Injection 4 mcg/mL contains as active substance, desmopressin acetate, a synthetic analogue of the natural hormone arginine vasopressin. One mL (4 mcg) of DDAVP (desmopressin acetate) solution has an antidiuretic activity of about 16 IU; 1 mcg of DDAVP is equivalent to 4 IU.

DDAVP has been shown to be more potent than arginine vasopressin in increasing plasma levels of factor VIII activity in patients with hemophilia and von Willebrand's disease Type I.

Dose-response studies were performed in healthy persons, using doses of 0.1 to 0.4 mcg/kg body weight, infused over a 10-minute period. Maximal dose response occurred at 0.3 to 0.4 mcg/kg. The response to DDAVP of factor VIII activity and plasminogen activator is dose-related, with maximal plasma levels of 300 to 400 percent of initial concentrations obtained after infusion of 0.4 mcg/kg body weight. The increase is rapid and evident within 30 minutes, reaching a maximum at a point ranging from 90 minutes to two hours. The factor VIII related antigen and ristocetin cofactor activity were also increased to a smaller degree, but still are dose-dependent.

1. The biphasic half-lives of DDAVP were 7.8 and 75.5 minutes for the fast and slow phases, respectively, compared with 2.5 and 14.5 minutes for lysine vasopressin, another form of the hormone. As a result, DDAVP provides a prompt onset of antidiuretic action with a long duration after each administration.
2. The change in structure of arginine vasopressin to DDAVP has resulted in a decreased vasopressor action and decreased actions on visceral smooth muscle relative to the enhanced antidiuretic activity, so that clinically effective antidiuretic doses are usually below threshold levels for effects on vascular or visceral smooth muscle.
3. When administered by injection, DDAVP has an antidiuretic effect about ten times that of an equivalent dose administered intranasally.
4. The bioavailability of the subcutaneous route of administration was determined qualitatively using urine output data. The exact fraction of drug absorbed by that route of administration has not been quantitatively determined.
5. The percentage increase of factor VIII levels in patients with mild hemophilia A and von Willebrand's disease was not significantly different from that observed in normal healthy individuals when treated with 0.3 mcg/kg of DDAVP infused over 10 minutes.
6. Plasminogen activator activity increases rapidly after DDAVP infusion, but there has been no clinically significant fibrinolysis in patients treated with DDAVP.
7. The effect of repeated DDAVP administration when doses were given every 12 to 24 hours has generally shown a gradual diminution of the factor VIII activity increase noted with a single dose. The initial response is reproducible in any particular patient if there are 2 or 3 days between administrations.

Human Pharmacokinetics: DDAVP is mainly excreted in the urine. A pharmacokinetic study conducted in healthy volunteers and patients with mild, moderate, and severe renal impairment (n=24, 6 subjects in each group) receiving single dose desmopressin acetate (2 mcg) injection demonstrated a difference in DDAVP terminal half-life. Terminal half-life significantly increased from 3 hours in normal healthy patients to 9 hours in patients with severe renal impairment. (See **CONTRAINDICATIONS.**)

INDICATIONS AND USAGE

Hemophilia A: DDAVP Injection 4 mcg/mL is indicated for patients with hemophilia A with factor VIII coagulant activity levels greater than 5%. DDAVP will often maintain hemostasis in patients with hemophilia A during surgical procedures and postoperatively when administered 30 minutes prior to scheduled procedure. DDAVP will also stop bleeding in hemophilia A patients with episodes of spontaneous or trauma-induced injuries such as hemarthroses, intramuscular hematomas or mucosal bleeding.

DDAVP is not indicated for the treatment of hemophilia A with factor VIII coagulant activity levels equal to or less than 5%.

In certain clinical situations, it may be justified to try DDAVP in patients with factor VIII levels between 2% to 5%; however, these patients should be carefully monitored.

von Willebrand's Disease (Type I): DDAVP Injection 4 mcg/mL is indicated for patients with mild to moderate classic von Willebrand's disease (Type I) with factor VIII levels greater than 5%. DDAVP will often maintain hemostasis in patients with mild to moderate von Willebrand's disease during surgical procedures and postoperatively when administered 30 minutes prior to the scheduled procedure.

DDAVP will usually stop bleeding in mild to moderate von Willebrand's patients with episodes of spontaneous or trauma-induced injuries such as hemarthroses, intramuscular hematomas or mucosal bleeding.

Those von Willebrand's disease patients who are least likely to respond are those with severe homozygous von Willebrand's disease with factor VIII coagulant activity and factor VIII von Willebrand factor antigen levels less than 1%. Other patients may respond in a variable fashion depending on the type of molecular defect they have. Bleeding time and factor VIII coagulant activity, ristocetin cofactor activity, and von Willebrand factor antigen should be checked during administration of DDAVP to ensure that adequate levels are being achieved.

DDAVP is not indicated for the treatment of severe classic von Willebrand's disease (Type I) and when there is evidence of an abnormal molecular form of factor VIII antigen. (See **WARNINGS.**)

Diabetes Insipidus: DDAVP Injection 4 mcg/mL is indicated as antidiuretic replacement therapy in the management of central (cranial) diabetes insipidus and for the management of the temporary polyuria and polydipsia following head trauma or surgery in the pituitary region. DDAVP is ineffective for the treatment of nephrogenic diabetes insipidus.

DDAVP is also available as an intranasal preparation. However, this means of delivery can be compromised by a variety of factors that can make nasal insufflation ineffective or inappropriate. These include poor intranasal absorption, nasal congestion and blockage, nasal discharge, atrophy of nasal mucosa, and severe atrophic rhinitis. Intranasal delivery may be inappropriate where there is an impaired level of consciousness. In addition, cranial surgical procedures, such as transphenoidal hypophysectomy, create situations where an alternative route of administration is needed as in cases of nasal packing or recovery from surgery.

CONTRAINDICATIONS

DDAVP Injection 4 mcg/mL is contraindicated in individuals with known hypersensitivity to desmopressin acetate or to any of the components of **DDAVP Injection** 4 mcg/mL.

DDAVP is contraindicated in patients with moderate to severe renal impairment (defined as a creatinine clearance below 50 mL/min). DDAVP is contraindicated in patients with hyponatremia or a history of hyponatremia.

WARNINGS

1. Very rare cases of hyponatremia have been reported from world-wide postmarketing experience in patients treated with DDAVP (desmopressin acetate). DDAVP is a potent antidiuretic which, when administered, may lead to water intoxication and/or hyponatremia. Unless properly diagnosed and treated hyponatremia can be fatal. Therefore, fluid restriction is recommended and should be discussed with the patient and/or guardian. Careful medical supervision is required.

2. When DDAVP Injection is administered to patients who do not have need of antidiuretic hormone for its antidiuretic effect, in particular in pediatric and geriatric patients, fluid intake should be adjusted downward to decrease the potential occurrence of water intoxication and hyponatremia. (See **PRECAUTIONS, Pediatric Use and Geriatric Use.**) All patients receiving DDAVP therapy should be observed for the following signs or symptoms associated with hyponatremia: headache, nausea/vomiting, decreased serum sodium, weight gain, restlessness, fatigue, lethargy, disorientation, depressed reflexes, loss of appetite, irritability, muscle weakness, muscle spasms or cramps and abnormal mental status such as hallucinations, decreased consciousness and confusion. Severe symptoms may include one or a combination of the following: seizure, coma and/or respiratory arrest. Particular attention should be paid to the possibility of the rare occurrence of an extreme decrease in plasma osmolality that may result in seizures which could lead to coma.

3. DDAVP should not be used to treat patients with Type IIB von Willebrand's disease since platelet aggregation may be induced.

4. DDAVP should be used with caution in patients with habitual or psychogenic polydipsia who may be more likely to drink excessive amounts of water, putting them at greater risk of hyponatremia.

DDAVP® Injection
(desmopressin acetate)
4 mcg/mL

PRECAUTIONS

General: For injection use only.

DDAVP Injection (desmopressin acetate) 4 mcg/mL has infrequently produced changes in blood pressure causing either a slight elevation in blood pressure or a transient fall in blood pressure and a compensatory increase in heart rate. The drug should be used with caution in patients with coronary artery insufficiency and/or hypertensive cardiovascular disease.

DDAVP (desmopressin acetate) should be used with caution in patients with conditions associated with fluid and electrolyte imbalance, such as cystic fibrosis, heart failure and renal disorders, because these patients are prone to hyponatremia.

There have been rare reports of thrombotic events following **DDAVP Injection** 4 mcg/mL in patients predisposed to thrombus formation. No causality has been determined, however, the drug should be used with caution in these patients.

Severe allergic reactions have been reported rarely. Anaphylaxis has been reported rarely with intravenous and intranasal DDAVP, including isolated cases of fatal anaphylaxis with intravenous DDAVP. It is not known whether antibodies to **DDAVP Injection** 4 mcg/mL are produced after repeated injections.

Hemophilia A: Laboratory tests for assessing patient status include levels of factor VIII coagulant, factor VIII antigen and factor VIII ristocetin cofactor (von Willebrand factor) as well as activated partial thromboplastin time. Factor VIII coagulant activity should be determined before giving DDAVP for hemostasis. If factor VIII coagulant activity is present at less than 5% of normal, DDAVP should not be relied on.

von Willebrand's Disease: Laboratory tests for assessing patient status include levels of factor VIII coagulant activity, factor VIII ristocetin cofactor activity, and factor VIII von Willebrand factor antigen. The skin bleeding time may be helpful in following these patients.

Diabetes Insipidus: Laboratory tests for monitoring the patient include urine volume and osmolality. In some cases, plasma osmolality may be required.

Drug Interactions: Although the pressor activity of DDAVP is very low compared with the antidiuretic activity, use of doses as large as 0.3 mcg/kg of DDAVP with other pressor agents should be done only with careful patient monitoring. The concomitant administration of drugs that may increase the risk of water intoxication with hyponatremia, (e.g., tricyclic antidepressants, selective serotonin re-uptake inhibitors, chlorpromazine, opiate analgesics, NSAIDs, lamotrigine and carbamazepine) should be performed with caution.

DDAVP has been used with epsilon aminocaproic acid without adverse effects.

Carcinogenicity, Mutagenicity, Impairment of Fertility: Studies with DDAVP have not been performed to evaluate carcinogenic potential, mutagenic potential or effects on fertility.

Pregnancy Category B: Fertility studies have not been done. Teratology studies in rats and rabbits at doses from 0.05 to 10 mcg/kg/day (approximately 0.1 times the maximum systemic human exposure in rats and up to 38 times the maximum systemic human exposure in rabbits based on surface area, mg/m²) revealed no harm to the fetus due to DDAVP. There are, however, no adequate and well controlled studies in pregnant women. Because animal reproduction studies are not always predictive of human response, this drug should be used during pregnancy only if clearly needed.

Several publications of desmopressin acetate's use in the management of diabetes insipidus during pregnancy are available; these include a few anecdotal reports of congenital anomalies and low birth weight babies. However, no causal connection between these events and desmopressin acetate has been established. A fifteen year, Swedish epidemiologic study of the use of desmopressin acetate in pregnant women with diabetes insipidus found the rate of birth defects to be no greater than that in the general population; however, the statistical power of this study is low. As opposed to preparations containing natural hormones, desmopressin acetate in antidiuretic doses has no uterotonic action and the physician will have to weigh the therapeutic advantages against the possible risks in each case.

Nursing Mothers: There have been no controlled studies in nursing mothers. A single study in postpartum women demonstrated a marked change in plasma, but little if any change in assayable DDAVP in breast milk following an intranasal dose of 10 mcg. 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 DDAVP is administered to a nursing woman.

Pediatric Use: Use in infants and pediatric patients will require careful fluid intake restriction to prevent possible hyponatremia and water intoxication. Fluid restriction should be discussed with the patient and/or guardian. (See **WARNINGS**.) **DDAVP Injection** 4 mcg/mL *should not be used in infants less than three months of age* in the treatment of hemophilia A or von Willebrand's disease; safety and effectiveness in pediatric patients under 12 years of age with diabetes insipidus have not been established.

Geriatric Use: Clinical studies of DDAVP Injection did not include sufficient numbers of subjects aged 65 and over to determine whether they respond differently from younger subjects. Other reported clinical experience has not identified differences in responses between the elderly and younger patients. In general, dose selection should be cautious, usually starting at the low end of the dosing range, reflecting the greater frequency of decreased hepatic, renal, or cardiac function, and of concomitant disease or other drug therapy.

This drug is known to be substantially excreted by the kidney, and the risk of toxic reactions to this drug may be greater in patients with impaired renal function. Because elderly patients are more likely to have decreased renal function, care should be taken in dose selection, and it may be useful to monitor renal function. DDAVP is contraindicated in patients with moderate to severe renal impairment (defined as a creatinine clearance below 50 mL/min). (See **CLINICAL PHARMACOLOGY**, Human Pharmacokinetics and **CONTRAINDICATIONS**.)

Use of DDAVP injection in geriatric patients will require careful fluid intake restrictions to prevent possible hyponatremia and water intoxication. Fluid restriction should be discussed with the patient. (See **WARNINGS**.)

ADVERSE REACTIONS

Infrequently, DDAVP has produced transient headache, nausea, mild abdominal cramps and vulval pain. These symptoms disappeared with reduction in dosage. Occasionally, injection of DDAVP has produced local erythema, swelling or burning pain. Occasional facial flushing has been reported with the administration of DDAVP. **DDAVP Injection** has infrequently produced changes in blood pressure causing either a slight elevation or a transient fall and a compensatory increase in heart rate. Severe allergic reactions including anaphylaxis have been reported rarely with **DDAVP Injection**.

See **WARNINGS** for the possibility of water intoxication and hyponatremia.

Post Marketing: There have been rare reports of thrombotic events (acute cerebrovascular thrombosis, acute myocardial infarction) following **DDAVP Injection** in patients predisposed to thrombus formation, and rare reports of hyponatremic convulsions associated with concomitant use with the following medications: oxybutinin and imipramine.

OVERDOSAGE

Signs of overdose may include confusion, drowsiness, continuing headache, problems with passing urine and rapid weight gain due to fluid retention. (See **WARNINGS**.) In case of overdose, the dosage should be reduced, frequency of administration decreased, or the drug withdrawn according to the severity of the condition.

There is no known specific antidote for desmopressin acetate or **DDAVP Injection** 4 mcg/mL.

An oral LD₅₀ has not been established. An intravenous dose of 2 mg/kg in mice demonstrated no effect.

DOSAGE AND ADMINISTRATION

Hemophilia A and von Willebrand's Disease (Type I): **DDAVP Injection** 4 mcg/mL is administered as an intravenous infusion at a dose of 0.3 mcg DDAVP/kg body weight diluted in sterile physiological saline and infused slowly over 15 to 30 minutes. In adults and children weighing more than 10 kg, 50 mL of diluent is recommended; in children weighing 10 kg or less, 10 mL of diluent is recommended. Blood pressure and pulse should be monitored during infusion. If **DDAVP Injection** 4 mcg/mL is used preoperatively, it should be administered 30 minutes prior to the scheduled procedure.

The necessity for repeat administration of DDAVP or use of any blood products for hemostasis should be determined by laboratory response as well as the clinical condition of the patient. The tendency toward tachyphylaxis (lessening of response) with repeated administration given more frequently than every 48 hours should be considered in treating each patient.

Fluid restriction should be observed. (See **WARNINGS**, **PRECAUTIONS**, Pediatric Use and Geriatric Use.)

Diabetes Insipidus: This formulation is administered subcutaneously or by direct intravenous injection. **DDAVP Injection** 4 mcg/mL dosage must be determined for each patient and adjusted according to the pattern of response. Response should be estimated by two parameters: adequate duration of sleep and adequate, not excessive, water turnover.

The usual dosage range in adults is 0.5 mL (2.0 mcg) to 1 mL (4.0 mcg) daily, administered intravenously or subcutaneously, usually in two divided doses. The morning and evening doses should be separately adjusted for an adequate diurnal rhythm of water turnover. For patients who have been controlled on intranasal DDAVP and who must be switched to the injection form, either because of poor intranasal absorption or because of the need for surgery, the comparable antidiuretic dose of the injection is about one-tenth the intranasal dose.

Fluid restriction should be observed. (See **WARNINGS**, **PRECAUTIONS**, Pediatric Use and Geriatric Use.)

Parenteral drug products should be inspected visually for particulate matter and discoloration prior to administration whenever solution and container permit.

Geriatric Use: This drug is known to be substantially excreted by the kidney, and the risk of toxic reactions to this drug may be greater in patients with impaired renal function. Because elderly patients are more likely to have decreased renal function, care should be taken in dose selection, and it may be useful to monitor renal function. (See **CLINICAL PHARMACOLOGY**, Human Pharmacokinetics, **CONTRAINDICATIONS**, and **PRECAUTIONS**, Geriatric Use.)

Directions for use of One Point Cut (OPC) Ampules for DDAVP Injection:

1. Use aseptic technique to clean ampule. Gently tap the top of the ampule to assist the flow of the solution from the upper portion of the ampule to the lower portion.
2. Locate the blue dot on the upper portion of the ampule. **Below** this dot is a small score on the neck of the ampule. Hold the ampule with the blue dot **facing away from you**.
3. Cover the vial with an appropriate wipe. Apply pressure to the top and bottom portions of the ampule to snap the ampule open away from you.

HOW SUPPLIED

DDAVP Injection 4 mcg/mL is available as a sterile solution in cartons of ten 1 mL single-dose ampules (NDC 55566-2200-0) and in 10 mL multiple-dose vials (NDC 55566-2300-0), each containing 4 mcg DDAVP per mL.

Store refrigerated 2 to 8°C (36 to 46°F).

Keep out of the reach of children.

Manufactured for:

Ferring Pharmaceuticals Inc.

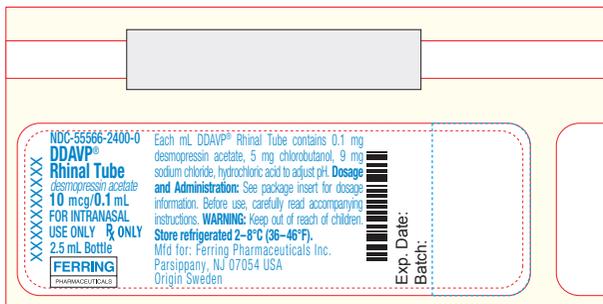
Parsippany, NJ 07054 USA

Origin Sweden

1.1 US Patents 5,500,413; 5,596,078; 5,763,407

Rev 04/2015

XXXXXXXXXX



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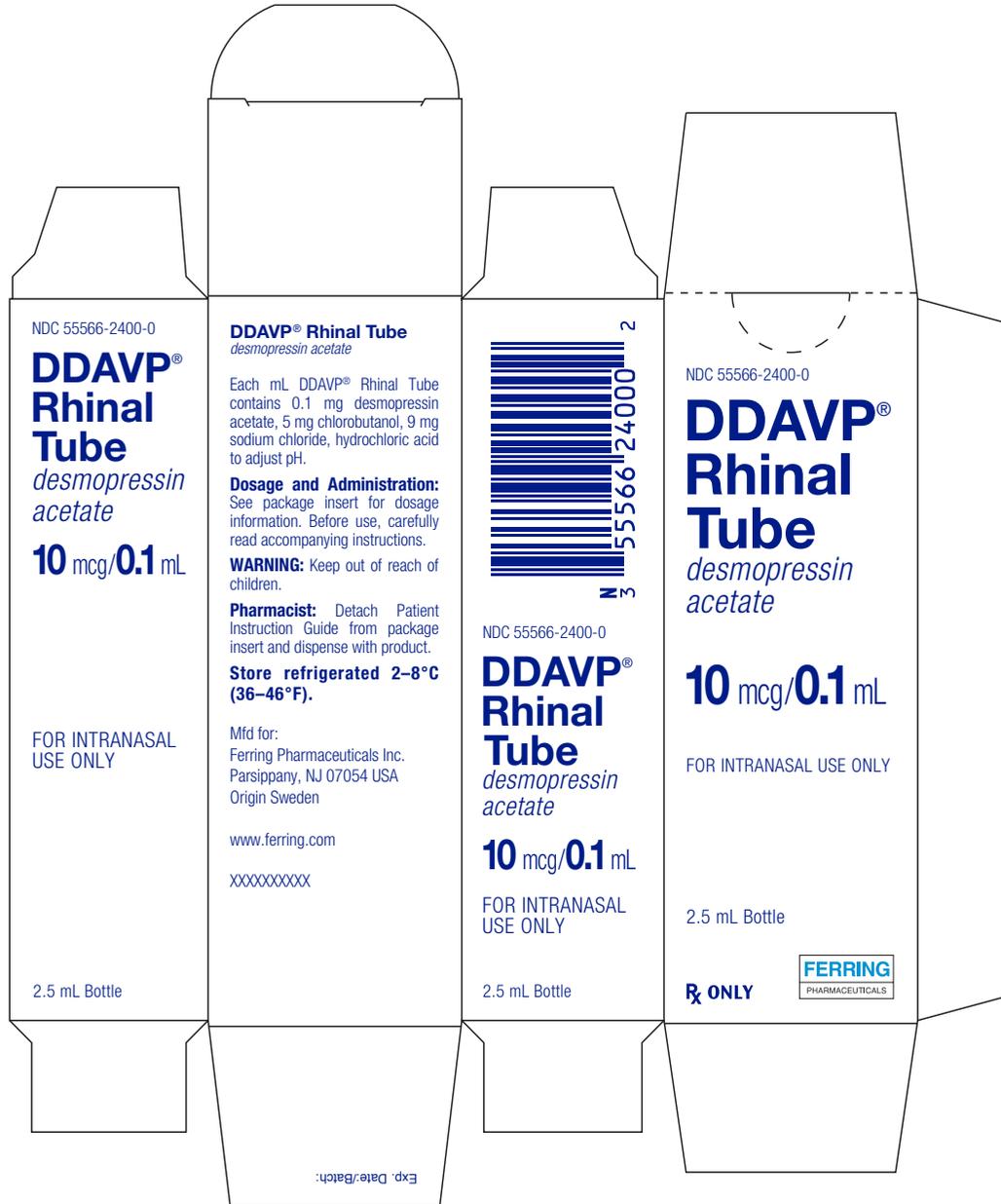
4/30/15

PMS Process Blue



Black





NDC 55566-2400-0

**DDAVP[®]
Rhinal
Tube**
*desmopressin
acetate*

10 mcg/0.1 mL

FOR INTRANASAL
USE ONLY

2.5 mL Bottle

DDAVP[®] Rhinal Tube
desmopressin acetate

Each mL DDAVP[®] Rhinal Tube contains 0.1 mg desmopressin acetate, 5 mg chlorbutanol, 9 mg sodium chloride, hydrochloric acid to adjust pH.

Dosage and Administration: See package insert for dosage information. Before use, carefully read accompanying instructions.

WARNING: Keep out of reach of children.

Pharmacist: Detach Patient Instruction Guide from package insert and dispense with product.

Store refrigerated 2–8°C (36–46°F).

Mfd for:
Ferring Pharmaceuticals Inc.
Parsippany, NJ 07054 USA
Origin Sweden

www.ferring.com

XXXXXXXXXX

Exp. Date/Batch:



NDC 55566-2400-0

**DDAVP[®]
Rhinal
Tube**
*desmopressin
acetate*

10 mcg/0.1 mL

FOR INTRANASAL
USE ONLY

2.5 mL Bottle

NDC 55566-2400-0

**DDAVP[®]
Rhinal
Tube**
*desmopressin
acetate*

10 mcg/0.1 mL

FOR INTRANASAL USE ONLY

2.5 mL Bottle

Rx ONLY

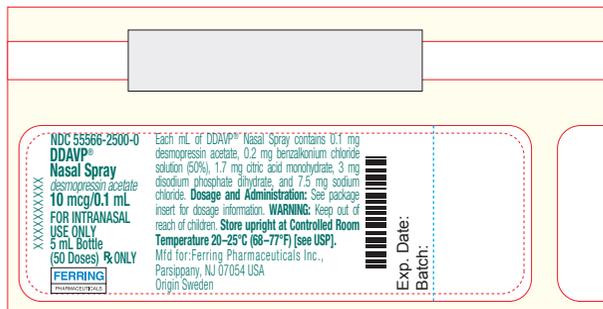


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04/30/15

PMS Reflex Blue PMS Process Blue Black





DDAVP Nasal Spray-5mL-1Count--Label_R8

PMS 328



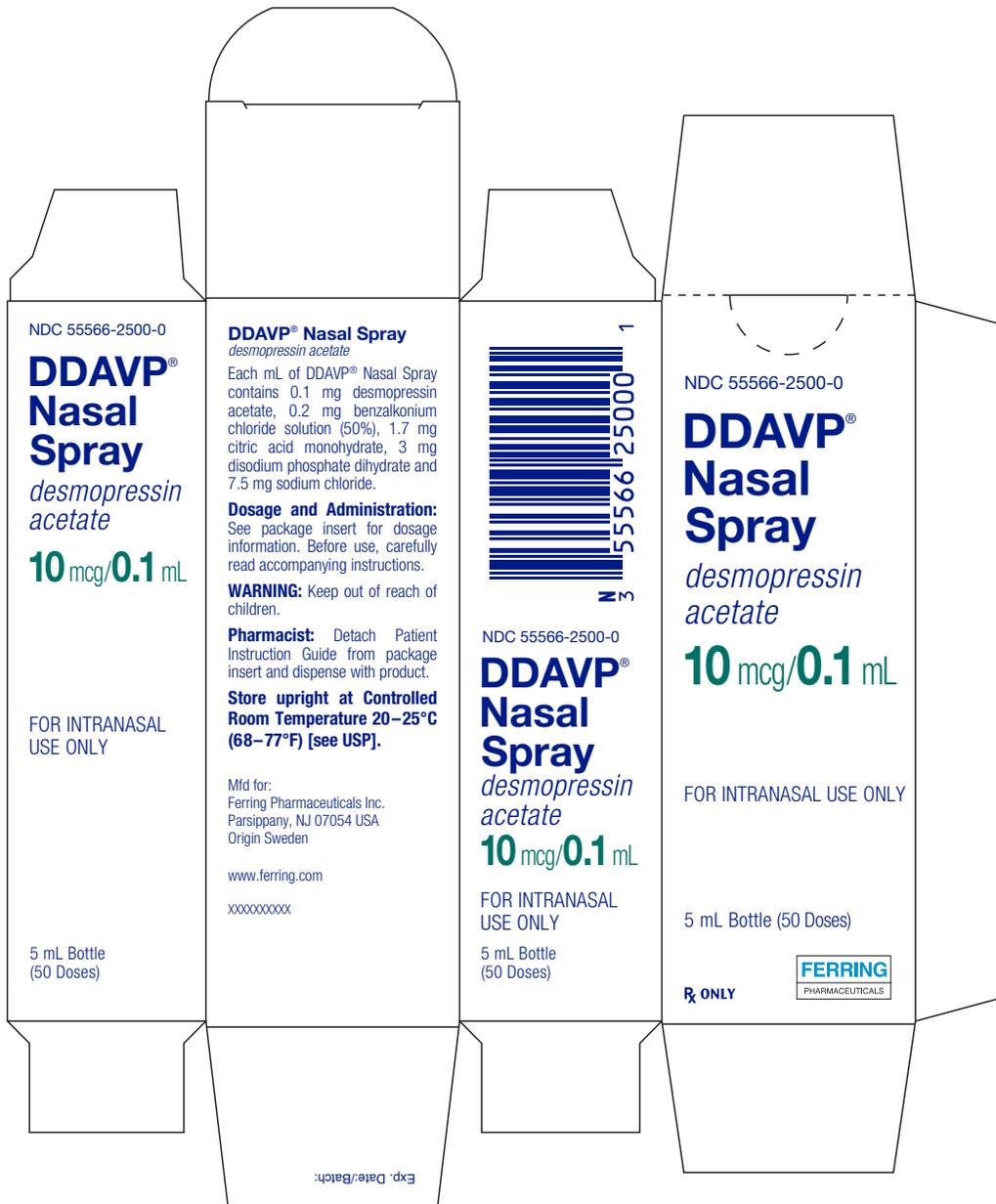
Process Blue



Black



04/30/15



NDC 55566-2500-0

**DDAVP[®]
Nasal
Spray**

*desmopressin
acetate*

10 mcg/0.1 mL

FOR INTRANASAL
USE ONLY

5 mL Bottle
(50 Doses)

DDAVP[®] Nasal Spray
desmopressin acetate

Each mL of DDAVP[®] Nasal Spray contains 0.1 mg desmopressin acetate, 0.2 mg benzalkonium chloride solution (50%), 1.7 mg citric acid monohydrate, 3 mg disodium phosphate dihydrate and 7.5 mg sodium chloride.

Dosage and Administration: See package insert for dosage information. Before use, carefully read accompanying instructions.

WARNING: Keep out of reach of children.

Pharmacist: Detach Patient Instruction Guide from package insert and dispense with product.

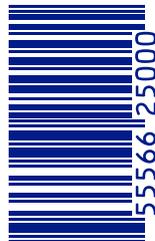
Store upright at Controlled Room Temperature 20–25°C (68–77°F) [see USP].

Mfd for:
Ferring Pharmaceuticals Inc.
Parsippany, NJ 07054 USA
Origin Sweden

www.ferring.com

xxxxxxxxxx

Exp. Date/Batch:



NDC 55566-2500-0

**DDAVP[®]
Nasal
Spray**

*desmopressin
acetate*

10 mcg/0.1 mL

FOR INTRANASAL
USE ONLY

5 mL Bottle
(50 Doses)

NDC 55566-2500-0

**DDAVP[®]
Nasal
Spray**

*desmopressin
acetate*

10 mcg/0.1 mL

FOR INTRANASAL USE ONLY

5 mL Bottle (50 Doses)

Rx ONLY

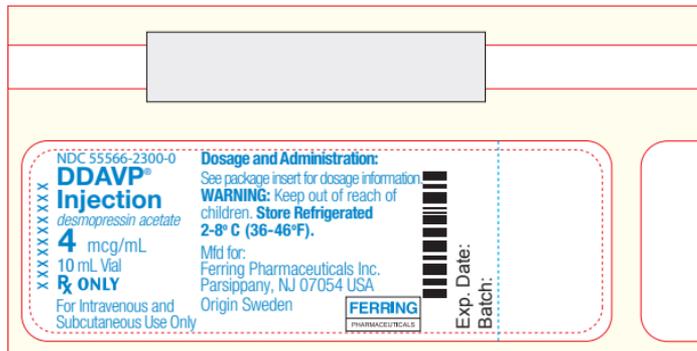


DDAVP Nasal Spray-5mL-1count-Carton_R6

04/30/15

PMS 328 PMS Reflex Blue PMS Process Blue Black





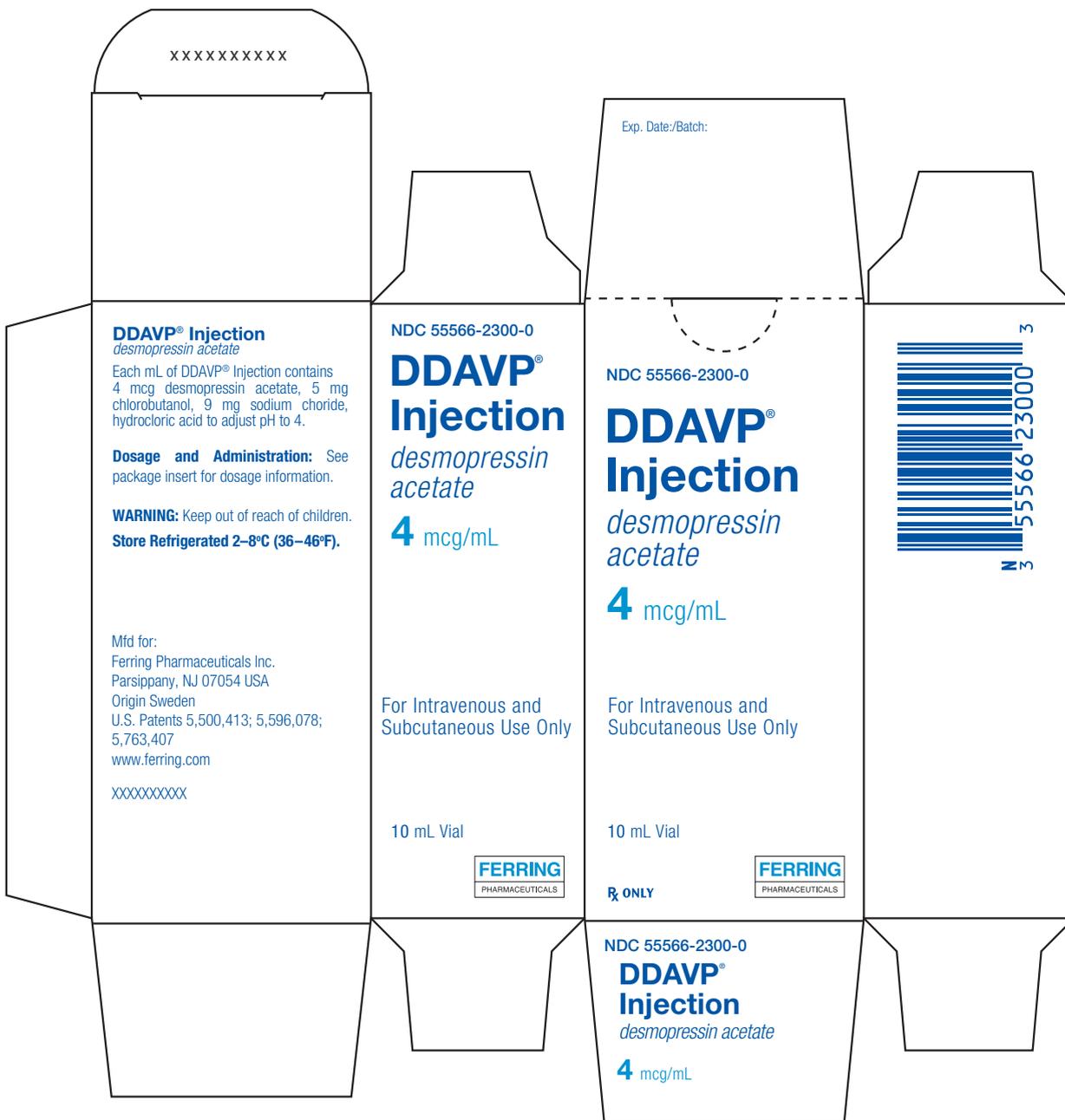
DDAVP injection 10 ml Vial Label R11

04/27/15

Colors Used:

PMS Process Blue  **Black** 

Reference ID: 3843605



DDAVP® Injection
desmopressin acetate

Each mL of DDAVP® Injection contains 4 mcg desmopressin acetate, 5 mg chlorobutanol, 9 mg sodium chloride, hydrochloric acid to adjust pH to 4.

Dosage and Administration: See package insert for dosage information.

WARNING: Keep out of reach of children.
Store Refrigerated 2–8°C (36–46°F).

Mfd for:
Ferring Pharmaceuticals Inc.
Parsippany, NJ 07054 USA
Origin Sweden
U.S. Patents 5,500,413; 5,596,078;
5,763,407
www.ferring.com

XXXXXXXXXX

NDC 55566-2300-0

DDAVP®
Injection
desmopressin acetate

4 mcg/mL

For Intravenous and
Subcutaneous Use Only

10 mL Vial



Exp. Date/Batch:

NDC 55566-2300-0

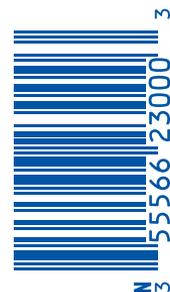
DDAVP®
Injection
desmopressin acetate

4 mcg/mL

For Intravenous and
Subcutaneous Use Only

10 mL Vial

R ONLY



N 3

NDC 55566-2300-0

DDAVP®
Injection
desmopressin acetate

4 mcg/mL

DDAVP_Injection Carton 10 mL vial_R12
05/01/15

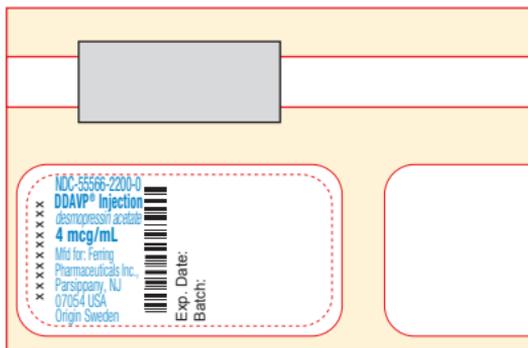
PMS Process Blue

PMS Reflex Blue

Black

PMS Process Blue ■ PMS Reflex Blue ■ Black ■





DDAVP Injection-1mL-1Count-Ampule-Label-R7.ai

04/27/15

Colors Used:

PMS Process Blue



White INK



Black



Reference ID: 3843605