

# Application of infusions

Infusion refers to **the administration of a larger amount of fluid into the body parenterally** (primarily intravenously). Different drugs can be added to infusion solutions, which are enabled to enter the body quickly, without interaction with the digestive tract (no *first pass effect*).

## Indication

We apply after assessing the patient's overall condition. Before administration, it is necessary to take a detailed anamnesis (feelings of thirst, urination, shortness of breath, etc.) and determine laboratory blood values.

### Therapeutic

- Application of drugs (antibiotics, cytostatics);
- Parenteral nutrition;
- regulation of water and mineral management;
- adjustment of acid-base balance;
- replenishment of the circulating volume (in the case of Hypovolemia).

### Diagnostic

- Application of contrast media (CT examination).

## Types of infusion solutions

The basis of infusion solutions is distilled, sterile water. Each infusion bottle is labeled with the name, amount, composition and expiration date of the solution.

### Crystalloids

Low molecular weight, balanced solutions. Their disadvantage is that most of the solution moves into the interstitium (about 20% remains intravascular). They are used to **adjust the water and electrolyte balance**.

E.g. *Physiological solution*, *Hartman's solution* (isotonic), *Ringer's solution*, *Plasmalyte* (representation of ions similar to plasma), *5% glucose*.

### Colloids

Compared to crystalloids, high-molecular solutions are more effective in substituting and expanding the plasma volume (they keep the fluid intravasally for a longer time). Their disadvantage is a relatively frequent allergic reaction to macromolecular substances and a reduction in coagulation parameters. They are used in the therapy of **shock states, severe dehydration, effusions (ascites), edema, hypoalbuminemia and replacement of blood loss**.

E.g. *Gelatin* (short half-life, expansion up to 50 %), *dextrans* (risk of renal insufficiency), *albumin* (excellent binding capacity, transport protein, can affect renal function, accumulation in tissues - pruritus), *hydroxyethylated starches* (rapid elimination, hydrolyzed to a greater extent).

### Other solutions

#### Osmotherapy

Substances inducing osmotic diuresis. Adverse effects include dilutional hyponatremia, headache, nausea, dehydration. They are given for **swelling, effusions, intracranial hypertension, při excessive production of intraocular fluid, intoxication and kidney hemodynamic disorders**.  
E.g. *Mannitol 10% and 20%*.

#### Adjustment of electrolyte and acid-base balance

For example: *KCl 7.45%*, *NaCl 10%*, *MgSO<sub>4</sub> 10% and 20%*, *NaHCO<sub>3</sub> 8.4%*.

#### Parenteral nutrition

Individual nutrients can be given **separately** (sugars – glucose 5%, 10%, 20%, 40%, fructose 20%, fats, amino acids) or in the form of **complex nutrition** with the representation of nutrients according to nutritional recommendations.

## Submission Policy



Infusion set



Saline label

1. Maintaining a sterile environment,
2. control of the preparation according to course (name, concentration, expiration date),
3. we only connect the infusion bottle to the infusion set just before administration,
4. drugs administered by infusion, added to the solution just before administration,
5. on the label of the infusion bottle, we will clearly write the name and amount of the added drug, the date and time of administration,
6. before administration, flush the infusion set (patency, air removal),
7. we carefully check whether the medicine drips at the prescribed rate and the patient's condition.

**In case of complications, we stop the administration of the infusion immediately.**

## Links

### Related Articles

- Administration of transfusions
- Cannulation of peripheral vein

### References

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### External links

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- VYTEJČKOVÁ, Renata. *Infuzní terapie* [lecture for subject Ošetřovatelství, specialization Všeobecné lékařství, Lékařská fakulta MUNI]. Brno. 5.11.2014. Available from <[https://is.muni.cz/el/med/podzim2014/BPDV011c/1.\\_Infuznx\\_terapie.pdf](https://is.muni.cz/el/med/podzim2014/BPDV011c/1._Infuznx_terapie.pdf)>.
- Video na výpočet rychlosti podávání infuzí (<https://www.youtube.com/watch?v=KQKdcJxBNU>)