**Fluid regulation in the body**

Fluids and solutes, along with nutrients and waste products, constantly shift within the body’s compartments from cells to interstitial spaces, to blood vessels, and back again.

Water is moved as needed to keep the amount in each area relatively constant, thus enabling the body to function optimally:

- When water loss is severe, the amount of water in the bloodstream decreases. The body moves water from inside the cells to outside the cells, and into the bloodstream until it can be replaced through increased fluid intake.
- When the body has excess water, the amount in the bloodstream increases. The body moves water from the bloodstream into and around the cells, ensuring blood volume and blood pressure can be kept relatively constant.

**Fluid imbalance**

To maintain a euhydrated state (optimal fluid balance) – water intake must equal water loss. Fluid imbalance occurs when there is a:

**FLUID DEFICIT**
- **Active fluid loss**: hemorrhage, diarrhea, excessive sweating.
- **Inadequate fluid intake**: poor thirst mechanism, mobility issues (i.e. in seniors).
- **Regulatory mechanism failure**: renal impairment, medical conditions (such as diabetic ketoacidosis), medications (such as diuretics).

**FLUID SURPLUS**
- Excess fluid intake (without electrolyte replacement).
- **Regulatory mechanism failure, medical conditions (such as congestive heart failure).**

Fluid imbalance can be associated with: dehydration, hyponatremia, heat cramps, heat exhaustion, heat stroke.

**Risk factors for dehydration**

**Vomiting & diarrhea**
- Large loss of fluid and electrolytes.
- **FACT**: Dehydration is the biggest health risk associated with vomiting and diarrhea.

**Travel**
- Travellers’ diarrhea.
- Increased physical activity and exposure to the sun (excess fluid and electrolyte loss through sweat).
- Long-haul flights (dry cabin conditions) can result in dehydration.

**Fever**
- Fever (elevated body temperature > 37°C) is often accompanied by increased sweating which leads to fluid and electrolyte loss.

**Heat**
- Heat exposure raises the core body temperature and usually increases the sweat rate.
- Fluid and electrolytes are commonly lost through sweat.

**Vigorous exercise / Strenuous activity**
- Increased physical activity will increase the core body temperature and sweat rate.
- Fluid and electrolytes are commonly lost through sweat.

**Work**
- Prolonged physical work results in an increased sweat rate.
- Fluid and electrolytes are commonly lost through sweat.

**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

**A focus on 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.
How to manage dehydration

Replacing lost fluid and electrolytes with an oral rehydration solution (ORS) is the most important aspect of managing dehydration. Hydralyte is a scientifically formulated ORS based on the World Health Organization criteria for oral rehydration therapy. The solutions contain the correct balance of glucose and electrolytes to allow for rapid and effective rehydration.

Oral rehydration solutions (Hydralyte) – The science

The most important physiological features are:

1. **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.

2. **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 products

**Powders:**

- Easy to prepare format, compact and portable for travel and on the go.
- Packaged with a measuring cup to allow for accurate dosing.

**Solutions:**

- Convenient pre-made drink.
- Extended shelf life after opening (1 month).
- Available in 1 Litre and 250 mL size bottles.

**Effervescent tablets:**

- Compact in size to fit in luggage for travelling families, and diaper bags for moms on the go.
- Easy to use format – dissolve 2 tablets in 200 mL of water.
- No stirring required.

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FAQs for Health Care Professionals

1. **Is Hydralyte suitable for people with diabetes?**
   - Hydralyte products contain 1.6 g of glucose per 100 mL. For people with diabetes, this is a small amount of glucose and is considered safe as part of a healthy, balanced overall diet. When unwell with vomiting and diarrhea, it is important to supply the body with some glucose, even for people with diabetes. Monitoring of blood glucose levels at this time is integral.

2. **Are there any warnings when using Hydralyte?**
   - Use with caution in patients with kidney or heart conditions, high blood pressure and conditions related to gastrointestinal function. Further medical advice is recommended with cases of vomiting and diarrhea lasting for longer than 24 hours, severe dehydration (including shock) and patients who are unable to drink.

3. **Does Hydralyte contain?**
   - **Isomalt**
     - No
   - **Saccharin**
     - No
   - **Aspartame**
     - No
   - **Salicylates**
     - No
   - **Gluten**
     - No
   - **Wheat**
     - No
   - **Yeast**
     - No
   - **Nuts**
     - No
   - **Animal products**
     - No
   - **Lactose or dairy products**
     - No

4. **Is Hydralyte suitable to use in pregnancy and breastfeeding?**
   - Yes, however, pregnant women should seek medical advice if they experience vomiting or diarrhea.

5. **Is Hydralyte fructose-friendly?**
   - Hydralyte does not contain any added fructose. However, the flavors in the product may contain minute quantities of fructose. If a patient suffers from dietary fructose intolerance (malabsorption), Hydralyte will generally be well tolerated. Should any unpleasant symptoms arise, the patients should cease taking the product. If a patient suffers from hereditary fructose intolerance, they are advised to consult their healthcare professional before use, as the answer will vary on an individual basis.

6. **What is the sweetener used in Hydralyte?**
   - Hydralyte contains stevia extract in Lemonade effervescent tablets and Lemonade maintenance solutions.

7. **What is the source of glucose in Hydralyte?**
   - The source of glucose in Hydralyte is corn (also called maize).
### Recommended instructions

**For dehydration due to vomiting and diarrhea**

#### Hydralyte Electrolyte Powder

<table>
<thead>
<tr>
<th>Age</th>
<th>Take in the first 6 hours</th>
<th>Maximum per day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 12 months</td>
<td>400–600 mL</td>
<td>1300 mL</td>
</tr>
<tr>
<td>1–3 years</td>
<td>700–1000 mL</td>
<td>1900 mL</td>
</tr>
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<td>2600 mL</td>
</tr>
<tr>
<td>6–12 years</td>
<td>1800–2400 mL</td>
<td>3900 mL</td>
</tr>
<tr>
<td>12–Adult</td>
<td>3000–3600 mL</td>
<td>6600 mL</td>
</tr>
</tbody>
</table>

1 powder sachet = 200 mL

#### Hydralyte Electrolyte Maintenance Solution

<table>
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<tr>
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#### Hydralyte Effervescent Electrolyte Tablets

<table>
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<td>6600 mL</td>
</tr>
</tbody>
</table>

2 effervescent tablets = 200 mL

### For dehydration due to causes other than vomiting and diarrhea

<table>
<thead>
<tr>
<th>Age</th>
<th>Take 1–7 sachets per day or as directed by your healthcare professional.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10–13 years</td>
<td>Take up to 4 x 200 mL for up to 3 days</td>
</tr>
<tr>
<td>13–Adult</td>
<td>Take up to 7 x 200 mL for up to 3 days</td>
</tr>
</tbody>
</table>

1 powder sachet = 200 mL

**Dehydration due to fever**

<table>
<thead>
<tr>
<th>Age</th>
<th>Take up to 2 x 200 mL doses daily. For dehydration due to fever, consult a healthcare professional for use beyond 24 hours.</th>
</tr>
</thead>
<tbody>
<tr>
<td>13–Adult</td>
<td></td>
</tr>
</tbody>
</table>

2 effervescent tablets = 200 mL

For prolonged exercise (3 hours or more) or recurring dehydrating conditions, seek advice from your healthcare professional.

### Dehydration and Oral Rehydration Solutions

Hydralyte.ca

Always read the label. Use only as directed.