

# Hydration via IV Therapy

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## Rehydration:

- Always employs:
  - Isotonic or mildly hypotonic solutions
  - These hydrate the ECF and Cells
- Never employs Hypertonic solutions
  - Hypertonic solutions dehydrate the ECF and cells

## Base IV Solutions

- Sodium Chloride Solutions

- 0.45% HYPOTONIC Half-Normal Saline “1/2 NS”

- **154 mOsm/L**
    - Can be infused alone as a hydration bag
    - Is the LOWEST osmolarity infused without other additives.
    - Often employed as a base solution for other additives

- 0.9% ISOTONIC Normal Saline “NS”

- **308 mOsm/L**

- Saline Infusions:

- Good agent for volume stabilization when other electrolytes not required.
    - Good agent in hyponatremia and hypochloremia

## Base IV Solutions

- Sterile Water:

- NEVER used without additives (-0- osmolarity = hemolysis and death) but is an excellent base for IV Nutrients.

- Ringer’s Lactate: “Hartmann’s solution”.

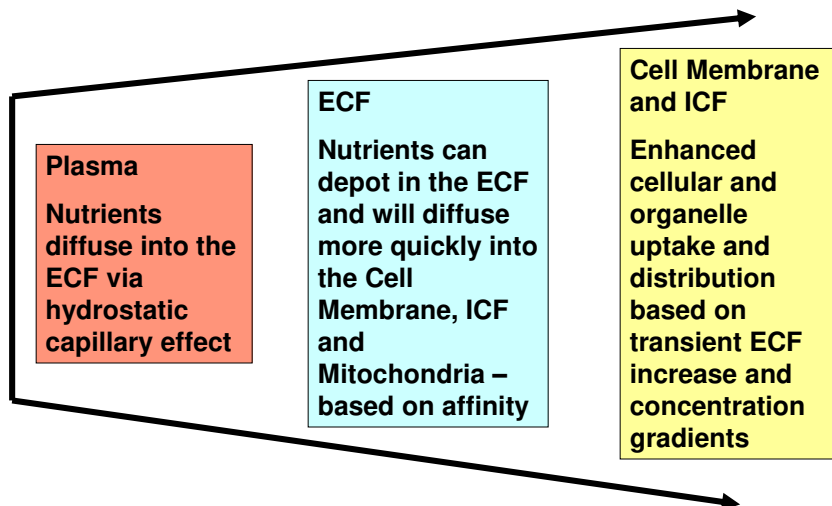
- Very similar to the ECF electrolytes.
    - **273 mOsm/L**
  - Helpful in all acidosis (except lactic) as lactate metabolism creates bicarbonate / acid stabilizing metabolites.
  - **Do not use** in Addison’s or hepatic disease where lactate metabolism is impaired.

## Base IV Solutions

### • Dextrose in Water

- D5W: 5% Dextrose in Water.
  - ISOTONIC (can become hypotonic during infusion if dextrose is metabolized quickly).
  - **260 mOsm/L**
- 1.5 to 2 liters / day average.
  - Good solution base for many antibiotics.
  - Often employed in patients with labile blood sugar control. (May increase insulin need in IDDM.)
  - RAPID INFUSION CAUSES SEVERE NAUSEA AND VOMITING
    - 125 – 250 mL / Hour is safe, unless patient is volume depleted – then 250 – 500 mL / Hr may be tolerated

Direct effect after infusion; Exclusive of specific channel or transport activity:



## Custom Rehydration Solutions with Nutrients

- The following slides show examples from the BIORC / AMSA clinics of customized solutions used in dehydrated cancer patients.
- As long as the rule of hypotonic or isotonic solution for rehydration is followed, one may compound any number of appropriate solutions using a hypotonic base solution and nutrients.

**Rx: Rehydration 500 mL**

**Total Volume: 552 mL**

**Osmolarity: 271 mOsm/L**

500 mL	Sterile Water	1 mL	Pyridoxine / B-6 (100mg)
10 mL	C-500 (5 grams)	3 mL	B-100 Complex
5 mL	Calcium Chloride (6.8 mEq)	2 mL	Dexpanthenol / B-5 (500mg)
10 mL	Magnesium Chloride (19.7 mEq)	0.5 mL	5MTHF (2.5 mg)
3 mL	Potassium Chloride (6 mEq)	2 mL	Methyl-B12 (10 mg)
15 mL	8.4% Sodium Bicarbonate		

**Rx: Rehydration 500 mL in 0.45% NS**

Total Volume: 535 mL

Osmolarity: 325 mOsm/L

500 mL	0.45% (Half) Normal Saline	1 mL	Pyridoxine / B-6 (100mg)
5 mL	C-500 (2.5 grams)	2 mL	B-100 Complex
4 mL	Calcium Chloride (5.44 mEq)	2 mL	Dexpanthenol / B-5 (500mg)
6 mL	Magnesium Chloride (11.82 mEq)	0.5 mL	5MTHF (2.5 mg)
3 mL	Potassium Chloride (6 mEq)	1 mL	Methyl-B12 (5 mg)
10 mL	8.4% Sodium Bicarbonate		

**Rx: Rehydration 500 mL plus Amino Acids**

Total Volume: 598 mL

Osmolarity: 285 mOsm/L

500 mL	Sterile Water	1 mL	Pyridoxine / B-6 (100mg)
5 mL	C-500 (2.5 grams)	3 mL	B-100 Complex
6 mL	Calcium Chloride (8.16 mEq)	2 mL	Dexpanthenol / B-5 (500mg)
10 mL	Magnesium Chloride (19.7 mEq)	0.5 mL	5MTHF (2.5 mg)
4 mL	Potassium Chloride (8 mEq)	2 mL	Methyl-B12 (10 mg)
15 mL	8.4% Sodium Bicarbonate	50 mL	Aminosyn 8.5% Solution

**Rx: Rehydration 1000 mL**

Total Volume: 1101 mL

Osmolarity: 290 mOsm/L

1000 mL	Sterile Water	1 mL	Pyridoxine / B-6 (100mg)
25 mL	C-500 (12.5 grams)	4 mL	B-100 Complex
10 mL	Calcium Chloride (13.60 mEq)	4 mL	Dexpanthenol / B-5 (1000mg)
20 mL	Magnesium Chloride (39.4 mEq)	0.5 mL	5MTHF (2.5 mg)
8 mL	Potassium Chloride (16 mEq)	2 mL	Methyl-B12 (10 mg)
25 mL	8.4% Sodium Bicarbonate		

**Rx: Rehydration 1000 mL plus Amino Acids**

Total Volume: 1186 mL

Osmolarity: 271 mOsm/L

1000 mL	Sterile Water	1 mL	Pyridoxine / B-6 (100mg)
10 mL	C-500 (5 grams)	4 mL	B-100 Complex
10 mL	Calcium Chloride (13.60 mEq)	4 mL	Dexpanthenol / B-5 (1000mg)
20 mL	Magnesium Chloride (39.4 mEq)	0.5 mL	5MTHF (2.5 mg)
8 mL	Potassium Chloride (16 mEq)	2 mL	Methyl-B12 (10 mg)
25 mL	8.4% Sodium Bicarbonate	100mL	8.5 % Aminosyn