**Recent scientific data suggest that the actual human parvovirus B19 (B19V) is far more effectively inactivated during the manufacturing process of FLEXBUMIN 25% than indicated by model virus data.**

The GALAXY plastic container is fabricated from a specially designed multilayered plastic (PL 2501). Solutions are in contact with the polyethylene layer of the container and can leach out certain chemical components of the plastic in very small amounts within the expiration period. The suitability and safety of the plastic have been confirmed in tests in animals according to the USP biological tests for plastic containers, as well as by tissue culture toxicity studies.

### Clinical Pharmacology

Albumin is responsible for 70-80% of the colloid osmotic pressure of normal plasma, thus making it useful in regulating the volume of circulating blood. **Albumin is also a transport protein and binds naturally occurring, therapeutic and toxic materials in the circulation.**

FLEXBUMIN 25% is osmotically equivalent to approximately five times its volume of human plasma. When injected intravenously, 25% albumin will draw about 3.5 times its volume of additional fluid into the circulation within 15 minutes, except when the patient is markedly dehydrated. This extra fluid reduces hemoconcentration and blood viscosity. The degree and duration of volume expansion depends upon the initial blood volume. In patients with decreased blood volume, the effect of infused albumin can persist for many hours; however, in patients with normal blood volume, the duration will be shorter.

Total body albumin is estimated to be 350 g for a 70 kg man and is distributed throughout the extracellular compartments; more than 60% is located in the extravascular fluid compartment. The half-life of albumin is 15 to 20 days with a turnover of approximately 15 g per day.

The minimum plasma albumin level necessary to prevent or reverse peripheral edema is unknown. Some investigators recommend that plasma albumin levels be maintained at approximately 2.5 g/dL. This concentration provides a plasma oncotic pressure value of 20 mm Hg.

FLEXBUMIN 25% is manufactured from human plasma by the modified Cohn-Oncley cold ethanolic fractionation process, which includes a series of cold-ethanol precipitation, centrifugation and/or filtration steps followed by pasteurization of the final product at 60 ± 0.5°C for 10 to 11 hours. This process accomplishes both purification of albumin and reduction of viruses.

*In vitro studies demonstrate that the manufacturing process for FLEXBUMIN 25% provides for effective viral reduction. These viral reduction studies, summarized in Table 1, demonstrate viral clearance during the manufacturing process for FLEXBUMIN 25% using human immunodeficiency virus, type 1 (HIV-1) both as a target virus and model for HIV-2 and other lipid-enveloped RNA viruses: bovine viral diarrhea virus (BVDV), a model for lipid-enveloped RNA viruses, such as hepatitis C virus (HCV); West Nile Virus (WNV), a target virus and model for other similar lipid-enveloped RNA viruses; pseudorabies virus (PRV), a model for other lipid-enveloped DNA viruses such as hepatitis B virus (HBV); mouse minute virus (MMV), models for non-enveloped DNA viruses such as human parvovirus B19; and hepatitis A virus (HAV), a target virus and a model for other non-enveloped RNA viruses.

These studies indicate that specific steps in the manufacture of FLEXBUMIN 25% are capable of eliminating/inactivating a wide range of relevant and model viruses. Since the mechanism of virus elimination/inactivation by fractionation and by heating steps is different, the overall manufacturing process of FLEXBUMIN 25% is effective in reducing viral load.

### Table 1

<table>
<thead>
<tr>
<th>Process Step</th>
<th>Viral Reduction Factor (log10)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HIV-1</strong></td>
<td></td>
</tr>
<tr>
<td>Flavivirus</td>
<td></td>
</tr>
<tr>
<td>BVDV</td>
<td>&gt; 4.9</td>
</tr>
<tr>
<td>WNV</td>
<td>&gt; 4.8</td>
</tr>
<tr>
<td>HAV</td>
<td>&gt; 5.7</td>
</tr>
<tr>
<td>MMV</td>
<td>&gt; 4.5</td>
</tr>
<tr>
<td><strong>Parvovirus</strong></td>
<td></td>
</tr>
<tr>
<td>Processing of Fraction IV + III/III+II supernatant to Fraction V, Cuno 70C filter*</td>
<td>3.0</td>
</tr>
<tr>
<td>Pasteurization</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt; 7.8</td>
</tr>
<tr>
<td></td>
<td>&gt; 6.5</td>
</tr>
<tr>
<td></td>
<td>n.d.</td>
</tr>
<tr>
<td></td>
<td>&gt; 7.4</td>
</tr>
<tr>
<td>Mean Cumulative Reduction Factor, log10</td>
<td>&gt; 7.2</td>
</tr>
<tr>
<td></td>
<td>&gt; 11.3</td>
</tr>
<tr>
<td></td>
<td>&gt; 5.7</td>
</tr>
<tr>
<td></td>
<td>&gt; 12.9</td>
</tr>
<tr>
<td></td>
<td>&gt; 7.7</td>
</tr>
<tr>
<td></td>
<td>&gt; 4.6</td>
</tr>
</tbody>
</table>

* Other Albumin fractionation process steps (processing of cryo-poor plasma to Fraction I + II + III supernatant and processing of Fraction V suspension to Cuno 90LP filter) showed virus reduction capacity in *in vitro* viral clearance studies. These process steps also contribute to the overall viral clearance effectiveness of the manufacturing process. However, since the mechanism of virus removal is similar to that of this particular process step, the viral inactivation data from other steps were not used in the calculation of the Mean Cumulative Reduction Factor.

**Recent scientific data suggest that the actual human parvovirus B19 (B19V) is far more effectively inactivated by pasteurization than indicated by model virus data.**

### INDICATIONS AND USAGE

**1. Hypovolemia**

The effectiveness of FLEXBUMIN 25% in reversing hypovolemia depends largely upon its ability to draw intravascular fluid into the circulation. It is most effective with patients who are well hydrated. When hypovolemia is long standing and hypalbuminemia exists accompanied by adequate hydration or edema, 25% albumin is preferable to 5% protein solutions. **Use 5% protein solutions or dilute 25% albumin with crystalloid solutions in the absence of adequate or excessive hydration. Administer compatible red blood cells or whole blood as quickly as possible when blood volume deficit is the result of hemorrhage.**

**2. Hypoalbuminemia**

**A. General**

Hypoalbuminemia can result from one or more of the following:

1. Inadequate production (malnutrition, burns, major injury, infections, etc.)

2. Excessive catabolism (burns, major injury, pancreatitis, etc.)

3. Loss from the body (hemorrhage, excessive renal excretion, burn exudates, etc.)

4. Redistribution within the body (major surgery, various inflammatory conditions, etc.)

When albumin deficit is the result of excessive protein loss, the effect of albumin administration will be temporary unless the underlying disorder is reversed.

There is no valid reason for use of albumin as an intravenous nutrient. In most cases, increased nutritional replacement of amino acids and/or protein with concurrent treatment of the underlying disorder will restore normal plasma albumin levels more effectively than albumin solutions.

Occasionally, hypoalbuminemia accompanying severe injuries, infections or pancreatitis cannot be quickly reversed and nutritional supplements can fail to restore serum albumin levels. **FLEXBUMIN 25% is indicated in these cases.**

**B. Burns**

An optimum regimen for the use of albumin, electrolytes and fluid in the early treatment of burns has not been established; however, in conjunction with appropriate crystalloid therapy, FLEXBUMIN 25% is indicated for treatment of oncofetal deficits after the initial 24 hour period following extensive burns and to replace the protein loss which accompanies any severe burn.

**C. Adult Respiratory Distress Syndrome (ARDS)**

A characteristic of ARDS is interstitial pulmonary edema, which can be causally related to hypoproteinemia. **25% albumin solution is indicated for these cases when used with a diuretic.**

**D. Nephrosis**

FLEXBUMIN 25% is indicated for treatment of edema in patients with severe nephrosis who are receiving steroids and/or diuretics.

**E. Cardiopulmonary Bypass Surgery**

FLEXBUMIN 25% is indicated during cardiopulmonary bypass surgery as a component of the pump prime.

**F. Hemolytic Disease of the Newborn (HDN)**

FLEXBUMIN 25% is indicated for infants with severe HDN to bind and detoxify unconjugated bilirubin.

### CONTRAINDICATIONS

- A history of allergic reactions to albumin and any of the excipients
- Severe anemia
- Heart failure

Do not dilute with Sterile Water for Injection as this can cause hemolysis in recipients. There exists a risk of potentially fatal hemolysis and acute renal failure from the use of Sterile Water for Injection as a diluent for Albumin (Human) in concentrations of 20% or higher. Acceptable diluents include 0.9% Sodium Chloride or 5% Dextrose in Water.

### WARNINGS

**Allergic /Anaphylactic Reactions**

Suspicion of allergic or anaphylactic type reactions requires immediate discontinuation of the injection. In case of shock, implement standard medical treatment for shock.
Transmission of Infectious Agents

FLEXBUMIN 25% is a derivative of human blood. Based on effective donor screening and product manufacturing processes, it carries an extremely remote risk for transmission of viral diseases and variant Creutzfeldt-Jakob disease (vCJD). There is a theoretical risk for transmission of Creutzfeldt-Jakob disease (CJD), but if that risk actually exists, the risk of transmission would also be considered extremely remote. No cases of transmission of viral diseases, CJD, or vCJD have ever been identified for licensed albumin.

All infections thought by a physician possibly to have been transmitted by this product, should be reported by the physician or other healthcare provider to Baxter Healthcare Corporation at 1-800-423-2862. The physician should discuss the risks and benefits of this product with the patient.

PRECAUTIONS

Hemodynamics

Closely monitor hemodynamic parameters after administering FLEXBUMIN 25% for evidence of cardiac or respiratory failure, renal failure, or increasing intracranial pressure.

Hypervolemia/Hemodilution

Administer FLEXBUMIN 25% with caution in conditions where hypervolemia and its consequences or hemodilution could represent a special risk for the patient. Examples include, but are not limited to, the following: Heart failure, hypertension, esophageal varices, pulmonary edema, hemorrhagic diathesis, severe anemia, and renal failure.

Adjust the rate of administration according to the solution concentration and the patient’s hemodynamic status. Do not exceed 1 mL/min to patients with normal blood volume. More rapid administration can cause circulatory overload and pulmonary edema.12 Discontinue administration at the first clinical signs of cardiovascular overload (e.g., headache, dyspnea, jugular venous distention, rales, and abnormal elevations in systemic or central venous blood pressure).

Blood Pressure

Monitor blood pressure in trauma patients and postoperative surgery patients resuscitated with FLEXBUMIN 25% in order to detect rebleeding secondary to clot disruption.

Pregnancy—Category C

Animal reproduction studies have not been conducted with FLEXBUMIN 25%. It is not known whether FLEXBUMIN 25% can cause fetal harm when administered to a pregnant woman or can affect reproductive capacity. FLEXBUMIN 25% should be given to a pregnant woman only if clearly needed.

Nursing Mothers

It is not known whether FLEXBUMIN 25% is excreted in human milk. Because many drugs are excreted in human milk, caution should be exercised when FLEXBUMIN 25% is administered to a nursing woman.

Pediatric Use

The safety of albumin solutions has been demonstrated in children provided the dose is appropriate for body weight, however, the safety of BUMINATE 25% has not been evaluated in pediatric patients.

Large Volumes

Monitor hemodynamic parameters. Ensure adequate substitution of other blood constituents (coagulation factors, electrolytes, platelets, and erythrocytes) are available if comparatively large volumes are replaced.

Electrolyte Status

Monitor electrolyte status and ensure appropriate steps are taken to restore or maintain the electrolyte balance.

DRUG INTERACTIONS

No interaction studies have been performed with FLEXBUMIN 25%.

ADVERSE REACTIONS

Adverse Reactions from Clinical Trials

There are no data available on adverse reactions from Baxter-sponsored clinical trials conducted with FLEXBUMIN 25%.

Post-Marketing Adverse Reactions

The following adverse reactions have been reported in the post-marketing experience:

IMMUNE SYSTEM DISORDERS:
- Anaphylactic shock, anaphylactic reaction, hypersensitivity/allergic reactions

NERVOUS SYSTEM DISORDERS:
- Headache, dizziness

CARDIAC DISORDERS:
- Myocardial infarction, atrial fibrillation, tachycardia

VASCULAR DISORDERS:
- Hypotension, flushing

RESPIRATORY, THORACIC, AND MEDIASTINAL DISORDERS:
- Pulmonary edema, dyspnea

GASTROINTESTINAL DISORDERS:
- Vomiting, nausea

SKIN AND SUBCUTANEOUS TISSUE DISORDERS:
- Urticaria, rash, pruritus

GENERAL DISORDERS AND ADMINISTRATION SITE CONDITIONS:
- Pyrexia, chills

OVERDOSE

Hypervolemia may occur if the dosage and rate of infusion are too high. [see Precautions: Hypervolemia/Hemodilution]

DOSEAGE AND ADMINISTRATION

FLEXBUMIN 25% must be administered intravenously.

- Do not use if turbid.
- Do not begin administration more than 4 hours after the container has been entered.
- Monitor hemodynamic parameters in patients receiving FLEXBUMIN 25% and check for the risk of hypervolemia and cardiovascular overload. [see Precautions]. Hypervolemia can occur if the dosage and rate of infusion are not adjusted, giving consideration to the solution concentration and the patient’s clinical status.
- Do not dilute with Sterile Water for Injection as this can cause hemolysis in recipients [see Contraindications].
- Do not mix with other medicinal products including blood and blood components. FLEXBUMIN 25% can be used concomitantly with other parenterals such as whole blood, plasma, saline, glucose or sodium lactate when deemed medically necessary. The addition of four volumes of normal saline or 5% glucose to 1 volume of FLEXBUMIN 25% gives a solution which is approximately isotonic and isosmotic with citrated plasma.
- Do not mix with protein hydrolysates or solutions containing alcohol since these combinations can cause the proteins to precipitate.
- Do not add supplementary medication.
- Record the name and batch number of the product in order to maintain a link between the patient and the batch of the product.
- Discard unused portion.

Recommended Dosages

1. Hypovolemic Shock

The dosage of FLEXBUMIN 25% must be individualized. Initial dosage range for adults is 100 to 200 mL and for children 2.5 to 5 mL per kilogram body weight. Repeat after 15 to 30 minutes if the response is not adequate. Administer albumin replacement in the form of 5% Albumin (Human) in patients with significant plasma volume deficits.

Upon administration of additional albumin or if hemorrhage occurs, hemodilution and anemia can occur. Supplemental administration of compatible red blood cells or compatible whole blood may be required to treat this condition.

2. Burns

The optimal therapeutic regimen for administration of crystalloid and colloid solutions after extensive burns has not been established. Determine the appropriate dose according to the patient’s condition and response to treatment when FLEXBUMIN 25% is administered after the first 24 hours following burns.

3. Hypoalbuminemia

Hypoalbuminemia is usually accompanied by a hidden extravascular albumin deficiency of equal magnitude. Consider total body albumin deficit when determining the amount of albumin necessary to reverse the hypoalbuminemia. Calculate the body albumin compartment to be 60 to 100 mL per kg of body weight when using the patient’s serum albumin concentration to estimate the deficit.14 Do not exceed a daily dose of 2 g of albumin per kilogram of body weight.

4. Hemolytic Disease of the Newborn

Administer FLEXBUMIN 25% prior to or during exchange transfusion at a dose of 1 g per kilogram body weight.11

Preparation for Administration

- Check the GALAXY container for minute leaks prior to squeezing the bag firmly. If leaks are found, discard solution as sterility can be impaired.
- Do not add supplementary medication.
- Visually inspect parenteral drug product for particulate matter and discoloration prior to administration. FLEXBUMIN 25% is a transparent or slightly opalescent solution, which may have a greenish tint or may vary from a pale straw to an amber color. Do not use unless solution is clear of particulate matter and seal is intact.

CAUTION: Do not use plastic containers in series connections. Such use could result in air embolism due to residual air being drawn from the primary container before the administration of the fluid from the secondary container is complete.

Administration

1. Suspend container from eyepet support.
2. Remove plastic protector from outlet port at bottom of container.
3. Attach administration set. Refer to complete directions accompanying set. Make certain that the administration set contains an adequate filter (15-micron or smaller).

HOW SUPPLIED

FLEXBUMIN 25% is supplied in a single-dose GALAXY plastic container:
- 50 mL NDC 0944-0493-01
- 100 mL NDC 0944-0493-02

STORAGE

Room temperature: Do not exceed 30°C (86°F). Protect from freezing.
REFERENCES


Baxter Healthcare Corporation
Westlake Village, CA 91362 USA
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To enroll in the confidential industry-wide Patient Notification System, call 1-888-UPDATE U (1-888-873-2838).

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