KEY TIPS ON HYDRATION

DIARRHOEA AND HYDRATION IN CHILDREN

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Diarrhoea, defined as the passage of three or more loose stools within a 24-hour period[1], is an important cause of fluid loss and dehydration. Children are particularly susceptible to diarrhoea-related dehydration due to their lower tolerance of body water losses. The World Health Organisation[2] estimates that there are 1.7 billion cases of diarrhoeal disease every year, mainly in developing countries.

Infections caused by rotavirus, norovirus or campylobacter and other bacteria (or their toxins) and parasites are by far the most common causes of diarrhoea in both industrialising and industrialised countries. However, in the latter case, other causes of diarrhoea should be considered[3]:

- **Intolerance or allergy:** such as lactose intolerance or coeliac disease
- **Chronic disease:** such as Crohn's disease or ulcerative colitis
- **Treatment-related:** radiotherapy or certain medications can cause diarrhoea
- **Other:** such as irritable bowel syndrome or laxative abuse

RECOGNISING DEHYDRATION IN CHILDREN

This can be challenging as children are vulnerable to even small changes in water balance and may be too young to respond to questioning about thirst and other symptoms of dehydration. Table 1 shows signs and symptoms of different levels of dehydration in children.

Table 1: Signs and symptoms of dehydration in children

	Minimal /no dehydration	Mild to moderate dehydration	Severe dehydration
Breathing	Normal	Normal, fast	Deep
Extremities	Warm	Cool	Cold, mottled
Eyes	Normal	Slightly sunken	Deeply sunken
Heart rate	Normal	Normal to increased	Tachycardia or decreased rate
Mental status	Alert	Normal, fatigued or restless	Apathetic, unconscious
Mouth and tongue	Moist	Dry	Parched
Pulse	Normal	Normal to decreased	Weak or impalpable
Skin turgor	Instant recoil	Recoil in less than 2 seconds	Recoil in more than 2 seconds
Tears	Present	Decreased	Absent
Thirst	Drinks normally, may refuse fluids	Thirsty	Drinks poorly or unable to drink
Urine output	Normal to decreased	Decreased	Minimal

Source: adapted from Churgay & Aftab[1]

Children are considered adequately hydrated if they have a body weight loss of no more than 3%, and they present with normal physical signs. Mild to moderate dehydration is present when 3-9% of body weight is lost, while severe dehydration is indicated by loss of more than 9% of body weight.

Additional signs of dehydration in babies are fewer wet nappies and a sunken fontanelle. Biochemical tests are less useful in children with suspected mild to moderate dehydration, due to poor sensitivity, although a serum bicarbonate level below 22 mmol/L is indicative of dehydration in children[4].

MANAGING THE EFFECTS OF DIARRHOEA IN CHILDREN

In addition to treating the causes of diarrhoea using medication or special diet, an essential step in the condition's management is to normalise fluid balance. How this is done depends on the extent of dehydration and on the resources available. In mild to moderate dehydration, the treatment is typically a normal diet plus oral rehydration therapy at 50ml per kg body weight[5]. More severe dehydration tends to be treated in hospital using intravenous fluids and/or accelerated oral hydration therapy.

Oral hydration solutions usually contain 50 mEq per L of sodium, 25 g per L of glucose, and 30 mEq per L of bicarbonate[4]. A systematic review[6] on the efficacy of oral hydration therapy estimated that the treatment could prevent 93% of deaths caused by diarrhoeal disease and was equally effective in all clinical settings. However, parental attitudes to oral hydration therapy are not always positive. A survey[7] of 100 parents of children with suspected dehydration due to gastroenteritis revealed that 49% would refuse to use oral hydration solutions as they were expecting their child to receive intravenous fluids. Health professionals can overcome these concerns by reassuring parents of the efficacy of oral hydration therapy.

TREATING DEHYDRATION IN CHILDREN[8]

- Use oral hydration solutions as recommended
- Offer regular sips of milk, fruit cordials or diluted fruit juice
- Offer small amounts of well-liked foods with a high water content, e.g. soup, stew, pasta in sauce, jelly, ice cream
- Tea, coffee, undiluted fruit juice and carbonated drinks are best avoided until the child is well

References

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