

Letter to the Editor

Dear Editor,

We read with interest the article "Use of intravenous therapy in the management of acute gastroenteritis in young children: a retrospective analysis" by Ip et al.¹ We would like to point out that their comment of 'dehydration was based on the weight loss classification of <5% (mild), 5-10% (moderate) and >10% (severe)' requires clarification. As total body water and extracellular fluid volume as percentage of body weight decreases with increasing age (Table 1), a lesser decrease in body weight would result in similar clinical dehydration in older children.² Hence, for children older than 1-year, a 3%, 6% and 10% weight loss correspond to mild, moderate and severe dehydration respectively.^{2,3} However, one should realise that the clinical features would not change much between 5% and 9% dehydration. Because of this threshold effect, distinguishing between mild and moderate dehydration on the basis of clinical signs alone might be difficult. Therefore, the updated recommendations group together patients with mild to moderate dehydration (Table 2). It is important for paediatricians to appreciate the differences as the accurate change in body weight is often not available and the rehydration regime would then be governed by the clinical assessment. In our experience in Kwong Wah Hospital, a

significant proportion of children did not have an accurate body weight before the presenting episodes of gastroenteritis. This was further complicated by the fact that difference in the weighing scales used would also make interpretation of change in body weight difficult.

References

1. Ip KS, Ma YM, Chan JSH, Young BWY. Use of intravenous therapy in the management of acute gastroenteritis in young children: a retrospective analysis. *HK J Paediatr (new series)* 2005;10:10-4.
2. Greenbaum LA. Pathophysiology of body fluids and fluid therapy. In: Behrman RE, Kliegman RM, Jenson HB, Editors. *Nelson textbook of pediatrics*. 17th ed. Philadelphia: WB Saunders, 2004:191-252.
3. King CK, Glass R, Bresee JS, Duggan C; Centers for Disease Control and Prevention. Managing acute gastroenteritis among children: oral rehydration, maintenance, and nutritional therapy. *MMWR Recomm Rep* 2003;52(RR-16):1-16.

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Table 1 Age related changes in percentage body weight of total body water, intracellular fluid and extracellular fluid²

	Total body water	Extracellular fluid	Intracellular fluid
Pre-term	80	45	35
Full-term	75	40	35
1-12 months	65	30	35
1-12 years	60	20	40
Adults	55-60	20	35-40

Table 2 Assessment of dehydration*³

Variable	No or minimal, <3%	Mild-Moderate, 3-9%	Severe, ≥10%
Blood pressure	Normal	Normal	Normal to reduced
Quality of pulses	Normal	Normal or slightly decreased	Moderately decreased
Heart rate	Normal	Increased	Increased ⁺
Skin turgor	Normal	Decreased	Decreased
Fontanelle	Normal	Sunken	Sunken
Mucous membranes	Slightly dry	Dry	Dry
Eyes	Normal	Sunken orbits	Deeply sunken orbits
Extremities	Warm, normal capillary refill	Delayed capillary refill	Cool, mottled
Mental status	Normal	Normal to listless	Normal to lethargic or comatose
Urine output	Slightly decreased	<1 mL/kg/h	<<1 mL/kg/h
Thirst	Slightly increased	Moderately increased	Very thirsty or too lethargic to indicate

* If a clinician is unsure of the category into which a patient falls, it is recommended that therapy for the more severe category be used.

⁺ Bradycardia may appear in severe cases.