SUMMARY OF PRODUCT CHARACTERISTICS

1 NAME OF THE MEDICINAL PRODUCT

Sodium chloride 0.9%w/v Solution for Infusion

2 QUALITATIVE AND QUANTITATIVE COMPOSITION

Sodium chloride: 9.0 g/l

Each ml contains 9 mg sodium chloride.

mmol/l: Na^+ : 154 Cl^-: 154

osmolarity: 308 mosmol/l

pH: 4.5 -7.0

For the full list of excipients: see section 6.1

3 PHARMACEUTICAL FORM

Solution for infusion

Clear, colourless solution, free from visible particles.

4 CLINICAL PARTICULARS

4.1 Therapeutic indications

Sodium chloride 0.9% solution for infusion is indicated for:

- Treatment of isotonic extracellular dehydration
- Treatment of sodium depletion
- Vehicle or diluent of compatible drugs for parenteral administration.

4.2 Posology and method of administration

Posology

Adults, older people and children:

Doses may be expressed in terms of mEq or mmol of sodium, mass of sodium, or mass of sodium salt (1 g NaCl = 394 mg, 17.1 mEq or 17.1 mmol of Na and Cl).

Fluid balance, serum electrolytes and acid-base balance should be monitored before and during administration, with particular attention to serum sodium in patients with increased non-osmotic vasopressin release (syndrome of inappropriate antidiuretic hormone secretion, SIADH) and in patients co-medicated with vasopressin agonist drugs, due to the risk of hospital acquired hyponatraemia (see sections 4.4, 4.5 and 4.8). Monitoring of serum sodium is particularly important for hypotonic fluids.

The infusion rate and volume depend on age, weight, clinical condition (e.g. burns, surgery, head-injury, infections), and concomitant therapy should be determined by the consulting physician experienced in intravenous fluid therapy (see sections 4.4. and 4.8).

Recommended dosage

The recommended dosage for treatment of isotonic extracellular dehydration and sodium depletion is:

- For adults: 500 ml to 3 litres/24h
- For babies and children: 20 to 100 ml per 24h and per kg of body weight, depending of the age and the total body mass.

The recommended dosage when used as a vehicle or diluent ranges from 50 to 250 ml per dose of medicinal product to be administered.

When Sodium chloride 0.9% is used as a diluent for injectable preparations of other drugs, the dosage and the infusion rate will also be dictated by the nature and the dose regimen of the prescribed drug.

Method of administration

For intravenous infusion.

The product should be inspected visually for particulate matter and discoloration prior to administration. Do not administer unless solution is clear, free from visible particles and the bag is intact.

For information regarding precautions to be taken before manipulating or administering the product, please see section 6.6.

Additives may be introduced before infusion or during infusion through the injection port. For information on incompatibilities and preparation of the product (with additives), please see sections 6.2 and 6.6.

4.3 Contraindications

The solution is contraindicated in patients presenting hypernatremia or hyperchloremia.

The contraindications related to the added medicinal product should be considered.

4.4 Special warnings and precautions for use

Fluid balance/renal function

Use in patients with (severe) renal impairment

Sodium chloride 0.9% should be administered with particular caution to patients with or at risk of severe renal impairment. In such patients, administration of Sodium chloride 0.9% may result in sodium retention. (See "Use in patients at risk for sodium retention, fluid overload and oedema" below; for additional considerations.)

Risk of fluid and/or solute overload and electrolyte disturbances

Depending on the volume and rate of infusion, intravenous administration of Sodium chloride 0.9% can cause:

- Fluid and/or solute overload resulting in overhydration/hypervolemia and, for example, congested states, including central and peripheral oedema.
- Clinically relevant electrolyte disturbances and acid-base imbalance.

In general, the risk of dilutional states (retention of water relative to sodium) is inversely proportional to the electrolyte concentrations of Sodium chloride 0.9% and its additions. Conversely, the risk of solute overload causing congested states (retention of solute relative to water) is directly proportional to the electrolyte concentrations of Sodium chloride 0.9% and its additions.

Special clinical monitoring is required at the beginning of any intravenous infusion. Clinical evaluation and periodic laboratory determinations may be necessary to monitor changes in fluid balance, electrolyte concentrations, and acid-base balance during prolonged parenteral therapy or whenever the condition of the patient or the rate of administration warrants such evaluation.

High volume infusion must be used under specific monitoring in patients with cardiac or pulmonary failure and in patients with non-osmotic vasopressin release (including SIADH), due to the risk of hospital-acquired hyponatraemia (see below).

Hyponatraemia

Patients with non-osmotic vasopressin release (e.g. in acute illness, pain, post-operative stress, infections, burns, and CNS diseases), patients with heart-, liver- and kidney diseases and patients concomitantly exposed to vasopressin agonists (see

section 4.5) are at particular risk of acute hyponatraemia upon infusion of hypotonic fluids.

Acute hyponatraemia can lead to acute hyponatraemic encephalopathy (cerebral oedema) characterized by headache, nausea, seizures, lethargy and vomiting. Patients with cerebral oedema are at particular risk of severe, irreversible and life-threatening brain injury.

Children, women in the fertile age and patients with reduced cerebral compliance (e.g.

meningitis, intracranial bleeding, cerebral contusion and brain oedema) are at particular risk of the severe and life-threatening brain swelling caused by acute hyponatraemia.

Use in patients at risk for sodium retention, fluid overload and oedema

Sodium chloride 0.9% should be used with particular caution, if at all, in patients with or at risk for:

- Hypernatraemia. Rapidly correcting hypernatraemia once adaptation has occurred may lead to cerebral oedema, potentially resulting in seizures, permanent brain damage, or death.
- Hyperchloraemia
- Metabolic acidosis, which may be worsened by prolonged use of this product, especially in patients with renal impairment.
- Hypervolaemia such as congestive heart failure and pulmonary oedema may be precipitated, particularly in patients with cardiovascular disease.
- Iatrogenic hyperchloraemic metabolic acidosis (e.g., during intravenous volume resuscitation)
- Conditions that may cause sodium retention, fluid overload and oedema (central and peripheral), such as patients with
    - primary hyperaldosteronism,
    - secondary hyperaldosteronism, associated with, for example,
        - hypertension,
        - congestive heart failure,
        - liver disease (including cirrhosis),
        - renal disease (including renal artery stenosis, nephrosclerosis) or preeclampsia.
- Medications that may increase the risk of sodium and fluid retention, such as corticosteroids

Infusion reactions

Symptoms of unknown aetiology which can appear to be hypersensitivity reactions have been reported very rarely in association with infusion of Sodium chloride 0.9 %. These have been characterized as hypotension, pyrexia, tremor, chills, urticaria, rash

and pruritus. Stop the infusion immediately if signs or symptoms of these reactions develop. Appropriate therapeutic countermeasures should be instituted as clinically indicated.

Specific patient groups

The consulting physician should be experienced in this product's use and safety in these special populations that are especially sensitive to rapid changes in serum sodium levels.

Rapid correction of hyponatraemia and hypernatraemia is potentially dangerous (risk of serious neurologic complications). See section "*Hyponatraemia/hypernatraemia*" above.

Paediatric population

Plasma electrolyte concentrations should be closely monitored in the paediatric population as this population may have impaired ability to regulate fluids and electrolytes. Repeated infusions of sodium chloride should therefore only be given after determination of the serum sodium level.

Geriatric population

When selecting the type of infusion solution and the volume/rate of infusion for a geriatric patient, consider that geriatric patients are generally more likely to have cardiac, renal, hepatic, and other diseases or concomitant drug therapy.

For information on preparation of the product and additives, please see section 6.6.

4.5 Interaction with other medicinal products and other forms of interaction

Drugs leading to an increased vasopressin effect

The below listed drugs increase the vasopressin effect, leading to reduced renal electrolyte free water excretion and may increase the risk of hospital acquired hyponatraemia following inappropriately balanced treatment with i.v. fluids (see sections 4.2, 4.4 and 4.8).

- Drugs stimulating vasopressin release include: Chlorpropamide, clofibrate, carbamazepine, vincristine, selective serotonin reuptake inhibitors, 3.4-methylenedioxyN-methamphetamine, ifosfamide, antipsychotics, narcotics
- Drugs potentiating vasopressin action include: Chlorpropamide, NSAIDs, cyclophosphamide
- Vasopressin analogues include: Desmopressin, oxytocin, terlipressin.

Other medicinal products increasing the risk of hyponatraemia also include diuretics in general and antiepileptics such as oxcarbazepine.

Caution is advised in patients treated with lithium. Renal sodium and lithium clearance may be increased during administration of Sodium chloride 0.9%. Administration of Sodium chloride 0.9% may result in decreased lithium levels.

Corticoids/Steroids and carbenoxolone, are associated with the retention of sodium and water (with oedema and hypertension). See Section 4.4 Special warnings and precautions for use.

4.6 Fertility, pregnancy and lactation

Pregnancy

There are no adequate data from the use of Sodium chloride 0.9% in pregnant women. The physician should carefully consider the potential risks and benefits for each specific patient before administering Sodium chloride 0.9%.

Sodium chloride 0.9% should be administrated with special caution for pregnant women during labour particularly as to serum-sodium if administered in combination with oxytocin (see sections 4.4, 4.5 and 4.8).

Caution is advised with patients with pre-eclampsia (See Section 4.4. Special warnings and precautions for use).

When a medicinal product is added, the nature of the drug and its use during pregnancy should be considered separately.

Breast-feeding

No effects during breast-feeding are anticipated from the use of Sodium chloride 0.9%.

When a medicinal product is added, the nature of the drug and its use during breast-feeding

should be considered separately.

Fertility

Sodium chloride is not expected to effect fertility.

4.7 Effects on ability to drive and use machines

No studies have been conducted on the influence of Sodium chloride 0.9% solution for infusion on the ability to drive and use machines.

4.8 Undesirable effects

The following adverse reactions have been reported in post-marketing experience. The frequency of the adverse drug reactions listed in this section cannot be estimated from the available data.

System Organ Class (SOC)	Adverse reactions (Preferred Term)	Frequency
Nervous system disorders	Tremor Acute hyponatraemic encephalopathy*	Not known
Metabolism and nutrition disorders	Hospital acquired hyponatraemia*	Not known
Vascular disorders	Hypotension	Not known
Skin and subcutaneous tissue disorders	Urticaria Rash Pruritus	Not known
General disorders and administration site conditions:	Infusion site reactions, such as • - Infusion site erythema, • - Vein irritation, Injection site streaking, burning sensation, • - Local pain or reaction, Infusion site urticaria • - Infection at the site of injection, • - Venous thrombosis or phlebitis extending from the site of injection, extravasation and hypervolemia • - Pyrexia • - Chills	Not known

*Hospital acquired hyponatraemia may cause irreversible brain injury and death, due to development of acute hyponatraemic encephalopathy, frequency unknown (see sections 4.2.

4.4, 4.5).

The following adverse reactions have not been reported with this product but may occur:

- Hypernatraemia (eg. when administered to patients with nephrogenic diabetes insipidus or high nasogastric output)

- Hyperchloraemic metabolic acidosis
- Hyponatraemia, which may be symptomatic. Hyponatraemia may occur when normal free water excretion is impaired. (e.g. SIADH or postoperative).

General adverse effects of sodium excess are described in section 4.9 Overdose.

Additives

When Sodium chloride 0.9% is used as a diluent for injectable preparations of other drugs, the nature of additives will determine the likelihood of any other undesirable effect.

If an adverse event occurs the patient should be evaluated and appropriate counter measures be started, if needed the infusion should be stopped. The remaining part of the solution should be kept for investigation if deemed necessary.

Reporting of suspected adverse reactions

Reporting suspected adverse reactions after authorisation of the medicinal product is important. It allows continued monitoring of the benefit/risk balance of the medicinal product.

Healthcare professionals are asked to report any suspected adverse via reactions via the Yellow Card Scheme at: www.mhra.gov.uk/yellowcard or search for MHRA Yellow Card in the Google Play or Apple App Store.

4.9 Overdose

General adverse effects of sodium excess in the body include nausea, vomiting, diarrhoea, abdominal cramps, thirst, reduced salivation and lacrimation, sweating, fever, tachycardia, hypertension, renal failure, peripheral and pulmonary oedema, respiratory arrest, headache, dizziness, restlessness, irritability, weakness, muscular twitching and rigidity, convulsions, coma, and death.

An excessive volume of sodium chloride 0.9% may lead to hypernatraemia (which can lead to CNS manifestations, including seizures, coma, cerebral oedema and death) and sodium overload (which can lead to central and/or peripheral oedema) and should be treated by an attending specialised physician.

Excess chloride in the body may cause a loss of bicarbonate with an acidifying effect.

When Sodium chloride 0.9% is used as a diluent for injectable preparations of other drugs, the signs and symptoms of over infusion will be related to the nature of the additives being used. In the event of accidental over infusion, treatment should be discontinued and the patient should be observed for the appropriate signs and symptoms related to the drug administered. The relevant and supportive measures should be provided as necessary.

5 PHARMACOLOGICAL PROPERTIES

5.1 Pharmacodynamic properties

Pharmacotherapeutic group: B05XA03 Sodium chloride

Sodium chloride 0.9% solution for infusion is an isotonic solution, with the same osmolarity as plasma.

Pharmacodynamics effects

The pharmacodynamic properties of the solution are those of the sodium and chloride ions in maintaining the fluid and electrolyte balance. Ions, such as sodium, circulate through the cell membrane, using various mechanisms of transport, among which is the sodium pump (Na-K-ATPase). Sodium plays an important role in neurotransmission and cardiac electrophysiology, and also in its renal metabolism.

5.2 Pharmacokinetic properties

Sodium is predominantly excreted by the kidney, but there is extensive renal reabsorption.

Small amounts of sodium are lost in the faeces and sweat.

5.3 Preclinical safety data

The safety of sodium chloride in animals is not relevant in view of its presence as a normal component in animal and human plasma.

6 PHARMACEUTICAL PARTICULARS

6.1 List of excipients

Water for injections.

6.2 Incompatibilities

As with all parenteral solutions compatibility of the additives with the solution must be assessed before addition.

Detection of incompatibility with any added medicinal product with the Sodium chloride 0.9% falls within the user's responsibility. A user should inspect potential change in the solution colour and/or the potential presence of a clot, insoluble complexes, or formation of crystals. A user should also read the authorised product information on the use of the added medicinal product.

Prior to the addition of a medicinal product, it should be verified whether the medicinal product is soluble and stabile in water within the pH range.

Once a compatible medicinal product is added to the Sodium chloride 0.9%, the solution must be used immediately.

Those additives known to be incompatible should not be used.

In the absence of compatibility studies, this medicinal product must not be mixed with other medicinal products.

See also section 6.6 for further instructions on the use of the product with additives.

6.3 Shelf life

Shelf life as packaged:

24 months

From a microbiological point of view, the diluted product must be used immediately unless dilution has taken place in controlled and validated aseptic conditions. If not used immediately, in-use storage times and conditions are the responsibility of the user.

6.4 Special precautions for storage

Do not store above 25°C. Do not freeze.

6.5 Nature and contents of container

A polyolefin/polypropylene bag with a polycarbonate-chlorobutyl infusion port covered with a blue flip-cap and a polycarbonate-isoprene injection port covered with a breakable cap.

Bags may be wrapped in a sealed, protective, plastic dustcover.

The bags are available in the following sizes:

1 x 100 ml, 1 x 250 ml, 1 x 500 ml, 1 x 1 000 ml (individually)

40 x 100 ml, 18 x 250 ml, 20 x 500 ml, 10 x 1000 ml (in a cardboard box)

Not all pack sizes may be marketed.

6.6 Special precautions for disposal

Please see section 4.2 for information regarding the method of administration.

Use only if the solution is clear, free of any visible particles, and if the packaging is intact. Administer immediately once attached to the infusion set.

Do not use plastic bags 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 completed. Pressurizing intravenous solutions contained in flexible plastic containers to increase flow rates can result in air embolism if the residual air in the container is not fully evacuated prior to administration.

Use of a vented intravenous administration set with the vent in the open position could result in air embolism.

Vented intravenous administration sets with the vent in the open position should not be used

with flexible plastic containers.

The solution must be administered aseptically, using a sterile device. To prevent the air from penetrating into the system, the device must be filled up with the solution.

Other medicinal products may be added before or during the infusion administration via a venous line.

If another medicinal product is added to the solution, check the isotonicity prior to the parenteral administration. All added medicinal products must be thoroughly and carefully mixed in an aseptic manner. Solutions containing other added medicinal products must be used immediately and must not be stored for later use.

Adding other medication or using an incorrect administration technique might cause the appearance of fever reactions due to the possible introduction of pyrogens. In case of adverse reaction, infusion must be stopped immediately.

For single use only.

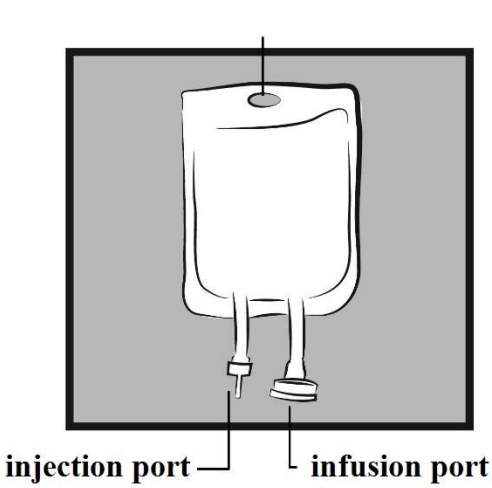
Any unused medicinal product or waste material should be disposed of in accordance with local requirements.

Do not reconnect partially used bags.

INSTRUCTIONS FOR HANDLING THE INFUSION BAG

Figure 1: Bag

hanger



1. INSPECTION PRIOR TO ADMINISTRATION

a) Check for minute leaks by squeezing the bag gently. If you observe any bag integrity disruption, discard the bag containing the solution, as its sterility may be impaired.

b) Check visually whether the solution meets the characteristics listed in the section 3 of the Summary of Product Characteristics. If not, the solution should be discarded. For preparation and administration use sterile material.

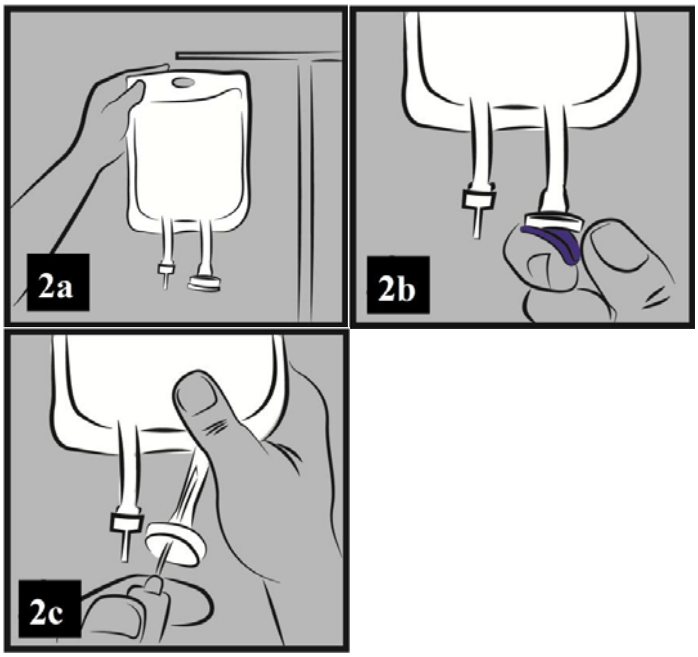
2. PREPARATION FOR ADMINISTRATION

a) Hang the bag on a stand position (Figure 2a).

b) Break off a blue plastic cover from the delivery port (infusion port) (Figure 2b).

c) Disinfect the medication site. Connect a thick perforation needle of the infusion set to the infusion port (Figure 2c).

d) Proceed as described in the instructions accompanying the infusion set (set filling and solution application).

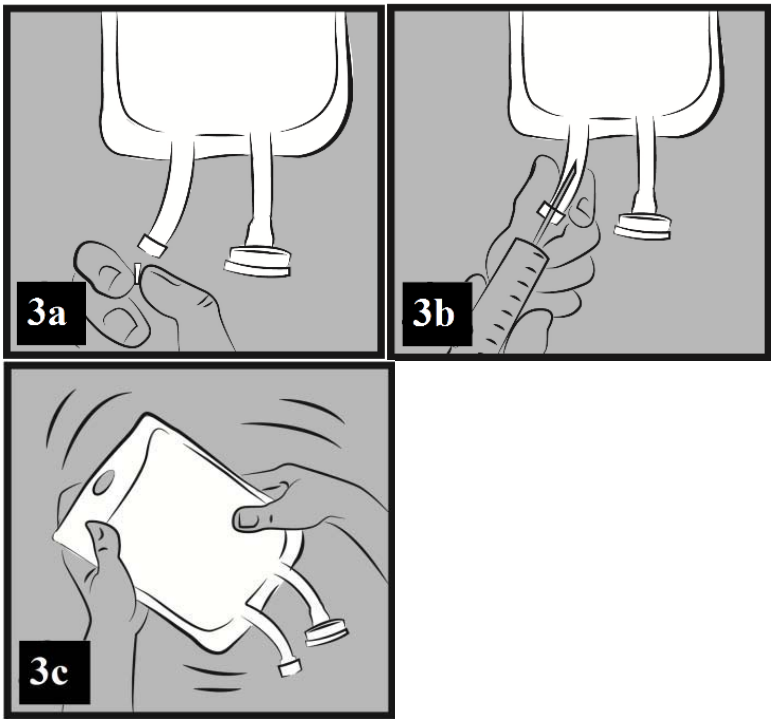


3. ADDING A MEDICINE TO THE SOLUTION

a) Break off a transparent cover on the injection port. (Figure 3a).

b) Disinfect the medication site. Puncture the injection port and add the medicine. Recommended needle size: 19 G (1.10 mm) to 22 G (0.70 mm) (Figure 3b).

c) Thoroughly mix the bag contents (Figure 3c).



Warning: Follow the instructions for the disposal of bags in the healthcare area (regarding content of the added medicinal product).

The bag may be filled up with the following maximum amounts of other medicines:

100 ml bag	max. 70 ml
250 ml bag	max. 75 ml
500 ml bag	max. 115 ml
1 000 ml bag	max. 130 ml

7 MARKETING AUTHORISATION HOLDER

IMUNA PHARM, a.s.

Jarková 269/17

082 22 Šarišské Michaľany

Slovak Republic

8 MARKETING AUTHORISATION NUMBER(S)

PL 43817/0001

9 DATE OF FIRST AUTHORISATION/RENEWAL OF THE AUTHORISATION

29/06/2021

10 DATE OF REVISION OF THE TEXT

04/10/2023