AMINO ACIDS

STALMINO

70 mg/mL (7% w/v) Solution for IV Infusion
Parenteral Nutrition

℞

FORMULATION:
Each mL contains:

L- Leucine USP	10.3 mg
L- Lysine (as HCl) USP	7.10 mg
L- Alanine USP	6.30 mg
L- Valine USP	6.20 mg
L- Isoleucine USP	5.10 mg
L- Arginine USP	4.90 mg
L- Threonine USP	4.80 mg
L- Serine USP	4.50 mg
L- Histidine USP	4.30 mg
L- Proline USP	4.30 mg
L- Phenylalanine USP	3.80 mg
L- Glycine USP	3.20 mg
L- Methionine USP	2.80 mg
L- Tryptophan USP	1.90 mg
L- Cysteine (as acetyl) USP	370 mcg

PHARMACOLOGICAL CLASSIFICATION:
Parenteral Nutrition.

INDICATION:
For supply of amino acids in acute and chronic renal insufficiency, hemofiltration, peritoneal and hemodialysis.

CONTRAINDICATIONS:
This preparation should not be used in patients with hepatic coma or metabolic disorders involving impaired nitrogen utilization.
Include: disturbances of the amino acid metabolism. Hepatic coma, serious renal disturbances, hyponatremia, hyperkalemia, congestive cardiac failure, hyperhydration, metabolic acidosis, liver failure.

DOSAGE AND ADMINISTRATION:
Central Venous Nutrition
Central venous infusion should be considered when amino acid solutions are to be admixed with hypertonic dextrose to promote protein synthesis in hypercatabolic or severely depleted patients, or those requiring long term parenteral nutrition.

Peripheral Parenteral Nutrition
For moderately catabolic or depleted patients in whom the central venous route is not indicated, diluted amino acid solutions mixed with 5% dextrose solutions may be infused by peripheral vein, supplemented, if desired, with fat emulsion. In pediatric patients, the final solution should not exceed twice normal serum osmolarity (718 mOsmol/L).

Protein Sparing
In well-nourished, mildly catabolic patients such as routine postsurgical patients who require only short-term parenteral nutrition, protein sparing can be achieved by peripheral infusion of amino acid solutions with or without dextrose. Or as prescribed by the physician.

Max: 1.5 g amino acids/kg body wt/day. Acute & chronic renal insufficiency not treated by dialysis.
Max: 0.5 g amino acids/kg body wt/day. Acute & chronic renal insufficiency treated by hemofiltration, peritoneal & hemodialysis
Max: 1 g amino acids/kg body wt/day.

DIRECTIONS FOR USE:
15% Amino Acids Injection is not intended for direct infusion. The container closure may be penetrated only once using a suitable sterile transfer device or dispensing set which allows measured dispensing of the contents. The Bulk Package is to be used only in a suitable work area such as a laminar flow hood (or an equivalent clean air compounding area). Once the closure is penetrated, the contents should be dispensed as soon as possible; the transfer of contents must be completed within 4 hours of closure entry. The bottle may be stored at room temperature (25°C) after the closure has been entered. Date and time of container entry should be noted in the area designated on the container label.
When using 15% Amino Acids Injection in patients with a need for fluid volume restriction, it can be diluted as follows:

	Volume	Amount	Final Concentration
15% Amino Acids Injection	500 mL	75 g	7.5 %
Dextrose 70%	250 mL	175 g	17.5 %
Intralipid® 20%	250 mL	50 g	5.0%

This will provide 1395 kilocalories (kcal) per 1000 mL of admixture with a ratio of 118 non-protein calories per gram of nitrogen and an osmolarity of 1561 mOsmol/L.
In patients where the need for fluid restriction is not so marked, either of the following regimens may be used dependent upon the energy needs of the patient.

	Volume	Amount	Final Concentration
15% Amino Acids Injection	500 mL	75 g	3.75 %
Dextrose 50%	100 mL	500 g	25 %
Intralipid® 20%	500 mL	100 g	5 %

This will provide 1500 kcal per 1000 mL of admixture with a ratio of 228 non-protein calories per gram of nitrogen and an osmolarity of 1633 mOsmol/L.

	Volume	Amount	Final Concentration
15% Amino Acids Injection	500 mL	75 g	3.75 %
Dextrose 30%	1000 mL	300 g	15 %
Intralipid® 10%	500 mL	50 g	2.5 %

This will provide 935 kcal per 1000 mL of admixture with a ratio of 158 non-protein calories per gram of nitrogen and an osmolarity of 1128.5 mOsmol/L.

WARNINGS:
Contains sodium metabisulfite, a sulfite that may cause allergic-type reactions including anaphylactic symptoms and life-threatening or less severe asthmatic episodes in certain susceptible persons.

Safe, effective use of parenteral nutrition requires a knowledge of nutrition as well as clinical expertise in recognition and treatment of the complications which can occur. FREQUENT EVALUATION AND LABORATORY DETERMINATIONS ARE NECESSARY FOR PROPER MONITORING OF PARENTERAL NUTRITION. Studies should include blood sugar, serum proteins, kidney and liver function tests, electrolytes, hemogram, carbon dioxide content, serum osmolalities, blood cultures, and blood ammonia levels.

Administration of amino acids in the presence of impaired renal function or gastrointestinal bleeding may augment an already elevated blood urea nitrogen. Patients with azotemia from any cause should not be infused with amino acids without regard to total nitrogen intake.

Administration of amino acid solutions to a patient with hepatic insufficiency may result in plasma amino acid imbalances, hyperammonemia, prerenal azotemia, stupor and coma.

Conservative doses of amino acids should be given, dictated by the nutritional status of the patient. Should symptoms of hyperammonemia develop, amino acid administration should be discontinued and the patient's clinical status re-evaluated.

Administration of intravenous solutions can cause fluid and/or solute overload resulting in dilution of serum electrolyte concentrations, overhydration, congested states, or pulmonary edema. The risk of dilutional states is inversely proportional to the electrolyte concentrations of the solutions.

PRECAUTIONS:
General
Clinical evaluation and periodic laboratory determinations are necessary to monitor changes in fluid balance, electrolyte concentrations, and acid-base balance during prolonged parenteral therapy or whenever the condition of the patient warrants such evaluation. Significant deviations from normal concentrations may require the use of additional electrolyte supplements.

Strongly hypertonic nutrient solutions should be administered through an indwelling intravenous catheter with the tip located in the superior vena cava.

Care should be taken to avoid circulatory overload, particularly in patients with cardiac insufficiency.
In patients with myocardial infarct, infusion of amino acids should always be accompanied by dextrose, since in anoxia, free fatty acids cannot be utilized by the myocardium, and energy must be produced anaerobically from glycogen or glucose.

Special care must be taken when giving hypertonic dextrose to a diabetic or prediabetic patient. To prevent severe hyperglycemia in such patients, insulin may be required.

Administration of dextrose-containing solutions according to the patient's utilization may lead to hyperglycemia, coma, and death.

Metabolic acidosis can be prevented or readily controlled by adding a portion of the cations in the electrolyte mixture as acetate salts and in the case of hyperchloremic acidosis, by keeping the total chloride content of the infusate to a minimum. (Amino Acid Injection) contains less than 3 mEq chloride per liter.

(Amino Acid Injection) contains phosphorus. Patients, especially those with hypophosphatemia, may require additional phosphate. To prevent hypocalcemia, calcium supplementation should always accompany phosphate administration. To assure adequate intake, serum levels should be monitored frequently.

To minimize the risk of possible incompatibilities arising from mixing this solution with other additives that may be prescribed, the final infusate should be inspected for cloudiness or precipitation immediately after mixing, prior to administration, and periodically during administration.

Use only if solution is clear and vacuum is present.

Drug product contains no more than 25 µg/L of aluminum.

SPECIAL PRECAUTIONS FOR CENTRAL INFUSIONS
ADMINISTRATION BY CENTRAL VENOUS CATHETER SHOULD BE USED ONLY BY THOSE FAMILIAR WITH THIS TECHNIQUE AND ITS COMPLICATIONS.

Central vein infusion (with added concentrated carbohydrate solutions) of amino acid solutions requires a knowledge of nutrition as well as clinical expertise in recognition and treatment of complications. Attention must be given to solution preparation, administration and patient monitoring. IT IS ESSENTIAL THAT A CAREFULLY PREPARED PROTOCOL, BASED ON CURRENT MEDICAL PRACTICES, BE FOLLOWED, PREFERABLY BY AN EXPERIENCED TEAM.

SUMMARY HIGHLIGHTS OF COMPLICATIONS

1. Technical
The placement of a central venous catheter should be regarded as a surgical procedure. One should be fully acquainted with various techniques of catheter insertion. For details of technique and placement sites, consult the medical literature. X-ray is the best means of verifying catheter placement. Complications known to occur from the placement of central venous catheters are pneumothorax, hemothorax, hydrothorax, artery puncture and transection, injury to the brachial plexus, malposition of the catheter, formation of arteriovenous fistula, phlebitis, thrombosis and air and catheter emboli.

2.Septic
The constant risk of sepsis is present during administration of total parenteral nutrition. It is imperative that the preparation of the solution and the placement and care of catheters be accomplished under strict aseptic conditions.
Solutions should ideally be prepared in the hospital pharmacy under a laminar flow hood using careful aseptic technique to avoid inadvertent touch contamination. Solutions should be used promptly after mixing. Storage should be under refrigeration and limited to a brief period of time, preferably less than 24 hours.
Administration time for a single container and set should never exceed 24 hours.

3.Metabolic
The following metabolic complications have been reported with TPN administration: Metabolic acidosis and alkalosis, hypophosphatemia, hypocalcemia, osteoporosis, hyperglycemia and glycosuria, rebound hypoglycemia, osmotic diuresis and dehydration, elevated liver enzymes, hypo- and hypervitaminosis, electrolyte imbalances and hyperammonemia in children. Frequent evaluations are necessary especially during the first few days of therapy to prevent or minimize these complications.
Administration of glucose at a rate exceeding the patient's utilization rate may lead to hyperglycemia, coma and death.

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

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

Geriatric Use: Clinical studies of Amino Acids 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 for an elderly patient should be cautious, usually starting at the low end of the dosage range, reflecting the greater frequency of decreased hepatic, renal, or cardiac function, and concomitant disease or other drug therapy.

ADVERSE EFFECTS:
Reactions reported as a result of infusion of the parenteral fluid were water weight gain, edema, increase in BUN, and mild acidosis.
Reactions which may occur because of the solution or the technique of administration include febrile response, infection at the site of injection, venous thrombosis or phlebitis extending from the site of injection, extravasation and hypervolemia.
Local reaction at the infusion site, consisting of a warm sensation, erythema, phlebitis and thrombosis, have been reported with peripheral amino acid infusions, especially if other substances are also administered through the same site.
If electrolyte supplementation is required during peripheral infusion, it is recommended that additives be administered throughout the day in order to avoid possible venous irritation. Irritating additive medications may require injection at another site and should not be added directly to the amino acid infusate.
Symptoms may result from an excess or deficit of one or more of the ions present in the solution; therefore, frequent monitoring of electrolyte levels is essential.
If an adverse reaction does occur, discontinue the infusion, evaluate the patient, institute appropriate therapeutic countermeasures and save the remainder of the fluid for examination if deemed necessary.
Nausea, chills & vomiting (infusion rate is too rapid).

DRUG INTERACTIONS:
-Levodopa interacts with Branched-Chain Amino Acids
Branched-chain amino acids might decrease how much levodopa the body absorbs. By decreasing how much levodopa the body absorbs, branched-chain amino acids might decrease the effectiveness of levodopa. Do not take branched-chain amino acids and levodopa at the same time.

-Medications for diabetes (Antidiabetic drugs) interacts with Branched-Chain Amino Acids.
Branched-chain amino acids might decrease blood sugar. Antidiabetic medications are also used to lower blood sugar. Taking branched-chain amino acids along with Antidiabetic medications might cause your blood sugar to go too low. Monitor your blood sugar closely. The dose of your Antidiabetic medication might need to be changed. Some medications used for diabetes include glimepiride (Amaryl), glyburide (DiaBeta, Glynase PresTab, Micronase), insulin, pioglitazone (Actos), rosiglitazone (Avandia), chlorpropamide (Diabinese), glipizide (Glucotrol), tolbutamide (Orinase), and others.

-Diazoxide (Hyperstat, Proglycem) interacts with Branched-Chain Amino Acids.
Branched-chain amino acids are used to help make proteins in the body. Taking Diazoxide along with branched-chain amino acids might decrease the effects of branched-chain amino acids on proteins. More information is needed about this interaction.

Medications for inflammation (Corticosteroids) interacts with Branched-Chain Amino Acids.
Branched-chain amino acids are used to help make proteins in the body. Taking drugs called glucocorticoids along with branched-chain amino acids might decrease the effects of branched-chain amino acids on proteins. More information is needed about this interaction.

Thyroid hormone interacts with Branched-Chain Amino Acids.
Branched-chain amino acids help the body make proteins. Some thyroid hormone medications can decrease how fast the body breaks down branched-chain amino acids. However, more information is needed to know the significance of this interaction.

OVERDOSAGE AND TREATMENT:
In the event of a fluid or solute overload during parenteral therapy, reevaluate the patient's condition, and institute appropriate corrective treatment.

-Histidine
Too much histidine may lead to stress and the aggravation of mental disorders such as anxiety and schizophrenia
-Lysine
Could result in higher LDL cholesterol, diarrhea and gallstones.
-Phenylalanine
This is not a wise supplement to be taking by pregnant women and diabetics. It results in higher blood pressure, headaches, nausea, heart trouble and nerve damage.
-Methionine
None, except in case of a shortage of B-Vitamins, in which case you are an easy target for arteriosclerosis.
-Leucine
Unknown, may increase ammonia.
-Isoleucine
Causes elevated urination. No serious problems. May become serious if you have kidney or liver disease.
-Valine
Crawling sensation in the skin is common, hallucination, may be hazardous to people with kidney and liver disease.
-Glutamine
Only dangerous in people with liver or kidney trouble.
-Arginine
Skin thickening and coarsening, weakness, diarrhea, nausea and loss of immunity to viruses. So it is not a smart idea for people with viral diseases.
-Carnitine
Doses exceeding 3000 mg have been known to cause diarrhea and fish odor syndrome.
-Cysteine
Only possible in diabetics.

CAUTION:
Foods, Drugs, Devices, and Cosmetics Act prohibits dispensing without prescription.

STORAGE CONDITION:
Store at temperatures not exceeding 30°C. Protect from light. Do not freeze.

KEEP ALL MEDICINES OUT OF REACH OF CHILDREN.

AVAILABILITY:
USP Type I Clear Glass Bottle in 500 mL (net content). Box of 1's.