

## Clarification regarding the correct use of medicinal products in the event of a heat wave

### KEY MESSAGES

1. The most vulnerable groups during heat waves are the elderly, babies and children, people suffering from a chronic disease warranting medicinal treatment and dependent persons. Social isolation increases their vulnerability.  
The elderly are particularly at risk because of: deterioration in their ability to recognise thirst, diminished homeostatic regulation of water and sodium, and reduced thermoregulatory capacity through perspiration.
2. In the event of a heat wave, some medicinal products are likely to exacerbate the exhaustion-dehydration syndrome or heat stroke. These are essentially:
  - Medicinal products causing hydration and/or electrolyte disorders,
  - Medicinal products likely to alter kidney function,
  - Medicinal products, the kinetic profile of which may be affected by dehydration,
  - Medicinal products that may disrupt central or peripheral thermoregulation.Medicinal products that might cause hyperthermia and those that may indirectly exacerbate the effects of heat must also be taken into account when analysing risk factors in subjects likely to experience problems adapting to the heat (see summary table).
3. The adaptation of current medicinal treatment must be considered individually. There is no justification for an immediate and systematic decrease or stopping of medicinal products likely to interact with the body's ability to adapt to heat.
4. Before making any decision regarding treatment, it is essential to carry out a full evaluation of the state of hydration (clinical evaluation, evaluation of water intake, recording of weight, heart rate, blood pressure and a full electrolytogram with blood creatinine levels and evaluation of creatinine clearance). Hydration level must be checked regularly if the heat wave persists.
5. Health care professionals are advised to:
  - a. Draw up a list of medicinal products, either prescribed or available over-the-counter, taken by the patient and to identify those that could alter the body's ability to adapt to heat (see summary table);
  - b. Reassess the benefit of each of these medicinal products and withdraw any medication that seems inappropriate or not essential. Pay particular attention to the combination of nephrotoxic medicinal products in the elderly;
  - c. Avoid the prescription of non-steroidal anti-inflammatory drugs, particularly nephrotoxic in case of dehydration;
  - d. In the event of fever, also avoid the prescription of paracetamol, due to its inefficacy to treat heat stroke and the risk of aggravating a pre-existing liver impairment;
  - e. If diuretics are prescribed, check that water and sodium intakes are appropriate;
  - f. Advise the patient to seek medical advice before taking any medicinal products including over-the-counter medication.

### Summary Table

<b>❖ MEDICINAL PRODUCTS LIKELY TO EXACERBATE EXHAUSTION-DEHYDRATION SYNDROME AND HEAT STROKE</b>			
Medicinal products causing hydration disorders and/or electrolyte imbalance	Diuretics, especially loop diuretics (furosemide)		
Medicinal products likely to alter kidney function	NSAIDs (including salicylates > 500 mg/d, classic NSAIDs and COX-2 selective INHIBITORS) <b>Medicinal products that have an effect on rennin-angiotensin system</b> (angiotensin converting enzyme (ACE) inhibitors, angiotensin II receptor antagonists, aliskiren, anti-aldosterones) <b>Sulfamides</b> <b>Indinavir</b> As a general rule, <b>all medicinal products known for their nephrotoxic effects</b> (e.g. aminoglycosides, cyclosporine, tacrolimus, iodine contrast products, etc.)		
Medicinal products with a kinetic profile likely to be affected by dehydration	<b>Lithium</b> <b>Anti-arrhythmics</b> <b>Digoxin</b> <b>Anti-epileptics</b> <b>Biguanides and hypoglycaemic sulfonamides</b> <b>Statins and fibrates</b>		
Medicinal products that can prevent heat loss	At central level	<b>Neuroleptics</b> <b>Serotonergic medicinal products</b> [imipramine antidepressants, serotonin reuptake inhibitor antidepressants, triptans, certain opiates (dextrometorphan, tramadol)]	
	At peripheral level	<b>Medicinal products with atropinic properties</b>	<ul style="list-style-type: none"> <li>- imipramine antidepressants</li> <li>- first generation antihistamines</li> <li>- atropinic anti-Parkinson's drugs</li> <li>- certain antispasmodics, especially those used in the treatment of urinary disorders</li> <li>- antipsychotics</li> <li>- disopyramide</li> <li>- pizotifen</li> <li>- some bronchodilators (salbutamol, tiotropium, etc.)</li> <li>- atropine</li> <li>- nefopam</li> </ul>
		<b>Vasoconstrictors</b>	<ul style="list-style-type: none"> <li>- agonists and sympathomimetic amines</li> <li>- certain antimigraine preparations (ergot derivatives, triptans)</li> </ul>
		<b>Medicinal products limiting the increase in cardiac output</b>	<ul style="list-style-type: none"> <li>- beta-blockers</li> <li>- diuretics</li> </ul>
	By altering basal metabolism	<b>Thyroid hormones</b>	
<b>❖ MEDICINAL PRODUCTS LIKELY TO TRIGGER HYPERTHERMIA (under normal temperature conditions or in the event of a heat wave)</b>			
<b>Antipsychotics</b> <b>Serotonergic agonists</b>			
<b>❖ MEDICINAL PRODUCTS LIKELY TO EXACERBATE THE EFFECTS OF HEAT</b>			
Medicinal products likely to lower blood pressure	<b>All antihypertensive drugs</b> <b>Anti-anginal drugs</b>		
Medicinal products altering vigilance			