

## Dehydration and Oral Rehydration Solutions

### Travel and Dehydration

#### Dehydration

Dehydration is the significant depletion of body water and electrolytes. Dehydration results from increased fluid loss, decreased fluid intake, or both. Mild to moderate dehydration is commonly defined as 2–6% of body weight loss through fluid.

#### Risks of dehydration when traveling

There are various risks of dehydration associated with travel, including:

##### Travelers' diarrhea



Travelers' diarrhea is the most common health problem facing travelers' to less developed countries – up to **50% of people** traveling to high risk destinations may experience travelers' diarrhea.

The condition is defined as three or more loose bowel motions, with at least one of the following symptoms: nausea, vomiting, abdominal cramps, pain, fever or blood in the stool.

The World Health Organization identifies dehydration as the most severe threat posed by travelers' diarrhea.



#### Signs and symptoms of dehydration:

Increased thirst

Fatigue / Lethargy

Dizziness

Headaches

Dark yellow urine, or decreased urine output

Sticky or dry mouth

Loss of skin elasticity

Irritability

**FACT: Rehydration is the most important aspect of managing travelers' diarrhea.**

Most cases of travelers' diarrhea result from:

- Ingesting contaminated food or water.
- Bacterial pathogens such as E. coli, Campylobacter, Shigella, Salmonella.
- Viral and parasitic agents are less common.



#### Heavy sweating



(Due to increased physical activity and/or prolonged exposure to the sun)

Many travelers spend time outdoors in the sun, and participate in activities such as hiking, rock climbing, skiing and summer walking tours.

Due to these activities, the body's core temperature may rise, resulting in the production of sweat, to allow for cooling.

Through sweat, there is the loss of both fluid and electrolytes – this may lead to mild to moderate dehydration.

## How to manage dehydration

Replacing lost fluid and electrolytes with an oral rehydration solution (ORS) is the most important aspect of preventing and relieving dehydration.

Hydralyte is a scientifically formulated ORS based on the World Health Organization (WHO) criteria for oral rehydration therapy. The solutions contain the correct balance of glucose and electrolytes to allow for rapid and effective rehydration.

The WHO recommends all travelers include an ORS in their travel first aid kit. The US Centers for Disease Control and Prevention (CDC) also recommends that traveler's use an oral rehydration solution when experiencing traveler's diarrhea.



Carry one in your hand luggage - for dehydration on the plane

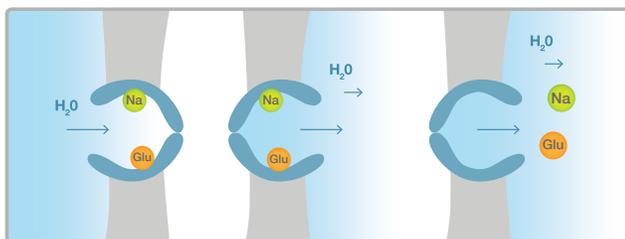
**Why pack two?**

Pack one in your suitcase - in case of travelers' diarrhea or other travel related dehydration

## Oral rehydration solutions (Hydralyte) – The science

The most important physiological features are:

- Correct balance of sodium and glucose** leads to the activation of the sodium-glucose co-transporter in the small intestinal lumen – this allows for rapid absorption. Sodium and glucose bind to the transporter protein – driven by high sodium concentrations in the small intestine. This dual binding causes the transport protein to change shape, delivering sodium and glucose to cell internals. At the same time, water moves into the cell internals by osmosis. Sodium and glucose are both actively transported out of the cell into the blood, along with water.



- The solution is hypotonic** – this allows for effective rehydration while minimizing potential side effects such as unnecessary calories or a feeling of fullness/bloating.

It is important to know that water alone or sugary drinks (i.e. soda or sports drinks) do not contain the correct balance of sodium or glucose to allow for rapid hydration.

## Hydralyte formulation

Ingredient	Function	Hydralyte per Liter (1.1 QT)	Sports drink (per Liter – approximate values)
<b>Sodium</b>	Helps body to retain fluid	45–60 mEq	12–23 mEq
<b>Potassium</b>	Essential for nerve and muscle function	20 mEq	4–9 mEq
<b>Chloride</b>	Helps body to retain fluid	35–45 mEq	NA
<b>Primary sugar</b>	Assists with absorption of fluid and electrolytes	0.6 oz (glucose)	2.1–2.6 oz (glucose/fructose/sucrose)
<b>Osmolality</b>	WHO recommendation = 245 mOsm/L	245 mOsm/L	Variable – not standardized
<b>Calories per Liter (1.1 QT)</b>		80 (powder, solution) –110 (effervescent tablets)	260–320

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