DELFLEX® Neutral pH

Peritoneal Dialysis Solutions
with Attached stay•safe® Exchange Set
For Intraperitoneal Administration Only

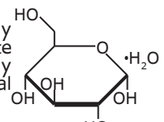
MPS 89-905-65 **No Latex**

Description

DELFLEX® Neutral pH peritoneal dialysis solutions (supplied in standard, low magnesium and low magnesium/low calcium as 2 or 3 Liter product) are sterile, non-pyrogenic formulations of dextrose and electrolytes in water for injection, USP, for use in peritoneal dialysis. In comparison to conventional peritoneal dialysis solutions, *DELFLEX® Neutral pH* solutions are formulated to lower levels of glucose degradation products and provide a neutral pH of 7.0 ± 0.4, which is closer to physiologic pH. The osmotic and buffer solutions are stored separately and mixed by the patient prior to use. The stay•safe® exchange set utilizes an easy to use dial designed to eliminate the use of clamps and to prevent touch contamination of internal connection components. Composition, calculated osmolarity, pH and ionic concentrations of the mixed solutions are shown in Table 2.

Hydrochloric acid, and sodium hydroxide may be added for pH adjustment. The patient mixed solution pH is 7.0 ± 0.4.

Dextrose USP is chemically designated D-glucose monohydrate ($C_6H_{12}O_6 \bullet H_2O$) a hexose sugar freely soluble in water. The structural formula is shown here:



These solutions do not contain antimicrobial agents or additional buffers. Exposure to temperatures above 25°C/77°F during transport and storage will lead to minor losses in moisture content. Higher temperatures lead to greater losses. It is unlikely that these minor losses will lead to clinically significant changes within the expiration period. Since the flexible inner bag is compounded from a specific polyvinyl chloride, water may permeate from the inner bag into the outerwrap in quantities insufficient to affect the solution significantly. Solutions in contact with the plastic inner bag can cause certain chemical components of the bag to leach out in very small amounts; however, the safety of the plastic formulation is supported by biological tests for plastic containers.

Nominal glucose degradation product (GDP) levels (immediately following sterilization) in DELFLEX® Neutral pH solution and DELFLEX® solution are reported in Table 1. The clinical relevance of these differences in GDP levels is unknown.

Table 1. Glucose Degradation Product Levels*

Dextrose Concentration	DELFLEX® Neutral pH	DELFLEX®
1.5%	23	267
2.5%	51	362
4.25%	106	437

* This is the sum [µmol/L] of the various component GDPs including: formaldehyde, acetaldehyde, furaldehyde, glyoxal, methylglyoxal, 5-hydroxymethylfurfural (5-HMF), and 3-deoxyglucosone (3DG).

Clinical Pharmacology

Peritoneal dialysis is the process of filtering excess water and toxins from the bloodstream through a semi-permeable membrane. This process does not cure the disease, but prevents progression of symptoms. Dialysis for chronic kidney failure is essential to maintain life, unless the patient receives a kidney transplant. A peritoneal dialysis procedure utilizes the peritoneum (lining of the abdomen) as the semi-permeable membrane. The procedure is conducted by instilling peritoneal dialysis solution through a catheter in the abdomen into the peritoneal cavity. Since the peritoneum is heavily supplied with blood vessels, the contact of the solution with the peritoneum causes excess water and toxins in the bloodstream to be drawn across the membrane into the solution. This osmosis and diffusion occurs between the plasma of the patient and the peritoneal dialysis solution. After a period of time called "dwell time," the solution is then drained from the patient.

This solution does not contain potassium. In situations in which there is a normal serum potassium level or hypokalemia, the addition of potassium chloride (up to a concentration of 4 mEq/L) may be indicated to prevent severe hypokalemia.

Addition of potassium chloride should be made after careful evaluation of serum and total body potassium and only under the direction of a physician.

Clinical studies have demonstrated that the use of low magnesium solutions resulted in significant increases in serum CO_2 and decreases in serum magnesium levels. The decrease in magnesium levels did not cause clinically significant hypomagnesemia.

Indications And Usage

DELFLEX® peritoneal dialysis solutions are indicated in the treatment of chronic renal failure patients being maintained on peritoneal dialysis when nondialytic medical therapy is judged to be inadequate.

Contraindications

None known.

Warnings

Not for Intravenous Injection.

Use Aseptic Technique.

It is important to mix the buffer (mini-bag) and main solutions thoroughly. Administer within 24 hours after mixing. Once buffer and main solutions are mixed, medication may be added prior to administration.

Peritoneal dialysis should be done with great care in patients with a number of conditions, including disruption of the peritoneal membrane or diaphragm by surgery or trauma, extensive adhesions, bowel distention, undiagnosed abdominal disease, abdominal wall infection, hernias or burns, fecal fistula or colostomy, tense ascites, obesity, large polycystic kidneys, recent aortic graft replacement, lactic acidosis and severe pulmonary disease. When assessing peritoneal dialysis as the mode of therapy in such extreme situations, the benefits to the patient must be weighed against the possible complications.

Solutions containing lactate ion should be used with great care in patients with metabolic or respiratory alkalosis. Lactate should be administered with great care in those conditions in which there is an increased level or an impaired utilization of this ion, such as severe hepatic insufficiency.

An accurate fluid balance record must be kept and the weight of the patient carefully monitored to avoid over or under hydration with severe consequences, including congestive heart failure, volume depletion and shock.

Excessive use of DELFLEX® peritoneal dialysis solution with 4.25% dextrose during a peritoneal dialysis treatment can result in significant removal of water from the patient.

Stable patients undergoing maintenance peritoneal dialysis should have routine periodic evaluation of electrolyte blood chemistries and hematologic factors, as well as other indicators that determine the patient's ongoing status.

After removing the outer wrap, check for minute leaks by squeezing the container firmly. If leaks are found, discard the solution because the sterility may be impaired. (A small amount of moisture may be present inside the overwrap, which is normal condensation from the sterilization process).

Serum calcium levels in patients using low calcium concentrations should be monitored and if found to be low, the peritoneal solution in use should be altered to one with a higher calcium concentration.

Precautions

General:
Administer only if the solution is clear, all seals are intact, and there is no evidence of leaking.

It is important to mix the buffer (mini-bag) and main solutions thoroughly. Administer within 24 hours after mixing. Once buffer and main solutions are mixed, medication may be added prior to administration.

Do Not Heat In A Microwave Oven

Care should be taken to see that the catheter is inserted completely, since leakage around the catheter, if not controlled, can create edema from subcutaneous infiltration of the dialysis solution. This will also create an inaccurate fluid balance measurement.

DELFLEX® Peritoneal Dialysis solutions do not include potassium. Potassium chloride should only be added under the direction of a physician after careful evaluation of both serum and total body potassium.

The overwrap must be removed immediately before use and is provided with a "Tear Open" feature to make removal easy. See instructions in the Directions for Use section.

Disconnect from disk only when knob is in position 4 (••••).

Aseptic technique must be used throughout the procedure and at its termination in order to reduce the possibility of infection.

Significant loss of protein, amino acids and water soluble vitamins may occur during peritoneal dialysis. Replacement therapy should be provided as necessary.

Laboratory Tests:
Serum electrolytes, magnesium, bicarbonate levels and fluid balance should be periodically monitored.

Carcinogenesis, Mutagenesis, Impairment of Fertility:
Long term animal studies with DELFLEX® peritoneal dialysis solutions have not been performed to evaluate the carcinogenic potential, mutagenic potential or effect on fertility.

Pregnancy: Teratology Effects:
Pregnancy Category C. Animal reproduction studies have not been conducted with DELFLEX peritoneal dialysis solutions. It is also not known whether DELFLEX peritoneal dialysis solutions can cause fetal harm when administered to a pregnant woman or can affect reproduction capacity. DELFLEX peritoneal dialysis solutions should be given to a pregnant woman only if clearly needed.

Nursing Mothers:
Caution should be exercised when DELFLEX peritoneal dialysis solutions are administered to a nursing woman.

Pediatric Use:
Safety and effectiveness in pediatric patients have not been established.

Adverse Reactions

Adverse reactions to peritoneal dialysis include mechanical and solution related problems as well as the results of contamination of equipment or improper technique in catheter placement. Abdominal pain, bleeding, peritonitis, subcutaneous infection around a peritoneal catheter, catheter blockage, difficulty in fluid removal, and ileus are among the complications of the procedure. Solution related adverse reactions might include peritonitis, catheter site infection, electrolyte and fluid imbalances, hypovolemia, hypervolemia, hypertension, hypotension, disequilibrium syndrome and muscle cramping.

If an adverse reaction does occur, institute appropriate therapeutic procedures according to the patient's needs and conditions, and save the remainder of the fluid in the bag for evaluation if deemed necessary.

Dosage And Administration

DELFLEX peritoneal dialysis solutions are provided for intraperitoneal administration only. The mode of therapy, frequency of treatment, formulation, exchange volume, duration of dwell, and length of dialysis should be selected by the physician responsible for the treatment of the individual patient.

To avoid the risk of severe dehydration or hypovolemia and to minimize the loss of protein, it is advisable to select the peritoneal dialysis solution with lowest level of osmolarity consistent with the fluid removal requirements for that exchange.

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

Additives may be incompatible. Do not store solutions containing additives.

For administration see Directions for Use section.

How Supplied

DELFLEX peritoneal dialysis solutions are delivered in single-dose flexible bags. All DELFLEX peritoneal dialysis solutions have overfills declared on the container label. The flexible containers have the capacity for drainage in excess of their stated fill volume for ultrafiltration from the patient.

DELFLEX peritoneal dialysis solutions with an attached stay•safe® exchange set are available in containers as shown in Table 2 in the Description section.

Storage Conditions

Store at 25°C (77°F); excursions permitted to 15°-30°C (59°-86°F). See USP Controlled Room Temperature. Brief exposure to temperatures up to 40°C/104°F may be tolerated provided the mean kinetic temperature does not exceed 25°C (77°F).

Keep DELFLEX and all medicines out of the reach of children.

Table 2. Composition, Calculated Osmolarity, pH, and Ionic Concentration

2 Liter DELFLEX® Neutral pH

		Standard Magnesium, Standard Calcium			Low Magnesium, Standard Calcium			Low Magnesium, Low Calcium		
		1.5% Dextrose	2.5% Dextrose	4.25% Dextrose	1.5% Dextrose	2.5% Dextrose	4.25% Dextrose	1.5% Dextrose	2.5% Dextrose	4.25% Dextrose
Composition / 100ml	Main Bag Contents									
	Dextrose Hydrous, USP ($C_6H_{12}O_6 \cdot H_2O$)	1.52 g	2.56 g	4.36 g	1.54 g	2.56 g	4.36 g	1.54 g	2.56 g	4.36 g
	Sodium Chloride,USP (NaCl)	581 mg	581 mg	581 mg	552 mg	552 mg	552 mg	552 mg	552 mg	552 mg
	Calcium Chloride, USP ($CaCl_2 \cdot 2H_2O$)	26.3 mg	26.3 mg	26.3 mg	26.3 mg	26.3 mg	26.3 mg	18.9 mg	18.9 mg	18.9 mg
	Magnesium Chloride, USP ($MgCl_2 \cdot 6H_2O$)	15.6 mg	15.6 mg	15.6 mg	5.21 mg	5.21 mg	5.21 mg	5.21 mg	5.21 mg	5.21 mg
	Mini-bag Contents									
	Sodium Lactate ($C_3H_5NaO_3$)	14.4 g	14.4 g	14.4 g	16.7 g	16.7 g	16.7 g	16.7 g	16.7 g	16.7 g
	Sodium Bicarbonate ($NaHCO_3$)	1.20 g	1.20 g	1.20 g	1.20 g	1.20 g	1.20 g	1.20 g	1.20 g	1.20 g
	Total ingredient content AFTER mixing Main Bag and Mini-bag solutions									
	Dextrose Hydrous, USP ($C_6H_{12}O_6 \cdot H_2O$)	1.5 g	2.5 g	4.25 g	1.5 g	2.5 g	4.25 g	1.5 g	2.5 g	4.25 g
	Sodium Chloride,USP (NaCl)	567 mg	567 mg	567 mg	538 mg	538 mg	538 mg	538 mg	538 mg	538 mg
	Sodium Lactate ($C_3H_5NaO_3$)	353 mg	353 mg	353 mg	409 mg	409 mg	409 mg	409 mg	409 mg	409 mg
	Sodium Bicarbonate ($NaHCO_3$)	29.4 mg	29.4 mg	29.4 mg	29.4 mg	29.4 mg	29.4 mg	29.4 mg	29.4 mg	29.4 mg
	Calcium Chloride, USP ($CaCl_2 \cdot 2H_2O$)	25.7 mg	25.7 mg	25.7 mg	25.7 mg	25.7 mg	25.7 mg	18.4 mg	18.4 mg	18.4 mg
	Magnesium Chloride, USP ($MgCl_2 \cdot 6H_2O$)	15.2 mg	15.2 mg	15.2 mg	5.08 mg	5.08 mg	5.08 mg	5.08 mg	5.08 mg	5.08 mg
	Osmolarity (mOsmoL/L)(calc)	347	398	486	346	396	485	344	394	483
	pH 7.0 ± 0.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Ionic Concentration(mEq/L)	Main Bag Contents									
	Sodium	99.4	99.4	99.4	94.3	94.3	94.3	94.3	94.3	94.3
	Calcium	3.59	3.59	3.59	3.59	3.59	3.59	2.56	2.56	2.56
	Magnesium	1.54	1.54	1.54	0.51	0.51	0.51	0.51	0.51	0.51
	Chloride	105	105	105	98.4	98.4	98.4	97.4	97.4	97.4
	Mini-bag Contents									
	Sodium	1428	1428	1428	1632	1632	1632	1632	1632	1632
	Lactate	1285	1285	1285	1489	1489	1489	1489	1489	1489
	Bicarbonate	143	143	143	143	143	143	143	143	143
	Total ingredient content AFTER mixing Main Bag and Mini-bag solutions									
	Sodium	132	132	132	132	132	132	132	132	132
	Calcium	3.5	3.5	3.5	3.5	3.5	3.5	2.5	2.5	2.5
	Magnesium	1.5	1.5	1.5	0.5	0.5	0.5	0.5	0.5	0.5
	Chloride	102	102	102	96	96	96	95	95	95
	Lactate	31.5	31.5	31.5	36.5	36.5	36.5	36.5	36.5	36.5
	Bicarbonate	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5

3 Liter DELFLEX® Neutral pH

		Standard Magnesium, Standard Calcium			Low Magnesium, Standard Calcium			Low Magnesium, Low Calcium		
		1.5% Dextrose	2.5% Dextrose	4.25% Dextrose	1.5% Dextrose	2.5% Dextrose	4.25% Dextrose	1.5% Dextrose	2.5% Dextrose	4.25% Dextrose
Composition / 100ml	Main Bag Contents									
	Dextrose Hydrous, USP ($C_6H_{12}O_6 \cdot H_2O$)	1.52 g	2.54 g	4.32 g	1.52 g	2.54 g	4.32 g	1.52 g	2.54 g	4.32 g
	Sodium Chloride,USP (NaCl)	576 mg	576 mg	576 mg	547 mg	547 mg	547 mg	547 mg	547 mg	547 mg
	Calcium Chloride, USP ($CaCl_2 \cdot 2H_2O$)	26.1 mg	26.1 mg	26.1 mg	26.1 mg	26.1 mg	26.1 mg	18.7 mg	18.7 mg	18.7 mg
	Magnesium Chloride, USP ($MgCl_2 \cdot 6H_2O$)	15.4 mg	15.4 mg	15.4 mg	5.16 mg	5.16 mg	5.16 mg	5.16 mg	5.16 mg	5.16 mg
	Mini-bag Contents									
	Sodium Lactate ($C_3H_5NaO_3$)	21.6 g	21.6 g	21.6 g	25.0 g	25.0 g	25.0 g	25.0 g	25.0 g	25.0 g
	Sodium Bicarbonate ($NaHCO_3$)	1.80 g	1.80 g	1.80 g	1.80 g	1.80 g	1.80 g	1.80 g	1.80 g	1.80 g
	Total ingredient content AFTER mixing Main Bag and Mini-bag solutions									
	Dextrose Hydrous, USP ($C_6H_{12}O_6 \cdot H_2O$)	1.5 g	2.5 g	4.25 g	1.5 g	2.5 g	4.25 g	1.5 g	2.5 g	4.25 g
	Sodium Chloride,USP (NaCl)	567 mg	567 mg	567 mg	538 mg	538 mg	538 mg	538 mg	538 mg	538 mg
	Sodium Lactate ($C_3H_5NaO_3$)	353 mg	353 mg	353 mg	409 mg	409 mg	409 mg	409 mg	409 mg	409 mg
	Sodium Bicarbonate ($NaHCO_3$)	29.4 mg	29.4 mg	29.4 mg	29.4 mg	29.4 mg	29.4 mg	29.4 mg	29.4 mg	29.4 mg
	Calcium Chloride, USP ($CaCl_2 \cdot 2H_2O$)	25.7 mg	25.7 mg	25.7 mg	25.7 mg	25.7 mg	25.7 mg	18.4 mg	18.4 mg	18.4 mg
	Magnesium Chloride, USP ($MgCl_2 \cdot 6H_2O$)	15.2 mg	15.2 mg	15.2 mg	5.08 mg	5.08 mg	5.08 mg	5.08 mg	5.08 mg	5.08 mg
	Osmolarity (mOsmoL/L)(calc)	347	398	486	346	396	485	344	394	483
	pH 7.0 ± 0.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Ionic Concentration(mEq/L)	Main Bag Contents									
	Sodium	98.6	98.6	98.6	93.5	93.5	93.5	93.5	93.5	93.5
	Calcium	3.56	3.56	3.56	3.56	3.56	3.56	2.54	2.54	2.54
	Magnesium	1.52	1.52	1.52	0.51	0.51	0.51	0.51	0.51	0.51
	Chloride	104	104	104	97.6	97.6	97.6	96.6	96.6	96.6
	Mini-bag Contents									
	Sodium	2142	2142	2142	2448	2448	2448	2448	2448	2448
	Lactate	1927	1927	1927	2233	2233	2233	2233	2233	2233
	Bicarbonate	214	214	214	214	214	214	214	214	214
	Total ingredient content AFTER mixing Main Bag and Mini-bag solutions									
	Sodium	132	132	132	132	132	132	132	132	132
	Calcium	3.5	3.5	3.5	3.5	3.5	3.5	2.5	2.5	2.5
	Magnesium	1.5	1.5	1.5	0.5	0.5	0.5	0.5	0.5	0.5
	Chloride	102	102	102	96	96	96	95	95	95
	Lactate	31.5	31.5	31.5	36.5	36.5	36.5	36.5	36.5	36.5
	Bicarbonate	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5

Fresenius Medical Care

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Patent Pending

Rev 07/11

Reference ID: 3252902

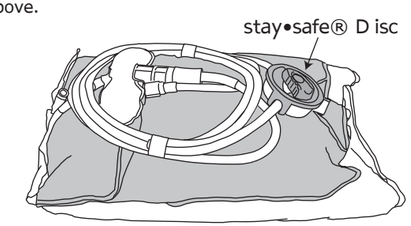
Not for Intravenous Injection. Do not microwave.
Warm solution as directed by your healthcare provider.

Directions for Use

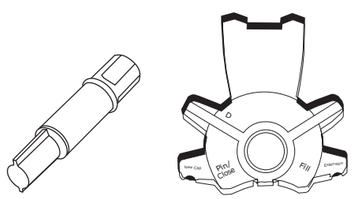
Get Ready

1. Clean work surface. Use aseptic technique.
2. Gather supplies:
   - Warmed DELFLEX Neutral pH Peritoneal Dialysis bag with the attached stay•safe® Exchange Set
   - Povidone iodine prefilled stay•safe cap, a stand alone item provided separately
   - stay•safe organizer, a stand alone item provided separately (Optional; FMCNA recommends its use)
   - Prescribed medicine(s) if ordered by your healthcare provider
   - Mask

See Figure A for identification of each item described above.



Delflex Neutral pH PD bag



stay·safe® cap stay·safe® organizer

Figure A

3. Put on the mask. Wash your hands.
4. Clamp the Extension Tube Set coming from your catheter.
5. Tear the overwrap across from the slit edge to open. Wipe away any moisture from the solution bags. Some opacity may be observed in the plastic of the bag and/or tubing and is due to moisture absorption during the sterilization process. This is normal and does not affect the solution quality or safety. The opacity will diminish gradually.
6. Inspect DELFLEX Solution Bags:
   - Place the DELFLEX Solution set on the work surface. See Figure B.

Do Not Microwave

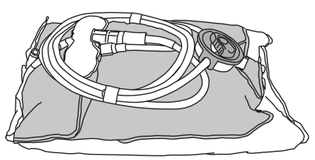


Figure B

- Position solution bags and drain bag as shown in Figure C.

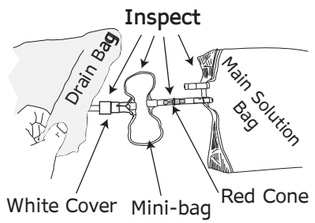


Figure C

- Squeeze the main bag and the mini bag to check for leaks. When squeezing the mini-bag, the bag should remain firm. No solution should leak into the main bag or into the drain line.

  Do not use DELFLEX Neutral pH Solution Set if:
  - leaks are found
  - the solution bags are damaged
  - solution is cloudy or discolored
  - Red or blue cone is broken

  Throw away DELFLEX Neutral pH Solution Set and notify your healthcare provider.

7. Turn the blue position indicator on the stay•safe disc counter-clockwise until it fits into the cut-out portion of the colored plastic cover on the disc as illustrated in Figure D. This will allow the effluent in your peritoneal cavity to drain. Remove the plastic cover while the indicator is in this position (Position 1: •). Once the cover is removed, do not turn counter-clockwise.

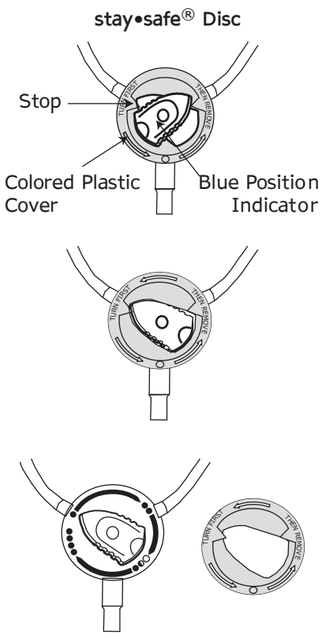


Figure D

Mix Delflex® Neutral pH Solution

Important: Mix the mini-bag and main solutions thoroughly. Use the solution within 24 hours after mixing.

1. With the solution bags stretched out on the work surface, break the red cone by bending. See Figure E.

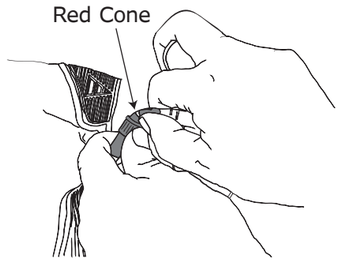
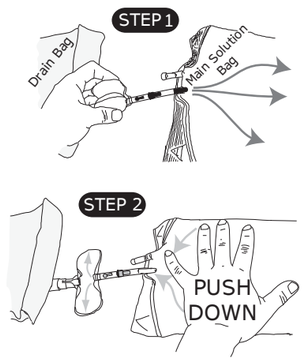


Figure E

2. Fold the mini-bag in half. Squeeze the solution from the mini-bag into the main solution bag by pressing the two halves together until the mini-bag is empty. See Figure F (Step 1).



Perform Steps 2 Times

Figure F

3. Push down on main solution bag to flush solution back into the mini-bag. Completely refill mini-bag with solution. See Figure F (Step 2).
4. Repeat steps 2 and 3 above to make sure that all of the contents of the mini-bag have been completely flushed into the main solution bag.
5. Grab the tubing at the bottom of the main solution bag. While keeping the top portion of the bag on the table, flip the bag lengthwise using a back and forth motion to mix solutions. See Figure G. Repeat this step to mix solutions.

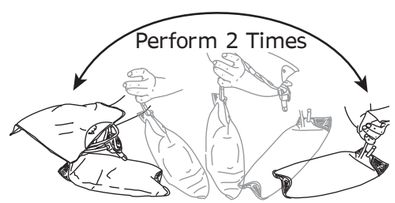


Figure G

6. Fold mini-bag in half and squeeze it until there is no solution left. Slide folded mini-bag into the slit of the white cover to show the blue cone. See Figure H.

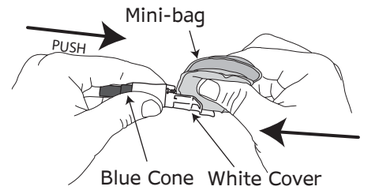


Figure H

The solution is now ready for use.

Administer Peritoneal Dialysis Solution

1. If adding medicine(s):
   - Clean the medication port as instructed by your healthcare provider.
   - Add the medicine(s).
   - Turn the bag upside down several times to mix the medicine.
2. Hang the solution bag from the I.V. pole. Place the drain bag at floor level.
3. Break the blue cone on the bottom of the mini-bag. See Figure **I**. (if using the Organizer, place the stay•safe disc in the organizer as shown in Figure **J**).

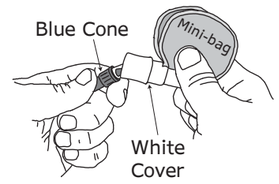


Figure I

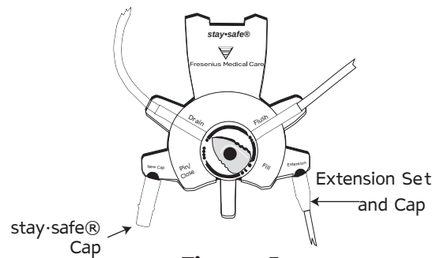


Figure J

4. Remove the new stay•safe cap from its package. The new stay•safe cap is the stand alone item provided to the patient separately. Refer to "Get Ready" section for stay•safe cap identification. (If using the Organizer, place in the right or left notch of the Organizer as illustrated in Figure **J**. Place the existing cap of stay•safe Extension Set, connected to the patient's catheter, in the other notch of the Organizer)
5. Remove the cap from the stay•safe disc and throw cap away. Remove the existing cap from the Extension Set connected to the patient's catheter by twisting the connection counter-clockwise. (If using the Organizer, leave the capped end of the Extension Set in the Organizer and twist the extension set connector counter-clockwise to remove the set from its cap.)
6. Aseptically connect the Extension set to the connector on the stay•safe disc. Twist clockwise to secure the connection.
7. Remove your mask. Do not open the system during exchange.
8. Open the Extension set clamp to start drain.
9. When patient drain is complete, turn the stay•safe disc position indicator to Position 2 (••). See Figure K. This will start flush from the solution bag to the drain bag.

Figure K

10. After approximately 5 seconds turn the stay•safe disc position indicator to Position 3 (•••). See Figure L. This will start the patient fill.

Figure L

11. When fill is complete, turn the stay•safe disc position indicator to Position 4 (••••). See Figure M. This will insert the closure pin of the disc into the extension set connector and seal the system.

Figure M

12. Remove the white protective cover from the new stay•safe cap. Save for later use.
13. Remove the Extension set from the stay•safe disc and attach the new stay•safe cap. Twist clockwise to secure the connection.
14. Seal the disc by attaching the white protective cover from the stay•safe cap to the disc connector. Twist clockwise to secure the connection and prevent leakage from the used system.
15. Look at the drained fluid for cloudiness. Measure the amount of fluid drained. Throw away the fluid and used set as instructed by your healthcare provider. In case of cloudiness, save the fluid and the exchange set and immediately contact your healthcare provider.

Reference ID: 3252902

DELFLEX® Neutral pH

Peritoneal Dialysis Solution

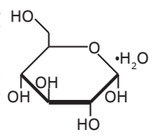
For Intraperitoneal Administration only

MPS 89-905-66 **No Latex**

Description

DELFLEX® Neutral pH peritoneal dialysis solutions, (standard, low magnesium and low magnesium/low calcium) are sterile, non-pyrogenic formulations of dextrose and electrolytes in water for injection, USP, for use in peritoneal dialysis. In comparison to conventional peritoneal dialysis solutions, *DELFLEX® Neutral pH* solutions are formulated to lower levels of glucose degradation products and provide a neutral pH of 7.0 ± 0.4, which is closer to physiologic pH. The osmotic and buffer solutions are stored separately and mixed by the patient prior to use. Composition, calculated osmolarity, pH and ionic concentrations of the mixed solutions are shown in Table 2.

D-glucose monohydrate ($C_6H_{12}O_6 \bullet H_2O$) is a hexose sugar freely soluble in water. It has the following structural formula:



Calcium Chloride, USP, is chemically designated calcium chloride dihydrate ($CaCl_2 \bullet 2H_2O$) white fragments or granules freely soluble in water.

Magnesium Chloride, USP, is chemically designated magnesium chloride hexahydrate ($MgCl_2 \bullet 6H_2O$) colorless flakes or crystals very soluble in water.

Sodium lactate solution, USP, is chemically designated $CH_3CH(OH)COONa$, a 60% aqueous solution miscible in water.

Sodium chloride, USP, is chemically designated NaCl, a white, crystalline compound freely soluble in water.

Water for injection, USP, is chemically designated H_2O.

Hydrochloric acid, and sodium hydroxide may be added for pH adjustment. pH is 7.0 ± 0.4.

Since the flexible inner bag is compounded from a specific polyvinyl chloride, water may permeate from the inner bag into the outerwrap in quantities insufficient to affect the solution significantly. Solutions in contact with the plastic inner bag can cause certain chemical components of the bag to leach out in very small amounts; however, the safety of the plastic formulation is supported by biological tests for plastic containers.

Nominal glucose degradation product (GDP) levels (immediately following sterilization) in DELFLEX Neutral pH solution and DELFLEX solution are reported in Table 1. The clinical relevance of these differences in GDP levels is unknown.

Table 1. Glucose Degradation Product Levels*

Dextrose Concentration	DELFLEX® Neutral pH	DELFLEX®
1.5%	23	267
2.5%	51	362
4.25%	106	437

* This is the sum [µmol/L] of the various component GDPs including: formaldehyde, acetaldehyde, furaldehyde, glyoxal, methylglyoxal, 5-hydroxymethylfurfural (5-HMF), and 3-deoxyglucosone (3DG).

Composition, Calculated Osmolarity, pH, and Ionic Concentration

Table 2. 3 Liter DELFLEX® Neutral pH

		Standard Magnesium, Standard Calcium			Low Magnesium, Standard Calcium			Low Magnesium, Low Calcium		
		1.5% Dextrose	2.5% Dextrose	4.25% Dextrose	1.5% Dextrose	2.5% Dextrose	4.25% Dextrose	1.5% Dextrose	2.5% Dextrose	4.25% Dextrose
Composition / 100ml	Main Bag Contents									
	Dextrose Hydrous, USP ($C_6H_{12}O_6 \cdot H_2O$)	1.52 g	2.54 g	4.32 g	1.52 g	2.54 g	4.32 g	1.52 g	2.54 g	4.32 g
	Sodium Chloride,USP (NaCl)	576 mg	576 mg	576 mg	547 mg	547 mg	547 mg	547 mg	547 mg	547 mg
	Calcium Chloride, USP ($CaCl_2 \cdot 2H_2O$)	26.1 mg	26.1 mg	26.1 mg	26.1 mg	26.1 mg	26.1 mg	18.7 mg	18.7 mg	18.7 mg
	Magnesium Chloride, USP ($MgCl_2 \cdot 6H_2O$)	15.4 mg	15.4 mg	15.4 mg	5.16 mg	5.16 mg	5.16 mg	5.16 mg	5.16 mg	5.16 mg
	Mini-bag Contents									
	Sodium Lactate ($C_3H_5NaO_3$)	21.6 g	21.6 g	21.6 g	25.0 g	25.0 g	25.0 g	25.0 g	25.0 g	25.0 g
	Sodium Bicarbonate ($NaHCO_3$)	1.80 g	1.80 g	1.80 g	1.80 g	1.80 g	1.80 g	1.80 g	1.80 g	1.80 g
	Total ingredient content AFTER mixing Main Bag and Mini-bag solutions									
	Dextrose Hydrous, USP ($C_6H_{12}O_6 \cdot H_2O$)	1.5 g	2.5 g	4.25 g	1.5 g	2.5 g	4.25 g	1.5 g	2.5 g	4.25 g
	Sodium Chloride,USP (NaCl)	567 mg	567 mg	567 mg	538 mg	538 mg	538 mg	538 mg	538 mg	538 mg
	Sodium Lactate ($C_3H_5NaO_3$)	353 mg	353 mg	353 mg	409 mg	409 mg	409 mg	409 mg	409 mg	409 mg
	Sodium Bicarbonate ($NaHCO_3$)	29.4 mg	29.4 mg	29.4 mg	29.4 mg	29.4 mg	29.4 mg	29.4 mg	29.4 mg	29.4 mg
	Calcium Chloride, USP ($CaCl_2 \cdot 2H_2O$)	25.7 mg	25.7 mg	25.7 mg	25.7 mg	25.7 mg	25.7 mg	18.4 mg	18.4 mg	18.4 mg
	Magnesium Chloride, USP ($MgCl_2 \cdot 6H_2O$)	15.2 mg	15.2 mg	15.2 mg	5.08 mg	5.08 mg	5.08 mg	5.08 mg	5.08 mg	5.08 mg
	Osmolarity (mOsmoL/L)(calc)	347	398	486	346	396	485	344	394	483
	pH 7.0 ± 0.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Ionic Concentration(mEq/L)	Main Bag Contents									
	Sodium	98.6	98.6	98.6	93.5	93.5	93.5	93.5	93.5	93.5
	Calcium	3.56	3.56	3.56	3.56	3.56	3.56	2.54	2.54	2.54
	Magnesium	1.52	1.52	1.52	0.51	0.51	0.51	0.51	0.51	0.51
	Chloride	104	104	104	97.6	97.6	97.6	96.6	96.6	96.6
	Mini-bag Contents									
	Sodium	2142	2142	2142	2448	2448	2448	2448	2448	2448
	Lactate	1927	1927	1927	2233	2233	2233	2233	2233	2233
	Bicarbonate	214	214	214	214	214	214	214	214	214
	Main Bag and Mini-bag Contents Combined									
	Sodium	132	132	132	132	132	132	132	132	132
	Calcium	3.5	3.5	3.5	3.5	3.5	3.5	2.5	2.5	2.5
	Magnesium	1.5	1.5	1.5	0.5	0.5	0.5	0.5	0.5	0.5
	Chloride	102	102	102	96	96	96	95	95	95
	Lactate	31.5	31.5	31.5	36.5	36.5	36.5	36.5	36.5	36.5
	Bicarbonate	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5

Clinical Pharmacology

Peritoneal dialysis is the process of filtering excess water and toxins from the bloodstream through a semi-permeable membrane. This process does not cure the disease, but prevents progression of symptoms. Dialysis for chronic kidney failure is essential to maintain life, unless the patient receives a kidney transplant. A peritoneal dialysis procedure utilizes the peritoneum (lining of the abdomen) as the semi-permeable membrane. The procedure is conducted by instilling peritoneal dialysis solution through a catheter in the abdomen into the peritoneal cavity. Since the peritoneum is heavily supplied with blood vessels, the contact of the solution with the peritoneum causes excess water and toxins in the bloodstream to be drawn across the membrane into the solution. This osmosis and diffusion occurs between the plasma of the patient and the peritoneal dialysis solution. After a period of time called "dwell time," the solution is then drained from the patient.

This solution does not contain potassium. In situations in which there is a normal serum potassium level or hypokalemia, the addition of potassium chloride (up to a concentration of 4 mEq/L) may be indicated to prevent severe hypokalemia. Addition of potassium chloride should be made after careful evaluation of serum and total body potassium and only under the direction of a physician.

Clinical studies have demonstrated that the use of low magnesium solutions resulted in significant increases in serum CO_2 and decreases in serum magnesium levels. The decrease in magnesium levels did not cause clinically significant hypomagnesemia.

Indications And Usage

DELFLEX® peritoneal dialysis solutions are indicated in the treatment of chronic renal failure patients being maintained on peritoneal dialysis when nondialytic medical therapy is judged to be inadequate.

Contraindications

None Known

Warnings

Not for Intravenous injection.

Use Aseptic Technique.

It is important to mix the buffer (mini-bag) and main solutions thoroughly. Administer within 24 hours after mixing. Once solutions are mixed, medication may be added prior to administration.

Peritoneal dialysis should be done with great care, in patients with a number of conditions, including disruption of the peritoneal membrane or diaphragm by surgery or trauma, extensive adhesions, bowel distention, undiagnosed abdominal disease, abdominal wall infection, hernias or burns, fecal fistula or colostomy, tense ascites, obesity, large polycystic kidneys, recent aortic graft replacement, lactic acidosis and severe pulmonary disease. When assessing peritoneal dialysis as the mode of therapy in such extreme situations, the benefits to the patient must be weighed against the possible complications.

Solutions containing lactate ion should be used with great care in patients with metabolic or respiratory alkalosis. Lactate should be administered with great care in those conditions in which there is an increased level or an impaired utilization of this ion, such as severe hepatic insufficiency.

An accurate fluid balance record must be kept and the weight of the patient carefully monitored to avoid over or under hydration with severe consequences, including congestive heart failure, volume depletion and shock.

Excessive use of DELFLEX® peritoneal dialysis solution with 4.25% dextrose during a peritoneal dialysis treatment can result in significant removal of water from the patient.

Stable patients undergoing maintenance peritoneal dialysis should have routine periodic evaluation of blood chemistries and hematologic factors, as well as other indicators of patient status.

After removing the outer wrap, check for minute leaks by squeezing the container firmly. If leaks are found, discard the solution because the sterility may be impaired. (A small amount of moisture may be present inside the overwrap, which is normal condensation from the sterilization process.)

Serum calcium levels in patients using low calcium concentrations should be monitored and if found to be low, the peritoneal solution in use should be altered to one with a higher calcium concentration.

Precautions

General

Administer only if the solution is clear, all seals are intact, and there is no evidence of leaking. It is important to mix the buffer(mini-bag) and main solutions thoroughly. Administer within 24 hours after mixing. Once solutions are mixed, medication may be added prior to administration.

Do Not Heat In A Microwave Oven

Care should be taken to see that the catheter is inserted completely, since leakage around the catheter, if not controlled, can create edema from subcutaneous infiltration of the dialysis solution. This will also create an inaccurate fluid balance measurement.

Chronic patients that have been stabilized on peritoneal dialysis therapy should have routine evalutaion of electrolyte blood chemistries and hematologic factors measured in order to determine the patient's ongoing condition.

Delfl_{ex} ® peritoneal dialysis solutions do not include potassium. Potassium chloride should only be added under the direction of a physician after careful evaluation of both serum and total body potassium.

Check the inner bag for leaks by gently squeezing the bag before removing the outer wrap. If after applying pressure on the bag, leaks are found, do not use this solution since the sterility of the bag may be compromised.

The outer wrap must be removed immediately before use and is provided with a "Tear Open" feature to make removal easy. See detailed instructions in the Directions for Use section.

Aseptic technique must be used throughout the procedure and at its termination in order to reduce the possibility of infection.

Significant loss of protein, amino acids and water soluble vitamins may occur during peritoneal dialysis. Replacement therapy should be provided as necessary.

Laboratory Tests

Serum electrolytes, magnesium, bicarbonate levels and fluid balance should be periodically monitored.

Carcinogenesis, Mutagenesis, Impairment of Fertility

Long term animal studies with DELFLEX® peritoneal dialysis solutions have not been performed to evaluate the carcinogenic potential, mutagenic potential or effect on fertility.

Pregnancy: Teratology Effects

Pregnancy Category C. Animal reproduction studies have not been conducted with DELFLEX® peritoneal dialysis solutions. It is also not known whether DELFLEX® peritoneal dialysis solutions can cause fetal harm when administered to a pregnant woman or can affect reproduction capacity. DELFLEX® peritoneal dialysis solutions should be given to a pregnant woman only if clearly needed.

Nursing Mothers

Caution should be exercised when DELFLEX® peritoneal dialysis solutions are administered to a nursing woman.

Pediatric Use

Safety and effectiveness in pediatric patients have not been established.

Adverse Reactions

Adverse reactions occurring with administration of peritoneal dialysis include mechanical and solution related problems as well as the results of contamination of equipment or improper technique in catheter placement. Abdominal pain, bleeding, peritonitis, subcutaneous infection around a peritoneal catheter, catheter blockage, difficulty in fluid removal, and ileus are among the complications of the procedure. Solution related adverse reactions might include peritonitis, catheter site infection, electrolyte and fluid imbalances, hypovolemia, hypervolemia, hypertension, hypotension, disequilibrium syndrome and muscle cramping.

If an adverse reaction does occur, institute appropriate therapeutic procedures according to the patient's needs and conditions, and save the remainder of the fluid in the bag for evaluation if deemed necessary.

How Supplied

DELFLEX® peritoneal dialysis solutions are delivered in single-dose flexible bags. All DELFLEX® peritoneal dialysis solutions have overfills declared on the container label. The flexible containers have the capacity for drainage in excess of their stated fill volume for ultrafiltration from the patient.

DELFLEX® peritoneal dialysis solutions are available in 3 liter size with the following formulations:

1.5% Dextrose			
Ca, mEq/L	3.5 (Standard)	3.5 (Standard)	2.5 (Low)
Mg, mEq/L	1.5 (Standard)	0.5 (Low)	0.5 (Low)
2.5% Dextrose			
Ca, mEq/L	3.5 (Standard)	3.5 (Standard)	2.5 (Low)
Mg, mEq/L	1.5 (Standard)	0.5 (Low)	0.5 (Low)
4.25% Dextrose			
Ca, mEq/L	3.5 (Standard)	3.5 (Standard)	2.5 (Low)
Mg, mEq/L	1.5 (Standard)	0.5 (Low)	0.5 (Low)

Storage Conditions

Store at 25° C (77° F); excursions permitted to 15º-30ºC (59º-86ºF). See USP Controlled Room Temperature. Brief exposure to temperatures up to 40ºC/104ºF may be tolerated provided the mean kinetic temperature does not exceed 25ºC (77ºF).

Keep DELFLEX and all medicines out of the reach of children.

Fresenius Medical Care

Fresenius Medical Care North America
920 Winter Street
Waltham, MA 02451
1-800-323-5188

Patent Pending

Rev 07/11

Dosage And Administration

DELFLEX® peritoneal dialysis solutions are provided for intraperitoneal administration only. The mode of therapy, frequency of treatment, formulation, exchange volume, duration of dwell, and length of dialysis should be selected by the physician responsible for the treatment of the individual patient.

To avoid the risk of severe dehydration or hypovolemia and to minimize the loss of protein, it is advisable to select the peritoneal dialysis solution with lowest level of osmolarity consistent with the fluid removal requirements for that exchange.

Not for Intravenous Injection. Do not microwave.

Warm solution as directed by your healthcare provider

Directions for Use

Get Ready

1. Clean work surface. Use aseptic technique.
2. Gather supplies:
   - Warmed DELFLEX Neutral pH Peritoneal Dialysis bag
   - Prescribed medicine(s), if ordered by your healthcare provider
   - Mask
3. Put on mask. Wash your hands.
4. Tear the overwrap across from the slit edge to open. Wipe away any moisture from the bag. Some opacity may be observed in the plastic of the bag and/or tubing and is due to moisture absorption during the sterilization process. This is normal and does not affect the solution quality or safety. The opacity will diminish gradually.
5. Inspect DELFLEX Solution Bags:
6. Place the DELFLEX solution set on the work surface. See Figure A.
   - Squeeze the main solution bag and the mini-bag to check for leaks.
   - When squeezing the mini-bag, the bag should remain firm and no solution should leak into the main solution bag or from the blue Safe-Lock® connector.

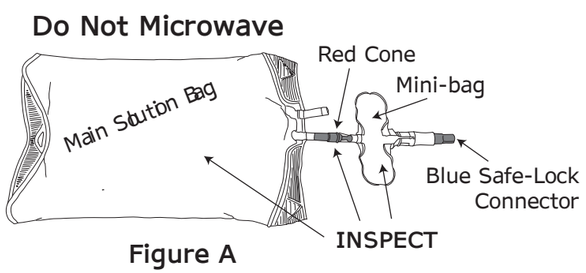


Figure A

Do not use DELFLEX Neutral pH Solution if:

- leaks are found
- the solution bags are damaged
- solution is cloudy or discolored
- Red cone or blue Safe-Lock connector is broken

Throw away DELFLEX Neutral pH Solution and notify your healthcare provider.

Mix DELFLEX® Neutral pH Solution

Important: Mix the mini-bag and main bag solutions thoroughly. Use the solution within 24 hours after mixing.

1. Break the red cone by bending it. See Figure B.

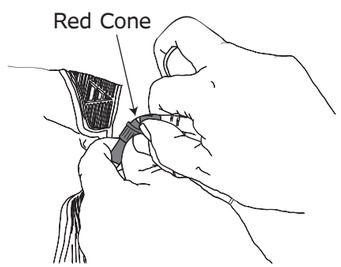


Figure B

2. Fold the mini-bag in half. Squeeze the solution from the mini-bag into the main solution bag by pressing the two halves together until the mini-bag is empty. See Figure C (Step 1).

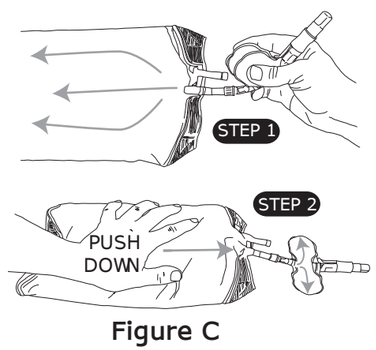


Figure C

3. Push down on the main solution bag to flush solution back into the mini-bag. Completely refill the mini-bag with solution. See Figure C (Step 2).
4. Repeat steps 2 and 3 above to make sure that all of the contents of the mini-bag have been completely flushed into the main solution bag.
5. Grab the top of the main solution bag. While keeping the bottom portion of the bag on the table, flip the bag lengthwise using a back and forth motion to mix the solution. See Figure D. Repeat to mix solution.

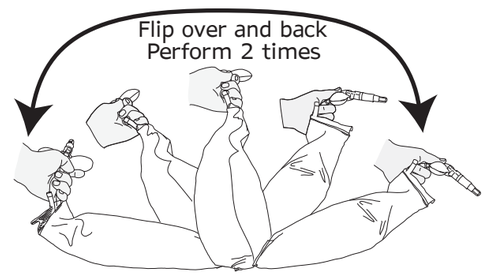


Figure D

6. Fold mini-bag in half and squeeze it empty of solution. Slide the folded mini-bag into the slit of the white cover to show more of the blue Safe-Lock connector. See Figures E and F.

The solution is now ready for use.

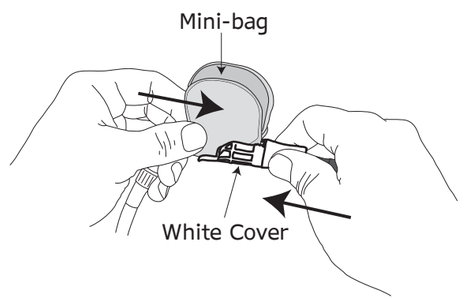


Figure E

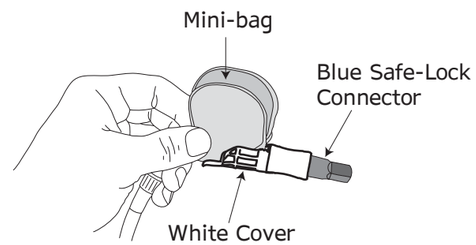


Figure F

Administer Peritoneal Dialysis Solution

1. If you will be adding medicine(s):
   - Clean the medication port as instructed by your healthcare provider.
   - Add the medicine(s).
   - Turn the bag upside down several times to mix the medicine.
2. Take off the protective cap from the blue Safe-Lock® connector at the bottom of the mini-bag. Connect the blue Safe-Lock® connector to the mating Safe-Lock® connector on the fluid delivery set connected to the PD cycler machine.
3. Remove your mask. Do not open the system during fluid exchange.
4. Break the blue Safe-Lock connector tip as shown in Figure G to start solution flow.

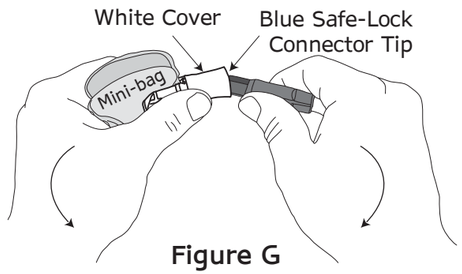


Figure G

5. Look at the drained fluid for cloudiness. Measure the amount of fluid drained. Throw away the fluid and used set as instructed by your healthcare provider. In case of cloudiness, save the fluid and the used set and immediately contact your healthcare provider.

DELFLEX®

Dextrose Peritoneal Dialysis Solutions
With Attached **stay•safe**® Exchange Set
For Intraperitoneal Administration Only

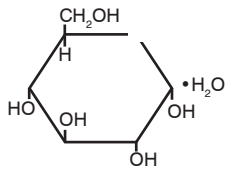
89-908-85 rev 07/11

DESCRIPTION

The DELFLEX peritoneal dialysis solutions, standard, low magnesium and low magnesium/low calcium, are sterile, non-pyrogenic formulations of Dextrose and Electrolytes in Water for Injection, USP, for use in peritoneal dialysis. The stay•safe exchange set utilizes an easy to use dial designed to eliminate the use of clamps and to prevent touch contamination of internal connection components. Composition, calculated osmolarity, pH and ionic concentrations are shown in the following table.

	Composition/100mL					Osmolarity (mOsmoL/L) (calc)	pH (5.0 - 6.0)	Ionic Concentration (mEq/L)					How Supplied					
	Dextrose Hydrous, USP ($C_6H_{12}O_6 \bullet H_2O$)	Sodium Chloride, USP (NaCl)	Sodium Lactate ($C_3H_5NaO_3$)	Calcium Chloride, USP ($CaCl_2 \bullet 2H_2O$)	Magnesium Chloride, USP ($MgCl_2 \bullet 6H_2O$)			Sodium	Calcium	Magnesium	Chloride	Lactate	1 L	1.5 L/2 L bag	2 L	2.25 L/3 L	2.5 L/3 L	3 L
Delflex Standard with 1.5% Dextrose	1.5 g	567 mg	392 mg	25.7 mg	15.2 mg	347	5.5	132	3.5	1.5	102	35	X	X	X	X	X	X
Delflex Standard with 2.5% Dextrose	2.5 g	567 mg	392 mg	25.7 mg	15.2 mg	398	5.5	132	3.5	1.5	102	35	X	X	X	X	X	X
Delflex Standard with 4.25% Dextrose	4.25 g	567 mg	392 mg	25.7 mg	15.2 mg	486	5.5	132	3.5	1.5	102	35	X	X	X	X	X	X
Delflex Low Magnesium with 1.5% Dextrose	1.5 g	538 mg	448 mg	25.7 mg	5.08 mg	346	5.5	132	3.5	0.5	96	40	X	X	X	X	X	X
Delflex Low Magnesium with 2.5% Dextrose	2.5 g	538 mg	448 mg	25.7 mg	5.08 mg	396	5.5	132	3.5	0.5	96	40	X	X	X	X	X	X
Delflex Low Magnesium with 4.25% Dextrose	4.25 g	538 mg	448 mg	25.7 mg	5.08 mg	485	5.5	132	3.5	0.5	96	40	X	X	X	X	X	X
Delflex Low Magnesium, Low Calcium with 1.5% Dextrose	1.5 g	538 mg	448 mg	18.4 mg	5.08 mg	344	5.5	132	2.5	0.5	95	40	X	X	X	X	X	X
Delflex Low Magnesium, Low Calcium with 2.5% Dextrose	2.5 g	538 mg	448 mg	18.4 mg	5.08 mg	394	5.5	132	2.5	0.5	95	40	X	X	X	X	X	X
Delflex Low Magnesium, Low Calcium with 4.25% Dextrose	4.25 g	538 mg	448 mg	18.4 mg	5.08 mg	483	5.5	132	2.5	0.5	95	40	X	X	X	X	X	X

Hydrochloric Acid or Sodium Hydroxide may be added for pH adjustment; pH is 5.5 (5.0 - 6.0) Dextrose USP, is chemically designated D-glucose monohydrate ($C_6H_{12}O_6 \bullet H_2O$) a hexose sugar freely soluble in water. It has the following structural formula:



These solutions do not contain antimicrobial agents or additional buffers. Exposure to temperatures above 25°C/77°F during transport and storage will lead to minor losses in moisture content. Higher temperatures lead to greater losses. It is unlikely that these minor losses will lead to clinically significant changes within the expiration period. Since the flexible inner bag is compounded from a specific polyvinyl chloride, water may permeate from the inner bag into the outerwrap in quantities insufficient to affect the solution significantly. Solutions in contact with the plastic inner bag can leach out certain of its chemical components in very small amounts; however, the safety of the plastic formulation is supported by biological tests for plastic containers.

CLINICAL PHARMACOLOGY

Peritoneal dialysis is the process of filtering excess water and toxins from the bloodstream through a semi-permeable membrane. This process does not cure the disease, but prevents progression of symptoms. Dialysis for chronic kidney failure is essential to maintain life, unless the patient receives a kidney transplant. A peritoneal dialysis procedure utilizes the peritoneum (lining of the abdomen) as the semi-permeable membrane. The procedure is conducted by instilling peritoneal dialysis solution through a catheter in the abdomen into the peritoneal cavity. Since the peritoneum is heavily supplied with blood vessels, the contact of the solution with the peritoneum causes excess water and toxins in the bloodstream to be drawn across the membrane into the solution. This osmosis and diffusion occurs between the plasma of the patient and the peritoneal dialysis solution. After a period of time called “dwell time,” the solution is then drained from the patient.

This solution does not contain potassium. In situations in which there is a normal serum potassium level or hypokalemia, the addition of potassium chloride (up to a concentration of 4 mEq/L) may be indicated to prevent severe hypokalemia. ADDITION OF POTASSIUM CHLORIDE SHOULD BE MADE AFTER CAREFUL EVALUATION OF SERUM AND TOTAL BODY POTASSIUM AND ONLY UNDER THE DIRECTION OF A PHYSICIAN.

Clinical studies have demonstrated that the use of low magnesium solutions resulted in significant increases in serum CO_2 and decreases in serum magnesium levels. The decrease in magnesium levels did not cause clinically significant hypomagnesemia.

INDICATIONS AND USAGE

DELFLEX peritoneal dialysis solutions are indicated in the treatment of chronic renal failure patients being maintained on continuous ambulatory peritoneal dialysis when nondialytic medical therapy is judged to be inadequate.

CONTRAINDICATIONS

None Known.

WARNINGS

Not for Intravenous Injection.

Use Aseptic Technique.

Peritoneal dialysis should be done with great care, in patients with a number of conditions, including disruption of the peritoneal membrane or diaphragm by surgery or trauma, extensive adhesions, bowel distention, undiagnosed abdominal disease, abdominal wall infection, hernias or burns, fecal fistula or colostomy, tense ascites, obesity, large polycystic kidneys, recent aortic graft replacement, lactic acidosis and severe pulmonary disease. When assessing peritoneal dialysis as the mode of therapy in such extreme situations, the benefits to the patient must be weighed against the possible complications.

Solutions containing lactate ion should be used with great care in patients with metabolic or respiratory alkalosis. Lactate should be administered with great care in those conditions in which there is an increased level or an impaired utilization of this ion, such as severe hepatic insufficiency.

An accurate fluid balance record must be kept and the weight of the patient carefully monitored to avoid over or under hydration with severe consequences, including congestive heart failure, volume depletion and shock.

Excessive use of DELFLEX peritoneal dialysis solution with 4.25% dextrose during a peritoneal dialysis treatment can result in significant removal of water from the patient.

Stable patients undergoing maintenance peritoneal dialysis should have routine periodic evaluation of electrolyte blood chemistries and hematologic factors, as well as other indicators that determine the patient’s ongoing status.

After removing the outer wrap, check for minute leaks by squeezing the container firmly. If leaks are found, discard the solution because the sterility may be impaired.

Serum calcium levels in patients using low calcium concentrations should be monitored and if found to be low, the peritoneal solution in use should be altered to one with a higher calcium concentration.

PRECAUTIONS

General:
Do not administer unless the solution is clear, all seals are intact, and there is no evidence of leaking.

Care should be taken to see that the catheter is inserted completely, since leakage around the catheter, if not controlled, can create edema from subcutaneous infiltration of the dialysis solution. This will also create an inaccurate fluid balance measurement.

DELFLEX® Peritoneal Dialysis solutions do not include potassium. Potassium chloride should only be added under the direction of a physician after careful evaluation of both serum and total body potassium.

The overwrap must be removed immediately before use and is provided with a "Tear Open" feature to make removal easy. See instructions in Exchange Procedure section.

Disconnect from disk only when knob is in position 4 (••••).

Aseptic technique must be used throughout the procedure and at its termination in order to reduce the possibility of infection.

Significant loss of protein, amino acids and water soluble vitamins may occur during peritoneal dialysis. Replacement therapy should be provided as necessary.

Laboratory Tests:
Serum electrolytes, magnesium, bicarbonate levels and fluid balance should be periodically monitored.

Carcinogenesis, Mutagenesis, Impairment of Fertility:
Long term animal studies with DELFLEX peritoneal dialysis solutions have not been performed to evaluate the carcinogenic potential, mutagenic potential or effect on fertility.

Pregnancy: Teratology Effects
Pregnancy Category C. Animal reproduction studies have not been conducted with DELFLEX peritoneal dialysis solutions. It is also not known whether DELFLEX peritoneal dialysis solutions can cause fetal harm when administered to a pregnant woman or can affect reproduction capacity. DELFLEX peritoneal dialysis solutions should be given to a pregnant woman only if clearly needed.

Nursing Mothers:
Caution should be exercised when DELFLEX peritoneal dialysis solutions are administered to a nursing woman.

Pediatric Use:
Safety and effectiveness in pediatric patients have not been established.

ADVERSE REACTIONS

Adverse reactions to peritoneal dialysis include mechanical and solution related problems as well as the results of contamination of equipment or improper technique in catheter placement. Abdominal pain, bleeding, peritonitis, subcutaneous infection around a peritoneal catheter, catheter blockage, difficulty in fluid removal, and ileus are among the complications of the procedure. Solution related adverse reactions may include peritonitis, catheter site infection, electrolyte and fluid imbalances, hypovolemia, hypervolemia, hypertension, hypotension, disequilibrium syndrome and muscle cramping.

If an adverse reaction does occur, institute appropriate therapeutic procedures according to the patient's needs and conditions, and save the remainder of the fluid in the bag for evaluation if deemed necessary.

DOSAGE AND ADMINISTRATION

DELFLEX peritoneal dialysis solutions are provided for intraperitoneal administration only. The mode of therapy, frequency of treatment, formulation, exchange volume, duration of dwell, and length of dialysis should be selected by the physician responsible for the treatment of the individual patient.

To avoid the risk of severe dehydration or hypovolemia and to minimize the loss of protein, it is advisable to select the peritoneal dialysis solution with lowest level of osmolarity consistent with the fluid removal requirements for that exchange.

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

Additives may be incompatible. Do not store solutions containing additives.

For administration see Exchange Procedure section.

HOW SUPPLIED

DELFLEX peritoneal dialysis solutions are delivered in single-dose flexible bags. All DELFLEX peritoneal dialysis solutions have overfills declared on the container label. The flexible containers have the capacity for drainage in excess of their stated fill volume for ultrafiltration from the patient.

DELFLEX peritoneal dialysis solutions with an attached stay•safe® exchange set are available in containers as shown in the table in the Description section.

Store at 25°C (77°F); excursions permitted to 15°-30°C (59°-86°F). See USP Controlled Room Temperature. Brief exposure to temperatures up to 40°C/104°F may be tolerated provided the mean kinetic temperature does not exceed 25°C (77°F). However, such exposure should be minimized.

EXCHANGE PROCEDURE (Aseptic technique is required)

1. Clean work surface.
2. Gather supplies:
   - Warmed stay•safe® Container
   - povidone iodine prefilled stay•safe cap
   - stay•safe Organizer (Optional)
   - Supplies if adding medication.
3. Close stay•safe extension set clamp.
4. Mask, then wash hands.
5. Open the stay•safe container by tearing from a notched edge of the package overwrap. Wipe any moisture from the container. Some opacity may be observed in the plastic of the bag and/or tubing and is due to moisture absorption during the sterilization process. This is normal and does not affect the solution quality or safety. The opacity will diminish gradually.
6. Place the stay•safe set on the work surface. Separate the fill and drain bag.
7. Verify the integrity of the solution bag by squeezing the bag to check that there are no leaks and the solution looks clear. Color variation from clear to slightly yellow will not affect the product efficacy and may still be used. Check the expiration date. Check for correct dextrose concentration. Do not use if there is any doubt about the integrity of the solution or packaging.
8. Turn the position indicator on the stay•safe disc counter-clockwise until it fits into the cut-out portion of the colored plastic cover on the disc as illustrated in Figure 1. Remove the plastic cover while the indicator is in this position (position 1; •). Once the cover is removed, do not turn counter-clockwise.
9. If adding medication, prep the medication port as instructed and add the prescribed medication. Invert the bag several times to mix the medication.

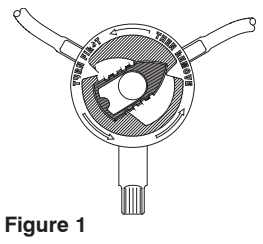


Figure 1

10. Hang the solution bag on an I.V. pole and place the drain bag at floor level. Break the frangible in the solution bag outlet port. (If using the organizer, place the stay•safe disc in the organizer as illustrated in Figure 2.)
11. Remove the stay•safe cap from it's packaging. (If using the organizer, place in the right or left notch of the organizer as illustrated in Figure 2. Place the stay•safe Extension Set in the other notch of the organizer.)
12. Remove the protective cap from the stay•safe disc and discard. Remove the cap from the extension set by twisting the connection counter-clockwise. (If using the organizer, leave the capped end of the extension set in the organizer and twist the extension set connector counter-clockwise to remove the set from its cap.) Aseptically connect the extension set to the connector on the stay•safe disc. Twist clockwise to secure the connection.

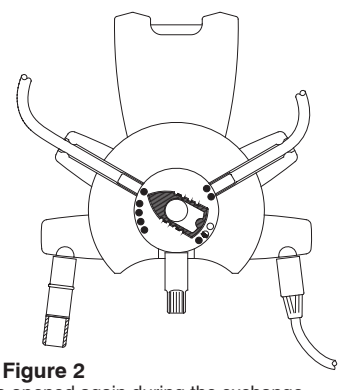


Figure 2

13. Remove your mask. The system will not be opened again during the exchange.
14. Open the extension set clamp. Patient outflow (drain) will start immediately.
15. When patient drain is complete, turn the disc position indicator to Position 2 (••). This will start the flush from the solution bag to the drain bag.
16. After approximately 5 seconds, turn the disc position indicator to Position 3 (•••). This will start the patient fill.
17. When fill is complete, turn the disc position indicator to Position 4 (••••). This will insert the closure pin of the disc into the extension set connector and seal the system.
18. Remove the white protective cover from the new stay•safe cap and reserve for later use. Do not discard.
19. Remove the extension set from stay•safe disc and attach the new stay•safe cap. Twist clockwise to secure the connection.
20. Seal the disc by attaching the white protective cover from the stay•safe cap to the disc connector. Twist clockwise to secure the connection and prevent leakage from the used system.
21. Observe the drained dialysate for cloudiness and measure the amount drained. Discard fluid and used set as instructed by the training facility. In case of cloudiness, save the fluid and the exchange set and immediately call the dialysis center.

Fresenius Medical Care

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89-908-85 REV 07/11

DOSAGE AND ADMINISTRATION

DELFLEX® peritoneal dialysis solutions are provided for intraperitoneal administration only. The mode of therapy, frequency of treatment, formulation, exchange volume, duration of dwell, and length of dialysis should be selected by the physician responsible for the treatment of the individual patient.

To avoid the risk of severe dehydration or hypovolemia and to minimize the loss of protein, it is advisable to select the peritoneal dialysis solution with lowest level of osmolarity consistent with the fluid removal requirements for that exchange.

To Open
DELFLEX peritoneal dialysis solution flexible bags are supplied in an overwrap pouch. This outer wrap must be opened and removed immediately before use of the product and is provided with a "Tear Open" feature to make opening easy.

Check the solution to assure that it is clear. Hold the bag up to a light source and visually inspect for particulate matter and discoloration prior to administration. Color may vary from clear to slightly yellow but does not affect efficacy and may be used. Some opacity may be observed in the plastic of the bag and/or tubing and is due to moisture absorption during the sterilization process. This is normal and does not affect the solution quality or safety. The opacity will diminish gradually.

To Connect (Aseptic Technique is Required)
DELFLEX peritoneal dialysis solutions utilize a Safe-Lock® Connection System. This unique system consists of two Safe-Lock connectors, one located on the administration port of the bag, and the mating connector is located on the fluid delivery set. The Safe-Lock connectors were designed to prevent touch contamination of the internal connection components.

To connect the bag to the fluid delivery set, unscrew the protective caps of the bag connector and fluid delivery set connector. Secure these two connectors with a twisting motion to lock in place, so that the fluid delivery set connector is seated over the bag connector O-Ring to assure a firm and tight fit.

Once the fluid delivery set is secured, to initiate solution flow, break the cone of the bag connector by placing the thumb firmly on the tube over the cone and pressing towards the outer wall of the tube and away from the bag. Once the cone is broken, a white retaining guide maintains the cone at a specific distance from the connector so it will not impede the flow of solution through the Safe-Lock connector.

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

Additives may be incompatible. Do not store solutions containing additives.

HOW SUPPLIED

DELFLEX peritoneal dialysis solutions are delivered in single-dose flexible bags. All Delflex peritoneal dialysis solutions have overfills declared on the container label. The flexible containers have the capacity for drainage in excess of their stated fill volume for ultrafiltration from the patient.

DELFLEX peritoneal dialysis solutions are available in the following sizes and formulations:

1.5% Dextrose			
Ca, mEq/L	3.5 (Standard)	3.5 (Standard)	2.5 (Low)
Mg, mEq/L	1.5 (Standard)	0.5 (Low)	0.5 (Low)
1 liter	X	X	X
1.5 liter/2 L bag	X	X	X
2 liter	X	X	X
2 liter/3 L bag	X	X	X
2.5 liter/3 L bag	X	X	X
3 liter	X	X	X
5 liter	X	X	X
2.5% Dextrose			
Ca, mEq/L	3.5 (Standard)	3.5 (Standard)	2.5 (Low)
Mg, mEq/L	1.5 (Standard)	0.5 (Low)	0.5 (Low)
1 liter	X	X	X
1.5 liter/2 L bag	X	X	X
2 liter	X	X	
2 liter/3 L bag	X	X	X
2.5 liter/3 L bag	X	X	X
3 liter	X	X	X
5 liter	X	X	X
4.25% Dextrose			
Ca, mEq/L	3.5 (Standard)	3.5 (Standard)	2.5 (Low)
Mg, mEq/L	1.5 (Standard)	0.5 (Low)	0.5 (Low)
1 liter	X	X	X
1.5 liter/2 L bag	X	X	X
2 liter	X	X	
2 liter/3 L bag	X	X	X
2.5 liter/3 L bag	X	X	X
3 liter	X	X	X
5 liter	X	X	X

STORAGE CONDITIONS

STORE AT ROOM TEMPERATURE (25° C).
Protect from freezing and extreme heat.

Fresenius Medical Care

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DELFLEX®
Dextrose Peritoneal Dialysis Solutions For Intraperitoneal Administration Only

DESCRIPTION

The DELFLEX peritoneal dialysis solutions, standard, low magnesium, and low magnesium/low calcium, are sterile, non-pyrogenic formulations of Dextrose and Electrolytes in Water for Injection, USP, for use in peritoneal dialysis. These solutions do not contain antimicrobial agents or additional buffers. Exposure to temperatures above 25°C/77°F during transport and storage will lead to minor losses in moisture content. Higher temperatures lead to greater losses. It is unlikely that these minor losses will lead to clinically significant changes within the expiration period.

Each 100 mL of standard dialysis solution contains 1.5, 2.5 or 4.25 g Dextrose, Hydrous, USP, 567 mg Sodium Chloride, USP, 392 mg Sodium Lactate, 25.7 mg Calcium Chloride, USP, 15.2 mg Magnesium Chloride, USP, q.s. Water for Injection, USP, Hydrochloric Acid or Sodium Hydroxide may be added for pH adjustment; pH is 5.5 (5.0-6.0).

DELFLEX
WITH DEXTROSE
Peritoneal Dialysis Solutions

	With 1.5% Dextrose	With 2.5% Dextrose	With 4.25% Dextrose
Dextrose, H_2O	15 g/L	25 g/L	42.5 g/L
Sodium	132 mEq/L	132 mEq/L	132 mEq/L
Calcium	3.5 mEq/L	3.5 mEq/L	3.5 mEq/L
Magnesium	1.5 mEq/L	1.5 mEq/L	1.5 mEq/L
Chloride	102 mEq/L	102 mEq/L	102 mEq/L
Lactate	35 mEq/L	35 mEq/L	35 mEq/L
Total Osmolarity	347 mOsmol/L	398 mOsmol/L	486 mOsmol/L
PH (5.0 - 6.0)	5.5	5.5	5.5

The total osmolarities shown in the above table are calculated theoretically.

Each 100 mL of low magnesium dialysis solution contains 1.5, 2.5 or 4.25 g Dextrose, Hydrous, USP, 538 mg Sodium Chloride, USP, 448 mg Sodium Lactate, 25.7 mg Calcium Chloride, USP, 5.08 mg Magnesium Chloride, USP, q.s. Water for Injection, USP, Hydrochloric Acid or Sodium Hydroxide may be added for pH adjustment; pH is 5.5 (5.0-6.0).

DELFLEX
LOW MAGNESIUM WITH DEXTROSE
Peritoneal Dialysis Solutions

	With 1.5% Dextrose	With 2.5% Dextrose	With 4.25% Dextrose
Dextrose, H_2O	15 g/L	25 g/L	42.5 g/L
Sodium	132 mEq/L	132 mEq/L	132 mEq/L
Calcium	3.5 mEq/L	3.5 mEq/L	3.5 mEq/L
Magnesium	0.5 mEq/L	0.5 mEq/L	0.5 mEq/L
Chloride	96 mEq/L	96 mEq/L	96 mEq/L
Lactate	40 mEq/L	40 mEq/L	40 mEq/L
Total Osmolarity	346 mOsmol/L	396 mOsmol/L	485 mOsmol/L
PH (5.0 - 6.0)	5.5	5.5	5.5

The total osmolarities shown in the above table are calculated theoretically.

Each 100 mL of low magnesium, low calcium dialysis solution contains 1.5, 2.5 or 4.25 g Dextrose, Hydrous, USP, 538 mg Sodium Chloride, USP, 448 mg Sodium Lactate, 18.4 mg Calcium Chloride, USP, 5.08 mg Magnesium Chloride, USP, q.s. Water for Injection, USP, Hydrochloric Acid or Sodium Hydroxide may be added for pH adjustment; pH is 5.5 (5.0-6.0).

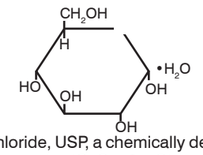
DELFLEX
LOW MAGNESIUM, LOW CALCIUM
WITH DEXTROSE
Peritoneal Dialysis Solutions

	With 1.5% Dextrose	With 2.5% Dextrose	With 4.25% Dextrose
Dextrose, H_2O	15 g/L	25 g/L	42.5 g/L
Sodium	132 mEq/L	132 mEq/L	132 mEq/L
Calcium	2.5 mEq/L	2.5 mEq/L	2.5 mEq/L
Magnesium	0.5 mEq/L	0.5 mEq/L	0.5 mEq/L
Chloride	95 mEq/L	95 mEq/L	95 mEq/L
Lactate	40 mEq/L	40 mEq/L	40 mEq/L
Total Osmolarity	344 mOsmol/L	394 mOsmol/L	483 mOsmol/L
PH (5.0 - 6.0)	5.5	5.5	5.5

The total osmolarities shown in the above table are calculated theoretically.

Dextrose USP, is chemically designated

D-glucose monohydrate ($C_6H_{12}O_6 \cdot H_2O$) a hexose sugar freely soluble in water. It has the following structural formula:



Calcium Chloride, USP, a chemically designated calcium chloride dihydrate ($CaCl_2 \cdot 2H_2O$) white fragments or granules freely soluble in water.

Magnesium Chloride, USP, is chemically designated magnesium chloride hexahydrate ($MgCl_2 \cdot 6H_2O$) colorless flakes or crystals very soluble in water.

Sodium Lactate Solution, USP, is chemically designated $CH_3CH(OH)COONa$, a 60% aqueous solution miscible in water.

Sodium Chloride, USP, is chemically designated NaCl, a white, crystalline compound freely soluble in water.

Water for injection, USP, is chemically designated H_2O.

Since the flexible inner bag is compounded from a specific polyvinyl chloride, water may permeate from the inner bag into the outerwrap in quantities insufficient to affect the solution significantly. Solutions in contact with the plastic inner bag can leach out certain of its chemical components in very small amounts; however, the safety of the plastic formulation is supported by biological tests for plastic containers.

CLINICAL PHARMACOLOGY

Peritoneal dialysis is the process of filtering excess water and toxins from the bloodstream through a semi-permeable membrane. This process does not cure the disease, but prevents progression of symptoms. Dialysis for chronic kidney failure is essential to maintain life, unless the patient receives a kidney transplant. A peritoneal dialysis procedure utilizes the peritoneum (lining of the abdomen) as the semi-permeable membrane. The procedure is conducted by instilling peritoneal dialysis solution through a catheter in the abdomen into the peritoneal cavity. Since the peritoneum is heavily supplied with blood vessels, the contact of the solution with the peritoneum causes excess water and toxins in the bloodstream to be drawn across the membrane into the solution. This osmosis and diffusion occurs between the plasma of the patient and the peritoneal dialysis solution. After a period of time called "dwell time," the solution is then drained from the patient.

This solution does not contain potassium. In situations in which there is a normal serum potassium level or hypokalemia, the addition of potassium chloride (up to a concentration of 4 mEq/L) may be indicated to prevent severe hypokalemia. Addition of potassium chloride should be made after careful evaluation of serum and total body potassium and only under the direction of a physician.

Clinical studies have demonstrated that the use of low magnesium solutions resulted in significant increases in serum CO_2 and decreases in serum magnesium levels. The decrease in magnesium levels did not cause clinically significant hypomagnesemia.

INDICATIONS AND USAGE

DELFLEX® peritoneal dialysis solutions are indicated in the treatment of chronic renal failure patients being maintained on continuous ambulatory peritoneal dialysis when nondialytic medical therapy is judged to be inadequate.

CONTRAINDICATIONS:

None Known

WARNINGS:

Not for Intravenous injection.

Use Aseptic Technique.

Peritoneal dialysis should be done with great care, in patients with a number of conditions, including disruption of the peritoneal membrane or diaphragm by surgery or trauma, extensive adhesions, bowel distention, undiagnosed abdominal disease, abdominal wall infection, hernias or burns, fecal fistula or colostomy, tense ascites, obesity, large polycystic kidneys, recent aortic graft replacement, lactic acidosis and severe pulmonary disease. When assessing peritoneal dialysis as the mode of therapy in such extreme situations, the benefits to the patient must be weighed against the possible complications.

Solutions containing lactate ion should be used with great care in patients with metabolic or respiratory alkalosis. Lactate should be administered with great care in those conditions in which there is an increased level or an impaired utilization of this ion, such as severe hepatic insufficiency.

An accurate fluid balance record must be kept and the weight of the patient carefully monitored to avoid over or under hydration with severe consequences, including congestive heart failure, volume depletion and shock.

Excessive use of DELFLEX peritoneal dialysis solution with 4.25% dextrose during a peritoneal dialysis treatment can result in significant removal of water from the patient.

Stable patients undergoing maintenance peritoneal dialysis should have routine periodic evaluation of blood chemistries and hematologic factors, as well as other indicators of patient status.

After removing the outer wrap, check for minute leaks by squeezing the container firmly. If leaks are found, discard the solution because the sterility may be impaired.

Serum calcium levels in patients using low calcium concentrations should be monitored and if found to be low, the peritoneal solution in use should be altered to one with a higher calcium concentration.

PRECAUTIONS

General:
DELFLEX® peritoneal dialysis solution should not be administered unless it is clear, all seals are intact and there is no evidence of leaking.

Care should be taken to see that the catheter is inserted completely, since leakage around the catheter, if not controlled, can create edema from subcutaneous infiltration of the dialysis solution. This will also create an inaccurate fluid balance measurement.

Chronic patients that have been stabilized on peritoneal dialysis therapy should have routine evaluation of electrolyte blood chemistries and hematologic factors measured in order to determine the patient's ongoing condition.

DELFLEX PERITONEAL DIALYSIS SOLUTIONS DO NOT INCLUDE POTASSIUM. POTASSIUM CHLORIDE SHOULD ONLY BE ADDED UNDER THE DIRECTION OF A PHYSICIAN AFTER CAREFUL EVALUATION OF BOTH SERUM AND TOTAL BODY POTASSIUM.

Check the inner bag for leaks by gently squeezing the bag *before* removing the outer wrap. If after applying pressure on the bag, leaks are found, do not use this solution since the sterility of the bag may be compromised.

The outer wrap must be removed immediately before use and is provided with a "Tear Open" feature to make removal easy. See detailed instructions in this insert's last page.

Aseptic technique must be used throughout the procedure and at its termination in order to reduce the possibility of infection.

Significant loss of protein, amino acids and water soluble vitamins may occur during peritoneal dialysis. Replacement therapy should be provided as necessary.

Laboratory Tests:

Serum electrolytes, magnesium, bicarbonate levels and fluid balance should be periodically monitored.

Carcinogenesis, Mutagenesis, Impairment of Fertility:

Long term animal studies with DELFLEX peritoneal dialysis solutions have not been performed to evaluate the carcinogenic potential, mutagenic potential or effect on fertility.

Pregnancy: Teratology Effects

Pregnancy Category C. Animal reproduction studies have not been conducted with DELFLEX peritoneal dialysis solutions. It is also not known whether DELFLEX peritoneal dialysis solutions can cause fetal harm when administered to a pregnant woman or can affect reproduction capacity. DELFLEX peritoneal dialysis solutions should be given to a pregnant woman only if clearly needed.

Nursing Mothers:

Caution should be exercised when DELFLEX peritoneal dialysis solutions are administered to a nursing woman.

Pediatric Use:

Safety and effectiveness in pediatric patients have not been established.

ADVERSE REACTIONS

Adverse reactions occurring with administration of peritoneal dialysis include mechanical and solution related problems as well as the results of contamination of equipment or improper technique in catheter placement. Abdominal pain, bleeding, peritonitis, subcutaneous infection around a peritoneal catheter, catheter blockage, difficulty in fluid removal, and ileus are among the complications of the procedure. Solution related adverse reactions may include peritonitis, catheter site infection, electrolyte and fluid imbalances, hypovolemia, hypervolemia, hypertension, hypotension, disequilibrium syndrome and muscle cramping.

If an adverse reaction does occur, institute appropriate therapeutic procedures according to the patient's needs and conditions, and save the remainder of the fluid in the bag for evaluation if deemed necessary.