Society for Endocrinology position statement on the management of adults with endocrine disorders during hot weather and heatwaves

Vasileios Chortis[1,2], Ruth T. Casey[3], Sophie Clarke[4], Miguel Debono[5], Smriti Gaur[6], Sath Nag[7], Narendra Reddy[8], Andrew Toogood[2], *on behalf of the UK Society for Endocrinology*

[1]Department of Metabolism and Systems Science, School of Medical Sciences, College of Medicine and Health, University of Birmingham, Birmingham, UK.

[2]Department of Endocrinology, Queen Elizabeth Hospital Birmingham, University Hospitals Birmingham NHS Foundation Trust, Birmingham, UK.

[3]University of Cambridge, Institute of Metabolic Science and Department of Genomic Medicine, Addenbrooke's Hospital, Cambridge, UK.

[4]Department of Endocrinology, University College London Hospitals NHS Foundation Trust (UCLH), London, UK

[5]Division of Clinical Medicine, University of Sheffield, Sheffield, UK

[6]Department of Diabetes and Endocrinology, Norfolk and Norwich University Hospitals NHS Foundation Trust, Norwich, UK

[7]Department of Diabetes and Endocrinology, South Tees Hospitals NHS Foundation Trust, Middlesbrough, UK

[8]Department of Diabetes and Endocrinology, University Hospitals Leicester NHS Trust, Leicester, UK

Introduction

The purpose of this position statement is to provide practical advice for healthcare professionals and patients on the management of common endocrine disorders during periods of hot weather. Recommendations provide a pragmatic framework predominantly based on physiological principles and expert consensus, acknowledging the limited clinical evidence available to underpin clinical practice in this area. This guidance is intended for use alongside disease-specific management plans and national or international guidelines, not as a replacement for specialist clinical judgement.

General Principles

- Body temperature regulation in hot weather relies predominantly on increased sweating (leading to hypotonic fluid and sodium losses), cutaneous vasodilation, and behavioural changes[1].
- Patients with certain endocrine disorders may be more vulnerable to hot weather due to susceptibility to salt and/or water depletion (primary adrenal insufficiency, arginine vasopressin (AVP) deficiency or resistance, primary hyperparathyroidism) or impaired body temperature regulation (hyperthyroidism). Those with a deficient sense of thirst (adipsia) are particularly vulnerable.
- The physiological impact of heat depends not only on absolute ambient temperature, but also on factors such as humidity, duration of exposure, direct sunlight, physical activity, acclimatisation, and individual vulnerability[1]. Therefore, no single ambient temperature threshold can reliably define risk. In general, susceptible patients are

likely to be at greater risk during prolonged heat exposure, particularly when this results in substantially increased sweating, and during periods covered by official heat-health alerts.

- Where thirst sensation is intact, increasing oral fluid intake guided by thirst to maintain hydration is important, unless fluid restriction is specifically indicated.
- In most cases, heat alone does not require endocrine medication dose changes, although intercurrent illness or heat-related illness may warrant adjustment.
- At-risk patients should avoid prolonged exposure to extreme heat where possible, particularly those with primary adrenal insufficiency or impaired thirst mechanisms.
- Patients should be vigilant for symptoms suggestive of dehydration, volume depletion or heat-related illness, including: dizziness (particularly on standing), marked fatigue or weakness, a high body temperature, muscle cramps or headaches. They should seek medical advice if symptoms are severe, persistent or worsening. Confusion, recurrent vomiting, reduced responsiveness, fainting episodes or seizures should prompt urgent medical assessment.
- Patients receiving glucocorticoid replacement should follow standard sick-day rules when clinically unwell[2].
- Patients should carry emergency medical identification where appropriate (e.g. Steroid Emergency Card).

Condition-specific Recommendations

Condition	Hot weather advice	Medication adjustment
Primary adrenal insufficiency (Addison's disease)	- Advise patients to maintain hydration by increasing oral fluid intake according to thirst.	**-Hydrocortisone**: Routine dose adjustment is not recommended.

	- Patients should consider increasing dietary salt intake or using electrolyte-containing oral rehydration solutions during periods of increased sweating.	Patients should apply sick-day rules as usual if clinically unwell[2]. **-Fludrocortisone**: Consider a temporary increase (e.g., by 50–100 micrograms/day), particularly if increased sweating, prolonged outdoor activities, or if symptomatic (e.g., light-headedness, salt craving)[2,3].
Secondary/tertiary adrenal insufficiency	- Advise patients to maintain hydration by increasing oral fluid intake according to thirst.	**-Hydrocortisone:** Routine dose adjustment is not recommended. Patients should apply sick-day rules as usual if clinically unwell. **-Fludrocortisone** is not required.
AVP deficiency/resistance (diabetes insipidus)	-Advise patients to maintain hydration by increasing oral fluid intake according to thirst. -In patients with absent or impaired thirst (adipsia), regular fluid prescription may need adjusting with close monitoring of body weight and/or serum sodium levels[4]. Any adjustment should be individualised and agreed with the patient's Endocrinology team.	- Routine desmopressin/diuretic dose adjustment is not recommended.

	Thirst should not be used to guide fluid intake. - Patients and their relatives/carers should be advised to contact their Endocrinology team if they notice significant or unexpected changes in body weight or urine output, which may reflect an underlying change in fluid balance.	
Syndrome of inappropriate antidiuresis (SIAD)	- There is a risk that the existing fluid restriction regime might lead to dehydration in hot weather. Patients should be advised to contact their GP or hospital team if symptoms of dehydration.	Avoid routine relaxation of fluid restriction; individualise according to clinical assessment and serum sodium.
Hyperparathyroidism	- Advise patients to maintain hydration by increasing oral fluid intake according to thirst. Some patients may be at increased risk of dehydration and worsening hypercalcaemia.	-Routine medication dose adjustment (e.g. cinacalcet) is not recommended.
Hyperthyroidism	-Patients with poorly controlled hyperthyroidism may be more sensitive to hot weather because of increased thermogenesis and sweating[5]. - Advise patients to maintain hydration by increasing oral fluid intake according to thirst. - Avoid prolonged heat exposure.	Routine medication dose adjustment is not recommended; ensure thyrotoxicosis is well-controlled.

	-Seek medical advice if dizziness, worsening palpitations, fainting episodes, or confusion.	

Key Messages

• Heat alone is not an indication to change regular medication doses in most cases.

• Encourage early recognition of dehydration and heat-related illness.

• Patients with adrenal insufficiency should understand sick-day rules and emergency injection use. In primary adrenal insufficiency, increased sweating may require increased salt intake and/or temporary adjustment of the fludrocortisone dose.

• Patients with AVP deficiency or resistance (diabetes insipidus) and intact thirst sensation should drink to thirst and seek urgent assessment if they are unable to maintain oral intake.

• Patients with adipsia (lack of thirst sensation) are particularly vulnerable to the effects of heat and careful fluid balance management is crucial in hot weather. Changes to medication or usual fluid prescription should be individualised in liaison with the patient's Endocrinology team. More frequent biochemical monitoring, guided by weight changes and clinical symptoms, may be required.

Further information for patients

General guidance on how to stay safe during hot weather is available from the NHS (https://www.nhs.uk/conditions/heat-exhaustion-heatstroke/) and the UK Health Security Agency (https://www.gov.uk/government/publications/beat-the-heat-hot-weather-advice/beat-the-heat-staying-safe-in-hot-weather). Useful information specific to patients with pituitary disease is available from the Pituitary Foundation

(https://www.pituitary.org.uk/information/heatwave-guidance-for-people-with-pituitary-conditions/).

References

1. Cramer MN, Gagnon D, Laitano O, Crandall CG. Human temperature regulation under heat stress in health, disease, and injury. Physiol Rev 2022;102(4):1907-1989. DOI: 10.1152/physrev.00047.2021.
2. Ftouh S, Zucker M, Tran A, et al. Adrenal insufficiency: identification and management-summary of new NICE guidance. BMJ 2025;389:r330. DOI: 10.1136/bmj.r330.
3. Bancos I, Hahner S, Tomlinson J, Arlt W. Diagnosis and management of adrenal insufficiency. Lancet Diabetes Endocrinol 2015;3(3):216-26. DOI: 10.1016/S2213-8587(14)70142-1.
4. Tomkins M, Lawless S, Martin-Grace J, Sherlock M, Thompson CJ. Diagnosis and Management of Central Diabetes Insipidus in Adults. J Clin Endocrinol Metab 2022;107(10):2701-2715. DOI: 10.1210/clinem/dgac381.
5. Ross DS, Burch HB, Cooper DS, et al. 2016 American Thyroid Association Guidelines for Diagnosis and Management of Hyperthyroidism and Other Causes of Thyrotoxicosis. Thyroid 2016;26(10):1343-1421. DOI: 10.1089/thy.2016.0229.