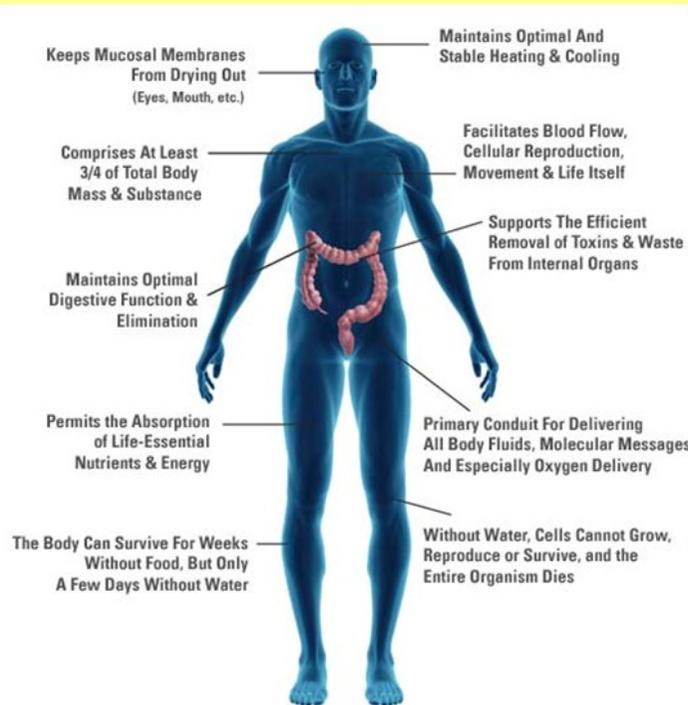


Dehydration occurs when the amount of water leaving the body is greater than the amount of water being taken in. The body is very dynamic and always changing. This is especially true with water in the body. We lose water routinely as we breathe and humidified air leaves the body, sweat to cool the body, urinate or have a bowel movement. Our LiveLife Pharmacies see dehydration on a daily basis, especially in our Coastal pharmacies where our customers often spend their days out in the beautiful sunshine. We know how important it is for you to be aware of how to identify dehydration and can help you to prevent and treat this potentially dangerous condition.

Water, why do we need it?

Did you know that more than half of your body weight is water?! No wonder we feel that we are not able to survive for more than a few hours without having a drink!

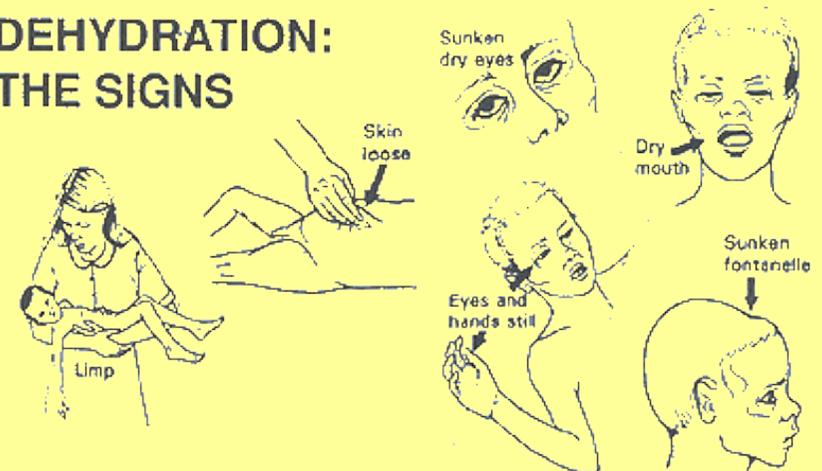
- Water is the biggest part of all the fluids that travel around in the body, and there is a large amount of water inside your cells too. Even your bones have a considerable amount of water in them.
- The water moves as part of the blood and lymph circulating through the body, giving food and oxygen to the cells and helping waste to be taken away.
- Water also carries digestive enzymes around our gastrointestinal tract, so that our food can be broken down. Anything that the body doesn't want is also carried with water in the blood to the kidneys, which make urine, and some water stays in the gut, then comes out as faeces.
- The body also uses water to keep our core body temperature at about 37degrees Celsius.
- Water is in the fluids that keep joints moving smoothly
- Water is also the main component of saliva and mucus in the body.



What are the signs & symptoms of dehydration?

- Increased thirst
- Dry or sticky mouth
- Feeling tired or sleepy
- Decreased urine output (with urine looking a dark yellow colour) – this may lead to nil urine output depending on severity of the dehydration
- Sunken eyes
- Few/nil tear production in the eyes
- Headache
- Dizziness
- Sunken fontanelles in an infant (the soft spot on the top of the head)
- Poor skin elasticity (skin sinks back slowly to its normal position when pinched)
- Drop in blood pressure when the person tries to stand up
- Rapid heart rate

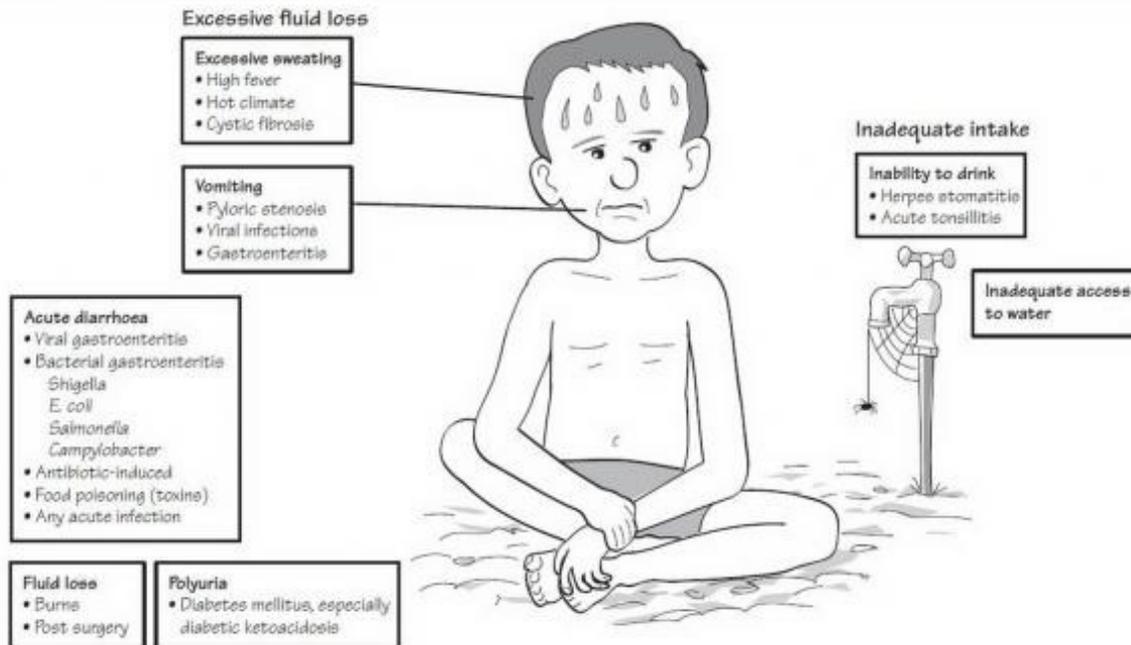
DEHYDRATION: THE SIGNS



Common causes of dehydration

- **Diarrhoea** – a common reason for a person to lose excess amounts of water.
- **Vomiting** – can also be a cause of fluid loss. Not only can the individual lose fluid in the vomit itself, but it can sometimes be difficult to replace the water by drinking when they are likely to vomit again straight away, leading to further dehydration
- **Sweating** – The body has a natural cooling mechanism whereby it forms sweat on the skin. This occurs when the body temperature is increased because of working or exercising in a hot environment, and also when a fever is present due to an infection. This can lead to significant fluid loss if not replaced quickly.
- **Diabetes** – when the blood sugar levels are elevated, sugar is spilled into the urine and water then follows, which may cause significant dehydration. This is why frequent urination and excessive thirst are often among the earliest symptoms of diabetes.
- **Burns** – Burn victims become dehydrated due to the skin becoming damaged and thus not being able to prevent fluid from seeping out of the body.
- **Inability to drink fluids** – this may be due to a lack of supply of water, intense nausea with or without vomiting, or lack of strength to drink.

Causes of dehydration



I've heard that children and infants are more quickly affected by dehydration – is that true?

Babies and young children should be observed carefully during hot weather as they can quickly lose body fluids through perspiring, which can lead to dehydration. They need to be offered water regularly, wear light and breathable clothes and keep as cool as possible. Try to monitor and control any high temperatures also to avoid further perspiration and loss of fluids.

What if the child is still breastfed? There is only so much breast milk a mother can produce!

In hot weather, it is normal for a thirsty baby to want to breastfeed more frequently but for shorter periods. This actually helps them to get more low-fat milk which is more satisfying to their thirst. If you need to be away from the baby, please make sure you have expressed enough breast milk. If you are finding that your baby is becoming sleepy in hot weather, you may need to wake them for feeds. An older baby or toddler who is no longer exclusively breastfed can be encouraged to drink water in between breastfeeds. There are also oral rehydration salts (ORS) that can be used in infants (consults your pharmacist); these will be explained in the "optimal care" section of this module. Remember that it's not only hot weather that can bring on dehydration in the child. The effect of car air conditioners can cause some dehydration – so extra breastfeeds may be necessary on long trips, even if you feel cool.

Are there any complications of dehydration to be concerned about?

Severe dehydration may lead to more serious symptoms, such as:

- Seizures
- Shock (when there is a severe shortage of blood and oxygen circulating in the body leading to a sudden drop in blood pressure)
- Permanent brain damage
- Coma
- and even death.

It is a serious condition that should not be ignored or treated lightly. Do not underestimate the time it takes to become dehydrated in our tropical climates – prevention is always better than treatment

Exercise, heat stress and dehydration

Regular exercise and physical activity is essential for good health. However, it is important in our often hot and tropical climate, to ensure you are staying well hydrated and reducing the risk of heat stress during sport/exercise. Normally, the human body generates about 100watts (a unit of energy expenditure per second) from its internal metabolic processes. During heavy exercise, this can escalate to 1000 watts, with perspiration flooding out of sweat glands and evaporating from the skin to cool the body. This can lead to dehydration in only a short period of time, so it is important to manage your fluid requirements. For every hour of exercise, you can lose around 1.5litres of fluid. This will lead first to fatigue, increased susceptibility to cramps, heat stress and heat stroke.

So how do you know if you have drunk enough water?

Weigh yourself before and after exercise – a loss of one kilogram is equivalent to about one litre of lost fluid. You also need to listen to your body by using your thirst as a clear indication you need to drink.

****There are specific rehydration solutions for sports and this will be discussed in the optimal care section of this module.****



But I usually have a sports drink when I think I am dehydrated – isn't that the same thing? Why should I pay all this money for these Oral Rehydration Salts that do exactly the same thing?!

In order to rapidly rehydrate the body and retain the fluid that has been consumed, it is important to have the right levels of glucose (sugar) and electrolytes (salts, and in particular sodium) in the solution. Usually, sports drinks have lots of sugar (to make them taste good) and not enough sodium, therefore interfering in the rehydration process. Rehydration formulas from our LiveLife pharmacies are formulated to contain the CORRECT concentration of these active ingredients.

See the table right for further explanation and illustration of this:

Ingredient	Function within the body	Hydralyte	Sports Drink (approx)
Sodium	Helps body to retain fluid	45mmol/L 55mmol/L*	10mmol/L
Potassium	Essential for nerve and muscle function	20mmol/L	4mmol/L
Chloride	Helps body to retain fluid	45mmol/L	N/A
Citrate	Natural Flavour and help stop acidosis	30mmol/L	N/A
Carbohydrates	Assists electrolyte and water absorption (energy source)	80mmol/L (16g/L)	400mmol/L (80g/L)

Preventing Dehydration

- Avoid the hottest part of the day for sporting activities if possible
- Wear loose, light-coloured and comfortable clothing – remember that dark colours absorb heat
- Ensure you are wearing sunscreen and a hat that shades your head, neck, ears and face – sunburn may stop your body from being able to cool itself down properly
- Hydrate with water or oral rehydration salt therapy before, during and after sport/exercise. Alcohol dehydrates the body, so avoid drinking any alcohol if you are going to be doing anything that may increase your risk of dehydration
- Be alert and check for symptoms of heat stress and dehydration



Optimal Care for Dehydration

Oral rehydration therapy with an inexpensive glucose and electrolyte solution as promoted by the World Health Organisation (WHO) has reduced the number of deaths from dehydration substantially all over the world!

*****Please note these rehydration therapies are NOT the same as sports drinks like Gatorade, powerade etc, as they contain more electrolytes and less sugar, and are based on the WHO formula for oral rehydration therapy.*****

There are many different preparations available, so we will go through some of the more common ones found in our LiveLife pharmacies:

Hydralyte

- Australian made and owned
- Pharmacy-only product – not available in supermarkets!
- Available as:
- Sachets of powder and effervescent tablets for portability when travelling
- Child-friendly ice-blocks – kids think they are a treat rather than medicine and they are well tolerated when frozen
- “Ready-made” solutions that are fast and convenient for people – there is also no chance of error in mixing these

Gastrolyte

- Available as sachets of powder, effervescent tablets and now “ready-made” 1L and 250ml bottles
- 2 varieties available – Gastrolyte (simple rehydration therapy as discussed previously), and Gastrolyte-R (rehydration therapy with the addition of pre-cooked rice to enable watery stools to return to normal more rapidly—a good choice when dehydration is caused by diarrhoea)

Restore ORS

- Available as sachets of powder for reconstitution

Ethical nutrients rehydrate

- Available as sachets of powder for reconstitution

So what are Hydralyte Sports and Endura Rehydration – are they the same as these other rehydration therapies we have just discussed?

These products are very good for rehydration, but are more specialised for athletes who lose electrolytes through exercise and perspiration. They also contain a higher amount of certain salts such as magnesium, which are very important for muscular function (and to prevent cramping when exercising). Consider the use of these specialised products for sports people who are dehydrated after playing football, running in a triathlon, or going to the gym. The other rehydration formulas are for general dehydration purposes. Consult with your pharmacist if you are unsure which product to use.

Other optimal care products available at the pharmacy:

- Paracetamol/ibuprofen – if there is any headache or body aches alongside the dehydration.
- Ice packs – to help cool the body down if there is a temperature/fever exacerbating the dehydration
- Healing gels for any sunburn that may be resulted alongside the dehydration—e.g. Solosite
- Slip, slop, slap, wrap supplies if they are planning to go out in the sun again—sunscreen, wide-brimmed hat and sunglasses

